

Tuesday, January 12, 2010

Page 1 of 3  
REQUEST NUMBER: 10-1227

**LOS ALAMOS**  
**NATIONAL LABORATORY**

ATTN: Valerie Davis

General Engineering Laboratories, Inc., Charleston, SC.  
2040 Savage Rd  
Charleston, SC 29407

These Samples are on:  
LANL Request Number: 10-1227  
Per Agreement Number: 126310011  
Project Cost Code: MR3A05529E00

Please analyse the enclosed samples  
according to the schedule indicated:

SHIP DATE: 1/12/2010

TURNAROUND/REPORT DUE: 2/11/2010

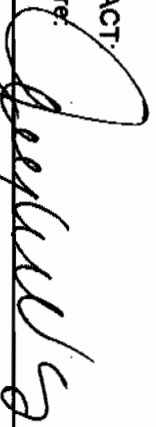
TURNAROUND REQ'D: 30 Days

RAD SCREENING: Yes, Below Background

LAB REQUEST COMMENTS:

LANL ER SMO CONTACT:

Signature:



| PRIORITY  | METHOD CODE | CNTNR | SAMPLE ID    | SAMPLE MATRIX | DATE SAMPLED | SPECIAL INSTRUCTIONS |
|-----------|-------------|-------|--------------|---------------|--------------|----------------------|
| EPA:901.1 |             | 1     | RE12-10-7258 | R             | 1/8/2010     |                      |
|           |             | 1     | RE12-10-7259 | R             | 1/8/2010     |                      |
|           |             | 1     | RE12-10-7260 | R             | 1/8/2010     |                      |
|           |             | 1     | RE12-10-7261 | R             | 1/8/2010     |                      |
|           |             | 1     | RE12-10-7262 | R             | 1/8/2010     |                      |
|           |             | 1     | RE12-10-7263 | R             | 1/8/2010     |                      |
|           |             | 1     | RE12-10-7264 | R             | 1/8/2010     |                      |
|           |             | 1     | RE12-10-7265 | R             | 1/8/2010     |                      |
|           |             | 1     | RE12-10-7266 | R             | 1/8/2010     |                      |

Tuesday, January 12, 2010

REQUEST NUMBER: 10-1227

| PRIORITY        | METHOD CODE | CNTNR | SAMPLE ID    | SAMPLE MATRIX | DATE SAMPLED | SPECIAL INSTRUCTIONS |
|-----------------|-------------|-------|--------------|---------------|--------------|----------------------|
| EPA:901.1       |             | 1     | RE12-10-7267 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7268 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7269 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7270 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7271 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7282 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7283 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7258 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7259 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7260 | R             | 1/8/2010     |                      |
| HASL-300:AM-241 |             | 1     | RE12-10-7261 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7262 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7263 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7264 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7265 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7266 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7267 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7268 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7269 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7270 | R             | 1/8/2010     |                      |
| HASL-300:ISOPU  |             | 1     | RE12-10-7271 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7282 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7283 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7258 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7259 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7260 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7261 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7262 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7263 | R             | 1/8/2010     |                      |
|                 |             | 1     | RE12-10-7264 | R             | 1/8/2010     |                      |

Tuesday, January 12, 2010

Page 3 of 3  
REQUEST NUMBER: 10-1227

| PRIORITY | METHOD CODE    | CNTNR | SAMPLE ID    | SAMPLE MATRIX | DATE SAMPLED | SPECIAL INSTRUCTIONS |
|----------|----------------|-------|--------------|---------------|--------------|----------------------|
|          | HASL-300:ISOPU | 1     | RE12-10-7263 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7264 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7265 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7266 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7267 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7268 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7269 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7270 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7271 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7282 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7283 | R             | 1/8/2010     |                      |
|          | HASL-300:ISOU  | 1     | RE12-10-7258 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7259 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7260 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7261 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7262 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7263 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7264 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7265 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7266 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7267 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7268 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7269 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7270 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7271 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7282 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7283 | R             | 1/8/2010     |                      |

Tuesday, January 12, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1227

## LOS ALAMOS

REQUEST NUMBER: 10-1227

## NATIONAL LABORATORY

ATTN: Valerie Davis

TURNAROUND/REPORT DUE: 2/11/2010

General Engineering Laboratories, Inc.,  
Charleston, SC.

TURNAROUND REQ'D: 30

2040 Savage Rd

Charleston, SC 29407

## LAB REQUEST COMMENTS:

| SAMPLE ID    | CTNR | CTNR DESC | ORDER                   | PRESERV | MATRIX |
|--------------|------|-----------|-------------------------|---------|--------|
| RE12-10-7262 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7266 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7258 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7268 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7265 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7261 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7259 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7263 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7271 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7260 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7267 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7264 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7270 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7269 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7283 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7282 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |

Relinquished By:

Date

Time

Received By:

Date

Time

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Received for DISPOSAL By:

Date

Time

Remarks:



## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2480

EVENT NAME: 4th Qtr. FY09 - AOC 12-004(a) - Threemile Canyon

SAMPLE ID: RE12-10-7266

WORK ORDER:

| AS PLANNED                  |           | AS COLLECTED |  | AS PLANNED               |        | AS COLLECTED |     |
|-----------------------------|-----------|--------------|--|--------------------------|--------|--------------|-----|
| DATE COLLECTED(MM/DD/YYYY): |           | 01/08/2010   |  | MEDIA:                   | QBT3   | Alt          | SED |
| TIME COLLECTED (HH:MM)      |           | 1257         |  | SUB-MEDIA:               | TUFF 1 | NA           |     |
| PRS ID:                     | 12-004(a) | OK           |  | SAMPLE TECH CODE:        | HA     | OK           |     |
| LOCATION ID:                | 12-610546 |              |  | FIELD QC TYPE:           | NA     |              |     |
| LOCATION TYPE:              | GENERIC   | ↓            |  | FIELD PREP:              | NA     | ↓            |     |
| TOP DEPTH:                  | 0         | 0.0          |  | SAMPLE USAGE:            | INV    | ↓            |     |
| BOTTOM DEPTH:               | 0         | 0.5          |  | SCREEN/PORT DESC:        | NA     |              |     |
| FIELD MATRIX:               | R         | SED          |  | EXCAVATED: YES/NO/NA     |        |              |     |
| COMPOSITE TYPE:             | NA        |              |  | COMPOSITE TIME INTERVAL: | NA     |              |     |
| BOREHOLE: YES/NO/NA         |           |              |  | BOREHOLE DECLINATION:    | NA     |              |     |
|                             |           |              |  | BOREHOLE DIRECTION:      | NA     |              |     |

| # | PRIORITY | ORDER                | CNTNR                         | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|---|----------|----------------------|-------------------------------|--------------|---------------|----------------------|
| 1 | Normal   | 8270C+NMED Exp       | 500 ML AMBER GLASS            | Ice          | Y             |                      |
| 1 | ↓        | AM241+GS+ISO PU+ISOU | 1 LITER POLY 12m 118/10       | None         | Y             |                      |
| 1 | ↓        | Met+U+CLO4+C N       | 1 GAL POLY 1 Liter            | Ice          | Y             |                      |
| 1 | ↓        | RADVANA+B+G          | 1 EA 8 IN RESEALABLE POLY BAG | None         | Y             |                      |

SAMPLE DESC: moist sand, tuff fragments, pine needles

SAMPLE COMMENTS: NA

LOCATION DESC: 4a-12 drainage

FIELD SCREENING/MEASUREMENT RESULTS: HE negative

Alpha  $\leq$  16 dpm  
 Beta/Gamma  $\leq$  2710 dpm

PID  $\frac{\text{Ambient}}{\text{Reading}} = \frac{0.0}{0.0}$  ppm

COLLECTED BY (PRINT)

TLMcFarlane

REVIEWED BY (PRINT)

R. Saunders

|  |                                 |  |                             |
|--|---------------------------------|--|-----------------------------|
| RELINQUISHED BY<br>(Printed Name) R. Saunders<br>(Signature) R. Saunders | Date/Time<br>01/08/2010<br>1517 | RECEIVED BY<br>(Printed Name) Sherri Greenwood<br>(Signature) Sherri Greenwood | Date/Time<br>1/8/10<br>1517 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)                         | Date/Time                       | RECEIVED BY<br>(Printed Name)<br>(Signature)                                   | Date/Time                   |

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2480

EVENT NAME: 4th Qtr. FY09 - AOC 12-004(a) - Threemile Canyon

SAMPLE ID: RE12-10-7282

WORK ORDER:

| AS PLANNED                  |  | AS COLLECTED                |  | AS PLANNED               |  | AS COLLECTED |  |
|-----------------------------|--|-----------------------------|--|--------------------------|--|--------------|--|
| DATE COLLECTED(MM/DD/YYYY): |  | 01/08/2010                  |  | MEDIA:                   |  | OBT3         |  |
| TIME COLLECTED (HH:MM)      |  | 1304                        |  | SUB-MEDIA:               |  | TUFF 1       |  |
| PRS ID: 12-004(a)           |  | ok                          |  | SAMPLE TECH CODE:        |  | HA           |  |
| LOCATION ID: UNK            |  | 12-610545                   |  | FIELD QC TYPE:           |  | FD           |  |
| LOCATION TYPE: GENERIC      |  | ok                          |  | FIELD PREP:              |  | NA           |  |
| TOP DEPTH: 0                |  | 1.0                         |  | SAMPLE USAGE:            |  | QC           |  |
| BOTTOM DEPTH: 0             |  | 3.0                         |  | SCREEN/PORT DESC:        |  | NA           |  |
| FIELD MATRIX: R             |  | R                           |  | EXCAVATED: YES/NO/NA     |  |              |  |
| COMPOSITE TYPE: NA          |  | COMPOSITE TIME INTERVAL: NA |  | WATER FLOWING: YES/NO/NA |  |              |  |
| BOREHOLE: YES/NO/NA         |  | BOREHOLE DECLINATION: NA    |  | BOREHOLE DIRECTION: NA   |  |              |  |

| # | PRIORITY | ORDER                | CNTNR                         | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|---|----------|----------------------|-------------------------------|--------------|---------------|----------------------|
| 1 | Normal   | 8082+8270+NME D-EXP  | 500 ML AMBER GLASS            | Ice          | Y             |                      |
| 1 |          | AM241+GS+ISO PU+ISOU | 1 LITER POLY<br>12m 1/08/10   | None         | Y             |                      |
| 1 |          | Met+U+CLO4+C N       | 1 GAL POLY<br>1 Liter         | Ice          | Y             |                      |
| 1 |          | RADVANA+B+G          | 1 EA 8 IN RESEALABLE POLY BAG | None         | Y             |                      |

SAMPLE DESC: QC Sample of RE12-10-7265

Pinkish gray tuff

SAMPLE COMMENTS:

NA

LOCATION DESC: 4a-11, drainage

## FIELD SCREENING/MEASUREMENT RESULTS:

$\alpha \leq 22$  dpm  
 $\text{Bg} \leq 3150$  dpm

PID reading ambient  $\frac{0.0}{0.0}$  ppm

COLLECTED BY (PRINT)

TL McFarland

REVIEWED BY (PRINT)

R. Saunders

|  |                                |  |                             |
|--|--------------------------------|--|-----------------------------|
| RELINQUISHED BY<br>(Printed Name) R. Saunders<br>(Signature) R. Saunders | Date/Time<br>1/08/2010<br>1517 | RECEIVED BY<br>(Printed Name) Sherri Sherwood<br>(Signature) Sherri Sherwood | Date/Time<br>1/8/10<br>1517 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)                         | Date/Time                      | RECEIVED BY<br>(Printed Name)<br>(Signature)                                 | Date/Time                   |

**SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY**

EVENT ID: 2480

EVENT NAME: 4th Qtr. FY09 - AOC 12-004(a) - Threemile Canyon

SAMPLE ID: RE12-10-7268

WORK ORDER:

| AS PLANNED                  |           | AS COLLECTED   |  | AS PLANNED               |       | AS COLLECTED |      |
|-----------------------------|-----------|----------------|--|--------------------------|-------|--------------|------|
| DATE COLLECTED(MM/DD/YYYY): |           | 01/08/2010     |  | MEDIA:                   | OBT3  |              | A11b |
| TIME COLLECTED (HH:MM)      |           | 0108/2009 1319 |  | SUB-MEDIA:               | TUFF1 |              | NA   |
| PRS ID:                     | 12-004(a) | ok             |  | SAMPLE TECH CODE:        | HA    |              | ok   |
| LOCATION ID:                | 12-610547 | ↓              |  | FIELD QC TYPE:           | NA    |              | ↓    |
| LOCATION TYPE:              | GENERIC   | ↓              |  | FIELD PREP:              | NA    |              | ↓    |
| TOP DEPTH:                  | 0         | 0.0            |  | SAMPLE USAGE:            | INV   |              | ↓    |
| BOTTOM DEPTH:               | 0         | 0.7            |  | SCREEN/PORT DESC:        | NA    |              |      |
| FIELD MATRIX:               | R         | S              |  | EXCAVATED: YES/NO/NA     |       |              |      |
| COMPOSITE TYPE:             | NA        |                |  | COMPOSITE TIME INTERVAL: | NA    |              |      |
| BOREHOLE: YES/NO/NA         |           |                |  | BOREHOLE DECLINATION:    | NA    |              |      |
|                             |           |                |  | BOREHOLE DIRECTION:      | NA    |              |      |

| # | PRIORITY | ORDER                | CNTNR                         | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|---|----------|----------------------|-------------------------------|--------------|---------------|----------------------|
| 1 | Normal   | 8270C+NMED Exp       | 500 ML AMBER GLASS            | Ice          | Y             |                      |
| 1 | ↓        | AM241+GS+ISO PU+ISOU | 1 LITER POLY                  | None         | Y             |                      |
| 1 | ↓        | Met+U+CLO4+C N       | 1 GAL POLY                    | Ice          | Y             |                      |
| 1 | ↓        | RADVANA+B+G          | 1 EA 8 IN RESEALABLE POLY BAG | None         | Y             |                      |

SAMPLE DESC:

Brownish gray silty sand, some tuff fragments

SAMPLE COMMENTS:

NA

LOCATION DESC:

4a-13 drainage

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha  $\leq$  22 dpm  
Beta/Gamma  $\leq$  3030 dpm

HE neg  
PID  $\frac{\text{Ambient Reading}}{0.0} = 0.0$  ppm

COLLECTED BY (PRINT)

TLMcFarlane

REVIEWED BY (PRINT)

R. Saunders

|  |                                 |  |                             |
|--|---------------------------------|--|-----------------------------|
| RELINQUISHED BY<br>(Printed Name) R. Saunders<br>(Signature) R. Saunders | Date/Time<br>01/08/2010<br>1517 | RECEIVED BY<br>(Printed Name) Sheri Sherwood<br>(Signature) Sheri Sherwood | Date/Time<br>1/8/10<br>1517 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)                         | Date/Time                       | RECEIVED BY<br>(Printed Name)<br>(Signature)                               | Date/Time                   |

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2480

EVENT NAME: 4th Qtr. FY09 - AOC 12-004(a) - Threemile Canyon

SAMPLE ID: RE12-10-7267

WORK ORDER:

| AS PLANNED                  |  | AS COLLECTED                |  | AS PLANNED               |  | AS COLLECTED |  |
|-----------------------------|--|-----------------------------|--|--------------------------|--|--------------|--|
| DATE COLLECTED(MM/DD/YYYY): |  | 01/08/2010                  |  | MEDIA:                   |  | OBT3         |  |
| TIME COLLECTED (HH:MM)      |  | 1304                        |  | SUB-MEDIA:               |  | TUFF 1       |  |
| PRS ID: 12-004(a)           |  | ok                          |  | SAMPLE TECH CODE: HA     |  | ok           |  |
| LOCATION ID: 12-610546      |  | ↓                           |  | FIELD QC TYPE: NA        |  | ↓            |  |
| LOCATION TYPE: GENERIC      |  | ↓                           |  | FIELD PREP: NA           |  | ↓            |  |
| TOP DEPTH: 0                |  | 1.0                         |  | SAMPLE USAGE: INV        |  | ↓            |  |
| BOTTOM DEPTH: 0             |  | 2.0                         |  | SCREEN/PORT DESC: NA     |  |              |  |
| FIELD MATRIX: R             |  | ok                          |  | EXCAVATED: YES/NO NA     |  |              |  |
| COMPOSITE TYPE: NA          |  | COMPOSITE TIME INTERVAL: NA |  | WATER FLOWING: YES/NO/NA |  |              |  |
| BOREHOLE: YES/NO NA         |  | BOREHOLE DECLINATION: NA    |  | BOREHOLE DIRECTION: NA   |  |              |  |

| # | PRIORITY | ORDER                | CNTNR                         | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|---|----------|----------------------|-------------------------------|--------------|---------------|----------------------|
| 1 |          | 8270C+NMED Exp       | 500 ML AMBER GLASS            | Ice          | Y             |                      |
| 1 |          | AM241+GS+ISO PU+ISOU | 1 LITER POLY                  | None         | Y             |                      |
| 1 |          | Met+U+CLO4+C N       | 1 GAL POLY                    | Ice          | Y             |                      |
| 1 |          | RADVANA+B+G          | 1 EA 8 IN RESEALABLE POLY BAG | None         | Y             |                      |

SAMPLE DESC:

Pinkish gray tuff and brown moist sand

SAMPLE COMMENTS:

Tuff at 1.6 ft

LOCATION DESC:

4a-12

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha  $\leq$  38 dpm  
Beta/Gamma  $\leq$  3000 dpm

PID  $\frac{\text{Ambient Reading}}{0.0} = 0.0$  ppm

COLLECTED BY (PRINT)

T. McFarland

REVIEWED BY (PRINT)

R. Saunders

|  |                                 |  |                             |
|--|---------------------------------|--|-----------------------------|
| RELINQUISHED BY<br>(Printed Name) R. Saunders<br>(Signature) R. Saunders | Date/Time<br>01/08/2010<br>1517 | RECEIVED BY<br>(Printed Name) Sheri Sherwood<br>(Signature) Sheri Sherwood | Date/Time<br>1/8/10<br>1517 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)                         | Date/Time                       | RECEIVED BY<br>(Printed Name)<br>(Signature)                               | Date/Time                   |

**SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY**

EVENT ID: 2480

EVENT NAME: 4th Qtr. FY09 - AOC 12-004(a) - Threemile Canyon

SAMPLE ID: RE12-10-7269

WORK ORDER:

| AS PLANNED                  |           | AS COLLECTED                | AS PLANNED               |  | AS COLLECTED |
|-----------------------------|-----------|-----------------------------|--------------------------|--|--------------|
| DATE COLLECTED(MM/DD/YYYY): |           | 01/08/2010                  | MEDIA:                   |  | OBT3         |
| TIME COLLECTED (HH:MM)      |           | 1326                        | SUB-MEDIA:               |  | TUFF 1       |
| PRS ID:                     | 12-004(a) | ok                          | SAMPLE TECH CODE:        |  | HA           |
| LOCATION ID:                | 12-610547 | ↓                           | FIELD QC TYPE:           |  | NA           |
| LOCATION TYPE:              | GENERIC   | ↓                           | FIELD PREP:              |  | NA           |
| TOP DEPTH:                  | 0         | 1.0                         | SAMPLE USAGE:            |  | INV          |
| BOTTOM DEPTH:               | 0         | 1.9                         | SCREEN/PORT DESC:        |  | NA           |
| FIELD MATRIX:               | R         | ok                          | EXCAVATED: YES/NO/NA     |  |              |
| COMPOSITE TYPE: NA          |           | COMPOSITE TIME INTERVAL: NA | WATER FLOWING: YES/NO/NA |  |              |
| BOREHOLE: YES/NO/NA         |           | BOREHOLE DECLINATION: NA    | BOREHOLE DIRECTION: NA   |  |              |

| # | PRIORITY | ORDER                | CNTNR                         | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|---|----------|----------------------|-------------------------------|--------------|---------------|----------------------|
| 1 | Normal   | 8270C+NMED Exp       | 500 ML AMBER GLASS            | Ice          | Y             |                      |
| 1 | ↓        | AM241+GS+ISO PU+ISOU | 1 LITER POLY 12m 1/08/2010    | None         | Y             |                      |
| 1 | ↓        | Met+U+CLO4+C N       | 1 GAL POLY 1 Liter            | Ice          | Y             |                      |
| 1 | ↓        | RADVANA+B+G          | 1 EA 8 IN RESEALABLE POLY BAG | None         | Y             |                      |

SAMPLE DESC:

Pinkish gray tuff

SAMPLE COMMENTS:

Tuff at 1.0 ft

LOCATION DESC:

4a-13 drainage

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha  $\leq$  22 dpmBeta/Gamma  $\leq$  2920 dpmPID  $\frac{\text{Ambient Reading}}{0.0} = 0.0$  ppm

COLLECTED BY (PRINT)

TL McFarland

REVIEWED BY (PRINT)

R. Saunders

|  |                                 |  |                             |
|--|---------------------------------|--|-----------------------------|
| RELINQUISHED BY<br>(Printed Name) R. Saunders<br>(Signature) R. Saunders | Date/Time<br>01/08/2010<br>1517 | RECEIVED BY<br>(Printed Name) Sheri Greenwood<br>(Signature) Sheri Greenwood | Date/Time<br>1/8/10<br>1517 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)                         | Date/Time                       | RECEIVED BY<br>(Printed Name)<br>(Signature)                                 | Date/Time                   |

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2480

EVENT NAME: 4th Qtr. FY09 - AOC 12-004(a) - Threemile Canyon

SAMPLE ID: RE12-10-7271

WORK ORDER:

| AS PLANNED                  |           | AS COLLECTED                | AS PLANNED               |  | AS COLLECTED |
|-----------------------------|-----------|-----------------------------|--------------------------|--|--------------|
| DATE COLLECTED(MM/DD/YYYY): |           | 01/08/2010                  | MEDIA:                   |  | OBT3         |
| TIME COLLECTED (HH:MM)      |           | 1350                        | SUB-MEDIA:               |  | TUFF 1       |
| PRS ID:                     | 12-004(a) | ok                          | SAMPLE TECH CODE:        |  | HA           |
| LOCATION ID:                | 12-610548 | ↓                           | FIELD QC TYPE:           |  | NA           |
| LOCATION TYPE:              | GENERIC   | ↓                           | FIELD PREP:              |  | NA           |
| TOP DEPTH:                  | 0         | 1.0                         | SAMPLE USAGE:            |  | INV          |
| BOTTOM DEPTH:               | 0         | 1.8                         | SCREEN/PORT DESC:        |  | NA           |
| FIELD MATRIX:               | R         | R                           | EXCAVATED: YES/NO/NA     |  |              |
| COMPOSITE TYPE: NA          |           | COMPOSITE TIME INTERVAL: NA | WATER FLOWING: YES/NO/NA |  |              |
| BOREHOLE: YES/NO/NA         |           | BOREHOLE DECLINATION: NA    | BOREHOLE DIRECTION: NA   |  |              |

| # | PRIORITY | ORDER                | CNTNR                         | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|---|----------|----------------------|-------------------------------|--------------|---------------|----------------------|
| 1 | Normal   | 8270C+NMED Exp       | 500 ML AMBER GLASS            | Ice          | Y             |                      |
| 1 | ↓        | AM241+GS+ISO PU+ISOU | 1 LITER POLY<br>72m 1/08/10   | None         | Y             |                      |
| 1 | ↓        | Met+U+CLO4+C N       | 1 GAL POLY<br>1 Liter         | Ice          | Y             |                      |
| 1 | ↓        | RADVANA+B+G          | 1 EA 8 IN RESEALABLE POLY BAG | None         | Y             |                      |

SAMPLE DESC: Pinkish gray, tuff

SAMPLE COMMENTS: Hit tuff at 8 inches

LOCATION DESC: 4a-14 drainage

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha  $\leq$  27 dpm  
Beta/Gamma  $\leq$  2860 dpm

PID  $\frac{\text{Ambient Reading}}{0.0} = 0.0$  ppm

COLLECTED BY (PRINT)

TLMcFarland

REVIEWED BY (PRINT)

R. Saunders

|  |                                 |  |                             |
|--|---------------------------------|--|-----------------------------|
| RELINQUISHED BY<br>(Printed Name) R. Saunders<br>(Signature) R. Saunders | Date/Time<br>01/08/2010<br>1517 | RECEIVED BY<br>(Printed Name) Sherrill Sherrill<br>(Signature) Sherrill Sherrill | Date/Time<br>1/8/10<br>1517 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)                         | Date/Time                       | RECEIVED BY<br>(Printed Name)<br>(Signature)                                     | Date/Time                   |

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2480

EVENT NAME: 4th Qtr. FY09 - AOC 12-004(a) - Threemile Canyon

SAMPLE ID: RE12-10-7260

WORK ORDER:

| AS PLANNED                  |  | AS COLLECTED                |  | AS PLANNED               |  | AS COLLECTED |  |
|-----------------------------|--|-----------------------------|--|--------------------------|--|--------------|--|
| DATE COLLECTED(MM/DD/YYYY): |  | 01/08/2010                  |  | MEDIA:                   |  | QBT3         |  |
| TIME COLLECTED (HH:MM)      |  | 1104                        |  | SUB-MEDIA:               |  | TUFF 1       |  |
| PRS ID: 12-004(a)           |  | OK                          |  | SAMPLE TECH CODE:        |  | HA           |  |
| LOCATION ID: 12-610543      |  | ↓                           |  | FIELD QC TYPE:           |  | NA           |  |
| LOCATION TYPE: GENERIC      |  | ↓                           |  | FIELD PREP:              |  | NA           |  |
| TOP DEPTH: 0                |  | 0.0                         |  | SAMPLE USAGE:            |  | INV          |  |
| BOTTOM DEPTH: 0             |  | 1.0                         |  | SCREEN/PORT DESC:        |  | NA           |  |
| FIELD MATRIX: R             |  | S                           |  | EXCAVATED: YES/NO/NA     |  | NO           |  |
| COMPOSITE TYPE: NA          |  | COMPOSITE TIME INTERVAL: NA |  | WATER FLOWING: YES/NO/NA |  | NO           |  |
| BOREHOLE: YES/NO/NA         |  | BOREHOLE DECLINATION: NA    |  | BOREHOLE DIRECTION: NA   |  |              |  |

| # | PRIORITY | ORDER                | CNTNR                         | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|---|----------|----------------------|-------------------------------|--------------|---------------|----------------------|
| 1 | Normal   | 8270C+NMED Exp       | 500 ML AMBER GLASS            | Ice          | Y             |                      |
| 1 | ↓        | AM241+GS+ISO PU+ISOU | 1 LITER POLY                  | None         | Y             |                      |
| 1 | ↓        | Met+U+CLO4+C N       | 1 GAL POLY<br>1 L ARM 1/2/10  | Ice          | Y             |                      |
| 1 | ↓        | RADVANA+B+G          | 1 EA 8 IN RESEALABLE POLY BAG | None         | Y             |                      |

SAMPLE DESC: Frozen brown silty sand and some gray tuff, some roots and tuff rocks

FD: RE12-10-7283

SAMPLE COMMENTS:

1st tuff at 0.5 ft

LOCATION DESC: 4a-9, southeast of bunker

FIELD SCREENING/MEASUREMENT RESULTS:

HE negative

Alpha 4 38 dpm  
Beta/Gamma 4 3690 dpm

PID  $\frac{\text{Ambient Reading}}{0.0} = 0.0$  ppm

COLLECTED BY (PRINT)

REVIEWED BY (PRINT)

T. McFarland

R. Saunders

|  |                                 |  |                             |
|--|---------------------------------|--|-----------------------------|
| RELINQUISHED BY<br>(Printed Name) R. Saunders<br>(Signature) R. Saunders | Date/Time<br>01/08/2010<br>1517 | RECEIVED BY<br>(Printed Name) Sheri Sherwood<br>(Signature) Sheri Sherwood | Date/Time<br>1/8/10<br>1517 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)                         | Date/Time                       | RECEIVED BY<br>(Printed Name)<br>(Signature)                               | Date/Time                   |

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2480

EVENT NAME: 4th Qtr. FY09 - AOC 12-004(a) - Threemile Canyon

SAMPLE ID: RE12-10-7283

WORK ORDER:

| AS PLANNED                  |           | AS COLLECTED                |  | AS PLANNED               |  | AS COLLECTED |  |
|-----------------------------|-----------|-----------------------------|--|--------------------------|--|--------------|--|
| DATE COLLECTED(MM/DD/YYYY): |           | 01/08/2010                  |  | MEDIA: QBT3              |  | Allh         |  |
| TIME COLLECTED (HH:MM)      |           | 1104                        |  | SUB-MEDIA: TUFF 1        |  | NA           |  |
| PRS ID:                     | 12-004(a) | ok                          |  | SAMPLE TECH CODE: HA     |  | ok           |  |
| LOCATION ID:                | UNK       | 12-610543                   |  | FIELD QC TYPE: FD        |  | ↓            |  |
| LOCATION TYPE:              | GENERIC   | ok                          |  | FIELD PREP: NA           |  | ↓            |  |
| TOP DEPTH:                  | 0         | 0.0                         |  | SAMPLE USAGE: QC         |  | ↓            |  |
| BOTTOM DEPTH:               | 0         | 1.0                         |  | SCREEN/PORT DESC: NA     |  |              |  |
| FIELD MATRIX:               | R         | S                           |  | EXCAVATED: YES/NO/NA     |  |              |  |
| COMPOSITE TYPE: NA          |           | COMPOSITE TIME INTERVAL: NA |  | WATER FLOWING: YES/NO/NA |  |              |  |
| BOREHOLE: YES/NO/NA         |           | BOREHOLE DECLINATION: NA    |  | BOREHOLE DIRECTION: NA   |  |              |  |

| # | PRIORITY | ORDER                | CNTNR                         | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|---|----------|----------------------|-------------------------------|--------------|---------------|----------------------|
| 1 | Normal   | 8082+8270+NME D-EXP  | 500 ML AMBER GLASS            | Ice          | Y             |                      |
| 1 | ↓        | AM241+GS+ISO PU+ISOU | 1 LITER POLY 12/1/08/2010     | None         | Y             |                      |
| 1 | ↓        | Met+U+CLO4+C N       | 1 LITER POLY 1 Liter          | Ice          | Y             |                      |
| 1 | ↓        | RADVANA+B+G          | 1 EA 8 IN RESEALABLE POLY BAG | None         | Y             |                      |

SAMPLE DESC: QC Sample of RE12-10-7260

Frozen brown silty sand and some gray tuff, some roots and tuff rocks

SAMPLE COMMENTS:

1st tuff at 0.5 ft

LOCATION DESC: 4a-9, southeast of bunker

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha < 38 dpm  
Beta/Gamma < 2690 dpmPID  $\frac{\text{Ambient Reading}}{0.0} = 0.0$  ppm  
HE negative

COLLECTED BY (PRINT)

TL McFarland

REVIEWED BY (PRINT)

R Saunders

|  |                                 |  |                             |
|--|---------------------------------|--|-----------------------------|
| RELINQUISHED BY<br>(Printed Name) R. Saunders<br>(Signature) R. Saunders | Date/Time<br>01/08/2010<br>1517 | RECEIVED BY<br>(Printed Name) Sherri Sherwood<br>(Signature) Sherri Sherwood | Date/Time<br>1/8/10<br>1517 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)                         | Date/Time                       | RECEIVED BY<br>(Printed Name)<br>(Signature)                                 | Date/Time                   |



## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2480

EVENT NAME: 4th Qtr. FY09 - AOC 12-004(a) - Threemile Canyon

SAMPLE ID: RE12-10-7262

WORK ORDER:

| AS PLANNED                  |           | AS COLLECTED                |  | AS PLANNED               |  | AS COLLECTED |  |
|-----------------------------|-----------|-----------------------------|--|--------------------------|--|--------------|--|
| DATE COLLECTED(MM/DD/YYYY): |           | 01/08/2010                  |  | MEDIA: QBT3              |  | ok           |  |
| TIME COLLECTED (HH:MM)      |           | 1120                        |  | SUB-MEDIA: TUFF 1        |  | L            |  |
| PRS ID:                     | 12-004(a) | ok                          |  | SAMPLE TECH CODE: HA     |  | ok           |  |
| LOCATION ID:                | 12-610544 | ↓                           |  | FIELD QC TYPE: NA        |  | ↓            |  |
| LOCATION TYPE:              | GENERIC   | ↓                           |  | FIELD PREP: NA           |  | ↓            |  |
| TOP DEPTH:                  | 0         | 0.0                         |  | SAMPLE USAGE: INV        |  | ↓            |  |
| BOTTOM DEPTH:               | 0         | 0.6                         |  | SCREEN/PORT DESC: NA     |  |              |  |
| FIELD MATRIX:               | R         | ok                          |  | EXCAVATED: YES/NO/NA     |  |              |  |
| COMPOSITE TYPE: NA          |           | COMPOSITE TIME INTERVAL: NA |  | WATER FLOWING: YES/NO/NA |  |              |  |
| BOREHOLE: YES/NO/NA         |           | BOREHOLE DECLINATION: NA    |  | BOREHOLE DIRECTION: NA   |  |              |  |

| # | PRIORITY | ORDER                | CNTNR                         | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|---|----------|----------------------|-------------------------------|--------------|---------------|----------------------|
| 1 | Normal   | 8270C+NMED Exp       | 500 ML AMBER GLASS            | Ice          | Y             |                      |
| 1 | ↓        | AM241+GS+ISO PU+ISOU | 1 LITER POLY 12m 1/8/10       | None         | Y             |                      |
| 1 | ↓        | Met+U+CLO4+C N       | 1 GAL POLY 1 Liter            | Ice          | Y             |                      |
| 1 | ↓        | RADVANA+B+G          | 1 EA 8 IN RESEALABLE POLY BAG | None         | Y             |                      |

SAMPLE DESC:

Pinkish gray weathered tuff, some roots and rocks

SAMPLE COMMENTS:

NA

LOCATION DESC:

4a - 10 south of bunker

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha  $\leq$  16 dpm  
 Beta/Gamma  $\leq$  2500 dpm

PID  $\frac{\text{Ambient}}{\text{Reading}} = \frac{0.0}{0.0}$  ppm

COLLECTED BY (PRINT)

TLMcFarland

REVIEWED BY (PRINT)

R Saunders

|  |                                 |  |                             |
|--|---------------------------------|--|-----------------------------|
| RELINQUISHED BY<br>(Printed Name) R. Saunders<br>(Signature) R. Saunders | Date/Time<br>01/08/2010<br>1517 | RECEIVED BY<br>(Printed Name) Sherril Sherwood<br>(Signature) Sherril Sherwood | Date/Time<br>1/8/10<br>1517 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)                         | Date/Time                       | RECEIVED BY<br>(Printed Name)<br>(Signature)                                   | Date/Time                   |

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2480

EVENT NAME: 4th Qtr. FY09 - AOC 12-004(a) - Threemile Canyon

SAMPLE ID: RE12-10-7259

WORK ORDER:

| AS PLANNED                  |  | AS COLLECTED                |  | AS PLANNED               |  | AS COLLECTED |  |
|-----------------------------|--|-----------------------------|--|--------------------------|--|--------------|--|
| DATE COLLECTED(MM/DD/YYYY): |  | 01/08/2010                  |  | MEDIA:                   |  | QBT3         |  |
| TIME COLLECTED (HH:MM)      |  | 1025                        |  | SUB-MEDIA:               |  | TUFF 1       |  |
| PRS ID: 12-004(a)           |  | OK                          |  | SAMPLE TECH CODE:        |  | HA           |  |
| LOCATION ID: 12-610542      |  | ↓                           |  | FIELD QC TYPE:           |  | NA           |  |
| LOCATION TYPE: GENERIC      |  | ↓                           |  | FIELD PREP:              |  | NA           |  |
| TOP DEPTH: 0                |  | 1.0                         |  | SAMPLE USAGE:            |  | INV          |  |
| BOTTOM DEPTH: 0             |  | 1.7                         |  | SCREEN/PORT DESC:        |  | NA           |  |
| FIELD MATRIX: R             |  | R                           |  | EXCAVATED: YES/NO/NA     |  |              |  |
| COMPOSITE TYPE: NA          |  | COMPOSITE TIME INTERVAL: NA |  | WATER FLOWING: YES/NO/NA |  | NO           |  |
| BOREHOLE: YES/NO/NA         |  | BOREHOLE DECLINATION: NA    |  | BOREHOLE DIRECTION: NA   |  |              |  |

| # | PRIORITY | ORDER                | CNTNR                         | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|---|----------|----------------------|-------------------------------|--------------|---------------|----------------------|
| 1 | Normal   | 8270C+NMED Exp       | 500 ML AMBER GLASS            | Ice          | y             |                      |
| 1 |          | AM241+GS+ISO PU+ISOU | 1 LITER POLY                  | None         | y             |                      |
| 1 |          | Met+U+CLO4+C N       | 1 GAL POLY<br>1 L REM 1/7/10  | Ice          | y             |                      |
| 1 |          | RADVANA+B+G          | 1 EA 8 IN RESEALABLE POLY BAG | None         | y             |                      |

SAMPLE DESC:

Pinkish gray tuff

SAMPLE COMMENTS:

NA

LOCATION DESC:

4a-8 south of benches

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha  $\leq$  27 dpm  
Beta/Gamma  $\leq$  2640 dpm

PID  $\frac{\text{Ambient}}{\text{Reading}} \frac{0.0}{0.0}$  ppm

COLLECTED BY (PRINT)

TL McFarland

REVIEWED BY (PRINT)

R. Saunders

|  |                                 |  |                             |
|--|---------------------------------|--|-----------------------------|
| RELINQUISHED BY<br>(Printed Name) R. Saunders<br>(Signature) R. Saunders | Date/Time<br>01/08/2010<br>1517 | RECEIVED BY<br>(Printed Name) Sherril Sherwood<br>(Signature) Sherril Sherwood | Date/Time<br>1/8/10<br>1517 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)                         | Date/Time                       | RECEIVED BY<br>(Printed Name)<br>(Signature)                                   | Date/Time                   |

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2480

EVENT NAME: 4th Qtr. FY09 - AOC 12-004(a) - Threemile Canyon

SAMPLE ID: RE12-10-7258

WORK ORDER:

| AS PLANNED                  |  | AS COLLECTED                |  | AS PLANNED               |  | AS COLLECTED |  |
|-----------------------------|--|-----------------------------|--|--------------------------|--|--------------|--|
| DATE COLLECTED(MM/DD/YYYY): |  | 01/08/2010                  |  | MEDIA:                   |  | QBT3         |  |
| TIME COLLECTED (HH:MM)      |  | 1016                        |  | SUB-MEDIA:               |  | TUFF 1       |  |
| PRS ID: 12-004(a)           |  | OK                          |  | SAMPLE TECH CODE:        |  | HA           |  |
| LOCATION ID: 12-610542      |  | ↓                           |  | FIELD QC TYPE:           |  | NA           |  |
| LOCATION TYPE: GENERIC      |  | ↓                           |  | FIELD PREP:              |  | NA           |  |
| TOP DEPTH: 0                |  | 0.0                         |  | SAMPLE USAGE:            |  | INV          |  |
| BOTTOM DEPTH: 0             |  | 0.8                         |  | SCREEN/PORT DESC:        |  | NA           |  |
| FIELD MATRIX: R             |  | R                           |  | EXCAVATED: YES/NO/NA     |  | NA           |  |
| COMPOSITE TYPE: NA          |  | COMPOSITE TIME INTERVAL: NA |  | WATER FLOWING: YES/NO/NA |  | NA           |  |
| BOREHOLE: YES/NO/NA         |  | BOREHOLE DECLINATION: NA    |  | BOREHOLE DIRECTION: NA   |  | NA           |  |

| # | PRIORITY | ORDER                | CNTNR                         | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|---|----------|----------------------|-------------------------------|--------------|---------------|----------------------|
| 1 | Normal   | 8270C+NMED Exp       | 500 ML AMBER GLASS            | Ice          | Y             |                      |
| 1 | ↓        | AM241+GS+ISO PU+ISOU | 1 LITER POLY                  | None         | Y             |                      |
| 1 | ↓        | Met+U+CLO4+C N       | 1 GAL POLY<br>1L 2PM 1/2/10   | Ice          | Y             |                      |
| 1 | ↓        | RADVANA+B+G          | 1 EA 8 IN RESEALABLE POLY BAG | None         | Y             |                      |

SAMPLE DESC: grey tuff, some brown clay

SAMPLE COMMENTS:

Hit tuff at 6 inches

LOCATION DESC:

4a-8 south of bunker

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 33 dpm

Beta/Gamma = 2590 dpm

PID  $\frac{\text{Ambient Reading}}{0.0}$  ppm

COLLECTED BY (PRINT)

TL McFarland

REVIEWED BY (PRINT)

R. Saunders

|  |                                 |  |                             |
|--|---------------------------------|--|-----------------------------|
| RELINQUISHED BY<br>(Printed Name) R. Saunders<br>(Signature) R. Saunders | Date/Time<br>01/08/2010<br>1517 | RECEIVED BY<br>(Printed Name) Sherri Sherwood<br>(Signature) Sherri Sherwood | Date/Time<br>1/8/10<br>1517 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)                         | Date/Time                       | RECEIVED BY<br>(Printed Name)<br>(Signature)                                 | Date/Time                   |

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2480

EVENT NAME: 4th Qtr. FY09 - AOC 12-004(a) - Threemile Canyon

SAMPLE ID: RE12-10-7263

WORK ORDER:

| AS PLANNED                  |           | AS COLLECTED                |  | AS PLANNED               |  | AS COLLECTED |  |
|-----------------------------|-----------|-----------------------------|--|--------------------------|--|--------------|--|
| DATE COLLECTED(MM/DD/YYYY): |           | 01/08/2010                  |  | MEDIA:                   |  | QBT3         |  |
| TIME COLLECTED (HH:MM)      |           | 1150                        |  | SUB-MEDIA:               |  | TUFF 1       |  |
| PRS ID:                     | 12-004(a) | ok                          |  | SAMPLE TECH CODE:        |  | HA           |  |
| LOCATION ID:                | 12-610544 | ↓                           |  | FIELD QC TYPE:           |  | NA           |  |
| LOCATION TYPE:              | GENERIC   | ↓                           |  | FIELD PREP:              |  | NA           |  |
| TOP DEPTH:                  | 0         | 1.0                         |  | SAMPLE USAGE:            |  | INV          |  |
| BOTTOM DEPTH:               | 0         | 1.7                         |  | SCREEN/PORT DESC:        |  | NA           |  |
| FIELD MATRIX:               | R         | R                           |  | EXCAVATED: YES/NO/NA     |  |              |  |
| COMPOSITE TYPE: NA          |           | COMPOSITE TIME INTERVAL: NA |  | WATER FLOWING: YES/NO/NA |  |              |  |
| BOREHOLE: YES/NO/NA         |           | BOREHOLE DECLINATION: NA    |  | BOREHOLE DIRECTION: NA   |  |              |  |

| # | PRIORITY | ORDER                | CNTNR                         | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|---|----------|----------------------|-------------------------------|--------------|---------------|----------------------|
| 1 | Normal   | 8270C+NMED Exp       | 500 ML AMBER GLASS            | Ice          | Y             |                      |
| 1 | ↓        | AM241+GS+ISO PU+ISOU | 1 LITER POLY                  | None         | Y             |                      |
| 1 | ↓        | Met+U+CLO4+C N       | 1 GAL POLY                    | Ice          | Y             |                      |
| 1 | ↓        | RADVANA+B+G          | 1 EA 8 IN RESEALABLE POLY BAG | None         | Y             |                      |

SAMPLE DESC:

Pinkish gray tuff, some roots

SAMPLE COMMENTS:

NA

LOCATION DESC:

4a- 10 south of bunker

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha  $\leq$  16 dpm  
Beta/Gamma  $\leq$  2430 dpm

PID  $\frac{\text{Ambient}}{\text{Reading}} \frac{0.0}{0.0}$  ppm

COLLECTED BY (PRINT)

TL McFarland

REVIEWED BY (PRINT)

R. Saunders

|  |                                 |  |                             |
|--|---------------------------------|--|-----------------------------|
| RELINQUISHED BY<br>(Printed Name) R. Saunders<br>(Signature) R. Saunders | Date/Time<br>01/08/2010<br>1517 | RECEIVED BY<br>(Printed Name) Sherrif Sherwood<br>(Signature) Sherrif Sherwood | Date/Time<br>1/8/10<br>1517 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)                         | Date/Time                       | RECEIVED BY<br>(Printed Name)<br>(Signature)                                   | Date/Time                   |

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2480

EVENT NAME: 4th Qtr. FY09 - AOC 12-004(a) - Threemile Canyon

SAMPLE ID: RE12-10-7261

WORK ORDER:

| AS PLANNED                  |           | AS COLLECTED |     | AS PLANNED               |        | AS COLLECTED |    |
|-----------------------------|-----------|--------------|-----|--------------------------|--------|--------------|----|
| DATE COLLECTED(MM/DD/YYYY): |           | 01/08/2010   |     | MEDIA:                   | QBT3   |              | OK |
| TIME COLLECTED (HH:MM)      |           | 1137         |     | SUB-MEDIA:               | TUFF 1 |              | ↓  |
| PRS ID:                     | 12-004(a) |              | ok  | SAMPLE TECH CODE:        | HA     |              | ok |
| LOCATION ID:                | 12-610543 |              | ↓   | FIELD QC TYPE:           | NA     |              |    |
| LOCATION TYPE:              | GENERIC   |              | ↓   | FIELD PREP:              | NA     |              |    |
| TOP DEPTH:                  | 0         |              | 1.0 | SAMPLE USAGE:            | INV    |              | ↓  |
| BOTTOM DEPTH:               | 0         |              | 1.8 | SCREEN/PORT DESC:        | NA     |              |    |
| FIELD MATRIX:               | R         |              | R   | EXCAVATED: YES/NO/NA     |        |              |    |
| COMPOSITE TYPE:             | NA        |              |     | COMPOSITE TIME INTERVAL: | NA     |              |    |
|                             |           |              |     | WATER FLOWING: YES/NO/NA |        |              |    |
| BOREHOLE: YES/NO/NA         |           |              |     | BOREHOLE DECLINATION:    | NA     |              |    |
|                             |           |              |     | BOREHOLE DIRECTION:      | NA     |              |    |

| # | PRIORITY | ORDER                | CNTNR                         | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|---|----------|----------------------|-------------------------------|--------------|---------------|----------------------|
| 1 | Normal   | 8270C+NMED Exp       | 500 ML AMBER GLASS            | Ice          | y             |                      |
| 1 | ↓        | AM241+GS+ISO PU+ISOU | 1 LITER POLY                  | None         | y             |                      |
| 1 |          | Met+U+CLO4+C N       | 1 GAL POLY                    | Ice          | y             |                      |
| 1 | ↓        | RADVANA+B+G          | 1 EA 8 IN RESEALABLE POLY BAG | None         | y             |                      |

SAMPLE DESC: pinkish grey tuff with orange tuff, some roots, slightly moist, Some brown sand

SAMPLE COMMENTS: 1.2' hit tuff

LOCATION DESC: 4a-9, southeast of bunker

## FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 22 dpm  
Beta/Gamma = 2480 dpm

PID Ambient 0.0  
Reading 0.0 ppm

COLLECTED BY (PRINT)

R Saunders

REVIEWED BY (PRINT) TLMcFarland

|  |                                 |  |                             |
|--|---------------------------------|--|-----------------------------|
| RELINQUISHED BY<br>(Printed Name) R. Saunders<br>(Signature) R. Saunders | Date/Time<br>01/08/2010<br>1517 | RECEIVED BY<br>(Printed Name) Sherri Sherwood<br>(Signature) Sherri Sherwood | Date/Time<br>1/8/10<br>1517 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)                         | Date/Time                       | RECEIVED BY<br>(Printed Name)<br>(Signature)                                 | Date/Time                   |

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2480

EVENT NAME: 4th Qtr. FY09 - AOC 12-004(a) - Threemile Canyon

SAMPLE ID: RE12-10-7270

WORK ORDER:

| AS PLANNED                  |           | AS COLLECTED |     | AS PLANNED               |        | AS COLLECTED |                          |
|-----------------------------|-----------|--------------|-----|--------------------------|--------|--------------|--------------------------|
| DATE COLLECTED(MM/DD/YYYY): |           | 01/08/2010   |     | MEDIA:                   | QBT3   |              | ALLH                     |
| TIME COLLECTED (HH:MM)      |           | 1343         |     | SUB-MEDIA:               | TUFF 1 |              | NA                       |
| PRS ID:                     | 12-004(a) |              | OK  | SAMPLE TECH CODE:        | HA     |              | OK                       |
| LOCATION ID:                | 12-610548 |              | ↓   | FIELD QC TYPE:           | NA     |              | ↓                        |
| LOCATION TYPE:              | GENERIC   |              | ↓   | FIELD PREP:              | NA     |              | ↓                        |
| TOP DEPTH:                  | 0         |              | 0.0 | SAMPLE USAGE:            | INV    |              | ↓                        |
| BOTTOM DEPTH:               | 0         |              | 0.8 | SCREEN/PORT DESC:        | NA     |              |                          |
| FIELD MATRIX:               | R         |              | S   | EXCAVATED: YES/NO/NA     |        |              |                          |
| COMPOSITE TYPE:             | NA        |              |     | COMPOSITE TIME INTERVAL: | NA     |              | WATER FLOWING: YES/NO/NA |
| BOREHOLE: YES/NO/NA         |           |              |     | BOREHOLE DECLINATION:    | NA     |              | BOREHOLE DIRECTION: NA   |

| # | PRIORITY | ORDER                | CNTNR                         | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|---|----------|----------------------|-------------------------------|--------------|---------------|----------------------|
| 1 | normal   | 8270C+NMED Exp       | 500 ML AMBER GLASS            | Ice          | Y             |                      |
| 1 | ↓        | AM241+GS+ISO PU+ISOU | 1 LITER POLY 12m 1/8/10       | None         | Y             |                      |
| 1 | ↓        | Met+U+CLO4+C N       | 1 GAL POLY 1L                 | Ice          | Y             |                      |
| 1 | ↓        | RADVANA+B+G          | 1 EA 8 IN RESEALABLE POLY BAG | None         | Y             |                      |

SAMPLE DESC: dark <sup>Nsf</sup> brown soil, wood/Root <sup>Nsf</sup> Fragments/moist  
 1-6-10 1-8-10

SAMPLE COMMENTS:

N/A

LOCATION DESC:

4a-14, drainage

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 16 dpm  
 Beta/Gamma = 2860 dpm

PID  $\frac{\text{Ambient}}{\text{Reading}} = \frac{0.0}{0.0}$  ppm

HE NEG

COLLECTED BY (PRINT)

R Saunders

REVIEWED BY (PRINT)

TLMcFarland

|  |                                 |  |                             |
|--|---------------------------------|--|-----------------------------|
| RELINQUISHED BY<br>(Printed Name) R. Saunders<br>(Signature) R. Saunders | Date/Time<br>01/08/2010<br>1517 | RECEIVED BY<br>(Printed Name) Sherrill Sherwood<br>(Signature) Sherrill Sherwood | Date/Time<br>1/8/10<br>1517 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)                         | Date/Time                       | RECEIVED BY<br>(Printed Name)<br>(Signature)                                     | Date/Time                   |

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2480

EVENT NAME: 4th Qtr. FY09 - AOC 12-004(a) - Threemile Canyon

SAMPLE ID: RE12-10-7265

WORK ORDER:

| AS PLANNED                  |           | AS COLLECTED |  | AS PLANNED               |       | AS COLLECTED |                          |
|-----------------------------|-----------|--------------|--|--------------------------|-------|--------------|--------------------------|
| DATE COLLECTED(MM/DD/YYYY): |           | 01/08/2010   |  | MEDIA:                   | QBT3  |              | OK                       |
| TIME COLLECTED (HH:MM)      |           | 1304         |  | SUB-MEDIA:               | TUFF1 |              | ↓                        |
| PRS ID:                     | 12-004(a) | OK           |  | SAMPLE TECH CODE:        | HA    |              | OK                       |
| LOCATION ID:                | 12-610545 | ↓            |  | FIELD QC TYPE:           | NA    |              | ↓                        |
| LOCATION TYPE:              | GENERIC   | ↓            |  | FIELD PREP:              | NA    |              | ↓                        |
| TOP DEPTH:                  | 0         | 1.0          |  | SAMPLE USAGE:            | INV   |              | ↓                        |
| BOTTOM DEPTH:               | 0         | 3.0          |  | SCREEN/PORT DESC:        |       | NA           |                          |
| FIELD MATRIX:               | R         | OK           |  | EXCAVATED: YES/NO/NA     |       |              |                          |
| COMPOSITE TYPE:             | NA        |              |  | COMPOSITE TIME INTERVAL: | NA    |              | WATER FLOWING: YES/NO/NA |
| BOREHOLE: YES/NO/NA         | NO/NA     |              |  | BOREHOLE DECLINATION:    | NA    |              | BOREHOLE DIRECTION: NA   |

| # | PRIORITY | ORDER                | CNTNR                         | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|---|----------|----------------------|-------------------------------|--------------|---------------|----------------------|
| 1 | normal   | 8270C+NMED Exp       | 500 ML AMBER GLASS            | Ice          | Yes           |                      |
| 1 |          | AM241+GS+ISO PU+ISOU | 1 LITER POLY                  | None         | Yes           |                      |
| 1 |          | Met+U+CLO4+C N       | 1 GAL POLY                    | Ice          | Yes           |                      |
| 1 |          | RADVANA+B+G          | 1 EA 8 IN RESEALABLE POLY BAG | None         | Yes           |                      |

SAMPLE DESC: Pinkish grey tuff

FD RE12-10-7282

SAMPLE COMMENTS:

NA

LOCATION DESC: 4a-11 drainage

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha  $\leq$  22 dpm  
 Beta/Gamma  $\leq$  3150 dpm

PID  $\frac{\text{Ambient Reading}}{0.0} = 6.0$  ppm

COLLECTED BY (PRINT)

R Saunders

REVIEWED BY (PRINT) TLMcFarland

|  |                                 |  |                             |
|--|---------------------------------|--|-----------------------------|
| RELINQUISHED BY<br>(Printed Name) R. Saunders<br>(Signature) R. Saunders | Date/Time<br>01/08/2010<br>1517 | RECEIVED BY<br>(Printed Name) Sherris Sherwood<br>(Signature) Sherris Sherwood | Date/Time<br>1/8/10<br>1517 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)                         | Date/Time                       | RECEIVED BY<br>(Printed Name)<br>(Signature)                                   | Date/Time                   |

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2480

EVENT NAME: 4th Qtr. FY09 - AOC 12-004(a) - Threemile Canyon

SAMPLE ID: RE12-10-7264

WORK ORDER:

| AS PLANNED                  |           | AS COLLECTED          |    | AS PLANNED               |        | AS COLLECTED |                            |
|-----------------------------|-----------|-----------------------|----|--------------------------|--------|--------------|----------------------------|
| DATE COLLECTED(MM/DD/YYYY): |           | 01/08/2010            |    | MEDIA:                   | QBT3   |              | ALLH                       |
| TIME COLLECTED (HH:MM)      |           | 12:59                 |    | SUB-MEDIA:               | TUFF 1 |              | NA                         |
| PRS ID:                     | 12-004(a) | OK                    |    | SAMPLE TECH CODE:        | HA     |              | OK                         |
| LOCATION ID:                | 12-610545 | ↓                     |    | FIELD QC TYPE:           | NA     |              | ↓                          |
| LOCATION TYPE:              | GENERIC   | ↓                     |    | FIELD PREP:              | NA     |              | ↓                          |
| TOP DEPTH:                  | 0         | 0.0                   |    | SAMPLE USAGE:            | INV    |              | ↓                          |
| BOTTOM DEPTH:               | 0         | 0.9                   |    | SCREEN/PORT DESC:        | NA     |              |                            |
| FIELD MATRIX:               | R         | S                     |    | EXCAVATED: YES (NO) NA   |        |              |                            |
| COMPOSITE TYPE:             | NA        |                       |    | COMPOSITE TIME INTERVAL: | NA     |              | WATER FLOWING: YES (NO) NA |
| BOREHOLE: YES (NO) NA       |           | BOREHOLE DECLINATION: | NA | BOREHOLE DIRECTION:      | NA     |              |                            |

| # | PRIORITY | ORDER                | CNTNR                         | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|---|----------|----------------------|-------------------------------|--------------|---------------|----------------------|
| 1 | Normal   | 8270C+NMED Exp       | 500 ML AMBER GLASS            | Ice          | Yes           |                      |
| 1 | ↓        | AM241+GS+ISO PU+ISOU | 1 LITER POLY                  | None         | Yes           |                      |
| 1 | ↓        | Met+U+CLO4+C N       | 1 GAL POLY                    | Ice          | Yes           |                      |
| 1 | ↓        | RADVANA+B+G          | 1 EA 8 IN RESEALABLE POLY BAG | None         | Yes           |                      |

SAMPLE DESC: brown silty sand, some root

## SAMPLE COMMENTS:

01-08-10 0.5', hit tuff

LOCATION DESC: 4a-11 drainage

## FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 22 dpm  
Beta/Gamma = 2700 dpm

PID  $\frac{\text{Ambient Reading}}{0.0} = 0.0$  ppm

HE Neg.

COLLECTED BY (PRINT)

R Saunders

REVIEWED BY (PRINT)

TL McFarland

|  |                                 |  |                             |
|--|---------------------------------|--|-----------------------------|
| RELINQUISHED BY<br>(Printed Name) R. Saunders<br>(Signature) R. Saunders | Date/Time<br>01/08/2010<br>1517 | RECEIVED BY<br>(Printed Name) Sherrish Sherwood<br>(Signature) | Date/Time<br>1/8/10<br>1517 |
| RELINQUISHED BY<br>(Printed Name)<br>(Signature)                         | Date/Time                       | RECEIVED BY<br>(Printed Name)<br>(Signature)                   | Date/Time                   |



## Rad Screening Data Release Form

The Following samples were received at the Field Support Facility (FSF) without screening data (list sample number):

|               |      |
|---------------|------|
| RE 12-10 7258 | 7268 |
| 7259          | 7269 |
| 7260          | 7270 |
| 7261          | 7271 |
| 7262          |      |
| 7263          |      |
| 7283          |      |
| 7282          |      |
| 7264          |      |
| 7265          |      |
| 7267          |      |

These samples will not be shipped until radiological screening data documentation arrives at the FSF. I understand that it is my responsibility to ensure this information arrives at the FSF in a timely manner. If holding times are missed because screening data does not arrive, I will pick up the samples.

.....

The following samples do not require rad screening data for the reasons stated (list sample numbers):

Reason:

.....

Print Last Name

Byers

Signature



Date



133 State Road 4, White Rock, NM 87544

505-672-2770 FAX 505-672-9534

ARS Sample Delivery Group: ARS2-10-00014

Client Sample ID: RE12-10-7258

Sample Collection Date: 01/08/10 10:16

Sample Matrix: Soil/Solid

Request or PO Number:

ARS Sample ID: ARS2-10-00014-001

Date Received: 01/11/10 06:00

Report Date: 01/11/10 13:33

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC   | TPU   | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|----------------------|------------------|------------------------|-------|-------|------|----------------|----------------------|--------------------|---------------------|----------------------|
| GROSS ALPHA          | 15.08            | 24.17                  | 39.16 | 24.27 |      | pCi/g          | EPA 900.0M           | 1/11/2010          | ME                  | N/A                  |
| GROSS BETA           | 30.51            | 16.62                  | 19.19 | 17.74 |      | pCi/g          | EPA 900.0M           | 1/11/2010          | ME                  | N/A                  |
| NA-22                | 0.01             | 0.05                   | 0.10  | 0.05  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| K-40                 | 4.40             | 0.85                   | 4.41  | 9.55  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| CO-60                | 0.00             | 9.85                   | 0.10  | 9.85  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| CS-134               | 0.35             | 0.24                   | 0.07  | 0.24  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| CS-137               | -0.01            | 12.88                  | 0.06  | 12.88 |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| EU-152               | 0.63             | 0.50                   | 0.11  | 0.50  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| PB-212               | 1.53             | 0.49                   | 0.13  | 0.50  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| RA-228               | 1.89             | 0.85                   | 0.26  | 0.85  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| U-235                | 0.34             | 0.41                   | 0.37  | 0.41  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| U-238                | 2.14             | 3.31                   | 1.49  | 3.34  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| AM-241               | 0.20             | 0.31                   | 0.13  | 0.31  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |

NOTES: % Moisture: 1.28

  
Quality Assurance Review

Notes: American Radiation Services, Inc. assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the client.

LELAP Certificate# 30658

NELAP Certificate # E87358



133 State Road 4, White Rock, NM 87544

505-672-2770 FAX 505-672-8534

ARS Sample Delivery Group: ARS2-10-00014

Client Sample ID: RE12-10-7289

Sample Collection Date: 01/08/10 10:25

Sample Matrix: Soil/Solid

Request or PO Number:

ARS Sample ID: ARS2-10-00014-002

Date Received: 01/11/10 00:00

Report Date: 01/11/10 13:33

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MNC   | TPH   | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Trace/Chem Recovery |
|----------------------|------------------|------------------------|-------|-------|------|----------------|----------------------|--------------------|---------------------|---------------------|
| GROSS ALPHA          | 41.27            | 28.73                  | 28.64 | 29.17 |      | pCi/g          | EPA 900.0M           | 1/11/2010          | ME                  | N/A                 |
| GROSS BETA           | 36.60            | 15.17                  | 17.99 | 18.82 |      | pCi/g          | EPA 900.0M           | 1/11/2010          | ME                  | N/A                 |
| NA-22                | 0.07             | 0.14                   | 0.11  | 0.14  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                 |
| K-40                 | 30.24            | 9.39                   | 1.75  | 9.63  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                 |
| CO-60                | 0.21             | 0.24                   | 0.12  | 0.24  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                 |
| CS-134               | 0.19             | 0.19                   | 0.08  | 0.19  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                 |
| CS-137               | -0.01            | 15.02                  | 0.97  | 15.02 |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                 |
| EU-152               | 0.91             | 0.57                   | 0.13  | 0.58  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                 |
| PB-212               | 1.31             | 0.50                   | 0.15  | 0.51  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                 |
| RA-228               | 1.76             | 0.93                   | 0.31  | 0.93  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                 |
| U-235                | 0.80             | 0.89                   | 0.44  | 0.89  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                 |
| U-238                | 1.50             | 2.13                   | 1.17  | 2.16  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                 |
| AM-241               | -0.01            | 31.82                  | 0.07  | 31.82 |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                 |

NOTES: % Moisture: 0.53

*Matt J. Edin*  
Quality Assurance Review

Notes: American Radiation Services, Inc. assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the client.

LELAP Certificate # 30658

NELAP Certificate # E87558



133 State Road 4, White Rock, NM 87544

505-672-2770 FAX 505-672-9534

ARS Sample Delivery Group: ARS2-10-00014

Client Sample ID: RS12-10-7260

Sample Collection Date: 01/08/10 11:04

Sample Matrix: Soil/Solid

Request or PO Number:

ARS Sample ID: ARS2-10-00014-003

Date Received: 01/11/10 00:00

Report Date: 01/11/10 13:33

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC   | TDU   | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|----------------------|------------------|------------------------|-------|-------|------|----------------|----------------------|--------------------|---------------------|----------------------|
| GROSS ALPHA          | 36.26            | 34.26                  | 32.13 | 34.98 |      | pCi/g          | EPA 900.0M           | 1/11/2010          | ME                  | N/A                  |
| GROSS BETA           | 61.67            | 19.13                  | 19.86 | 20.57 |      | pCi/g          | EPA 900.0M           | 1/11/2010          | ME                  | N/A                  |
| NA-22                | 0.00             | 0.00                   | 0.12  | 0.00  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| K-40                 | 16.48            | 7.89                   | 1.92  | 7.61  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| CO-60                | 0.00             | 12.57                  | 0.13  | 12.57 |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| CS-134               | 0.06             | 0.10                   | 0.09  | 0.10  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| CS-137               | 0.13             | 0.17                   | 0.08  | 0.17  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| EU-152               | 0.00             | 13.07                  | 0.15  | 13.07 |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| PB-212               | 1.80             | 0.89                   | 0.20  | 0.89  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| RA-228               | 2.31             | 1.01                   | 0.34  | 1.01  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| U-235                | 1.21             | 0.60                   | 0.37  | 0.60  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| U-238                | ~0.35            | ~0.84                  | 1.02  | ~0.84 |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| AM-241               | 0.42             | 0.33                   | 0.11  | 0.33  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |

NOTES: % Moisture: 1.86

  
Quality Assurance Review

Notes: American Radiation Services, Inc. assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the client.

LELAP Certificate # 30658

NELAP Certificate # E87558



133 State Road 4, White Rock, NM 87544

505-672-2770 FAX 505-672-9534

ARS Sample Delivery Group: ARS2-10-00014

Request or PO Number:

Client Sample ID: R212-10-7261

ARS Sample ID: ARS2-10-00014-004

Sample Collection Date: 01/08/10 11:37

Date Received: 01/11/10 00:00

Sample Matrix: Soil/Solid

Report Date: 01/11/10 13:33

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | min   | TPH   | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|----------------------|------------------|------------------------|-------|-------|------|----------------|----------------------|--------------------|---------------------|----------------------|
| GROSS ALPHA          | 31.66            | 27.26                  | 35.16 | 27.54 |      | pCi/g          | EPA 900.0M           | 1/11/2010          | ME                  | N/A                  |
| GROSS BETA           | 51.60            | 16.62                  | 18.68 | 17.97 |      | pCi/g          | EPA 900.0M           | 1/11/2010          | ME                  | N/A                  |
| NA-22                | 8.00             | 0.00                   | 0.13  | 0.00  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| K-40                 | 22.28            | 0.95                   | 2.92  | 0.97  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| CO-60                | 0.00             | 13.14                  | 0.13  | 13.18 |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| CS-134               | 0.07             | 0.10                   | 0.10  | 0.10  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| CS-137               | 0.14             | 0.18                   | 0.08  | 0.18  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| SU-152               | 0.29             | 0.40                   | 0.15  | 0.40  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| FR-212               | 0.69             | 0.51                   | 0.33  | 0.51  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| RA-226               | 1.85             | 0.85                   | 0.35  | 0.86  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| U-235                | 1.04             | 1.14                   | 0.44  | 1.14  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| U-238                | 2.58             | 2.90                   | 1.40  | 2.90  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| AM-241               | 0.20             | 0.33                   | 0.15  | 0.33  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |

NOTES: % Moisture: 1.25

*Martin J. Eden*  
Quality Assurance Review

Notes: American Radiation Services, Inc. assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in any form requires the written consent of the client.

LELAP Certificate # 30658

NELAP Certificate # E87558



133 State Road 4, White Rock, NM 87844

505-872-2700 FAX 505-872-9534

ARS Sample Delivery Group: ARS2-10-00014

Client Sample ID: RS12-10-7262

Sample Collection Date: 01/08/10 11:20

Sample Matrix: Soil/Solid

Request of PO Number:

ARS Sample ID: ARS2-10-00014-005

Date Received: 01/11/10 00:00

Report Date: 01/11/10 13:33

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | net   | gross | Quality | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|----------------------|------------------|------------------------|-------|-------|---------|----------------|----------------------|--------------------|---------------------|----------------------|
| GROSS ALPHA          | 42.83            | 32.49                  | 39.16 | 32.91 |         | pCi/g          | EPA 900.0M           | 1/11/2010          | ME                  | N/A                  |
| GROSS BETA           | 56.34            | 17.55                  | 19.19 | 18.85 |         | pCi/g          | EPA 900.0M           | 1/11/2010          | ME                  | N/A                  |
| NA-22                | 0.00             | 0.00                   | 0.13  | 0.00  |         | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| K-40                 | 31.47            | 10.30                  | 1.07  | 10.42 |         | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| CO-60                | 0.00             | 15.87                  | 0.13  | 12.87 |         | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| CS-134               | 0.14             | 0.15                   | 0.09  | 0.15  |         | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| CS-137               | 0.24             | 0.22                   | 0.08  | 0.22  |         | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| EU-152               | 0.00             | 13.39                  | 0.15  | 13.39 |         | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| PB-212               | 1.46             | 0.56                   | 0.17  | 0.57  |         | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| RA-228               | 2.28             | 0.93                   | 0.34  | 0.94  |         | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| U-235                | -0.08            | 72.38                  | 0.20  | 72.35 |         | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| U-238                | 10.37            | 5.02                   | 1.06  | 5.55  |         | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| AM-241               | 0.84             | 0.34                   | 0.09  | 0.34  |         | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |

NOTES: % Moisture: 0.57

*Martin J. Edm*  
Quality Assurance Review

Notes: American Radiation Services, Inc., assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the client.

LELAP Certificate # 30658

NELAP Certificate # E87556



127 State Road 4, White Rock, NM 87544

505-672-2770 FAX 505-672-9524

ARS Sample Delivery Group: ARS2-10-00014

Client Sample ID: RE12-10-7263

Sample Collection Date: 01/08/10 11:50

Sample Matrix: Soil/Solid

Request or PO Number:

ARS Sample ID: ARS2-10-00014-006

Date Received: 01/11/10 00:00

Report Date: 01/11/10 13:13

| Analysis Description | Analysis Results | Analysis Error +/- % | MDC   | TPU   | Qual | Analysis Units | Analysis Lab Method | Analysis Date/Time | Analysis Technician | Treosor/Chem Recovery |
|----------------------|------------------|----------------------|-------|-------|------|----------------|---------------------|--------------------|---------------------|-----------------------|
| GROSS ALPHA          | 41.25            | 28.73                | 28.64 | 29.19 |      | pCi/g          | EPA 900.0M          | 1/11/2010          | ME                  | N/A                   |
| GROSS BETA           | 54.65            | 17.02                | 17.99 | 18.29 |      | pCi/g          | EPA 900.0M          | 1/11/2010          | ME                  | N/A                   |
| NA-22                | 0.06             | 0.12                 | 0.10  | 0.12  |      | pCi/g          | EPA 901.1M          | 1/11/2010          | ME                  | N/A                   |
| K-40                 | 25.98            | 8.39                 | 1.54  | 0.38  |      | pCi/g          | EPA 901.1M          | 1/11/2010          | ME                  | N/A                   |
| CO-60                | 0.11             | 0.13                 | 0.10  | 0.13  |      | pCi/g          | EPA 901.1M          | 1/11/2010          | ME                  | N/A                   |
| CS-134               | 0.00             | 0.00                 | 0.07  | 0.00  |      | pCi/g          | EPA 901.1M          | 1/11/2010          | ME                  | N/A                   |
| CS-137               | 0.03             | 0.08                 | 0.06  | 0.08  |      | pCi/g          | EPA 901.1M          | 1/11/2010          | ME                  | N/A                   |
| EU-152               | 0.50             | 0.56                 | 0.12  | 0.56  |      | pCi/g          | EPA 901.1M          | 1/11/2010          | ME                  | N/A                   |
| PB-212               | 1.27             | 0.44                 | 0.11  | 0.45  |      | pCi/g          | EPA 901.1M          | 1/11/2010          | ME                  | N/A                   |
| RA-228               | 1.48             | 0.76                 | 0.27  | 0.77  |      | pCi/g          | EPA 901.1M          | 1/11/2010          | ME                  | N/A                   |
| U-235                | 0.17             | 0.43                 | 0.24  | 0.43  |      | pCi/g          | EPA 901.1M          | 1/11/2010          | ME                  | N/A                   |
| U-238                | 3.89             | 3.32                 | 1.28  | 3.44  |      | pCi/g          | EPA 901.1M          | 1/11/2010          | ME                  | N/A                   |
| AM-241               | 0.51             | 0.27                 | 0.07  | 0.27  |      | pCi/g          | EPA 901.1M          | 1/11/2010          | ME                  | N/A                   |

NOTES: % Moisture: 0.61

*Matthew L. Edin*  
Quality Assurance Review

Notes: American Radiation Services, Inc. assumes no liability for the use or interpretation of any analytical results provided other than the use of the analysis itself. Reproduction of this report in less than full requires the written consent of the client.

LELAP Certificate# 30658

NEIAP Certificate # E67558



133 State Road 4, White Rock, NM 87544

505-672-2770 FAX 505-672-9834

ARS Sample Delivery Group: ARS2-10-00014

Client Sample ID: RE12-10-7264

Sample Collection Date: 01/08/10 12:29

Sample Matrix: Soil/Solid

Request or PO Number:

ARS Sample ID: ARS2-10-00014-007

Date Received: 01/11/10 00:00

Report Date: 01/11/10 13:33

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC   | TMI   | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|----------------------|------------------|------------------------|-------|-------|------|----------------|----------------------|--------------------|---------------------|----------------------|
| GROSS ALPHA          | 36.94            | 28.96                  | 32.23 | 28.91 |      | pCi/g          | EPA 900.0M           | 1/11/2010          | ME                  | N/A                  |
| GROSS BETA           | 63.94            | 18.95                  | 19.86 | 20.49 |      | pCi/g          | EPA 900.0M           | 1/11/2010          | ME                  | N/A                  |
| NA-22                | 0.09             | 0.18                   | 0.14  | 0.18  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| K-40                 | 21.34            | 0.35                   | 2.27  | 9.37  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| CO-60                | 0.00             | 14.85                  | 0.14  | 14.85 |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| CS-134               | 0.00             | 0.00                   | 0.11  | 0.00  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| CS-137               | 0.01             | 0.06                   | 0.09  | 0.05  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| EU-152               | 0.00             | 15.44                  | 0.17  | 15.44 |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| PB-212               | 1.13             | 0.65                   | 0.27  | 0.65  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| RA-228               | 1.29             | 1.87                   | 0.40  | 1.07  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| U-235                | 1.89             | 1.25                   | 0.33  | 1.25  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| U-238                | 2.24             | 2.84                   | 1.43  | 2.68  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| AM-241               | 0.52             | 0.36                   | 0.11  | 0.36  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |

NOTES: % Moisture: 1.32

*Matthew J. Edm*  
Quality Assurance Review

Notes: American Radiation Services, Inc. assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the client.

LELAP Certificate # 30656

NELAP Certificate # E87558





133 State Road 4, White Rock, NM 87544

805-672-2770 FAX 805-672-9534

ARS Sample Delivery Group: ARS2-10-00014

Request or PO Number:

Client Sample ID: RE13-10-7765

ARS Sample ID: ARS2-10-00014-008

Sample Collection Date: 01/08/10 13:04

Date Received: 01/11/10 00:00

Sample Matrix: Soil/Solid

Report Date: 01/11/10 13:33

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MOC   | TPU   | Qnet | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|----------------------|------------------|------------------------|-------|-------|------|----------------|----------------------|--------------------|---------------------|----------------------|
| GROSS ALPHA          | 10.24            | 35.06                  | 35.16 | 35.80 |      | pCi/g          | EPA 900.0M           | 1/11/2010          | ME                  | N/A                  |
| GROSS BETA           | 30.32            | 15.10                  | 18.98 | 15.35 |      | pCi/g          | EPA 900.0M           | 1/11/2010          | ME                  | N/A                  |
| NA-22                | 0.00             | 0.00                   | 0.10  | 0.00  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| K-40                 | 30.05            | 9.09                   | 1.39  | 9.13  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| CO-60                | 0.00             | 10.41                  | 0.11  | 10.41 |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| CS-134               | 0.00             | 0.00                   | 0.08  | 0.00  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| CS-137               | -0.01            | 13.63                  | 0.07  | 13.63 |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| EU-152               | 0.00             | 10.83                  | 0.12  | 10.83 |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| PS-212               | 1.43             | 0.49                   | 0.14  | 0.50  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| RA-226               | 1.10             | 0.74                   | 0.28  | 0.74  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| U-235                | 1.10             | 0.84                   | 0.32  | 0.84  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| U-238                | 5.16             | 5.11                   | 1.77  | 5.10  |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |
| AM-241               | -0.01            | 21.73                  | 0.05  | 21.73 |      | pCi/g          | EPA 901.1M           | 1/11/2010          | ME                  | N/A                  |

NOTES: % Moisture: 0.60

*Matthew J. Eden*  
Quality Assurance Review

Notes: American Radiation Services, Inc. assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the Lab.

LELAP Certificate# 30658

NELAP Certificate # E87558

## DATA VALIDATION COVER SHEET

5119-1

## Data Validation Cover Sheet

Records Use only



## Section I.

REQUEST NUMBER: 10-1227 VALIDATION DATE: 02/18/10 LAB CODE: GEL

CONTRACT LABORATORY NAME: GEL Laboratories LLC

VALIDATOR: John A. Bailey ORGANIZATION: Analytical Quality Associates, Inc.

ANALYTICAL SUITE (CHECK ALL THAT APPLY):

- |  |  |   |  |
|--|--|---|--|
| <input type="checkbox"/> TPH-GRO           | <input type="checkbox"/> HIGH EXPLOSIVES           | <input type="checkbox"/> DIOXIN FURANS          | <input type="checkbox"/> LCMSMS PERCHLORATES |
| <input type="checkbox"/> TPH-DRO           | <input type="checkbox"/> METALS                    | <input type="checkbox"/> PCB CONGENERS          | <input type="checkbox"/> ORGANOCHLORINE      |
| <input type="checkbox"/> GENERAL CHEMISTRY | <input checked="" type="checkbox"/> RADIOCHEMISTRY | <input type="checkbox"/> LCMSMS HIGH EXPLOSIVES | PESTICIDES/POLYCHLORINATED BIPHENYLS         |

☐ OTHER (DESCRIBE):

## Section II. Completeness Check

- | YES                                 | NO                       | N/A                                 | (CHECK ONE)                 | YES                                 | NO                       | N/A                                 | (CHECK ONE)              |
|-------------------------------------|--------------------------|-------------------------------------|-----------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | 1. CHAIN-OF-CUSTODY FORM(S) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | 6. RAW/BSS DATA          |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | 2. CASE NARRATIVE           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | 7. QUALITY CONTROL FORMS |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | 3. SAMPLE RESULT FORMS      | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 8. QUANTITATION REPORTS  |
| <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 4. SAMPLE CHROMATOGRAMS     | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 9. TICS FORMS            |
| <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 5. STANDARD CHROMATOGRAMS   | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 10. TICS MASS SPECTRA    |

Comments/problems noted (include information about requests for further information submitted to the contract laboratory and agreed-upon date of resolution and contract laboratory point of contact):

- The gamma spec results that were rejected by the laboratory due to interference or low abundance were qualified R,R5a.
- The U-232 tracer %R was < the laboratory's LAL for sample RE12-10-7264. The U-235/236 result was an ND and, thus, was not qualified. The U-233/234 and U-238 results were detects and, thus, were qualified J+,R3b.

Reviewed by: Charissa Lewis


Level: 1

Date: 2/19/10


VALIDATOR'S SIGNATURE:

A handwritten signature in cursive script that reads 'John A. Bailey'.


DATE: 02/18/10

| RAD ANALYTICAL DATA VALIDATION CHECKLIST                             |   |
|--|---|
| <b>5119-2</b><br><br><b>Rad Analytical Data Validation Checklist</b> | Records Use only<br><br> |

| Yes No N/A                          |                                     |                                     |   | Assign Qualifier Listed Below If Criterion = Yes |                  |
|-------------------------------------|-------------------------------------|-------------------------------------|---|--|------------------|
| (Check One)                         |                                     |                                     |   | Non-detected Analyte                             | Detected Analyte |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | 1. The holding time was >1 and ≤2 times the applicable holding time requirement.  | UJ, R9   | J-, R9           |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | 2. The holding time was >2 times the applicable holding time requirement.   | R, R9a   | J-, R9a          |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | 3. The results for the affected analytes are considered not detected (U) because the associated sample concentration was less than or equal to the MDC.       | U, R5  | N/A              |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | 4. The analyte should be regarded as rejected because spectral interferences prevent positive identification of the analytes.                                 | R, R5a   | R, R5a           |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | 5. The MDC and/or TPU documentation is missing. Data may not be acceptable for use. Contact the SMO or external laboratory for information.                   | R, R5b   | J-, R5b          |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | 6. The results for the affected analytes should be regarded as not detected (U) because the associated sample concentration was less than 3X the 1 sigma TPU. | U, R11   | N/A              |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | 7. The sample result is ≤5X the concentration of the related analyte in the method blank.   | U, R4  | N/A              |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | 8. The affected analytes are considered estimated and biased high because this analyte was identified in the method blank but was >5X.                        | N/A  | J, R4a           |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | 9. The sample result is ≤5X the concentration of the related analyte in the trip blank, rinsate blank, or equipment blank.                                    | U, R4d   | N/A              |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | 10. Required method blank information is missing. Data may not be acceptable for use. Contact the SMO or external laboratory for information.                 | R, R4e   | R, R4e           |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | 11. The tracer is <10%R. Follow the external laboratory limits located within the associated data package. Tracer%R is not applicable for Gamma Spectroscopy. | R, R3  | R, R3            |

| RAD ANALYTICAL DATA VALIDATION CHECKLIST |  |   |
|--|--|---|
| 5119-2                                   |  | Records Use only  |
| Rad Analytical Data Validation Checklist |  |  |

| Yes No N/A                          |                                     |                                     |   | Assign Qualifier Listed Below If<br>Criterion = Yes |                     |
|-------------------------------------|-------------------------------------|-------------------------------------|---|---|---------------------|
| (Check One)                         |                                     |                                     |   | Non-detected<br>Analyte                             | Detected<br>Analyte |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | 12. The tracer is $\leq$ the Lower Acceptance Level (LAL) but $\geq 10\%R$ . Follow the external laboratory limits located within the associated data package. Tracer%R is not applicable for Gamma Spectroscopy.                     | UJ, R3a   | J-, R3a             |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | 13. The Tracer%R value is $>$ the Upper Acceptance Limit (UAL). Follow the external laboratory limits located within the associated data package. Tracer%R is not applicable for Gamma Spectroscopy.                                  | N/A   | J+, R3b             |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | 14. Required tracer information is missing. Data may not be acceptable for use. Contact the SMO or external laboratory for information. Tracer%R is not applicable for Gamma Spectroscopy.  | R, R3d  | R, R3d              |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | 15. The LCS percent recovery was $< 10\%$ . Follow the external laboratory limits located within the associated data package.   | R, R12  | R, R12              |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | 16. The LCS percent recovery was $<$ the LAL but $> 10\%$ . Follow the external laboratory limits located within the associated data package.   | UJ, R12a  | J-, R12a            |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | 17. The LCS percent recovery was $>$ the UAL. Follow the external laboratory limits located within the associated data package.   | N/A   | J+, R12b            |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | 18. The LCS documentation is missing. Data may not be acceptable for use. Contact the SMO or external laboratory for information.   | R, R12c   | R, R12c             |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | 19. Associated duplicate sample has DER or RER $>$ the analytical laboratory's acceptance limits.   | R, R10  | J, J10              |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | 20. The duplicate sample was not prepared and/or analyzed with the samples for unspecified reasons. The duplicate information is missing. Data may not be acceptable for use. Contact the SMO or external laboratory for information. | R, R6   | R, R6               |

| RAD ANALYTICAL DATA VALIDATION CHECKLIST                             |   |
|--|---|
| <b>5119-2</b><br><br><b>Rad Analytical Data Validation Checklist</b> | Records Use only<br><br> |

| Yes No N/A                          |                                     |                                     |  | Assign Qualifier Listed Below If<br>Criterion = Yes |                     |
|-------------------------------------|-------------------------------------|-------------------------------------|--|---|---------------------|
| (Check One)                         |                                     |                                     |  | Non-detected<br>Analyte                             | Detected<br>Analyte |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | 21. The associated matrix spike recovery was <10%. Follow the external laboratory limits. MS/MSD is not applicable to Gamma Spectroscopy.  | R, R6   | R, R6               |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | 22. The associated matrix spike recovery was <10%. Follow the external laboratory limits. MS/MSD is not applicable to Gamma Spectroscopy.  | UJ, R6a   | J-, R6a             |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | 23. The associated matrix spike recovery was above the UAL. Follow the external laboratory limits. MS/MSD is not applicable to Gamma Spectroscopy.   | UJ, R6b   | J+, R6b             |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | 24. Required matrix spike information is missing. Data may not be acceptable for use. Contact the SMO or external laboratory for information. If LCS information is present, do not Reject. Qualify data based on LCS information. MS/MSD is not applicable to Gamma Spectroscopy. | R, R6c  | R, R6c              |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | 25. Duplicate, dilution, or reanalysis.  | UJ, R88   | J, R88              |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | 26. The LANL project chemist identified quality deficiencies in the reported data that require further qualification. This code can ONLY be used and/or under advisement by the LANL project chemist.  | UJ, R, R19  | J, R, R19           |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | 27. Quantification of data via data validation did not occur based on Quality Control requirements in this procedure. Adhere to the external laboratory qualifiers found within the Form I analytical data summary sheets generated by the external laboratory.                    | U, U_LAB  | J, J_LAB<br>NQ, NQ  |

**GEL LABORATORIES LLC**

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis**

Company : Los Alamos National Laboratory  
 Address : PO Box 1663  
 TA-03, SM271, Drop Pt. 02U, Rm  
 Los Alamos, New Mexico 87545  
 Contact: Ms. Joylene Valdez  
 Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7262  
 Sample ID: 244630001  
 Matrix: R  
 Collect Date: 08-JAN-10  
 Receive Date: 14-JAN-10  
 Collector: Client  
 Moisture: 8.86%

Project: LANL01004  
 Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU        | RL       | Units | DF | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|----------|--------|------------|----------|-------|----|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |          |        |            |          |       |    |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |          |        |            |          |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.00483  | 0.0187 | +/-0.00232 | 0.050    | pCi/g |    | MXA1    | 01/22/10 | 1203 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |          |        |            |          |       |    |         |          |      |        |      |
| Plutonium-238                            | U         | 0.00     | 0.0189 | +/-0.00115 | 0.050    | pCi/g |    | MXA1    | 01/20/10 | 1641 | 941752 | 2    |
| Plutonium-239/240                        | U         | 0.00229  | 0.0217 | +/-0.00229 | 0.050    | pCi/g |    |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |          |        |            |          |       |    |         |          |      |        |      |
| Uranium-233/234                          |           | 0.859    | 0.116  | +/-0.0832  | 0.100    | pCi/g |    | MXA1    | 01/23/10 | 1120 | 941758 | 3    |
| Uranium-235/236                          | U         | 0.0646   | 0.0719 | +/-0.0201  | 0.100    | pCi/g |    |         |          |      |        |      |
| Uranium-238                              |           | 1.06     | 0.0672 | +/-0.0978  | 0.100    | pCi/g |    |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |            |          |       |    |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |            |          |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.097    | 0.509  | +/-0.161   | 0.200    | pCi/g |    | MXR1    | 01/22/10 | 2049 | 941639 | 4    |
| Bismuth-211                              | UI        | 3.73     | R,R5a  | 0.431      | +/-0.286 | pCi/g |    |         |          |      |        |      |
| Bismuth-214                              |           | 1.21     |        | 0.140      | +/-0.101 | pCi/g |    |         |          |      |        |      |
| Cadmium-109                              | U         | 1.93     | 2.06   | +/-0.737   |          | pCi/g |    |         |          |      |        |      |
| Cerium-139                               | U         | -0.00332 | 0.0602 | +/-0.0179  | 0.050    | pCi/g |    |         |          |      |        |      |
| Cesium-134                               | U         | 0.0565   | 0.097  | +/-0.0267  | 0.100    | pCi/g |    |         |          |      |        |      |
| Cesium-137                               | U         | 0.0826   | 0.0907 | +/-0.0251  | 0.100    | pCi/g |    |         |          |      |        |      |
| Cobalt-60                                | U         | 0.0633   | 0.0831 | +/-0.0221  | 0.100    | pCi/g |    |         |          |      |        |      |
| Europium-152                             | U         | -0.103   | 0.185  | +/-0.0767  | 0.200    | pCi/g |    |         |          |      |        |      |
| Lanthanum-140                            | U         | 0.0794   | 0.152  | +/-0.0444  |          | pCi/g |    |         |          |      |        |      |
| Lead-212                                 |           | 1.78     | 0.108  | +/-0.101   | 0.100    | pCi/g |    |         |          |      |        |      |
| Lead-214                                 |           | 1.30     | 0.150  | +/-0.105   | 0.100    | pCi/g |    |         |          |      |        |      |
| Mercury-203                              | U         | -0.00349 | 0.086  | +/-0.0249  | 0.100    | pCi/g |    |         |          |      |        |      |
| Potassium-40                             |           | 28.1     | 0.628  | +/-1.42    | 1.00     | pCi/g |    |         |          |      |        |      |
| Radium-223                               | U         | -1.05    | 1.30   | +/-0.416   |          | pCi/g |    |         |          |      |        |      |
| Radium-224                               | UI        | 4.28     | R,R5a  | 1.23       | +/-0.764 | pCi/g |    |         |          |      |        |      |
| Radium-226                               |           | 1.21     |        | 0.140      | +/-0.101 | pCi/g |    |         |          |      |        |      |
| Radium-228                               |           | 1.66     |        | 0.250      | +/-0.202 | 0.500 |    |         |          |      |        |      |
| Ruthenium-106                            | U         | -0.215   | 0.553  | +/-0.177   | 0.800    | pCi/g |    |         |          |      |        |      |
| Sodium-22                                | U         | -0.0544  | 0.0718 | +/-0.0252  | 0.080    | pCi/g |    |         |          |      |        |      |
| Strontium-85                             | U         | 0.070    | 0.0708 | +/-0.0212  |          | pCi/g |    |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID:  
Sample ID:

RE12-10-7262  
244630001

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time Batch | Mtd. |
|--|-----------|----------|--------|-----------|-------|-------|----|---------|------|------------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |           |       |       |    |         |      |            |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |           |       |       |    |         |      |            |      |
| Thallium-208                             |           | 0.554    | 0.0608 | +/-0.0547 | 0.080 | pCi/g |    |         |      |            |      |
| Thorium-227                              | U         | -0.227   | 0.777  | +/-0.229  |       | pCi/g |    |         |      |            |      |
| Thorium-231                              | U         | -1.05    | 1.30   | +/-0.416  |       | pCi/g |    |         |      |            |      |
| Thorium-234                              | U         | 3.24     | 3.77   | +/-1.20   | 2.00  | pCi/g |    |         |      |            |      |
| Tin-113                                  | U         | 0.0432   | 0.0951 | +/-0.0269 | 0.100 | pCi/g |    |         |      |            |      |
| Uranium-235                              | U         | 0.157    | 0.461  | +/-0.135  | 0.500 | pCi/g |    |         |      |            |      |
| Yttrium-88                               | U         | -0.00348 | 0.0515 | +/-0.0161 | 0.100 | pCi/g |    |         |      |            |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery% | Acceptable Limits |
|---------------------------|------------------------------|-----------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 84.8      | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 95.0      | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 71.1      | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7266  
Sample ID: 244630002  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 19.7%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU        | RL        | Units | DF    | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|----------|--------|------------|-----------|-------|-------|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |          |        |            |           |       |       |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |          |        |            |           |       |       |         |          |      |        |      |
| Americium-241                            | U         | 0.00674  | 0.0182 | +/-0.00346 | 0.050     | pCi/g |       | MXA1    | 01/22/10 | 1203 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |          |        |            |           |       |       |         |          |      |        |      |
| Plutonium-238                            | U         | 0.00122  | 0.0201 | +/-0.00272 | 0.050     | pCi/g |       | MXA1    | 01/20/10 | 1641 | 941752 | 2    |
| Plutonium-239/240                        |           | 0.0292   | 0.023  | +/-0.00661 | 0.050     | pCi/g |       |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |          |        |            |           |       |       |         |          |      |        |      |
| Uranium-233/234                          |           | 1.99     | 0.143  | +/-0.173   | 0.100     | pCi/g |       | MXA1    | 01/23/10 | 1120 | 941758 | 3    |
| Uranium-235/236                          |           | 0.176    | 0.0885 | +/-0.0341  | 0.100     | pCi/g |       |         |          |      |        |      |
| Uranium-238                              |           | 2.96     | 0.0827 | +/-0.243   | 0.100     | pCi/g |       |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |            |           |       |       |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |            |           |       |       |         |          |      |        |      |
| Americium-241                            | U         | 0.00731  | 0.298  | +/-0.0924  | 0.200     | pCi/g |       | MXR1    | 01/22/10 | 2050 | 941639 | 4    |
| Bismuth-211                              | UI        | 3.90     | R,R5a  | 0.254      | +/-0.225  | pCi/g |       |         |          |      |        |      |
| Bismuth-214                              |           | 1.20     |        | 0.0883     | +/-0.0885 | 0.200 | pCi/g |         |          |      |        |      |
| Cadmium-109                              | UI        | 3.16     | R,R5a  | 1.22       | +/-0.546  | pCi/g |       |         |          |      |        |      |
| Cerium-139                               | U         | -0.00362 |        | 0.0437     | +/-0.0124 | 0.050 | pCi/g |         |          |      |        |      |
| Cesium-134                               | UI        | 0.118    | R,R5a  | 0.0716     | +/-0.033  | 0.100 | pCi/g |         |          |      |        |      |
| Cesium-137                               |           | 0.436    |        | 0.050      | +/-0.0366 | 0.100 | pCi/g |         |          |      |        |      |
| Cobalt-60                                | U         | 0.0256   |        | 0.0528     | +/-0.015  | 0.100 | pCi/g |         |          |      |        |      |
| Europium-152                             | U         | -0.0118  |        | 0.133      | +/-0.0468 | 0.200 | pCi/g |         |          |      |        |      |
| Lanthanum-140                            | U         | 0.0295   |        | 0.104      | +/-0.0344 | pCi/g |       |         |          |      |        |      |
| Lead-212                                 |           | 1.81     |        | 0.0787     | +/-0.0805 | 0.100 | pCi/g |         |          |      |        |      |
| Lead-214                                 |           | 1.36     |        | 0.0884     | +/-0.0858 | 0.100 | pCi/g |         |          |      |        |      |
| Mercury-203                              | U         | 0.0192   |        | 0.059      | +/-0.0194 | 0.100 | pCi/g |         |          |      |        |      |
| Potassium-40                             |           | 33.2     |        | 0.357      | +/-1.44   | 1.00  | pCi/g |         |          |      |        |      |
| Radium-223                               | U         | 0.160    |        | 0.898      | +/-0.303  | pCi/g |       |         |          |      |        |      |
| Radium-224                               | UI        | 5.19     | R,R5a  | 0.894      | +/-0.568  | pCi/g |       |         |          |      |        |      |
| Radium-226                               |           | 1.20     |        | 0.0883     | +/-0.0885 | pCi/g |       |         |          |      |        |      |
| Radium-228                               |           | 1.76     |        | 0.162      | +/-0.163  | 0.500 | pCi/g |         |          |      |        |      |
| Ruthenium-106                            | U         | -0.126   |        | 0.400      | +/-0.126  | 0.800 | pCi/g |         |          |      |        |      |
| Sodium-22                                | U         | -0.00732 |        | 0.0549     | +/-0.0169 | 0.080 | pCi/g |         |          |      |        |      |
| Strontium-85                             | UI        | 0.0927   | R,R5a  | 0.0581     | +/-0.0171 | pCi/g |       |         |          |      |        |      |
| Thallium-208                             |           | 0.515    |        | 0.0458     | +/-0.0408 | 0.080 | pCi/g |         |          |      |        |      |



# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID:  
Sample ID:

RE12-10-7266  
244630002

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result  | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time | Batch | Mtd. |
|--|-----------|---------|--------|-----------|-------|-------|----|---------|------|------|-------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |         |        |           |       |       |    |         |      |      |       |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |         |        |           |       |       |    |         |      |      |       |      |
| Thorium-227                              | U         | -0.145  | 0.524  | +/-0.157  |       | pCi/g |    |         |      |      |       |      |
| Thorium-231                              | U         | 0.160   | 0.898  | +/-0.303  |       | pCi/g |    |         |      |      |       |      |
| Thorium-234                              | U         | 1.84    | 2.38   | +/-1.13   | 2.00  | pCi/g |    |         |      |      |       |      |
| Tin-113                                  | U         | -0.0272 | 0.0598 | +/-0.0179 | 0.100 | pCi/g |    |         |      |      |       |      |
| Uranium-235                              | U         | 0.0562  | 0.324  | +/-0.0971 | 0.500 | pCi/g |    |         |      |      |       |      |
| Yttrium-88                               | U         | 0.00872 | 0.0504 | +/-0.0164 | 0.100 | pCi/g |    |         |      |      |       |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery% | Acceptable Limits |
|---------------------------|------------------------------|-----------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 85.6      | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 95.6      | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 65.8      | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.

**GEL LABORATORIES LLC**

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis**

Company : Los Alamos National Laboratory  
 Address : PO Box 1663  
 TA-03, SM271, Drop Pt. 02U, Rm  
 Los Alamos, New Mexico 87545  
 Contact: Ms. Joylene Valdez  
 Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7258  
 Sample ID: 244630003  
 Matrix: R  
 Collect Date: 08-JAN-10  
 Receive Date: 14-JAN-10  
 Collector: Client  
 Moisture: 14.3%

Project: LANL01004  
 Client ID: LANL010

| Parameter                                | Qualifier | Result    | DL     | TPU        | RL        | Units | DF    | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|-----------|--------|------------|-----------|-------|-------|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |           |        |            |           |       |       |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |           |        |            |           |       |       |         |          |      |        |      |
| Americium-241                            | U         | -0.000665 | 0.0191 | +/-0.00113 | 0.050     | pCi/g |       | MXA1    | 01/22/10 | 1203 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |           |        |            |           |       |       |         |          |      |        |      |
| Plutonium-238                            | U         | 0.0011    | 0.0182 | +/-0.0011  | 0.050     | pCi/g |       | MXA1    | 01/20/10 | 1641 | 941752 | 2    |
| Plutonium-239/240                        | U         | 0.0033    | 0.0208 | +/-0.00291 | 0.050     | pCi/g |       |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |           |        |            |           |       |       |         |          |      |        |      |
| Uranium-233/234                          |           | 0.948     | 0.106  | +/-0.0876  | 0.100     | pCi/g |       | MXA1    | 01/23/10 | 1120 | 941758 | 3    |
| Uranium-235/236                          | U         | 0.059     | 0.0656 | +/-0.0163  | 0.100     | pCi/g |       |         |          |      |        |      |
| Uranium-238                              |           | 0.996     | 0.0613 | +/-0.0911  | 0.100     | pCi/g |       |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |           |        |            |           |       |       |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |           |        |            |           |       |       |         |          |      |        |      |
| Americium-241                            | U         | 0.00372   | 0.393  | +/-0.110   | 0.200     | pCi/g |       | MXR1    | 01/23/10 | 1145 | 941639 | 4    |
| Bismuth-211                              | UI        | 4.08      | R,R5a  | 0.335      | +/-0.255  | pCi/g |       |         |          |      |        |      |
| Bismuth-214                              |           | 1.15      |        | 0.108      | +/-0.0889 | 0.200 | pCi/g |         |          |      |        |      |
| Cadmium-109                              | UI        | 3.14      | R,R5a  | 1.43       | +/-0.588  | pCi/g |       |         |          |      |        |      |
| Cerium-139                               | U         | -0.0317   |        | 0.0467     | +/-0.0146 | 0.050 | pCi/g |         |          |      |        |      |
| Cesium-134                               | UI        | 0.129     | R,R5a  | 0.0847     | +/-0.0253 | 0.100 | pCi/g |         |          |      |        |      |
| Cesium-137                               | U         | 0.0538    |        | 0.0641     | +/-0.0243 | 0.100 | pCi/g |         |          |      |        |      |
| Cobalt-60                                | U         | 0.0109    |        | 0.0724     | +/-0.0211 | 0.100 | pCi/g |         |          |      |        |      |
| Europium-152                             | U         | -0.011    |        | 0.157      | +/-0.0463 | 0.200 | pCi/g |         |          |      |        |      |
| Lanthanum-140                            | U         | -0.148    |        | 0.130      | +/-0.0507 | pCi/g |       |         |          |      |        |      |
| Lead-212                                 |           | 1.91      |        | 0.0927     | +/-0.0967 | 0.100 | pCi/g |         |          |      |        |      |
| Lead-214                                 |           | 1.42      |        | 0.118      | +/-0.0961 | 0.100 | pCi/g |         |          |      |        |      |
| Mercury-203                              | U         | 0.015     |        | 0.065      | +/-0.0206 | 0.100 | pCi/g |         |          |      |        |      |
| Potassium-40                             |           | 34.9      |        | 0.466      | +/-1.55   | 1.00  | pCi/g |         |          |      |        |      |
| Radium-223                               | U         | 0.178     |        | 1.08       | +/-0.350  | pCi/g |       |         |          |      |        |      |
| Radium-224                               | UI        | 4.83      | R,R5a  | 1.06       | +/-0.651  | pCi/g |       |         |          |      |        |      |
| Radium-226                               |           | 1.15      |        | 0.108      | +/-0.0889 | pCi/g |       |         |          |      |        |      |
| Radium-228                               |           | 1.86      |        | 0.244      | +/-0.163  | 0.500 | pCi/g |         |          |      |        |      |
| Ruthenium-106                            | U         | -0.0596   |        | 0.465      | +/-0.146  | 0.800 | pCi/g |         |          |      |        |      |
| Sodium-22                                | U         | -0.0272   |        | 0.0704     | +/-0.0223 | 0.080 | pCi/g |         |          |      |        |      |
| Strontium-85                             | U         | 0.0407    |        | 0.0658     | +/-0.0208 | pCi/g |       |         |          |      |        |      |
| Thallium-208                             |           | 0.601     |        | 0.0557     | +/-0.045  | 0.080 | pCi/g |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7258  
Sample ID: 244630003

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result  | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time Batch | Mtd. |
|--|-----------|---------|--------|-----------|-------|-------|----|---------|------|------------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |         |        |           |       |       |    |         |      |            |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |         |        |           |       |       |    |         |      |            |      |
| Thorium-227                              | U         | -0.156  | 0.615  | +/-0.180  |       | pCi/g |    |         |      |            |      |
| Thorium-231                              | U         | 0.178   | 1.08   | +/-0.350  |       | pCi/g |    |         |      |            |      |
| Thorium-234                              | U         | 0.484   | 3.08   | +/-0.854  | 2.00  | pCi/g |    |         |      |            |      |
| Tin-113                                  | U         | 0.0166  | 0.0737 | +/-0.0212 | 0.100 | pCi/g |    |         |      |            |      |
| Uranium-235                              | U         | -0.0163 | 0.352  | +/-0.104  | 0.500 | pCi/g |    |         |      |            |      |
| Yttrium-88                               | U         | 0.0377  | 0.063  | +/-0.0157 | 0.100 | pCi/g |    |         |      |            |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery% | Acceptable Limits |
|---------------------------|------------------------------|-----------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 85.6      | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 94.5      | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 82.1      | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7268  
Sample ID: 244630004  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 9.81%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result    | DL     | TPU        | RL        | Units | DF    | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|-----------|--------|------------|-----------|-------|-------|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |           |        |            |           |       |       |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |           |        |            |           |       |       |         |          |      |        |      |
| Americium-241                            | U         | 0.00266   | 0.0188 | +/-0.00172 | 0.050     | pCi/g |       | MXA1    | 01/22/10 | 1203 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |           |        |            |           |       |       |         |          |      |        |      |
| Plutonium-238                            | U         | 0.00      | 0.0192 | +/-0.00164 | 0.050     | pCi/g |       | MXA1    | 01/20/10 | 1641 | 941752 | 2    |
| Plutonium-239/240                        |           | 0.0244    | 0.0219 | +/-0.00616 | 0.050     | pCi/g |       |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |           |        |            |           |       |       |         |          |      |        |      |
| Uranium-233/234                          |           | 1.58      | 0.117  | +/-0.136   | 0.100     | pCi/g |       | MXA1    | 01/23/10 | 1120 | 941758 | 3    |
| Uranium-235/236                          |           | 0.159     | 0.0729 | +/-0.0303  | 0.100     | pCi/g |       |         |          |      |        |      |
| Uranium-238                              |           | 2.57      | 0.0681 | +/-0.208   | 0.100     | pCi/g |       |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |           |        |            |           |       |       |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |           |        |            |           |       |       |         |          |      |        |      |
| Americium-241                            | U         | 0.190     | 0.378  | +/-0.116   | 0.200     | pCi/g |       | MXR1    | 01/23/10 | 1146 | 941639 | 4    |
| Bismuth-211                              | UI        | 4.35      | R,R5a  | 0.429      | +/-0.290  | pCi/g |       |         |          |      |        |      |
| Bismuth-214                              |           | 1.41      |        | 0.130      | +/-0.113  | 0.200 | pCi/g |         |          |      |        |      |
| Cadmium-109                              | UI        | 3.83      | R,R5a  | 2.08       | +/-0.619  | pCi/g |       |         |          |      |        |      |
| Cerium-139                               | U         | -0.00795  |        | 0.0629     | +/-0.0186 | 0.050 | pCi/g |         |          |      |        |      |
| Cesium-134                               | UI        | 0.116     | R,R5a  | 0.109      | +/-0.046  | 0.100 | pCi/g |         |          |      |        |      |
| Cesium-137                               |           | 0.483     |        | 0.0722     | +/-0.0494 | 0.100 | pCi/g |         |          |      |        |      |
| Cobalt-60                                | U         | 2.06E-05  |        | 0.0763     | +/-0.0235 | 0.100 | pCi/g |         |          |      |        |      |
| Europium-152                             | U         | 0.00764   |        | 0.211      | +/-0.0644 | 0.200 | pCi/g |         |          |      |        |      |
| Lanthanum-140                            | U         | -0.0258   |        | 0.124      | +/-0.0468 | pCi/g |       |         |          |      |        |      |
| Lead-212                                 |           | 2.01      |        | 0.109      | +/-0.0973 | 0.100 | pCi/g |         |          |      |        |      |
| Lead-214                                 |           | 1.51      |        | 0.139      | +/-0.108  | 0.100 | pCi/g |         |          |      |        |      |
| Mercury-203                              | U         | 0.0102    |        | 0.0855     | +/-0.0246 | 0.100 | pCi/g |         |          |      |        |      |
| Potassium-40                             |           | 29.7      |        | 0.677      | +/-1.35   | 1.00  | pCi/g |         |          |      |        |      |
| Radium-223                               | U         | -0.477    |        | 1.24       | +/-0.431  | pCi/g |       |         |          |      |        |      |
| Radium-224                               | UI        | 4.74      | R,R5a  | 1.25       | +/-0.700  | pCi/g |       |         |          |      |        |      |
| Radium-226                               |           | 1.41      |        | 0.130      | +/-0.113  | pCi/g |       |         |          |      |        |      |
| Radium-228                               |           | 1.84      |        | 0.250      | +/-0.181  | 0.500 | pCi/g |         |          |      |        |      |
| Ruthenium-106                            | U         | 0.243     |        | 0.636      | +/-0.182  | 0.800 | pCi/g |         |          |      |        |      |
| Sodium-22                                | U         | -0.000773 |        | 0.0832     | +/-0.0254 | 0.080 | pCi/g |         |          |      |        |      |
| Strontium-85                             | UI        | 0.084     | R,R5a  | 0.0811     | +/-0.0244 | pCi/g |       |         |          |      |        |      |
| Thallium-208                             |           | 0.623     |        | 0.0719     | +/-0.0513 | 0.080 | pCi/g |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7268  
Sample ID: 244630004  
Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time Batch | Mtd. |
|--|-----------|----------|--------|-----------|-------|-------|----|---------|------|------------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |           |       |       |    |         |      |            |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |           |       |       |    |         |      |            |      |
| Thorium-227                              | U         | 0.078    | 0.749  | +/-0.223  |       | pCi/g |    |         |      |            |      |
| Thorium-231                              | U         | -0.477   | 1.24   | +/-0.431  |       | pCi/g |    |         |      |            |      |
| Thorium-234                              |           | 3.44     | 3.02   | +/-1.29   | 2.00  | pCi/g |    |         |      |            |      |
| Tin-113                                  | U         | -0.00703 | 0.0892 | +/-0.0262 | 0.100 | pCi/g |    |         |      |            |      |
| Uranium-235                              | U         | 0.243    | 0.454  | +/-0.131  | 0.500 | pCi/g |    |         |      |            |      |
| Yttrium-88                               | U         | 0.0166   | 0.0637 | +/-0.0184 | 0.100 | pCi/g |    |         |      |            |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery% | Acceptable Limits |
|---------------------------|------------------------------|-----------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 83.8      | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 85.9      | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 75.8      | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7265  
Sample ID: 244630005  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 6.16%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU        | RL        | Units | DF    | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|----------|--------|------------|-----------|-------|-------|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |          |        |            |           |       |       |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |          |        |            |           |       |       |         |          |      |        |      |
| Americium-241                            | U         | 0.00139  | 0.018  | +/-0.00122 | 0.050     | pCi/g |       | MXA1    | 01/22/10 | 1203 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |          |        |            |           |       |       |         |          |      |        |      |
| Plutonium-238                            | U         | -0.00757 | 0.0313 | +/-0.00803 | 0.050     | pCi/g |       | MXA1    | 01/20/10 | 1641 | 941752 | 2    |
| Plutonium-239/240                        | U         | 0.00     | 0.0358 | +/-0.00268 | 0.050     | pCi/g |       |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |          |        |            |           |       |       |         |          |      |        |      |
| Uranium-233/234                          |           | 0.905    | 0.090  | +/-0.0813  | 0.100     | pCi/g |       | MXA1    | 01/23/10 | 1120 | 941758 | 3    |
| Uranium-235/236                          |           | 0.108    | 0.0559 | +/-0.021   | 0.100     | pCi/g |       |         |          |      |        |      |
| Uranium-238                              |           | 0.988    | 0.0522 | +/-0.087   | 0.100     | pCi/g |       |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |            |           |       |       |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |            |           |       |       |         |          |      |        |      |
| Americium-241                            | U         | 0.132    | 0.202  | +/-0.0623  | 0.200     | pCi/g |       | MXR1    | 01/23/10 | 1146 | 941639 | 4    |
| Bismuth-211                              | UI        | 5.32     | R,R5a  | 0.388      | +/-0.349  | pCi/g |       |         |          |      |        |      |
| Bismuth-214                              |           | 1.63     |        | 0.128      | +/-0.122  | pCi/g |       |         |          |      |        |      |
| Cadmium-109                              | UI        | 4.01     | R,R5a  | 1.17       | +/-0.541  | pCi/g |       |         |          |      |        |      |
| Cerium-139                               | U         | -0.0183  | 0.0531 | +/-0.0166  | 0.050     | pCi/g |       |         |          |      |        |      |
| Cesium-134                               | UI        | 0.258    | R,R5a  | 0.103      | +/-0.0675 | 0.100 | pCi/g |         |          |      |        |      |
| Cesium-137                               | U         | -0.0388  | 0.0648 | +/-0.0208  | 0.100     | pCi/g |       |         |          |      |        |      |
| Cobalt-60                                | U         | 0.000259 | 0.0718 | +/-0.0217  | 0.100     | pCi/g |       |         |          |      |        |      |
| Europium-152                             | U         | -0.0549  | 0.180  | +/-0.0574  | 0.200     | pCi/g |       |         |          |      |        |      |
| Lanthanum-140                            | U         | 0.0781   | 0.151  | +/-0.0452  | pCi/g     |       |       |         |          |      |        |      |
| Lead-212                                 |           | 2.15     | 0.129  | +/-0.123   | 0.100     | pCi/g |       |         |          |      |        |      |
| Lead-214                                 |           | 1.85     | 0.135  | +/-0.131   | 0.100     | pCi/g |       |         |          |      |        |      |
| Mercury-203                              | U         | 0.0343   | 0.0788 | +/-0.0224  | 0.100     | pCi/g |       |         |          |      |        |      |
| Potassium-40                             |           | 39.6     | 0.559  | +/-1.99    | 1.00      | pCi/g |       |         |          |      |        |      |
| Radium-223                               | U         | -0.212   | 1.19   | +/-0.412   | pCi/g     |       |       |         |          |      |        |      |
| Radium-224                               | UI        | 4.90     | R,R5a  | 1.55       | +/-0.518  | pCi/g |       |         |          |      |        |      |
| Radium-226                               |           | 1.63     | 0.128  | +/-0.122   | pCi/g     |       |       |         |          |      |        |      |
| Radium-228                               |           | 2.58     | 0.236  | +/-0.224   | 0.500     | pCi/g |       |         |          |      |        |      |
| Ruthenium-106                            | U         | 0.0357   | 0.577  | +/-0.170   | 0.800     | pCi/g |       |         |          |      |        |      |
| Sodium-22                                | U         | 0.0257   | 0.0786 | +/-0.0225  | 0.080     | pCi/g |       |         |          |      |        |      |
| Strontium-85                             | UI        | 0.102    | R,R5a  | 0.0776     | +/-0.0224 | pCi/g |       |         |          |      |        |      |
| Thallium-208                             |           | 0.768    | 0.0598 | +/-0.057   | 0.080     | pCi/g |       |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID:  
Sample ID:

RE12-10-7265  
244630005

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time Batch | Mtd. |
|--|-----------|----------|--------|-----------|-------|-------|----|---------|------|------------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |           |       |       |    |         |      |            |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |           |       |       |    |         |      |            |      |
| Thorium-227                              | U         | -0.208   | 0.661  | +/-0.199  |       | pCi/g |    |         |      |            |      |
| Thorium-231                              | U         | -0.212   | 1.19   | +/-0.412  |       | pCi/g |    |         |      |            |      |
| Thorium-234                              |           | 2.23     | 1.76   | +/-0.781  | 2.00  | pCi/g |    |         |      |            |      |
| Tin-113                                  | U         | -0.00302 | 0.0842 | +/-0.0255 | 0.100 | pCi/g |    |         |      |            |      |
| Uranium-235                              | U         | 0.233    | 0.381  | +/-0.114  | 0.500 | pCi/g |    |         |      |            |      |
| Yttrium-88                               | U         | 0.0149   | 0.0542 | +/-0.0148 | 0.100 | pCi/g |    |         |      |            |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery% | Acceptable Limits |
|---------------------------|------------------------------|-----------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 86.9      | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 58.5      | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 92.1      | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7261  
Sample ID: 244630006  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 13.3%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU        | RL        | Units | DF    | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|----------|--------|------------|-----------|-------|-------|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |          |        |            |           |       |       |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |          |        |            |           |       |       |         |          |      |        |      |
| Americium-241                            | U         | 0.00533  | 0.0202 | +/-0.00254 | 0.050     | pCi/g |       | MXA1    | 01/22/10 | 1203 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |          |        |            |           |       |       |         |          |      |        |      |
| Plutonium-238                            | U         | 0.00116  | 0.0191 | +/-0.00116 | 0.050     | pCi/g |       | MXA1    | 01/20/10 | 1641 | 941752 | 2    |
| Plutonium-239/240                        | U         | 0.00579  | 0.0219 | +/-0.00349 | 0.050     | pCi/g |       |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |          |        |            |           |       |       |         |          |      |        |      |
| Uranium-233/234                          |           | 0.969    | 0.141  | +/-0.0965  | 0.100     | pCi/g |       | MXA1    | 01/23/10 | 1120 | 941758 | 3    |
| Uranium-235/236                          | U         | 0.0787   | 0.0874 | +/-0.0218  | 0.100     | pCi/g |       |         |          |      |        |      |
| Uranium-238                              |           | 0.991    | 0.0817 | +/-0.098   | 0.100     | pCi/g |       |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |            |           |       |       |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |            |           |       |       |         |          |      |        |      |
| Americium-241                            | U         | -0.0302  | 0.177  | +/-0.0588  | 0.200     | pCi/g |       | MXR1    | 01/23/10 | 1147 | 941639 | 4    |
| Bismuth-211                              | UI        | 3.47     | R,R5a  | 0.287      | +/-0.322  | pCi/g |       |         |          |      |        |      |
| Bismuth-214                              |           | 1.07     |        | 0.0948     | +/-0.0902 | 0.200 | pCi/g |         |          |      |        |      |
| Cadmium-109                              | UI        | 3.03     | R,R5a  | 0.938      | +/-0.469  | pCi/g |       |         |          |      |        |      |
| Cerium-139                               | U         | 0.00249  | 0.0423 | +/-0.0123  | 0.050     | pCi/g |       |         |          |      |        |      |
| Cesium-134                               | UI        | 0.112    | R,R5a  | 0.0922     | +/-0.0332 | 0.100 | pCi/g |         |          |      |        |      |
| Cesium-137                               |           | 0.123    |        | 0.0534     | +/-0.0383 | 0.100 | pCi/g |         |          |      |        |      |
| Cobalt-60                                | U         | -0.00433 | 0.0632 | +/-0.0198  | 0.100     | pCi/g |       |         |          |      |        |      |
| Europium-152                             | U         | 0.0102   | 0.138  | +/-0.0473  | 0.200     | pCi/g |       |         |          |      |        |      |
| Lanthanum-140                            | U         | -0.0506  | 0.115  | +/-0.0388  |           | pCi/g |       |         |          |      |        |      |
| Lead-212                                 |           | 1.65     | 0.084  | +/-0.128   | 0.100     | pCi/g |       |         |          |      |        |      |
| Lead-214                                 |           | 1.21     | 0.0999 | +/-0.116   | 0.100     | pCi/g |       |         |          |      |        |      |
| Mercury-203                              | U         | 0.048    | 0.0647 | +/-0.0186  | 0.100     | pCi/g |       |         |          |      |        |      |
| Potassium-40                             |           | 28.6     | 0.440  | +/-1.55    | 1.00      | pCi/g |       |         |          |      |        |      |
| Radium-223                               | U         | 0.715    | 1.04   | +/-0.336   |           | pCi/g |       |         |          |      |        |      |
| Radium-224                               | UI        | 4.52     | R,R5a  | 0.936      | +/-0.633  | pCi/g |       |         |          |      |        |      |
| Radium-226                               |           | 1.07     | 0.0948 | +/-0.0902  |           | pCi/g |       |         |          |      |        |      |
| Radium-228                               |           | 1.70     | 0.191  | +/-0.174   | 0.500     | pCi/g |       |         |          |      |        |      |
| Ruthenium-106                            | U         | 0.051    | 0.462  | +/-0.137   | 0.800     | pCi/g |       |         |          |      |        |      |
| Sodium-22                                | U         | 0.0357   | 0.072  | +/-0.0202  | 0.080     | pCi/g |       |         |          |      |        |      |
| Strontium-85                             | UI        | 0.0609   | R,R5a  | 0.0605     | +/-0.0177 | pCi/g |       |         |          |      |        |      |
| Thallium-208                             |           | 0.501    | 0.0576 | +/-0.0452  | 0.080     | pCi/g |       |         |          |      |        |      |



# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7261  
Sample ID: 244630006

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result  | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time Batch | Mtd. |
|--|-----------|---------|--------|-----------|-------|-------|----|---------|------|------------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |         |        |           |       |       |    |         |      |            |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |         |        |           |       |       |    |         |      |            |      |
| Thorium-227                              | U         | -0.031  | 0.554  | +/-0.168  |       | pCi/g |    |         |      |            |      |
| Thorium-231                              | U         | 0.715   | 1.04   | +/-0.336  |       | pCi/g |    |         |      |            |      |
| Thorium-234                              | U         | 1.35    | 1.56   | +/-0.780  | 2.00  | pCi/g |    |         |      |            |      |
| Tin-113                                  | U         | 0.0139  | 0.0693 | +/-0.0197 | 0.100 | pCi/g |    |         |      |            |      |
| Uranium-235                              | U         | 0.0998  | 0.310  | +/-0.0902 | 0.500 | pCi/g |    |         |      |            |      |
| Yttrium-88                               | U         | 0.00683 | 0.0581 | +/-0.0171 | 0.100 | pCi/g |    |         |      |            |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery% | Acceptable Limits |
|---------------------------|------------------------------|-----------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 79.5      | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 91.5      | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 64.5      | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7259  
Sample ID: 244630007  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 6.49%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU        | RL        | Units | DF | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|----------|--------|------------|-----------|-------|----|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |          |        |            |           |       |    |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |          |        |            |           |       |    |         |          |      |        |      |
| Americium-241                            | U         | -0.00281 | 0.0177 | +/-0.0024  | 0.050     | pCi/g |    | MXA1    | 01/22/10 | 1203 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |          |        |            |           |       |    |         |          |      |        |      |
| Plutonium-238                            | U         | 0.00118  | 0.0194 | +/-0.00118 | 0.050     | pCi/g |    | MXA1    | 01/20/10 | 1641 | 941752 | 2    |
| Plutonium-239/240                        | U         | 0.00235  | 0.0222 | +/-0.00288 | 0.050     | pCi/g |    |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |          |        |            |           |       |    |         |          |      |        |      |
| Uranium-233/234                          |           | 0.809    | 0.104  | +/-0.0778  | 0.100     | pCi/g |    | MXA1    | 01/23/10 | 1120 | 941758 | 3    |
| Uranium-235/236                          |           | 0.0834   | 0.0649 | +/-0.0212  | 0.100     | pCi/g |    |         |          |      |        |      |
| Uranium-238                              |           | 0.776    | 0.0606 | +/-0.0754  | 0.100     | pCi/g |    |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |            |           |       |    |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |            |           |       |    |         |          |      |        |      |
| Americium-241                            | U         | -0.177   | 0.566  | +/-0.165   | 0.200     | pCi/g |    | MXR1    | 01/23/10 | 1147 | 941639 | 4    |
| Bismuth-211                              | UI        | 4.11     | R,R5a  | 0.405      | +/-0.321  | pCi/g |    |         |          |      |        |      |
| Bismuth-214                              |           | 1.26     |        | 0.137      | +/-0.106  | pCi/g |    |         |          |      |        |      |
| Cadmium-109                              | U         | 0.773    |        | 2.18       | +/-0.975  | pCi/g |    |         |          |      |        |      |
| Cerium-139                               | U         | 0.00994  |        | 0.0685     | +/-0.0203 | pCi/g |    |         |          |      |        |      |
| Cesium-134                               | U         | 0.0864   |        | 0.104      | +/-0.0278 | pCi/g |    |         |          |      |        |      |
| Cesium-137                               | U         | -0.0126  |        | 0.071      | +/-0.0223 | pCi/g |    |         |          |      |        |      |
| Cobalt-60                                | U         | 0.0447   |        | 0.0853     | +/-0.0239 | pCi/g |    |         |          |      |        |      |
| Europium-152                             | U         | -0.139   |        | 0.189      | +/-0.0807 | pCi/g |    |         |          |      |        |      |
| Lanthanum-140                            | U         | 0.0482   |        | 0.159      | +/-0.0442 | pCi/g |    |         |          |      |        |      |
| Lead-212                                 |           | 1.92     |        | 0.120      | +/-0.107  | pCi/g |    |         |          |      |        |      |
| Lead-214                                 |           | 1.43     |        | 0.141      | +/-0.118  | pCi/g |    |         |          |      |        |      |
| Mercury-203                              | U         | 0.0381   |        | 0.0943     | +/-0.0266 | pCi/g |    |         |          |      |        |      |
| Potassium-40                             |           | 35.3     |        | 0.699      | +/-1.74   | pCi/g |    |         |          |      |        |      |
| Radium-223                               | U         | 0.410    |        | 1.46       | +/-0.479  | pCi/g |    |         |          |      |        |      |
| Radium-224                               | UI        | 6.79     | R,R5a  | 1.37       | +/-0.957  | pCi/g |    |         |          |      |        |      |
| Radium-226                               |           | 1.26     |        | 0.137      | +/-0.106  | pCi/g |    |         |          |      |        |      |
| Radium-228                               |           | 2.21     |        | 0.250      | +/-0.206  | pCi/g |    |         |          |      |        |      |
| Ruthenium-106                            | U         | 0.215    |        | 0.669      | +/-0.196  | pCi/g |    |         |          |      |        |      |
| Sodium-22                                | U         | -0.015   |        | 0.0885     | +/-0.028  | pCi/g |    |         |          |      |        |      |
| Strontium-85                             | U         | 0.0263   |        | 0.0743     | +/-0.0247 | pCi/g |    |         |          |      |        |      |
| Thallium-208                             |           | 0.562    |        | 0.0771     | +/-0.046  | pCi/g |    |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID:  
Sample ID:

RE12-10-7259  
244630007

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result  | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time Batch | Mtd. |
|--|-----------|---------|--------|-----------|-------|-------|----|---------|------|------------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |         |        |           |       |       |    |         |      |            |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |         |        |           |       |       |    |         |      |            |      |
| Thorium-227                              | U         | 0.312   | 0.884  | +/-0.251  |       | pCi/g |    |         |      |            |      |
| Thorium-231                              | U         | 0.410   | 1.46   | +/-0.479  |       | pCi/g |    |         |      |            |      |
| Thorium-234                              | U         | 1.51    | 4.29   | +/-1.22   | 2.00  | pCi/g |    |         |      |            |      |
| Tin-113                                  | U         | -0.0562 | 0.0861 | +/-0.0273 | 0.100 | pCi/g |    |         |      |            |      |
| Uranium-235                              | U         | 0.182   | 0.471  | +/-0.139  | 0.500 | pCi/g |    |         |      |            |      |
| Yttrium-88                               | U         | 0.0249  | 0.0699 | +/-0.0191 | 0.100 | pCi/g |    |         |      |            |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery% | Acceptable Limits |
|---------------------------|------------------------------|-----------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 90.0      | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 94.0      | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 83.6      | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7263  
Sample ID: 244630008  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 5.59%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU        | RL        | Units | DF | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|----------|--------|------------|-----------|-------|----|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |          |        |            |           |       |    |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |          |        |            |           |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.000388 | 0.0185 | +/-0.00109 | 0.050     | pCi/g |    | MXA1    | 01/22/10 | 1203 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |          |        |            |           |       |    |         |          |      |        |      |
| Plutonium-238                            | U         | 0.00     | 0.0166 | +/-0.001   | 0.050     | pCi/g |    | MXA1    | 01/20/10 | 1636 | 941752 | 2    |
| Plutonium-239/240                        | U         | 0.00201  | 0.019  | +/-0.00142 | 0.050     | pCi/g |    |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |          |        |            |           |       |    |         |          |      |        |      |
| Uranium-233/234                          |           | 0.883    | 0.113  | +/-0.0845  | 0.100     | pCi/g |    | MXA1    | 01/23/10 | 1120 | 941758 | 3    |
| Uranium-235/236                          |           | 0.0767   | 0.0702 | +/-0.0204  | 0.100     | pCi/g |    |         |          |      |        |      |
| Uranium-238                              |           | 0.887    | 0.0656 | +/-0.0851  | 0.100     | pCi/g |    |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |            |           |       |    |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |            |           |       |    |         |          |      |        |      |
| Americium-241                            | U         | -0.104   | 0.236  | +/-0.0803  | 0.200     | pCi/g |    | MXR1    | 01/23/10 | 1147 | 941639 | 4    |
| Bismuth-211                              | UI        | 4.12     | R,R5a  | 0.287      | +/-0.300  | pCi/g |    |         |          |      |        |      |
| Bismuth-214                              |           | 1.31     |        | 0.0988     | +/-0.105  | pCi/g |    |         |          |      |        |      |
| Cadmium-109                              | UI        | 3.09     | R,R5a  | 1.13       | +/-0.478  | pCi/g |    |         |          |      |        |      |
| Cerium-139                               | U         | 0.00233  |        | 0.0456     | +/-0.0132 | pCi/g |    |         |          |      |        |      |
| Cesium-134                               | UI        | 0.150    | R,R5a  | 0.0953     | +/-0.0322 | pCi/g |    |         |          |      |        |      |
| Cesium-137                               | U         | 0.00699  |        | 0.0593     | +/-0.0177 | pCi/g |    |         |          |      |        |      |
| Cobalt-60                                | U         | -0.0513  |        | 0.0586     | +/-0.0212 | pCi/g |    |         |          |      |        |      |
| Europium-152                             | U         | -0.0331  |        | 0.140      | +/-0.0427 | pCi/g |    |         |          |      |        |      |
| Lanthanum-140                            | U         | -0.112   |        | 0.0945     | +/-0.038  | pCi/g |    |         |          |      |        |      |
| Lead-212                                 |           | 1.92     |        | 0.0772     | +/-0.126  | pCi/g |    |         |          |      |        |      |
| Lead-214                                 |           | 1.43     |        | 0.111      | +/-0.111  | pCi/g |    |         |          |      |        |      |
| Mercury-203                              | U         | 0.0498   |        | 0.0598     | +/-0.0293 | pCi/g |    |         |          |      |        |      |
| Potassium-40                             |           | 32.8     |        | 0.482      | +/-1.69   | pCi/g |    |         |          |      |        |      |
| Radium-223                               | U         | 0.0689   |        | 0.980      | +/-0.336  | pCi/g |    |         |          |      |        |      |
| Radium-224                               | UI        | 5.34     | R,R5a  | 0.878      | +/-0.672  | pCi/g |    |         |          |      |        |      |
| Radium-226                               |           | 1.31     |        | 0.0988     | +/-0.105  | pCi/g |    |         |          |      |        |      |
| Radium-228                               |           | 2.03     |        | 0.178      | +/-0.183  | pCi/g |    |         |          |      |        |      |
| Ruthenium-106                            | U         | 0.0629   |        | 0.500      | +/-0.148  | pCi/g |    |         |          |      |        |      |
| Sodium-22                                | U         | -0.0374  |        | 0.0683     | +/-0.0229 | pCi/g |    |         |          |      |        |      |
| Strontium-85                             | U         | 0.0299   |        | 0.0524     | +/-0.0162 | pCi/g |    |         |          |      |        |      |
| Thallium-208                             |           | 0.613    |        | 0.0538     | +/-0.0501 | pCi/g |    |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pl 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7263  
Sample ID: 244630008

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time Batch | Mtd. |
|--|-----------|----------|--------|-----------|-------|-------|----|---------|------|------------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |           |       |       |    |         |      |            |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |           |       |       |    |         |      |            |      |
| Thorium-227                              | U         | -0.0687  | 0.577  | +/-0.175  |       | pCi/g |    |         |      |            |      |
| Thorium-231                              | U         | 0.0689   | 0.980  | +/-0.336  |       | pCi/g |    |         |      |            |      |
| Thorium-234                              | U         | 1.59     | 1.75   | +/-0.834  | 2.00  | pCi/g |    |         |      |            |      |
| Tin-113                                  | U         | -0.0261  | 0.0674 | +/-0.0203 | 0.100 | pCi/g |    |         |      |            |      |
| Uranium-235                              | U         | 0.139    | 0.337  | +/-0.0969 | 0.500 | pCi/g |    |         |      |            |      |
| Yttrium-88                               | U         | -0.00978 | 0.0332 | +/-0.0115 | 0.100 | pCi/g |    |         |      |            |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery% | Acceptable Limits |
|---------------------------|------------------------------|-----------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 90.9      | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 92.1      | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 71.8      | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.

**GEL LABORATORIES LLC**

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis**

Company : Los Alamos National Laboratory  
 Address : PO Box 1663  
 TA-03, SM271, Drop Pt. 02U, Rm  
 Los Alamos, New Mexico 87545  
 Contact: Ms. Joylene Valdez  
 Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7271  
 Sample ID: 244630009  
 Matrix: R  
 Collect Date: 08-JAN-10  
 Receive Date: 14-JAN-10  
 Collector: Client  
 Moisture: 7.57%

Project: LANL01004  
 Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU        | RL        | Units | DF    | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|----------|--------|------------|-----------|-------|-------|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |          |        |            |           |       |       |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |          |        |            |           |       |       |         |          |      |        |      |
| Americium-241                            | U         | -0.00179 | 0.0193 | +/-0.00161 | 0.050     | pCi/g |       | MXA1    | 01/22/10 | 1203 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |          |        |            |           |       |       |         |          |      |        |      |
| Plutonium-238                            | U         | -0.0012  | 0.0198 | +/-0.00465 | 0.050     | pCi/g |       | MXA1    | 01/21/10 | 1704 | 941752 | 2    |
| Plutonium-239/240                        | U         | 0.0204   | 0.0227 | +/-0.0056  | 0.050     | pCi/g |       |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |          |        |            |           |       |       |         |          |      |        |      |
| Uranium-233/234                          |           | 1.87     | 0.104  | +/-0.153   | 0.100     | pCi/g |       | MXA1    | 01/23/10 | 1120 | 941758 | 4    |
| Uranium-235/236                          |           | 0.124    | 0.0645 | +/-0.025   | 0.100     | pCi/g |       |         |          |      |        |      |
| Uranium-238                              |           | 4.54     | 0.0602 | +/-0.342   | 0.100     | pCi/g |       |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |            |           |       |       |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |            |           |       |       |         |          |      |        |      |
| Americium-241                            | U         | -0.00906 | 0.120  | +/-0.0372  | 0.200     | pCi/g |       | MXR1    | 01/23/10 | 1148 | 941639 | 5    |
| Bismuth-211                              | UI        | 5.70     | R,R5a  | 0.405      | +/-0.404  | pCi/g |       |         |          |      |        |      |
| Bismuth-214                              |           | 1.83     |        | 0.138      | +/-0.142  | 0.200 | pCi/g |         |          |      |        |      |
| Cadmium-109                              | UI        | 4.92     | R,R5a  | 1.11       | +/-0.540  | pCi/g |       |         |          |      |        |      |
| Cerium-139                               | U         | -0.0236  |        | 0.055      | +/-0.0168 | 0.050 | pCi/g |         |          |      |        |      |
| Cesium-134                               | UI        | 0.165    | R,R5a  | 0.138      | +/-0.0586 | 0.100 | pCi/g |         |          |      |        |      |
| Cesium-137                               | U         | 0.033    |        | 0.0988     | +/-0.0293 | 0.100 | pCi/g |         |          |      |        |      |
| Cobalt-60                                | U         | -0.0186  |        | 0.0861     | +/-0.0267 | 0.100 | pCi/g |         |          |      |        |      |
| Europium-152                             | U         | -0.0105  |        | 0.185      | +/-0.054  | 0.200 | pCi/g |         |          |      |        |      |
| Lanthanum-140                            | U         | 0.00566  |        | 0.168      | +/-0.0586 | pCi/g |       |         |          |      |        |      |
| Lead-212                                 |           | 2.20     |        | 0.105      | +/-0.130  | 0.100 | pCi/g |         |          |      |        |      |
| Lead-214                                 |           | 1.98     |        | 0.141      | +/-0.150  | 0.100 | pCi/g |         |          |      |        |      |
| Mercury-203                              | U         | 0.042    |        | 0.0827     | +/-0.0253 | 0.100 | pCi/g |         |          |      |        |      |
| Potassium-40                             |           | 33.3     |        | 0.633      | +/-1.85   | 1.00  | pCi/g |         |          |      |        |      |
| Radium-223                               | U         | 0.0217   |        | 1.26       | +/-0.411  | pCi/g |       |         |          |      |        |      |
| Radium-224                               | UI        | 7.32     | R,R5a  | 1.19       | +/-0.749  | pCi/g |       |         |          |      |        |      |
| Radium-226                               |           | 1.83     |        | 0.138      | +/-0.142  | pCi/g |       |         |          |      |        |      |
| Radium-228                               |           | 2.54     |        | 0.307      | +/-0.227  | 0.500 | pCi/g |         |          |      |        |      |
| Ruthenium-106                            | U         | 0.0757   |        | 0.711      | +/-0.214  | 0.800 | pCi/g |         |          |      |        |      |
| Sodium-22                                | U         | 0.0122   |        | 0.108      | +/-0.0327 | 0.080 | pCi/g |         |          |      |        |      |
| Strontium-85                             | UI        | 0.0789   | R,R5a  | 0.0785     | +/-0.023  | pCi/g |       |         |          |      |        |      |
| Thallium-208                             |           | 0.756    |        | 0.0744     | +/-0.068  | 0.080 | pCi/g |         |          |      |        |      |

**GEL LABORATORIES LLC**

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis**

Company : Los Alamos National Laboratory  
 Address : PO Box 1663  
 TA-03, SM271, Drop Pt. 02U, Rm  
 Los Alamos, New Mexico 87545  
 Contact: Ms. Joylene Valdez  
 Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7271  
 Sample ID: 244630009  
 Project: LANL01004  
 Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time Batch | Mtd. |
|--|-----------|----------|--------|-----------|-------|-------|----|---------|------|------------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |           |       |       |    |         |      |            |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |           |       |       |    |         |      |            |      |
| Thorium-227                              | U         | 0.050    | 0.764  | +/-0.231  |       | pCi/g |    |         |      |            |      |
| Thorium-231                              | U         | 0.0217   | 1.26   | +/-0.411  |       | pCi/g |    |         |      |            |      |
| Thorium-234                              |           | 2.36     | 1.19   | +/-0.585  | 2.00  | pCi/g |    |         |      |            |      |
| Tin-113                                  | U         | 0.00704  | 0.0931 | +/-0.0271 | 0.100 | pCi/g |    |         |      |            |      |
| Uranium-235                              | U         | 0.0408   | 0.399  | +/-0.117  | 0.500 | pCi/g |    |         |      |            |      |
| Yttrium-88                               | U         | -0.00655 | 0.0696 | +/-0.0221 | 0.100 | pCi/g |    |         |      |            |      |

**The following Analytical Methods were performed**

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, Pu-11-RC Modified |
| 4      | DOE EML HASL-300, U-02-RC Modified  |
| 5      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery% | Acceptable Limits |
|---------------------------|------------------------------|-----------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 83.8      | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 97.6      | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 75.8      | (50%-105%)        |

**Notes:**

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure

**GEL LABORATORIES LLC**

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis**

Company : Los Alamos National Laboratory  
 Address : PO Box 1663  
 TA-03, SM271, Drop Pt. 02U, Rm  
 Los Alamos, New Mexico 87545  
 Contact: Ms. Joylene Valdez  
 Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7260  
 Sample ID: 244630010  
 Matrix: R  
 Collect Date: 08-JAN-10  
 Receive Date: 14-JAN-10  
 Collector: Client  
 Moisture: 19.9%

Project: LANL01004  
 Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU        | RL        | Units | DF    | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|----------|--------|------------|-----------|-------|-------|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |          |        |            |           |       |       |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |          |        |            |           |       |       |         |          |      |        |      |
| Americium-241                            | U         | 0.00908  | 0.0185 | +/-0.00354 | 0.050     | pCi/g |       | MXA1    | 01/25/10 | 1715 | 941748 | 2    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |          |        |            |           |       |       |         |          |      |        |      |
| Plutonium-238                            | U         | 0.002    | 0.0165 | +/-0.00142 | 0.050     | pCi/g |       | MXA1    | 01/20/10 | 1637 | 941752 | 3    |
| Plutonium-239/240                        |           | 0.030    | 0.0189 | +/-0.00568 | 0.050     | pCi/g |       |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |          |        |            |           |       |       |         |          |      |        |      |
| Uranium-233/234                          |           | 1.84     | 0.168  | +/-0.170   | 0.100     | pCi/g |       | MXA1    | 01/23/10 | 1120 | 941758 | 4    |
| Uranium-235/236                          |           | 0.128    | 0.104  | +/-0.0322  | 0.100     | pCi/g |       |         |          |      |        |      |
| Uranium-238                              |           | 3.18     | 0.0976 | +/-0.269   | 0.100     | pCi/g |       |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |            |           |       |       |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |            |           |       |       |         |          |      |        |      |
| Americium-241                            | U         | 0.0731   | 0.0883 | +/-0.0277  | 0.200     | pCi/g |       | MXR1    | 01/23/10 | 1148 | 941639 | 5    |
| Bismuth-211                              | UI        | 4.30     | R,R5a  | 0.348      | +/-0.343  | pCi/g |       |         |          |      |        |      |
| Bismuth-214                              |           | 1.33     |        | 0.124      | +/-0.118  | 0.200 | pCi/g |         |          |      |        |      |
| Cadmium-109                              | UI        | 4.27     | R,R5a  | 0.818      | +/-0.400  | pCi/g |       |         |          |      |        |      |
| Cerium-139                               | U         | -0.00721 |        | 0.0462     | +/-0.0139 | 0.050 | pCi/g |         |          |      |        |      |
| Cesium-134                               | UI        | 0.131    | R,R5a  | 0.101      | +/-0.0292 | 0.100 | pCi/g |         |          |      |        |      |
| Cesium-137                               |           | 0.971    |        | 0.0868     | +/-0.0731 | 0.100 | pCi/g |         |          |      |        |      |
| Cobalt-60                                | U         | -0.00711 |        | 0.0685     | +/-0.0214 | 0.100 | pCi/g |         |          |      |        |      |
| Europium-152                             | U         | -0.0289  |        | 0.167      | +/-0.0518 | 0.200 | pCi/g |         |          |      |        |      |
| Lanthanum-140                            | U         | -0.0207  |        | 0.156      | +/-0.0486 | pCi/g |       |         |          |      |        |      |
| Lead-212                                 |           | 2.05     |        | 0.0897     | +/-0.132  | 0.100 | pCi/g |         |          |      |        |      |
| Lead-214                                 |           | 1.50     |        | 0.122      | +/-0.126  | 0.100 | pCi/g |         |          |      |        |      |
| Mercury-203                              | U         | -0.00322 |        | 0.0651     | +/-0.023  | 0.100 | pCi/g |         |          |      |        |      |
| Potassium-40                             |           | 27.2     |        | 0.636      | +/-1.50   | 1.00  | pCi/g |         |          |      |        |      |
| Radium-223                               | U         | -0.318   |        | 1.12       | +/-0.385  | pCi/g |       |         |          |      |        |      |
| Radium-224                               | UI        | 2.75     | R,R5a  | 1.02       | +/-0.537  | pCi/g |       |         |          |      |        |      |
| Radium-226                               |           | 1.33     |        | 0.124      | +/-0.118  | pCi/g |       |         |          |      |        |      |
| Radium-228                               |           | 1.96     |        | 0.212      | +/-0.224  | 0.500 | pCi/g |         |          |      |        |      |
| Ruthenium-106                            | U         | -0.0278  |        | 0.569      | +/-0.169  | 0.800 | pCi/g |         |          |      |        |      |
| Sodium-22                                | U         | 0.00217  |        | 0.0725     | +/-0.022  | 0.080 | pCi/g |         |          |      |        |      |
| Strontium-85                             | U         | 0.0425   |        | 0.0729     | +/-0.0237 | pCi/g |       |         |          |      |        |      |
| Thallium-208                             |           | 0.678    |        | 0.0642     | +/-0.0601 | 0.080 | pCi/g |         |          |      |        |      |



# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID:  
Sample ID:

RE12-10-7260  
244630010

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL    | TPU       | RL    | Units | DF | Analyst | Date | Time Batch | Mtd. |
|--|-----------|----------|-------|-----------|-------|-------|----|---------|------|------------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |          |       |           |       |       |    |         |      |            |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |       |           |       |       |    |         |      |            |      |
| Thorium-227                              | U         | -0.0889  | 0.614 | +/-0.192  |       | pCi/g |    |         |      |            |      |
| Thorium-231                              | U         | -0.318   | 1.12  | +/-0.385  |       | pCi/g |    |         |      |            |      |
| Thorium-234                              |           | 4.40     | 0.823 | +/-0.624  | 2.00  | pCi/g |    |         |      |            |      |
| Tin-113                                  | U         | -0.00896 | 0.075 | +/-0.0227 | 0.100 | pCi/g |    |         |      |            |      |
| Uranium-235                              |           | 0.327    | 0.310 | +/-0.112  | 0.500 | pCi/g |    |         |      |            |      |
| Yttrium-88                               | U         | -0.00688 | 0.073 | +/-0.0229 | 0.100 | pCi/g |    |         |      |            |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Am-05-RC Modified |
| 3      | DOE EML HASL-300, Pu-11-RC Modified |
| 4      | DOE EML HASL-300, U-02-RC Modified  |
| 5      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery% | Acceptable Limits |
|---------------------------|------------------------------|-----------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 87.1      | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 96.5      | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 50.3      | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7267  
Sample ID: 244630011  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 7.12%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU        | RL        | Units | DF    | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|----------|--------|------------|-----------|-------|-------|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |          |        |            |           |       |       |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |          |        |            |           |       |       |         |          |      |        |      |
| Americium-241                            | U         | 0.0012   | 0.0168 | +/-0.00109 | 0.050     | pCi/g |       | MXA1    | 01/22/10 | 1203 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |          |        |            |           |       |       |         |          |      |        |      |
| Plutonium-238                            | U         | 0.00     | 0.0165 | +/-0.00141 | 0.050     | pCi/g |       | MXA1    | 01/20/10 | 1637 | 941752 | 2    |
| Plutonium-239/240                        | U         | 0.000997 | 0.0188 | +/-0.00223 | 0.050     | pCi/g |       |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |          |        |            |           |       |       |         |          |      |        |      |
| Uranium-233/234                          |           | 0.928    | 0.103  | +/-0.0858  | 0.100     | pCi/g |       | MXA1    | 01/23/10 | 1120 | 941758 | 3    |
| Uranium-235/236                          |           | 0.082    | 0.0638 | +/-0.0201  | 0.100     | pCi/g |       |         |          |      |        |      |
| Uranium-238                              |           | 0.998    | 0.0596 | +/-0.0916  | 0.100     | pCi/g |       |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |            |           |       |       |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |            |           |       |       |         |          |      |        |      |
| Americium-241                            | U         | 0.0509   | 0.288  | +/-0.0875  | 0.200     | pCi/g |       | MXR1    | 01/23/10 | 1149 | 941639 | 4    |
| Bismuth-211                              | UI        | 5.20     | R,R5a  | 0.290      | +/-0.244  | pCi/g |       |         |          |      |        |      |
| Bismuth-214                              |           | 1.47     |        | 0.0861     | +/-0.096  | 0.200 | pCi/g |         |          |      |        |      |
| Cadmium-109                              | UI        | 4.81     | R,R5a  | 1.18       | +/-0.565  | pCi/g |       |         |          |      |        |      |
| Cerium-139                               | U         | -0.0314  | 0.0416 | +/-0.0122  | 0.050     | pCi/g |       |         |          |      |        |      |
| Cesium-134                               | UI        | 0.124    | R,R5a  | 0.0742     | +/-0.0271 | 0.100 | pCi/g |         |          |      |        |      |
| Cesium-137                               | U         | 0.0227   | 0.0566 | +/-0.0159  | 0.100     | pCi/g |       |         |          |      |        |      |
| Cobalt-60                                | U         | -0.00428 | 0.0553 | +/-0.0169  | 0.100     | pCi/g |       |         |          |      |        |      |
| Europium-152                             | U         | -0.0375  | 0.133  | +/-0.0449  | 0.200     | pCi/g |       |         |          |      |        |      |
| Lanthanum-140                            | U         | -0.05    | 0.0913 | +/-0.0365  | pCi/g     |       |       |         |          |      |        |      |
| Lead-212                                 |           | 2.15     | 0.0762 | +/-0.0913  | 0.100     | pCi/g |       |         |          |      |        |      |
| Lead-214                                 |           | 1.81     | 0.0958 | +/-0.0971  | 0.100     | pCi/g |       |         |          |      |        |      |
| Mercury-203                              | U         | 0.0519   | 0.0608 | +/-0.0169  | 0.100     | pCi/g |       |         |          |      |        |      |
| Potassium-40                             |           | 33.6     | 0.437  | +/-1.46    | 1.00      | pCi/g |       |         |          |      |        |      |
| Radium-223                               | U         | -0.412   | 0.924  | +/-0.331   | pCi/g     |       |       |         |          |      |        |      |
| Radium-224                               | UI        | 5.47     | R,R5a  | 0.866      | +/-0.493  | pCi/g |       |         |          |      |        |      |
| Radium-226                               |           | 1.47     | 0.0861 | +/-0.096   | pCi/g     |       |       |         |          |      |        |      |
| Radium-228                               |           | 2.12     | 0.174  | +/-0.186   | 0.500     | pCi/g |       |         |          |      |        |      |
| Ruthenium-106                            | U         | -0.0259  | 0.425  | +/-0.129   | 0.800     | pCi/g |       |         |          |      |        |      |
| Sodium-22                                | U         | -0.0347  | 0.0562 | +/-0.0182  | 0.080     | pCi/g |       |         |          |      |        |      |
| Strontium-85                             | UI        | 0.080    | R,R5a  | 0.0563     | +/-0.0168 | pCi/g |       |         |          |      |        |      |
| Thallium-208                             |           | 0.638    | 0.0443 | +/-0.0405  | 0.080     | pCi/g |       |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7267  
Sample ID: 244630011  
Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time Batch | Mtd. |
|--|-----------|--------|--------|-----------|-------|-------|----|---------|------|------------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |        |        |           |       |       |    |         |      |            |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |        |        |           |       |       |    |         |      |            |      |
| Thorium-227                              | U         | 0.170  | 0.546  | +/-0.156  |       | pCi/g |    |         |      |            |      |
| Thorium-231                              | U         | -0.412 | 0.924  | +/-0.331  |       | pCi/g |    |         |      |            |      |
| Thorium-234                              |           | 2.57   | 2.33   | +/-1.24   | 2.00  | pCi/g |    |         |      |            |      |
| Tin-113                                  | U         | 0.0199 | 0.0632 | +/-0.0178 | 0.100 | pCi/g |    |         |      |            |      |
| Uranium-235                              | U         | -0.023 | 0.325  | +/-0.0978 | 0.500 | pCi/g |    |         |      |            |      |
| Yttrium-88                               | U         | 0.015  | 0.0458 | +/-0.013  | 0.100 | pCi/g |    |         |      |            |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery% | Acceptable Limits |
|---------------------------|------------------------------|-----------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 89.6      | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 91.0      | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 89.8      | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7264  
Sample ID: 244630012  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 11%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU        | RL        | Units | DF    | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|----------|--------|------------|-----------|-------|-------|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |          |        |            |           |       |       |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |          |        |            |           |       |       |         |          |      |        |      |
| Americium-241                            | U         | 0.00345  | 0.0179 | +/-0.00243 | 0.050     | pCi/g |       | MXA1    | 01/22/10 | 1203 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |          |        |            |           |       |       |         |          |      |        |      |
| Plutonium-238                            | U         | 0.00     | 0.0168 | +/-0.00144 | 0.050     | pCi/g |       | MXA1    | 01/20/10 | 1637 | 941752 | 2    |
| Plutonium-239/240                        | U         | 0.0172   | 0.0192 | +/-0.00427 | 0.050     | pCi/g |       |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |          |        |            |           |       |       |         |          |      |        |      |
| Uranium-233/234                          |           | 1.22     | J+,R3b | 0.209      | +/-0.131  | 0.100 | pCi/g | MXA1    | 01/23/10 | 1120 | 941758 | 3    |
| Uranium-235/236                          | U         | 0.0918   |        | 0.130      | +/-0.0309 | 0.100 | pCi/g |         |          |      |        |      |
| Uranium-238                              |           | 1.88     | J+,R3b | 0.121      | +/-0.183  | 0.100 | pCi/g |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |            |           |       |       |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |            |           |       |       |         |          |      |        |      |
| Americium-241                            | U         | 0.134    |        | 0.249      | +/-0.0815 | 0.200 | pCi/g | MXR1    | 01/23/10 | 1229 | 941639 | 4    |
| Bismuth-211                              | UI        | 4.79     | R,R5a  | 0.355      | +/-0.264  |       | pCi/g |         |          |      |        |      |
| Bismuth-214                              |           | 1.29     |        | 0.122      | +/-0.104  | 0.200 | pCi/g |         |          |      |        |      |
| Cadmium-109                              | UI        | 3.91     | R,R5a  | 1.54       | +/-0.810  |       | pCi/g |         |          |      |        |      |
| Cerium-139                               | U         | -0.0275  |        | 0.0521     | +/-0.0165 | 0.050 | pCi/g |         |          |      |        |      |
| Cesium-134                               | U         | 0.0746   |        | 0.0942     | +/-0.0387 | 0.100 | pCi/g |         |          |      |        |      |
| Cesium-137                               |           | 0.236    |        | 0.0635     | +/-0.0499 | 0.100 | pCi/g |         |          |      |        |      |
| Cobalt-60                                | U         | 0.0132   |        | 0.0724     | +/-0.0214 | 0.100 | pCi/g |         |          |      |        |      |
| Europium-152                             | U         | -0.0108  |        | 0.170      | +/-0.0584 | 0.200 | pCi/g |         |          |      |        |      |
| Lanthanum-140                            | U         | -0.00507 |        | 0.142      | +/-0.0478 |       | pCi/g |         |          |      |        |      |
| Lead-212                                 |           | 2.15     |        | 0.101      | +/-0.101  | 0.100 | pCi/g |         |          |      |        |      |
| Lead-214                                 |           | 1.67     |        | 0.126      | +/-0.102  | 0.100 | pCi/g |         |          |      |        |      |
| Mercury-203                              | U         | 0.079    |        | 0.080      | +/-0.0248 | 0.100 | pCi/g |         |          |      |        |      |
| Potassium-40                             |           | 32.1     |        | 0.567      | +/-1.48   | 1.00  | pCi/g |         |          |      |        |      |
| Radium-223                               | U         | -1.16    |        | 1.15       | +/-0.380  |       | pCi/g |         |          |      |        |      |
| Radium-224                               | UI        | 5.03     | R,R5a  | 1.15       | +/-0.549  |       | pCi/g |         |          |      |        |      |
| Radium-226                               |           | 1.29     |        | 0.122      | +/-0.104  |       | pCi/g |         |          |      |        |      |
| Radium-228                               |           | 2.09     |        | 0.239      | +/-0.205  | 0.500 | pCi/g |         |          |      |        |      |
| Ruthenium-106                            | U         | -0.0594  |        | 0.564      | +/-0.174  | 0.800 | pCi/g |         |          |      |        |      |
| Sodium-22                                | U         | -0.0125  |        | 0.0823     | +/-0.0256 | 0.080 | pCi/g |         |          |      |        |      |
| Strontium-85                             | UI        | 0.111    | R,R5a  | 0.076      | +/-0.0222 |       | pCi/g |         |          |      |        |      |
| Thallium-208                             |           | 0.570    |        | 0.0626     | +/-0.0456 | 0.080 | pCi/g |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID:  
Sample ID:

RE12-10-7264  
244630012

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time Batch | Mtd. |
|--|-----------|----------|--------|-----------|-------|-------|----|---------|------|------------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |           |       |       |    |         |      |            |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |           |       |       |    |         |      |            |      |
| Thorium-227                              | U         | -0.0544  | 0.693  | +/-0.216  |       | pCi/g |    |         |      |            |      |
| Thorium-231                              | U         | -1.16    | 1.15   | +/-0.380  |       | pCi/g |    |         |      |            |      |
| Thorium-234                              | U         | 1.93     | 2.12   | +/-0.847  | 2.00  | pCi/g |    |         |      |            |      |
| Tin-113                                  | U         | 0.00499  | 0.0802 | +/-0.0238 | 0.100 | pCi/g |    |         |      |            |      |
| Uranium-235                              | U         | 0.121    | 0.393  | +/-0.117  | 0.500 | pCi/g |    |         |      |            |      |
| Yttrium-88                               | U         | -0.00243 | 0.0575 | +/-0.0181 | 0.100 | pCi/g |    |         |      |            |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery% | Acceptable Limits |
|---------------------------|------------------------------|-----------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 91.4      | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 89.4      | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 42.9 *    | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7270  
Sample ID: 244630013  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 12.5%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result  | DL     | TPU        | RL        | Units | DF | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|---------|--------|------------|-----------|-------|----|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |         |        |            |           |       |    |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |         |        |            |           |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.00868 | 0.0223 | +/-0.00342 | 0.050     | pCi/g |    | MXA1    | 01/22/10 | 1203 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |         |        |            |           |       |    |         |          |      |        |      |
| Plutonium-238                            | U         | 0.00291 | 0.016  | +/-0.00168 | 0.050     | pCi/g |    | MXA1    | 01/20/10 | 1637 | 941752 | 2    |
| Plutonium-239/240                        |           | 0.0261  | 0.0183 | +/-0.00537 | 0.050     | pCi/g |    |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |         |        |            |           |       |    |         |          |      |        |      |
| Uranium-233/234                          |           | 2.16    | 0.149  | +/-0.188   | 0.100     | pCi/g |    | MXA1    | 01/23/10 | 1116 | 941758 | 3    |
| Uranium-235/236                          |           | 0.161   | 0.0927 | +/-0.0352  | 0.100     | pCi/g |    |         |          |      |        |      |
| Uranium-238                              |           | 3.10    | 0.0866 | +/-0.257   | 0.100     | pCi/g |    |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |         |        |            |           |       |    |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |         |        |            |           |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.102   | 0.362  | +/-0.122   | 0.200     | pCi/g |    | MXR1    | 01/23/10 | 1405 | 941639 | 4    |
| Bismuth-211                              | UI        | 4.76    | R,R5a  | 0.452      | +/-0.398  | pCi/g |    |         |          |      |        |      |
| Bismuth-214                              |           | 1.42    |        | 0.164      | +/-0.142  | pCi/g |    |         |          |      |        |      |
| Cadmium-109                              | UI        | 4.63    | R,R5a  | 1.65       | +/-0.777  | pCi/g |    |         |          |      |        |      |
| Cerium-139                               | U         | -0.0121 |        | 0.0626     | +/-0.0189 | pCi/g |    |         |          |      |        |      |
| Cesium-134                               | U         | 0.0544  |        | 0.120      | +/-0.0345 | pCi/g |    |         |          |      |        |      |
| Cesium-137                               |           | 0.598   |        | 0.0923     | +/-0.0595 | pCi/g |    |         |          |      |        |      |
| Cobalt-60                                | U         | 0.00586 |        | 0.101      | +/-0.0303 | pCi/g |    |         |          |      |        |      |
| Europium-152                             | U         | -0.0998 |        | 0.223      | +/-0.0781 | pCi/g |    |         |          |      |        |      |
| Lanthanum-140                            | U         | -0.10   |        | 0.124      | +/-0.0609 | pCi/g |    |         |          |      |        |      |
| Lead-212                                 |           | 1.90    |        | 0.119      | +/-0.123  | pCi/g |    |         |          |      |        |      |
| Lead-214                                 |           | 1.66    |        | 0.163      | +/-0.145  | pCi/g |    |         |          |      |        |      |
| Mercury-203                              | U         | 0.102   |        | 0.103      | +/-0.029  | pCi/g |    |         |          |      |        |      |
| Potassium-40                             |           | 31.7    |        | 0.651      | +/-1.85   | pCi/g |    |         |          |      |        |      |
| Radium-223                               | U         | 0.725   |        | 1.56       | +/-0.519  | pCi/g |    |         |          |      |        |      |
| Radium-224                               | UI        | 4.35    | R,R5a  | 1.35       | +/-0.770  | pCi/g |    |         |          |      |        |      |
| Radium-226                               |           | 1.42    |        | 0.164      | +/-0.142  | pCi/g |    |         |          |      |        |      |
| Radium-228                               |           | 1.60    |        | 0.303      | +/-0.196  | pCi/g |    |         |          |      |        |      |
| Ruthenium-106                            | U         | -0.0694 |        | 0.695      | +/-0.212  | pCi/g |    |         |          |      |        |      |
| Sodium-22                                | U         | 0.00288 |        | 0.106      | +/-0.0319 | pCi/g |    |         |          |      |        |      |
| Strontium-85                             | UI        | 0.0986  | R,R5a  | 0.0943     | +/-0.0292 | pCi/g |    |         |          |      |        |      |
| Thallium-208                             |           | 0.546   |        | 0.0733     | +/-0.0575 | pCi/g |    |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7270  
Sample ID: 244630013  
Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result  | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time Batch | Mtd. |
|--|-----------|---------|--------|-----------|-------|-------|----|---------|------|------------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |         |        |           |       |       |    |         |      |            |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |         |        |           |       |       |    |         |      |            |      |
| Thorium-227                              | U         | 0.0729  | 0.851  | +/-0.256  |       | pCi/g |    |         |      |            |      |
| Thorium-231                              | U         | 0.725   | 1.56   | +/-0.519  |       | pCi/g |    |         |      |            |      |
| Thorium-234                              | U         | 1.38    | 2.98   | +/-1.48   | 2.00  | pCi/g |    |         |      |            |      |
| Tin-113                                  | U         | -0.0311 | 0.101  | +/-0.0324 | 0.100 | pCi/g |    |         |      |            |      |
| Uranium-235                              | U         | 0.0185  | 0.468  | +/-0.142  | 0.500 | pCi/g |    |         |      |            |      |
| Yttrium-88                               | U         | 0.00233 | 0.0851 | +/-0.0262 | 0.100 | pCi/g |    |         |      |            |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery% | Acceptable Limits |
|---------------------------|------------------------------|-----------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 71.1      | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 93.6      | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 71.4      | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.

**GEL LABORATORIES LLC**

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis**

Company : Los Alamos National Laboratory  
 Address : PO Box 1663  
 TA-03, SM271, Drop Pt. 02U, Rm  
 Los Alamos, New Mexico 87545  
 Contact: Ms. Joylene Valdez  
 Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7269  
 Sample ID: 244630014  
 Matrix: R  
 Collect Date: 08-JAN-10  
 Receive Date: 14-JAN-10  
 Collector: Client  
 Moisture: 6%

Project: LANL01004  
 Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU         | RL        | Units | DF    | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|----------|--------|-------------|-----------|-------|-------|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |          |        |             |           |       |       |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |          |        |             |           |       |       |         |          |      |        |      |
| Americium-241                            | U         | 0.00356  | 0.0181 | +/-0.00247  | 0.050     | pCi/g |       | MXA1    | 01/22/10 | 1204 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |          |        |             |           |       |       |         |          |      |        |      |
| Plutonium-238                            | U         | 0.00     | 0.0158 | +/-0.000957 | 0.050     | pCi/g |       | MXA1    | 01/20/10 | 1637 | 941752 | 2    |
| Plutonium-239/240                        | U         | 0.00191  | 0.0181 | +/-0.00191  | 0.050     | pCi/g |       |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |          |        |             |           |       |       |         |          |      |        |      |
| Uranium-233/234                          |           | 1.32     | 0.132  | +/-0.120    | 0.100     | pCi/g |       | MXA1    | 01/23/10 | 1116 | 941758 | 3    |
| Uranium-235/236                          |           | 0.105    | 0.0818 | +/-0.0247   | 0.100     | pCi/g |       |         |          |      |        |      |
| Uranium-238                              |           | 1.16     | 0.0764 | +/-0.109    | 0.100     | pCi/g |       |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |             |           |       |       |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |             |           |       |       |         |          |      |        |      |
| Americium-241                            | U         | -0.00946 | 0.354  | +/-0.110    | 0.200     | pCi/g |       | MXR1    | 01/23/10 | 1405 | 941639 | 4    |
| Bismuth-211                              | UI        | 5.99     | R,R5a  | 0.409       | +/-0.450  | pCi/g |       |         |          |      |        |      |
| Bismuth-214                              |           | 1.79     |        | 0.133       | +/-0.145  | 0.200 | pCi/g |         |          |      |        |      |
| Cadmium-109                              | UI        | 5.81     | R,R5a  | 1.39        | +/-0.726  | pCi/g |       |         |          |      |        |      |
| Cerium-139                               | U         | 0.000893 |        | 0.0608      | +/-0.0181 | 0.050 | pCi/g |         |          |      |        |      |
| Cesium-134                               | UI        | 0.167    | R,R5a  | 0.116       | +/-0.0407 | 0.100 | pCi/g |         |          |      |        |      |
| Cesium-137                               |           | 0.126    |        | 0.074       | +/-0.0296 | 0.100 | pCi/g |         |          |      |        |      |
| Cobalt-60                                | U         | 0.0121   |        | 0.0756      | +/-0.0223 | 0.100 | pCi/g |         |          |      |        |      |
| Europium-152                             | U         | -0.075   |        | 0.190       | +/-0.0583 | 0.200 | pCi/g |         |          |      |        |      |
| Lanthanum-140                            | U         | -0.0935  |        | 0.140       | +/-0.049  | pCi/g |       |         |          |      |        |      |
| Lead-212                                 |           | 2.45     |        | 0.108       | +/-0.169  | 0.100 | pCi/g |         |          |      |        |      |
| Lead-214                                 |           | 2.08     |        | 0.143       | +/-0.166  | 0.100 | pCi/g |         |          |      |        |      |
| Mercury-203                              | U         | -0.0389  |        | 0.0795      | +/-0.0241 | 0.100 | pCi/g |         |          |      |        |      |
| Potassium-40                             |           | 35.7     |        | 0.605       | +/-2.01   | 1.00  | pCi/g |         |          |      |        |      |
| Radium-223                               | U         | -0.259   |        | 1.36        | +/-0.463  | pCi/g |       |         |          |      |        |      |
| Radium-224                               | UI        | 6.54     | R,R5a  | 1.23        | +/-0.843  | pCi/g |       |         |          |      |        |      |
| Radium-226                               |           | 1.79     |        | 0.133       | +/-0.145  | pCi/g |       |         |          |      |        |      |
| Radium-228                               |           | 2.14     |        | 0.256       | +/-0.225  | 0.500 | pCi/g |         |          |      |        |      |
| Ruthenium-106                            | U         | 0.0963   |        | 0.640       | +/-0.185  | 0.800 | pCi/g |         |          |      |        |      |
| Sodium-22                                | U         | 0.0348   |        | 0.0953      | +/-0.0274 | 0.080 | pCi/g |         |          |      |        |      |
| Strontium-85                             | U         | 0.00219  |        | 0.0709      | +/-0.0248 | pCi/g |       |         |          |      |        |      |
| Thallium-208                             |           | 0.672    |        | 0.075       | +/-0.058  | 0.080 | pCi/g |         |          |      |        |      |



# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID:  
Sample ID:

RE12-10-7269  
244630014

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result  | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time Batch | Mtd. |
|--|-----------|---------|--------|-----------|-------|-------|----|---------|------|------------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |         |        |           |       |       |    |         |      |            |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |         |        |           |       |       |    |         |      |            |      |
| Thorium-227                              | U         | 0.379   | 0.830  | +/-0.234  |       | pCi/g |    |         |      |            |      |
| Thorium-231                              | U         | -0.259  | 1.36   | +/-0.463  |       | pCi/g |    |         |      |            |      |
| Thorium-234                              | U         | 1.71    | 2.93   | +/-1.09   | 2.00  | pCi/g |    |         |      |            |      |
| Tin-113                                  | U         | 0.0459  | 0.0919 | +/-0.0262 | 0.100 | pCi/g |    |         |      |            |      |
| Uranium-235                              | U         | 0.021   | 0.436  | +/-0.129  | 0.500 | pCi/g |    |         |      |            |      |
| Yttrium-88                               | U         | 0.00723 | 0.0671 | +/-0.0197 | 0.100 | pCi/g |    |         |      |            |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery% | Acceptable Limits |
|---------------------------|------------------------------|-----------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 88.9      | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 95.6      | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 82.2      | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7283  
Sample ID: 244630015  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 18.2%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU        | RL        | Units | DF    | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|----------|--------|------------|-----------|-------|-------|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |          |        |            |           |       |       |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |          |        |            |           |       |       |         |          |      |        |      |
| Americium-241                            | U         | 0.0138   | 0.019  | +/-0.00401 | 0.050     | pCi/g |       | MXA1    | 01/22/10 | 1204 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |          |        |            |           |       |       |         |          |      |        |      |
| Plutonium-238                            | U         | -0.00103 | 0.0169 | +/-0.00145 | 0.050     | pCi/g |       | MXA1    | 01/20/10 | 1637 | 941752 | 2    |
| Plutonium-239/240                        |           | 0.0308   | 0.0194 | +/-0.006   | 0.050     | pCi/g |       |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |          |        |            |           |       |       |         |          |      |        |      |
| Uranium-233/234                          |           | 1.88     | 0.199  | +/-0.180   | 0.100     | pCi/g |       | MXA1    | 01/23/10 | 1116 | 941758 | 3    |
| Uranium-235/236                          |           | 0.143    | 0.124  | +/-0.0371  | 0.100     | pCi/g |       |         |          |      |        |      |
| Uranium-238                              |           | 3.11     | 0.115  | +/-0.274   | 0.100     | pCi/g |       |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |            |           |       |       |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |            |           |       |       |         |          |      |        |      |
| Americium-241                            | U         | 0.106    | 0.570  | +/-0.185   | 0.200     | pCi/g |       | MXR1    | 01/23/10 | 1406 | 941639 | 4    |
| Bismuth-211                              | UI        | 4.14     | R,R5a  | 0.428      | +/-0.338  | pCi/g |       |         |          |      |        |      |
| Bismuth-214                              |           | 1.19     |        | 0.144      | +/-0.0976 | 0.200 | pCi/g |         |          |      |        |      |
| Cadmium-109                              | UI        | 2.83     | R,R5a  | 1.85       | +/-0.785  | pCi/g |       |         |          |      |        |      |
| Cerium-139                               | U         | -0.0111  | 0.0665 | +/-0.0203  | 0.050     | pCi/g |       |         |          |      |        |      |
| Cesium-134                               | U         | 0.0848   | 0.113  | +/-0.0409  | 0.100     | pCi/g |       |         |          |      |        |      |
| Cesium-137                               |           | 0.643    | 0.0725 | +/-0.0592  | 0.100     | pCi/g |       |         |          |      |        |      |
| Cobalt-60                                | U         | 0.0401   | 0.0819 | +/-0.0229  | 0.100     | pCi/g |       |         |          |      |        |      |
| Europium-152                             | U         | -0.00958 | 0.220  | +/-0.0959  | 0.200     | pCi/g |       |         |          |      |        |      |
| Lanthanum-140                            | U         | -0.0566  | 0.170  | +/-0.0552  |           | pCi/g |       |         |          |      |        |      |
| Lead-212                                 |           | 1.88     | 0.124  | +/-0.107   | 0.100     | pCi/g |       |         |          |      |        |      |
| Lead-214                                 |           | 1.44     | 0.149  | +/-0.123   | 0.100     | pCi/g |       |         |          |      |        |      |
| Mercury-203                              | U         | 0.0219   | 0.0963 | +/-0.0277  | 0.100     | pCi/g |       |         |          |      |        |      |
| Potassium-40                             |           | 26.0     | 0.573  | +/-1.38    | 1.00      | pCi/g |       |         |          |      |        |      |
| Radium-223                               | U         | -0.0194  | 1.48   | +/-0.502   |           | pCi/g |       |         |          |      |        |      |
| Radium-224                               | UI        | 5.97     | R,R5a  | 1.41       | +/-0.969  | pCi/g |       |         |          |      |        |      |
| Radium-226                               |           | 1.19     | 0.144  | +/-0.0976  |           | pCi/g |       |         |          |      |        |      |
| Radium-228                               |           | 1.90     | 0.280  | +/-0.202   | 0.500     | pCi/g |       |         |          |      |        |      |
| Ruthenium-106                            | U         | -0.113   | 0.646  | +/-0.203   | 0.800     | pCi/g |       |         |          |      |        |      |
| Sodium-22                                | U         | -0.00957 | 0.0914 | +/-0.0287  | 0.080     | pCi/g |       |         |          |      |        |      |
| Strontium-85                             | UI        | 0.105    | R,R5a  | 0.0849     | +/-0.0251 | pCi/g |       |         |          |      |        |      |
| Thallium-208                             |           | 0.558    | 0.0708 | +/-0.0494  | 0.080     | pCi/g |       |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID:  
Sample ID:

RE12-10-7283  
244630015

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result  | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time Batch | Mtd. |
|--|-----------|---------|--------|-----------|-------|-------|----|---------|------|------------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |         |        |           |       |       |    |         |      |            |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |         |        |           |       |       |    |         |      |            |      |
| Thorium-227                              | U         | 0.0863  | 0.858  | +/-0.248  |       | pCi/g |    |         |      |            |      |
| Thorium-231                              | U         | -0.0194 | 1.48   | +/-0.502  |       | pCi/g |    |         |      |            |      |
| Thorium-234                              |           | 4.47    | 4.34   | +/-1.92   | 2.00  | pCi/g |    |         |      |            |      |
| Tin-113                                  | U         | -0.0323 | 0.0959 | +/-0.0295 | 0.100 | pCi/g |    |         |      |            |      |
| Uranium-235                              | U         | 0.0989  | 0.479  | +/-0.144  | 0.500 | pCi/g |    |         |      |            |      |
| Yttrium-88                               | U         | -0.0146 | 0.0629 | +/-0.0207 | 0.100 | pCi/g |    |         |      |            |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery% | Acceptable Limits |
|---------------------------|------------------------------|-----------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 85.8      | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 94.1      | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 53.1      | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.

**GEL LABORATORIES LLC**

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis**

Company : Los Alamos National Laboratory  
 Address : PO Box 1663  
 TA-03, SM271, Drop Pt. 02U, Rm  
 Los Alamos, New Mexico 87545  
 Contact: Ms. Joylene Valdez  
 Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7282  
 Sample ID: 244630016  
 Matrix: R  
 Collect Date: 08-JAN-10  
 Receive Date: 14-JAN-10  
 Collector: Client  
 Moisture: 6.2%

Project: LANL01004  
 Client ID: LANL010

| Parameter                                | Qualifier | Result    | DL     | TPU        | RL        | Units | DF | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|-----------|--------|------------|-----------|-------|----|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |           |        |            |           |       |    |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |           |        |            |           |       |    |         |          |      |        |      |
| Americium-241                            | U         | -0.000764 | 0.0178 | +/-0.00105 | 0.050     | pCi/g |    | MXA1    | 01/22/10 | 1204 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |           |        |            |           |       |    |         |          |      |        |      |
| Plutonium-238                            | U         | 0.00108   | 0.0179 | +/-0.00108 | 0.050     | pCi/g |    | MXA1    | 01/20/10 | 1637 | 941752 | 2    |
| Plutonium-239/240                        | U         | 0.00324   | 0.0204 | +/-0.00188 | 0.050     | pCi/g |    |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |           |        |            |           |       |    |         |          |      |        |      |
| Uranium-233/234                          |           | 1.02      | 0.126  | +/-0.0975  | 0.100     | pCi/g |    | MXA1    | 01/23/10 | 1116 | 941758 | 3    |
| Uranium-235/236                          |           | 0.0951    | 0.0779 | +/-0.0229  | 0.100     | pCi/g |    |         |          |      |        |      |
| Uranium-238                              |           | 1.01      | 0.0728 | +/-0.0967  | 0.100     | pCi/g |    |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |           |        |            |           |       |    |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |           |        |            |           |       |    |         |          |      |        |      |
| Americium-241                            | U         | -0.0182   | 0.321  | +/-0.0952  | 0.200     | pCi/g |    | MXR1    | 01/23/10 | 1406 | 941639 | 4    |
| Bismuth-211                              | UI        | 5.25      | R,R5a  | 0.267      | +/-0.262  | pCi/g |    |         |          |      |        |      |
| Bismuth-214                              |           | 1.44      |        | 0.0983     | +/-0.094  | pCi/g |    |         |          |      |        |      |
| Cadmium-109                              | UI        | 3.10      | R,R5a  | 1.25       | +/-0.564  | pCi/g |    |         |          |      |        |      |
| Cerium-139                               | U         | -0.00265  |        | 0.0463     | +/-0.0132 | pCi/g |    |         |          |      |        |      |
| Cesium-134                               | UI        | 0.121     | R,R5a  | 0.0763     | +/-0.0313 | pCi/g |    |         |          |      |        |      |
| Cesium-137                               | U         | -0.0339   |        | 0.0492     | +/-0.0154 | pCi/g |    |         |          |      |        |      |
| Cobalt-60                                | U         | -0.0136   |        | 0.0513     | +/-0.0162 | pCi/g |    |         |          |      |        |      |
| Europium-152                             | U         | 0.0268    |        | 0.128      | +/-0.0521 | pCi/g |    |         |          |      |        |      |
| Lanthanum-140                            | U         | 0.0815    |        | 0.113      | +/-0.0331 | pCi/g |    |         |          |      |        |      |
| Lead-212                                 |           | 2.19      |        | 0.0802     | +/-0.094  | pCi/g |    |         |          |      |        |      |
| Lead-214                                 |           | 1.83      |        | 0.093      | +/-0.103  | pCi/g |    |         |          |      |        |      |
| Mercury-203                              | U         | 0.027     |        | 0.0616     | +/-0.0202 | pCi/g |    |         |          |      |        |      |
| Potassium-40                             |           | 37.6      |        | 0.458      | +/-1.63   | pCi/g |    |         |          |      |        |      |
| Radium-223                               | U         | -0.48     |        | 0.885      | +/-0.325  | pCi/g |    |         |          |      |        |      |
| Radium-224                               | UI        | 6.44      | R,R5a  | 0.912      | +/-0.632  | pCi/g |    |         |          |      |        |      |
| Radium-226                               |           | 1.44      |        | 0.0983     | +/-0.094  | pCi/g |    |         |          |      |        |      |
| Radium-228                               |           | 1.89      |        | 0.193      | +/-0.186  | pCi/g |    |         |          |      |        |      |
| Ruthenium-106                            | U         | 0.216     |        | 0.459      | +/-0.133  | pCi/g |    |         |          |      |        |      |
| Sodium-22                                | U         | -0.0464   |        | 0.061      | +/-0.0202 | pCi/g |    |         |          |      |        |      |
| Strontium-85                             | UI        | 0.096     | R,R5a  | 0.0629     | +/-0.0189 | pCi/g |    |         |          |      |        |      |
| Thallium-208                             |           | 0.697     |        | 0.0479     | +/-0.0445 | pCi/g |    |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID:  
Sample ID:

RE12-10-7282  
244630016

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result  | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time Batch | Mtd. |
|--|-----------|---------|--------|-----------|-------|-------|----|---------|------|------------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |         |        |           |       |       |    |         |      |            |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |         |        |           |       |       |    |         |      |            |      |
| Thorium-227                              | U         | 0.0968  | 0.581  | +/-0.170  |       | pCi/g |    |         |      |            |      |
| Thorium-231                              | U         | -0.48   | 0.885  | +/-0.325  |       | pCi/g |    |         |      |            |      |
| Thorium-234                              | U         | 1.41    | 2.58   | +/-0.969  | 2.00  | pCi/g |    |         |      |            |      |
| Tin-113                                  | U         | -0.0083 | 0.0656 | +/-0.0193 | 0.100 | pCi/g |    |         |      |            |      |
| Uranium-235                              | U         | 0.0233  | 0.345  | +/-0.105  | 0.500 | pCi/g |    |         |      |            |      |
| Yttrium-88                               | U         | 0.0034  | 0.0436 | +/-0.0131 | 0.100 | pCi/g |    |         |      |            |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery% | Acceptable Limits |
|---------------------------|------------------------------|-----------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 90.7      | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 87.8      | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 80.4      | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.

Tuesday, January 12, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1227

LOS ALAMOS

REQUEST NUMBER: 10-1227

NATIONAL LABORATORY

ATTN: Valerie Davis

TURNAROUND/REPORT DUE: 2/11/2010

General Engineering Laboratories, Inc.,  
Charleston, SC.

TURNAROUND REQ'D: 30

2040 Savage Rd

Charleston, SC 29407

LAB REQUEST COMMENTS:

2446.30%

| SAMPLE ID    | CTNR | CTNR DESC | ORDER                   | PRESERV | MATRIX |
|--------------|------|-----------|-------------------------|---------|--------|
| RE12-10-7262 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7266 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7258 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7268 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7265 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7261 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7259 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7263 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7271 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7260 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7267 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7264 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7270 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7269 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7283 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7282 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |

Relinquished By:

Date

Time

Received By:

Date

Time

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Received for DISPOSAL By:

Date

Time

Remarks:

Tuesday, January 12, 2010  
**LOS ALAMOS**  
NATIONAL LABORATORY

ATTN: Valerie Davis  
General Engineering Laboratories, Inc., Charleston, SC.  
2040 Savage Rd  
Charleston, SC 29407

These Samples are on:  
LANL Request Number: 10-1227  
Per Agreement Number: 126310011  
Project Cost Code: MR3A05529E00

Please analyze the enclosed samples  
according to the schedule indicated:

SHIP DATE: 1/12/2010  
TURNAROUND/REPORT DUE: 2/11/2010  
TURNAROUND REQ'D: 30 Days

RAD SCREENING: Yes, Below Background  
LAB REQUEST COMMENTS:

LANL ER SMO CONTACT:  
Signature: 

| PRIORITY  | METHOD CODE | CNTNR | SAMPLE ID    | SAMPLE MATRIX | DATE SAMPLED | SPECIAL INSTRUCTIONS |
|-----------|-------------|-------|--------------|---------------|--------------|----------------------|
| EPA:901.1 |             |       |              |               |              |                      |
|           |             | 1     | RE12-10-7258 | R             | 1/8/2010     |                      |
|           |             | 1     | RE12-10-7259 | R             | 1/8/2010     |                      |
|           |             | 1     | RE12-10-7260 | R             | 1/8/2010     |                      |
|           |             | 1     | RE12-10-7261 | R             | 1/8/2010     |                      |
|           |             | 1     | RE12-10-7262 | R             | 1/8/2010     |                      |
|           |             | 1     | RE12-10-7263 | R             | 1/8/2010     |                      |
|           |             | 1     | RE12-10-7264 | R             | 1/8/2010     |                      |
|           |             | 1     | RE12-10-7265 | R             | 1/8/2010     |                      |
|           |             | 1     | RE12-10-7266 | R             | 1/8/2010     |                      |

Tuesday, January 12, 2010

| PRIORITY | METHOD CODE     | CNTNR | SAMPLE ID    | SAMPLE MATRIX | DATE SAMPLED | SPECIAL INSTRUCTIONS |
|----------|-----------------|-------|--------------|---------------|--------------|----------------------|
|          | EPA-901.1       | 1     | RE12-10-7267 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7268 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7269 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7270 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7271 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7282 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7283 | R             | 1/8/2010     |                      |
|          | HASL-300-AM-241 | 1     | RE12-10-7258 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7259 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7260 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7261 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7262 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7263 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7264 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7265 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7266 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7267 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7268 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7269 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7270 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7271 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7282 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7283 | R             | 1/8/2010     |                      |
|          | HASL-300-ISOPU  | 1     | RE12-10-7258 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7259 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7260 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7261 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7262 | R             | 1/8/2010     |                      |



Tuesday, January 12, 2010

| PRIORITY | METHOD CODE   | CNTNR | SAMPLE ID    | SAMPLE MATRIX | DATE SAMPLED | SPECIAL INSTRUCTIONS |
|----------|---------------|-------|--------------|---------------|--------------|----------------------|
|          | HASL-300:ISOU | 1     | RE12-10-7263 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7264 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7265 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7266 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7267 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7268 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7269 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7270 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7271 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7282 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7283 | R             | 1/8/2010     |                      |
|          | HASL-300:ISOU | 1     | RE12-10-7258 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7259 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7260 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7261 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7262 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7263 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7264 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7265 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7266 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7267 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7268 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7269 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7270 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7271 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7282 | R             | 1/8/2010     |                      |
|          |               | 1     | RE12-10-7283 | R             | 1/8/2010     |                      |



Laboratories LLC

a member of **The GEL Group** INC



PO Box 30712 Charleston, SC 29417  
2040 Savage Road Charleston, SC 29407

P 843.556.8171 F 843.766.1178

January 15, 2010

[www.gel.com](http://www.gel.com)

Ms. Joylene Valdez  
Los Alamos National Laboratory  
PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm111  
Los Alamos, New Mexico 87545

Re: LANL ER Project  
Work Order: 244630  
SDG: 10-1227

Dear Ms. Valdez:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on January 14, 2010, and analyzed for Radiochemistry. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4485.

Sincerely,

Valerie Davis  
Project Manager

Purchase Order: 72733-001-09  
Chain of Custody: 10-1227  
Enclosures

**Los Alamos National Laboratory (72733-001-09)**  
**LANL ER Project**  
**Work Order #: 244630**  
**SDG: 10-1227**

## TABLE OF CONTENTS

|  |      |
|--|------|
| Case Narrative.....                                | 1    |
| Chain of Custody and Supporting Documentation..... | 5    |
| Data Review Qualifer Flag Definition Sheet.....    | 15   |
| Radiological Analysis.....                         | 17   |
| Sample Data Summary.....                           | 29   |
| Quality Control Data.....                          | 79   |
| Raw Data.....                                      | 86   |
| Background and Efficiency Data.....                | 1014 |
| Standards Data.....                                | 1213 |
| Runlogs.....                                       | 1245 |

# Case Narrative

**Case Narrative for  
Los Alamos National Laboratory (72733-001-09)  
LANL ER Project  
Workorder #: 244630  
SDG # : 10-1227**

**January 15, 2010**

**Laboratory Identification:**

GEL Laboratories LLC  
2040 Savage Road  
Charleston, South Carolina 29407  
(843) 556-8171

**Summary**

**Sample receipt** The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on January 14, 2010 for analysis. The samples were prepared/analyzed within the required holding time. Shipping container temperatures were checked, documented, and within specifications. The samples were screened according to GEL Standard Operating Procedure. The COC was received on 1/13/10 without containers. Los Alamos was notified and the containers were received on 1/14/10. Please see attached e-mail. All sample containers arrived without any visible signs of tampering or breakage. Containers were checked for pH, where appropriate, and matched the preservative as documented on the accompanying chain of custody. The containers for radiochemistry were received at 10,12,13C temperatures. Shipping container temperature was within specification (0 - 6C).

**Sample Identification** The laboratory received the following samples:

| <b><u>Laboratory ID</u></b> | <b><u>Client ID</u></b> |
|-----------------------------|-------------------------|
| 244630001                   | RE12-10-7262            |
| 244630002                   | RE12-10-7266            |
| 244630003                   | RE12-10-7258            |
| 244630004                   | RE12-10-7268            |
| 244630005                   | RE12-10-7265            |
| 244630006                   | RE12-10-7261            |
| 244630007                   | RE12-10-7259            |
| 244630008                   | RE12-10-7263            |
| 244630009                   | RE12-10-7271            |
| 244630010                   | RE12-10-7260            |
| 244630011                   | RE12-10-7267            |
| 244630012                   | RE12-10-7264            |
| 244630013                   | RE12-10-7270            |
| 244630014                   | RE12-10-7269            |
| 244630015                   | RE12-10-7283            |
| 244630016                   | RE12-10-7282            |

**Case Narrative**

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

**Data Package** The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Radiochemistry.

I certify that this data report is in compliance with the terms and conditions of the subcontract and task order, both technically and for completeness, for other than the conditions detailed in the attached case narrative.

*Valerie Davis*

Valerie Davis

Project Manager

**List of current GEL Certifications as of 15 January 2010**

| <b>State</b>              | <b>Certification</b> |
|---------------------------|----------------------|
| Arizona                   | AZ0668               |
| Arkansas                  | 88-0651              |
| CLIA                      | 42D0904046           |
| California - NELAP        | 01151CA              |
| Colorado                  | GEL                  |
| Connecticut               | PH-0169              |
| Dept. of Navy             | NFESC 413            |
| EPA Region 5              | WG-15J               |
| Florida - NELAP           | E87156               |
| Georgia                   | E87156 (FL/NELAP)    |
| Georgia DW                | 967                  |
| Hawaii                    | N/A                  |
| ISO 17025                 | 2567.01              |
| Idaho                     | SC00012              |
| Illinois - NELAP          | 200029               |
| Indiana                   | C-SC-01              |
| Kansas - NELAP            | E-10332              |
| Kentucky                  | 90129                |
| Louisiana - NELAP         | 03046                |
| Maryland                  | 270                  |
| Massachusetts             | M-SC012              |
| Nevada                    | SC00012              |
| New Jersey - NELAP        | SC002                |
| New Mexico                | FL NELAP E87156      |
| New York - NELAP          | 11501                |
| North Carolina            | 233                  |
| North Carolina DW         | 45709                |
| Oklahoma                  | 9904                 |
| Pennsylvania - NELAP      | 68-00485             |
| South Carolina            | 10120001/10120002    |
| Tennessee                 | TN 02934             |
| Texas - NELAP             | T104704235-07B-TX    |
| U.S. Dept. of Agriculture | S-52597              |
| Utah - NELAP              | GEL                  |
| Vermont                   | VT87156              |
| Virginia                  | 00151                |
| Washington                | C1641                |



# **Chain of Custody and Supporting Documentation**

Tuesday, January 12, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1227

LOS ALAMOS

REQUEST NUMBER: 10-1227

NATIONAL LABORATORY

ATTN: Valerie Davis

TURNAROUND/REPORT DUE: 2/11/2010

General Engineering Laboratories, Inc.,  
Charleston, SC.

TURNAROUND REQ'D: 30

2040 Savage Rd

Charleston, SC 29407

LAB REQUEST COMMENTS:

2446.30%

| SAMPLE ID    | CTNR | CTNR DESC | ORDER                   | PRESERV | MATRIX |
|--------------|------|-----------|-------------------------|---------|--------|
| RE12-10-7262 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7266 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7258 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7268 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7265 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7261 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7259 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7263 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7271 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7260 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7267 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7264 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7270 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7269 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7283 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |
| RE12-10-7282 | 1    | POLY      | AM241+GS+ISOPU+ISO<br>U | None    | R      |

Relinquished By:

Date

Time

Received By:

Date

Time

Printer Name

Signature

Printer Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Received for DISPOSAL By:

Date

Time

Remarks:

Tuesday, January 12, 2010

**LOS ALAMOS**  
NATIONAL LABORATORY

ATTN: Valerie Davis

General Engineering Laboratories, Inc., Charleston, SC.

2040 Savage Rd

Charleston, SC 29407

Please analyse the enclosed samples  
according to the schedule indicated:

**SHIP DATE: 1/12/2010**

**TURNAROUND/REPORT DUE: 2/11/2010**

**TURNAROUND REQ'D: 30 Days**

**RAD SCREENING: Yes, Below Background**

**LAB REQUEST COMMENTS:**

LANL ER SMO CONTACT:

Signature: 

Page 1 of 3

REQUEST NUMBER: 10-1227

These Samples are on:

LANL Request Number: 10-1227

Per Agreement Number: 126310011

Project Cost Code: MR3A05529E00

| PRIORITY | METHOD CODE | CNTNR | SAMPLE ID    | SAMPLE MATRIX | DATE SAMPLED | SPECIAL INSTRUCTIONS |
|----------|-------------|-------|--------------|---------------|--------------|----------------------|
|          | EPA:901.1   |       |              |               |              |                      |
|          |             | 1     | RE12-10-7258 | R             | 1/8/2010     |                      |
|          |             | 1     | RE12-10-7259 | R             | 1/8/2010     |                      |
|          |             | 1     | RE12-10-7260 | R             | 1/8/2010     |                      |
|          |             | 1     | RE12-10-7261 | R             | 1/8/2010     |                      |
|          |             | 1     | RE12-10-7262 | R             | 1/8/2010     |                      |
|          |             | 1     | RE12-10-7263 | R             | 1/8/2010     |                      |
|          |             | 1     | RE12-10-7264 | R             | 1/8/2010     |                      |
|          |             | 1     | RE12-10-7265 | R             | 1/8/2010     |                      |
|          |             | 1     | RE12-10-7266 | R             | 1/8/2010     |                      |

Tuesday, January 12, 2010

| PRIORITY | METHOD CODE     | CNTNR | SAMPLE ID    | SAMPLE MATRIX | DATE SAMPLED | SPECIAL INSTRUCTIONS |
|----------|-----------------|-------|--------------|---------------|--------------|----------------------|
|          | EPA-901.1       | 1     | RE12-10-7267 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7268 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7269 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7270 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7271 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7282 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7283 | R             | 1/8/2010     |                      |
|          | HASL-300:AM-241 | 1     | RE12-10-7258 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7259 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7260 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7261 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7262 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7263 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7264 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7265 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7266 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7267 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7268 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7269 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7270 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7271 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7282 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7283 | R             | 1/8/2010     |                      |
|          | HASL-300:ISOPU  | 1     | RE12-10-7258 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7259 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7260 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7261 | R             | 1/8/2010     |                      |
|          |                 | 1     | RE12-10-7262 | R             | 1/8/2010     |                      |

Tuesday, January 12, 2010

REQUEST NUMBER: 10-1227

| PRIORITY | METHOD CODE    | CNTNR | SAMPLE ID    | SAMPLE MATRIX | DATE SAMPLED | SPECIAL INSTRUCTIONS |
|----------|----------------|-------|--------------|---------------|--------------|----------------------|
|          | HASL-300:ISOPU | 1     | RE12-10-7263 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7264 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7265 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7266 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7267 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7268 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7269 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7270 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7271 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7282 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7283 | R             | 1/8/2010     |                      |
|          | HASL-300:ISOU  | 1     | RE12-10-7258 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7259 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7260 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7261 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7262 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7263 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7264 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7265 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7266 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7267 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7268 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7269 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7270 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7271 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7282 | R             | 1/8/2010     |                      |
|          |                | 1     | RE12-10-7283 | R             | 1/8/2010     |                      |



Laboratories LLC

## SAMPLE RECEIPT &amp; REVIEW FORM

|                                     |     |    |  |  |  |
|-------------------------------------|-----|----|--|--|--|
| Client: LANL                        |     |    | SDG/ARCOC/Work Order: 10-10-1227   |  |  |
| Received By: Patricia Dover-Dent    |     |    | Date Received: JANUARY 14, 2009  |  |  |
| Suspected Hazard Information        | Yes | No | *If Counts > x2 area background on samples not marked "radioactive", contact the Radiation Safety Group of further |  |  |
| COC/Samples marked as radioactive?  |     | X  | Maximum Counts Observed*: 60CPM  |  |  |
| Classified Radioactive II by RSO?   |     | X  |  |  |  |
| COC/Samples marked containing PCBs? |     | X  |  |  |  |
| Shipped as a DOT Hazardous?         |     | X  | Hazard Class Shipped: UN#:   |  |  |
| Samples identified as Foreign Soil? |     | X  |  |  |  |

| Sample Receipt Criteria   | Yes | NA | No | Comments/Qualifiers (Required for Non-Conforming Items)                                    |
|---|-----|----|----|--|
| 1 Shipping containers received intact and sealed?                 | X   |    |    | Circle Applicable:<br>seals broken damaged container leaking container other<br>(describe) |
| 2 Samples requiring cold preservation within (0 < 6 deg. C)?      | X   |    |    | Preservation Method:<br>ice bags BLUE ICE dry ice NONE other (describe)<br>1-6,10,12,13    |
| 3 Chain of custody documents included with shipment?              |     |    | X  | Chain of custody was received 01/13/10 Samples rec'd 01/14/10                              |
| 4 Sample containers intact and sealed?                            | X   |    |    | Circle Applicable<br>broken damaged container leaking container other<br>(describe) seals  |
| 5 Samples requiring chemical preservation at proper pH?           |     | X  |    | Sample ID's, containers affected and observed pH.<br>If Preservative added Lot#            |
| 6 VOA vials free of headspace (defined as < 6mm bubble)?          |     | X  |    | Sample ID's and containers affected:   |
| 7 Are Encore containers present?                                  |     |    | X  | (If yes, immediately deliver to Volatiles laboratory)                                      |
| 8 Samples received within holding time?                           | X   |    |    | ID's and tests affected:   |
| 9 Sample ID's on COC match ID's on bottles?                       | X   |    |    | Sample ID's and containers affected:   |
| 10 Date & time on COC match date & time on bottles?               |     | X  |    | Sample ID's affected: No Time on Chain of Custody  |
| 11 Number of containers received match number indicated on COC?   | X   |    |    | Sample ID's affected:  |
| 12 COC form is properly signed in relinquished/received sections? | X   |    |    |  |

Comments: FED EX #S  
7209 7849 5060 2C  
7209 7849 5015 2C  
7209 7849 5004 2C  
7209 7849 5059 3C  
7209 7849 5037 3C  
7209 7849 4990 3C  
7209 7849 5026 6C  
7209 7849 4979 11C  
7209 7849 4980 12C

**Subject:** Re: Sample Receipt for 11/13/09  
**From:** Keith Grene <kgreene@lanl.gov>  
**Date:** Thu, 14 Jan 2010 09:25:51 -0700  
**To:** Dionne Francis <Dionne.Francis@gel.com>

cancel 1551, request 1227 you will get today, add 1303 to request 10-1218, cancel 7721  
client canceled it while in transit

At 08:57 AM 1/14/2010, you wrote:

Good Morning Keith,

RN 10-1215: the lab did not receive the CN poly container for sample RE16-10-1551.  
Please advise.

RN 10-1214: th lab rec'd (1) 40ml vial 8260B container for sample RE16-10-1555 instead  
of (2) as indicated on the COC.

RN 10-1227: the lab did not receive any containers.

The following samples rec'd without a COC:

RE16-10-1303 - TCN 250ml poly container

RE12-10-7721 - AM241+GS+ISOU+ISOPU, Met+U ClO4 - (2) 1L poly containers  
NMED Explosives - 250ml amber

Thanks,  
Dionne

--

Dionne Francis  
Project Manager Assistant  
GEL Laboratories, LLC  
2040 Savage Road  
Charleston, SC (USA) 29407  
Direct: 843.769.7376 Ext. 4432  
Main: 843.556.8171  
Fax: 843.766.1178  
E-mail: [daf@gel.com](mailto:daf@gel.com)  
Web: [www.gel.com](http://www.gel.com)

Let the Bible fill the memory, rule the heart, and guide the feet.

ORIGIN ID: SAFA (505) 665-9968  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TAGO BLDG 1237 DPU 03  
LOS ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 13JAN10  
ACTWGT: 37.0 LB MAN  
CAD: 0014176/CAFE24

BILL SENDER

° VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171  
REF: 68010AARET182JSX00

2c



ORIGIN ID: SAFA (505) 665-9968  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TAGO BLDG 1237 DPU 03  
LOS ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 13JAN10  
ACTWGT: 53.0 LB MAN  
CAD: 0014176/CAFE2449

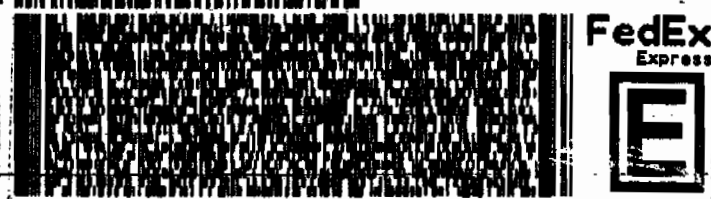
BILL SENDER

° VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171  
REF: 68010AARET182JSX00

2c



2 of 2  
NPSH 7209 7849 5060  
Matr# 7209 7849 5059 0201  
THU - 14JAN A1  
PRIORITY OVERNIGHT

XX CHSA

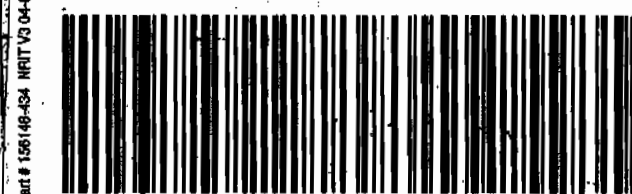
29407  
SC-US  
CHS



TRKH 7209 7849 5015  
0201  
THU - 14JAN A1  
PRIORITY OVERNIGHT

XX CHSA

29407  
SC-US  
CHS



ORIGIN ID: SAFA (505) 665-9968  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TAGO BLDG 1237 DPU 03  
LOS ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 13JAN10  
ACTWGT: 53.0 LB MAN  
CAD: 0014176/CAFE2449

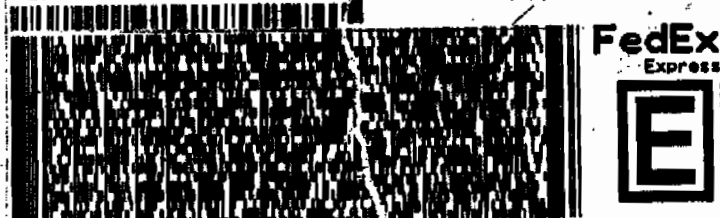
BILL SENDER

° VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171  
REF: 68010AARET182JSX00

2c



ORIGIN ID: SAFA (505) 665-9968  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TAGO BLDG 1237 DPU 03  
LOS ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 13JAN10  
ACTWGT: 54.0 LB MAN  
CAD: 0014176/CAFE2449

BILL SENDER

° VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171  
REF: 68010AARET182JSX00

3c



2 of 2  
NPSH 7209 7849 5004  
Matr# 7209 7849 4990 0201  
THU - 14JAN A1  
PRIORITY OVERNIGHT

XX CHSA

29407  
SC-US  
CHS

249

1 of 2  
TRKH 7209 7849 5059  
0201  
NN MASTER NN  
THU - 14JAN A1  
PRIORITY OVERNIGHT

XX CHSA

29407  
SC-US  
CHS

04



ORIGIN ID: SAFA (505) 655-9968  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TA00 BLDG 1237 DPU 03

LOS ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 13JAN10  
ACTNGT: 52.0 LB MAN  
CAD: 0014176/CAFE2449

BILL SENDER

ORIGIN ID: SAFA (505) 655-9968  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TA00 BLDG 1237 DPU 03

LOS ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 13JAN10  
ACTNGT: 52.0 LB MAN  
CAD: 0014176/CAFE2449

BILL SENDER

VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171  
REF: 6B010AMR2A0515BYDO

3c

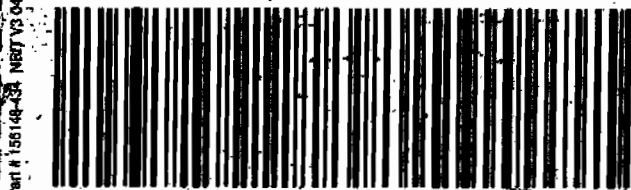


2 of 2  
MPSH 7209 7849 5037  
MatrN 7209 7849 5026 (8201)

THU - 14JAN A1  
PRIORITY OVERNIGHT

XX CHSA

29407  
SC-US  
CHS



ORIGIN ID: SAFA (505) 655-9968  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TA00 BLDG 1237 DPU 03

LOS ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 13JAN10  
ACTNGT: 51.0 LB MAN  
CAD: 0014176/CAFE2449

BILL SENDER

ORIGIN ID: SAFA (505) 655-9968  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TA00 BLDG 1237 DPU 03

LOS ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 13JAN10  
ACTNGT: 52.0 LB MAN  
CAD: 0014176/CAFE2449

BILL SENDER

VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171  
REF: 6B010AMR1A015AGWFO

11c



2 of 3  
MPSH 7209 7849 4979  
MatrN 7209 7849 4968 (8201)

THU - 14JAN A1  
PRIORITY OVERNIGHT

XX CHSA

29407  
SC-US  
CHS



1 of 2  
MPSH 7209 7849 5026  
MatrN 7209 7849 5026 (8201)

THU - 14JAN A1  
PRIORITY OVERNIGHT

XX CHSA

29407  
SC-US  
CHS



ORIGIN ID: SAFA (505) 665-9959  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TAGE BLDG 1237 DPU 03  
LOS ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 13JAN18  
ACTMGT: 63.0 LB MAX  
CAD: 0014178/CAFE2449

BILL SENDER

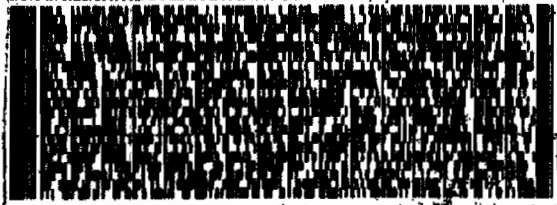
VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171  
REF: 65010APR1A015AGMHO

12c

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES



FedEx  
Express



J09200511303223

3 of 3

PSN 7209 7849 4980

Matrn 7209 7849 4968 (62P)

THU - 14 JAN A1  
PRIORITY OVERNIGHT

XX CHSA

29407  
SC-US  
CHS

Per # 156148-464 NRIT V3 04-0



# **Data Review Qualifier Flag Definition Sheet**

## Data Review Qualifier Definitions

Qualifier    Explanation

- \*    A quality control analyte recovery is outside of specified acceptance criteria
- \*\*   Analyte is a surrogate compound
- <    Result is less than value reported
- >    Result is greater than value reported
- ^    RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
- A    The TIC is a suspected aldol-condensation product
- B    Target analyte was detected in the associated blank
- B    Metals-Either presence of analyte detected in the associated blank, or  
MDL/IDL < sample value < PQL
- BD   Results are either below the MDC or tracer recovery is low
- C    Analyte has been confirmed by GC/MS analysis
- D    Results are reported from a diluted aliquot of the sample
- d    5-day BOD-The 2:1 depletion requirement was not met for this sample
- E    Organics-Concentration of the target analyte exceeds the instrument calibration range
- E    Metals-%difference of sample and SD is >10%. Sample concentration must meet flagging criteria
- H    Analytical holding time was exceeded
- h    Preparation or preservation holding time was exceeded
- J    Value is estimated
- N    Metals-The Matrix spike sample recovery is not within specified control limits
- N    Organics-Presumptive evidence based on mass spectral library search to make a tentative  
identification of the analyte (TIC). Quantitation is based on nearest internal standard  
response factor
- N/A   Spike recovery limits do not apply. Sample concentration exceeds spike concentration  
by 4X or more
- ND   Analyte concentration is not detected above the reporting limit
- UI   Gamma Spectroscopy-Uncertain identification
- X    Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y    QC Samples were not spiked with this compound
- Z    Paint Filter Test-Particulates passed through the filter, however no free liquids were observed.

# RADIOLOGICAL ANALYSIS

**Radiochemistry Case Narrative  
Los Alamos National Laboratory (LANL)  
SDG 10-1227**

**Method/Analysis Information**

**Product:** AM241  
**Analytical Method:** DOE EML HASL-300, Am-05-RC Modified  
**Prep Method:** Dry Soil Prep  
**Analytical Batch Number:** 941748  
**Prep Batch Number:** 941627

| <b>Sample ID</b> | <b>Client ID</b>                               |
|------------------|--|
| 244630001        | RE12-10-7262                                   |
| 244630002        | RE12-10-7266                                   |
| 244630003        | RE12-10-7258                                   |
| 244630004        | RE12-10-7268                                   |
| 244630005        | RE12-10-7265                                   |
| 244630006        | RE12-10-7261                                   |
| 244630007        | RE12-10-7259                                   |
| 244630008        | RE12-10-7263                                   |
| 244630009        | RE12-10-7271                                   |
| 244630010        | RE12-10-7260                                   |
| 244630011        | RE12-10-7267                                   |
| 244630012        | RE12-10-7264                                   |
| 244630013        | RE12-10-7270                                   |
| 244630014        | RE12-10-7269                                   |
| 244630015        | RE12-10-7283                                   |
| 244630016        | RE12-10-7282                                   |
| 1202015727       | Method Blank (MB)                              |
| 1202015728       | 244630007(RE12-10-7259) Sample Duplicate (DUP) |
| 1202015729       | Laboratory Control Sample (LCS)                |

The samples in this SDG were analyzed on a "dry weight" basis.

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 18.

**Calibration Information:****Calibration Information**

All initial and continuing calibration requirements have been met. Calibrations are performed monthly using mixed alpha standards comprised of the following: Gd-148, Np-237, and Cm-244.

**Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

**Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

**Quality Control (QC) Information:****Blank Information**

Aliquot for sample 1202015727 (MB) was changed to 1.0 per client request.

**Designated QC**

The following sample was used for QC: 244630007 (RE12-10-7259). The QC was from LANL work order 244630.

**QC Information**

All of the QC samples met the required acceptance limits.

**CSU**

The blank result is less than 1.65 times the CSU.

**Technical Information:****Holding Time**

All sample procedures for this sample set were performed within the required holding time.

**Sample Re-prep/Re-analysis**

Sample 244630010 (RE12-10-7260) was recounted due to a suspected false positive.

**Miscellaneous Information:****Data Exception (DER) Documentation**

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

**Manual Integration**

No manual integrations were performed on data in this batch.

**Additional Comments**

The MDCs are calculated using a blank population.

**Blank Decision Level**

The blank result is less than the decision level.

### **Qualifier information**

Manual qualifiers were not required.

### **Method/Analysis Information**

|                          |                                     |
|--------------------------|-------------------------------------|
| <b>Product:</b>          | <b>ISOPU</b>                        |
| Analytical Method:       | DOE EML HASL-300, Pu-11-RC Modified |
| Prep Method:             | Dry Soil Prep                       |
| Analytical Batch Number: | 941752                              |
| Prep Batch Number:       | 941627                              |

| <b>Sample ID</b> | <b>Client ID</b>                               |
|------------------|--|
| 244630001        | RE12-10-7262                                   |
| 244630002        | RE12-10-7266                                   |
| 244630003        | RE12-10-7258                                   |
| 244630004        | RE12-10-7268                                   |
| 244630005        | RE12-10-7265                                   |
| 244630006        | RE12-10-7261                                   |
| 244630007        | RE12-10-7259                                   |
| 244630008        | RE12-10-7263                                   |
| 244630009        | RE12-10-7271                                   |
| 244630010        | RE12-10-7260                                   |
| 244630011        | RE12-10-7267                                   |
| 244630012        | RE12-10-7264                                   |
| 244630013        | RE12-10-7270                                   |
| 244630014        | RE12-10-7269                                   |
| 244630015        | RE12-10-7283                                   |
| 244630016        | RE12-10-7282                                   |
| 1202015738       | Method Blank (MB)                              |
| 1202015739       | 244630007(RE12-10-7259) Sample Duplicate (DUP) |
| 1202015740       | Laboratory Control Sample (LCS)                |

The samples in this SDG were analyzed on a "dry weight" basis.

### **SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 18.



**Calibration Information:****Calibration Information**

All initial and continuing calibration requirements have been met. Calibrations are performed monthly using mixed alpha standards comprised of the following: Gd-148, Np-237, and Cm-244.

**Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

**Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

**Quality Control (QC) Information:****Blank Information**

Aliquot for sample 1202015738 (MB) was changed to 1.0 per client request.

**Designated QC**

The following sample was used for QC: 244630007 (RE12-10-7259). The QC was from LANL work order 244630.

**QC Information**

All of the QC samples met the required acceptance limits.

**CSU**

The blank result for Pu-239/240 is greater than 1.65 times the CSU but less than the MDC.

**Technical Information:****Holding Time**

All sample procedures for this sample set were performed within the required holding time.

**Sample Re-prep/Re-analysis**

Sample 244630009 (RE12-10-7271) was recounted due to high carrier/tracer yield.

**Miscellaneous Information:****Data Exception (DER) Documentation**

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

**Manual Integration**

No manual integrations were performed on data in this batch.

**Additional Comments**

The MDCs are calculated using a blank population. Sample, 1202015740 (LCS), did not meet the client tracer yield requirements, however it is less than 110 percent and does meet the GEL standard tracer yield requirements.

**Blank Decision Level**

The blank result is less than the decision level.

**Qualifier information**

Manual qualifiers were not required.

**Method/Analysis Information**

|                          |                                    |
|--------------------------|------------------------------------|
| <b>Product:</b>          | <b>ISOU</b>                        |
| Analytical Method:       | DOE EML HASL-300, U-02-RC Modified |
| Prep Method:             | Dry Soil Prep                      |
| Analytical Batch Number: | 941758                             |
| Prep Batch Number:       | 941627                             |

| <b>Sample ID</b> | <b>Client ID</b>                               |
|------------------|--|
| 244630001        | RE12-10-7262                                   |
| 244630002        | RE12-10-7266                                   |
| 244630003        | RE12-10-7258                                   |
| 244630004        | RE12-10-7268                                   |
| 244630005        | RE12-10-7265                                   |
| 244630006        | RE12-10-7261                                   |
| 244630007        | RE12-10-7259                                   |
| 244630008        | RE12-10-7263                                   |
| 244630009        | RE12-10-7271                                   |
| 244630010        | RE12-10-7260                                   |
| 244630011        | RE12-10-7267                                   |
| 244630012        | RE12-10-7264                                   |
| 244630013        | RE12-10-7270                                   |
| 244630014        | RE12-10-7269                                   |
| 244630015        | RE12-10-7283                                   |
| 244630016        | RE12-10-7282                                   |
| 1202015747       | Method Blank (MB)                              |
| 1202015748       | 244630007(RE12-10-7259) Sample Duplicate (DUP) |
| 1202015749       | Laboratory Control Sample (LCS)                |

The samples in this SDG were analyzed on a "dry weight" basis.

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 18.

### **Calibration Information:**

#### **Calibration Information**

All initial and continuing calibration requirements have been met. Calibrations are performed monthly using mixed alpha standards comprised of the following: Gd-148, Np-237, and Cm-244.

#### **Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

#### **Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

### **Quality Control (QC) Information:**

#### **Blank Information**

Aliquot for sample 1202015747 (MB) was changed to 1.0 per client request.

#### **Designated QC**

The following sample was used for QC: 244630007 (RE12-10-7259). The QC was from LANL work order 244630.

#### **QC Information**

All of the QC samples met the required acceptance limits.

#### **CSU**

The U-233/234, U-235, and U-238 blank results are greater than 1.65 times the CSU but less than the MDC.

### **Technical Information:**

#### **Holding Time**

All sample procedures for this sample set were performed within the required holding time.

#### **Sample Re-prep/Re-analysis**

Sample 1202015747 (MB) was recounted due to a peak shift.

### **Miscellaneous Information:**

#### **Data Exception (DER) Documentation**

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

#### **Manual Integration**

No manual integrations were performed on data in this batch.

#### **Additional Comments**

The MDCs are calculated using a blank population. Sample 244630012 (RE12-10-7264) did not meet the client's yield requirement. However, there are 400 tracer counts, GEL's standard tracer yield requirements are met, and the client's detection limits are met.

**Blank Decision Level**

The U-238 blank result is greater than the decision level but less than the MDC.

**Qualifier information**

Manual qualifiers were not required.

**Method/Analysis Information**

**Product:** GAMMA SPEC  
**Analytical Method:** DOE HASL 300, 4.5.2.3/Ga-01-R  
**Prep Method:** Dry Soil Prep  
**Analytical Batch Number:** 941639  
**Prep Batch Number:** 941627

| <b>Sample ID</b> | <b>Client ID</b>                               |
|------------------|--|
| 244630001        | RE12-10-7262                                   |
| 244630002        | RE12-10-7266                                   |
| 244630003        | RE12-10-7258                                   |
| 244630004        | RE12-10-7268                                   |
| 244630005        | RE12-10-7265                                   |
| 244630006        | RE12-10-7261                                   |
| 244630007        | RE12-10-7259                                   |
| 244630008        | RE12-10-7263                                   |
| 244630009        | RE12-10-7271                                   |
| 244630010        | RE12-10-7260                                   |
| 244630011        | RE12-10-7267                                   |
| 244630012        | RE12-10-7264                                   |
| 244630013        | RE12-10-7270                                   |
| 244630014        | RE12-10-7269                                   |
| 244630015        | RE12-10-7283                                   |
| 244630016        | RE12-10-7282                                   |
| 1202015449       | Method Blank (MB)                              |
| 1202015450       | 244630001(RE12-10-7262) Sample Duplicate (DUP) |
| 1202015451       | Laboratory Control Sample (LCS)                |

The samples in this SDG were analyzed on a "dry weight" basis.

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-013 REV# 18.

**Calibration Information:****Calibration Information**

All initial and continuing calibration requirements have been met. The initial Calibrations were performed in January 2009, February 2009, March 2009, April 2009, May 2009, July 2009, October 2009, November 2009 and January 2010.

**Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

**Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

**Quality Control (QC) Information:****Blank Information**

The blank volume is representative of the sample volume in this batch.

**Designated QC**

The following sample was used for QC: 244630001 (RE12-10-7262). The QC was from LANL work order 244630.

**QC Information**

All of the QC samples met the required acceptance limits.

**CSU**

The blank 1202015449 (MB) result is greater than 1.65 times the CSU but less than the MDC for Bi-211, Pb-214 and Sr-85.

**Technical Information:****Holding Time**

All sample procedures for this sample set were performed within the required holding time.

**Sample Re-prep/Re-analysis**

None of the samples in this sample set required reprep or reanalysis.

**Miscellaneous Information:****Data Exception (DER) Documentation**

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

**Additional Comments**

Additional comments were not required for this sample set.

**Blank Decision Level**

The blank 1202015449 (MB) result is greater than the decision level but less than the MDC for Bi-211 and Sr-85.

**Qualifier information**

| Qualifier | Reason                             | Analyte     | Sample     | Client Sample              |
|-----------|------------------------------------|-------------|------------|----------------------------|
| UI        | Data rejected due to interference. | Bismuth-211 | 244630001  | RE12-10-7262               |
|           |                                    |             | 244630002  | RE12-10-7266               |
|           |                                    |             | 244630003  | RE12-10-7258               |
|           |                                    |             | 244630004  | RE12-10-7268               |
|           |                                    |             | 244630005  | RE12-10-7265               |
|           |                                    |             | 244630006  | RE12-10-7261               |
|           |                                    |             | 244630007  | RE12-10-7259               |
|           |                                    |             | 244630008  | RE12-10-7263               |
|           |                                    |             | 244630009  | RE12-10-7271               |
|           |                                    |             | 244630010  | RE12-10-7260               |
|           |                                    |             | 244630011  | RE12-10-7267               |
|           |                                    |             | 244630012  | RE12-10-7264               |
|           |                                    |             | 244630013  | RE12-10-7270               |
|           |                                    |             | 244630014  | RE12-10-7269               |
|           |                                    |             | 244630015  | RE12-10-7283               |
|           |                                    |             | 244630016  | RE12-10-7282               |
|           |                                    |             | 1202015450 | RE12-10-7262(244630001DUP) |
|           |                                    | Cadmium-109 | 244630002  | RE12-10-7266               |
|           |                                    |             | 244630003  | RE12-10-7258               |
|           |                                    |             | 244630004  | RE12-10-7268               |
|           |                                    |             | 244630005  | RE12-10-7265               |
|           |                                    |             | 244630006  | RE12-10-7261               |
|           |                                    |             | 244630008  | RE12-10-7263               |
|           |                                    |             | 244630009  | RE12-10-7271               |
|           |                                    |             | 244630010  | RE12-10-7260               |
|           |                                    |             | 244630011  | RE12-10-7267               |

|    |   |            |            |                            |
|----|---|------------|------------|----------------------------|
|    |   |            | 244630012  | RE12-10-7264               |
|    |   |            | 244630013  | RE12-10-7270               |
|    |   |            | 244630014  | RE12-10-7269               |
|    |   |            | 244630015  | RE12-10-7283               |
|    |   |            | 244630016  | RE12-10-7282               |
|    |   |            | 1202015450 | RE12-10-7262(244630001DUP) |
|    |   | Radium-224 | 244630001  | RE12-10-7262               |
|    |   |            | 244630002  | RE12-10-7266               |
|    |   |            | 244630003  | RE12-10-7258               |
|    |   |            | 244630004  | RE12-10-7268               |
|    |   |            | 244630005  | RE12-10-7265               |
|    |   |            | 244630006  | RE12-10-7261               |
|    |   |            | 244630007  | RE12-10-7259               |
|    |   |            | 244630008  | RE12-10-7263               |
|    |   |            | 244630009  | RE12-10-7271               |
|    |   |            | 244630010  | RE12-10-7260               |
|    |   |            | 244630011  | RE12-10-7267               |
|    |   |            | 244630012  | RE12-10-7264               |
|    |   |            | 244630013  | RE12-10-7270               |
|    |   |            | 244630014  | RE12-10-7269               |
|    |   |            | 244630015  | RE12-10-7283               |
|    |   |            | 244630016  | RE12-10-7282               |
|    |   |            | 1202015450 | RE12-10-7262(244630001DUP) |
| UI | Data rejected<br>due to low<br>abundance. | Cesium-134 | 244630002  | RE12-10-7266               |
|    |   |            | 244630003  | RE12-10-7258               |
|    |   |            | 244630004  | RE12-10-7268               |
|    |   |            | 244630005  | RE12-10-7265               |
|    |   |            | 244630006  | RE12-10-7261               |
|    |   |            | 244630008  | RE12-10-7263               |

|              |           |              |
|--------------|-----------|--------------|
|              | 244630009 | RE12-10-7271 |
|              | 244630010 | RE12-10-7260 |
|              | 244630011 | RE12-10-7267 |
|              | 244630014 | RE12-10-7269 |
|              | 244630016 | RE12-10-7282 |
| Strontium-85 | 244630002 | RE12-10-7266 |
|              | 244630004 | RE12-10-7268 |
|              | 244630005 | RE12-10-7265 |
|              | 244630006 | RE12-10-7261 |
|              | 244630009 | RE12-10-7271 |
|              | 244630011 | RE12-10-7267 |
|              | 244630012 | RE12-10-7264 |
|              | 244630013 | RE12-10-7270 |
|              | 244630015 | RE12-10-7283 |
|              | 244630016 | RE12-10-7282 |

### **Certification Statement**

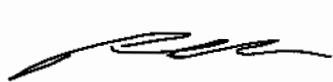
Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

### **Review Validation:**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

**The following data validator verified the information presented in this case narrative:**

**Reviewer/Date:** \_\_\_\_\_

 1/27/10



# SAMPLE DATA SUMMARY

## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

### Certificate of Analysis Report for

LANL010 Los Alamos National Laboratory (72733-001-09)

Client SDG: 10-1227 GEL Work Order: 244630

**The Qualifiers in this report are defined as follows:**

- \* Indicates that a quality control analyte recovery is outside of specified acceptance criteria.
- \*\* Indicates the analyte is a surrogate compound.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the detection limit.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by



1/27/10

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7262  
Sample ID: 244630001  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 8.86%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU        | RL    | Units | DF | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|----------|--------|------------|-------|-------|----|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |          |        |            |       |       |    |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |          |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.00483  | 0.0187 | +/-0.00232 | 0.050 | pCi/g |    | MXA1    | 01/22/10 | 1203 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |          |        |            |       |       |    |         |          |      |        |      |
| Plutonium-238                            | U         | 0.00     | 0.0189 | +/-0.00115 | 0.050 | pCi/g |    | MXA1    | 01/20/10 | 1641 | 941752 | 2    |
| Plutonium-239/240                        | U         | 0.00229  | 0.0217 | +/-0.00229 | 0.050 | pCi/g |    |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |          |        |            |       |       |    |         |          |      |        |      |
| Uranium-233/234                          |           | 0.859    | 0.116  | +/-0.0832  | 0.100 | pCi/g |    | MXA1    | 01/23/10 | 1120 | 941758 | 3    |
| Uranium-235/236                          | U         | 0.0646   | 0.0719 | +/-0.0201  | 0.100 | pCi/g |    |         |          |      |        |      |
| Uranium-238                              |           | 1.06     | 0.0672 | +/-0.0978  | 0.100 | pCi/g |    |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |            |       |       |    |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.097    | 0.509  | +/-0.161   | 0.200 | pCi/g |    | MXR1    | 01/22/10 | 2049 | 941639 | 4    |
| Bismuth-211                              | UI        | 3.73     | 0.431  | +/-0.286   |       | pCi/g |    |         |          |      |        |      |
| Bismuth-214                              |           | 1.21     | 0.140  | +/-0.101   | 0.200 | pCi/g |    |         |          |      |        |      |
| Cadmium-109                              | U         | 1.93     | 2.06   | +/-0.737   |       | pCi/g |    |         |          |      |        |      |
| Cerium-139                               | U         | -0.00332 | 0.0602 | +/-0.0179  | 0.050 | pCi/g |    |         |          |      |        |      |
| Cesium-134                               | U         | 0.0565   | 0.097  | +/-0.0267  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cesium-137                               | U         | 0.0826   | 0.0907 | +/-0.0251  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cobalt-60                                | U         | 0.0633   | 0.0831 | +/-0.0221  | 0.100 | pCi/g |    |         |          |      |        |      |
| Europium-152                             | U         | -0.103   | 0.185  | +/-0.0767  | 0.200 | pCi/g |    |         |          |      |        |      |
| Lanthanum-140                            | U         | 0.0794   | 0.152  | +/-0.0444  |       | pCi/g |    |         |          |      |        |      |
| Lead-212                                 |           | 1.78     | 0.108  | +/-0.101   | 0.100 | pCi/g |    |         |          |      |        |      |
| Lead-214                                 |           | 1.30     | 0.150  | +/-0.105   | 0.100 | pCi/g |    |         |          |      |        |      |
| Mercury-203                              | U         | -0.00349 | 0.086  | +/-0.0249  | 0.100 | pCi/g |    |         |          |      |        |      |
| Potassium-40                             |           | 28.1     | 0.628  | +/-1.42    | 1.00  | pCi/g |    |         |          |      |        |      |
| Radium-223                               | U         | -1.05    | 1.30   | +/-0.416   |       | pCi/g |    |         |          |      |        |      |
| Radium-224                               | UI        | 4.28     | 1.23   | +/-0.764   |       | pCi/g |    |         |          |      |        |      |
| Radium-226                               |           | 1.21     | 0.140  | +/-0.101   |       | pCi/g |    |         |          |      |        |      |
| Radium-228                               |           | 1.66     | 0.250  | +/-0.202   | 0.500 | pCi/g |    |         |          |      |        |      |
| Ruthenium-106                            | U         | -0.215   | 0.553  | +/-0.177   | 0.800 | pCi/g |    |         |          |      |        |      |
| Sodium-22                                | U         | -0.0544  | 0.0718 | +/-0.0252  | 0.080 | pCi/g |    |         |          |      |        |      |
| Strontium-85                             | U         | 0.070    | 0.0708 | +/-0.0212  |       | pCi/g |    |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7262  
Sample ID: 244630001

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time Batch | Mtd. |
|--|-----------|----------|--------|-----------|-------|-------|----|---------|------|------------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |           |       |       |    |         |      |            |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |           |       |       |    |         |      |            |      |
| Thallium-208                             |           | 0.554    | 0.0608 | +/-0.0547 | 0.080 | pCi/g |    |         |      |            |      |
| Thorium-227                              | U         | -0.227   | 0.777  | +/-0.229  |       | pCi/g |    |         |      |            |      |
| Thorium-231                              | U         | -1.05    | 1.30   | +/-0.416  |       | pCi/g |    |         |      |            |      |
| Thorium-234                              | U         | 3.24     | 3.77   | +/-1.20   | 2.00  | pCi/g |    |         |      |            |      |
| Tin-113                                  | U         | 0.0432   | 0.0951 | +/-0.0269 | 0.100 | pCi/g |    |         |      |            |      |
| Uranium-235                              | U         | 0.157    | 0.461  | +/-0.135  | 0.500 | pCi/g |    |         |      |            |      |
| Yttrium-88                               | U         | -0.00348 | 0.0515 | +/-0.0161 | 0.100 | pCi/g |    |         |      |            |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery % | Acceptable Limits |
|---------------------------|------------------------------|------------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 84.8       | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 95.0       | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 71.1       | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure

## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

### Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7262  
Sample ID: 244630001

Project: LANL01004  
Client ID: LANL010

| Parameter | Qualifier | Result | DL | TPU | RL | Units | DF | Analyst | Date | Time | Batch | Mtd. |
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|

N/A RPD or %Recovery limits do not apply.

ND Analyte concentration is not detected above the detection limit

NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

R Sample results are rejected

U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

UI Gamma Spectroscopy--Uncertain identification

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Y QC Samples were not spiked with this compound

^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7266  
Sample ID: 244630002  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 19.7%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU        | RL    | Units | DF | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|----------|--------|------------|-------|-------|----|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |          |        |            |       |       |    |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |          |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.00674  | 0.0182 | +/-0.00346 | 0.050 | pCi/g |    | MXA1    | 01/22/10 | 1203 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |          |        |            |       |       |    |         |          |      |        |      |
| Plutonium-238                            | U         | 0.00122  | 0.0201 | +/-0.00272 | 0.050 | pCi/g |    | MXA1    | 01/20/10 | 1641 | 941752 | 2    |
| Plutonium-239/240                        |           | 0.0292   | 0.023  | +/-0.00661 | 0.050 | pCi/g |    |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |          |        |            |       |       |    |         |          |      |        |      |
| Uranium-233/234                          |           | 1.99     | 0.143  | +/-0.173   | 0.100 | pCi/g |    | MXA1    | 01/23/10 | 1120 | 941758 | 3    |
| Uranium-235/236                          |           | 0.176    | 0.0885 | +/-0.0341  | 0.100 | pCi/g |    |         |          |      |        |      |
| Uranium-238                              |           | 2.96     | 0.0827 | +/-0.243   | 0.100 | pCi/g |    |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |            |       |       |    |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.00731  | 0.298  | +/-0.0924  | 0.200 | pCi/g |    | MXR1    | 01/22/10 | 2050 | 941639 | 4    |
| Bismuth-211                              | UI        | 3.90     | 0.254  | +/-0.225   |       | pCi/g |    |         |          |      |        |      |
| Bismuth-214                              |           | 1.20     | 0.0883 | +/-0.0885  | 0.200 | pCi/g |    |         |          |      |        |      |
| Cadmium-109                              | UI        | 3.16     | 1.22   | +/-0.546   |       | pCi/g |    |         |          |      |        |      |
| Cerium-139                               | U         | -0.00362 | 0.0437 | +/-0.0124  | 0.050 | pCi/g |    |         |          |      |        |      |
| Cesium-134                               | UI        | 0.118    | 0.0716 | +/-0.033   | 0.100 | pCi/g |    |         |          |      |        |      |
| Cesium-137                               |           | 0.436    | 0.050  | +/-0.0366  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cobalt-60                                | U         | 0.0256   | 0.0528 | +/-0.015   | 0.100 | pCi/g |    |         |          |      |        |      |
| Europium-152                             | U         | -0.0118  | 0.133  | +/-0.0468  | 0.200 | pCi/g |    |         |          |      |        |      |
| Lanthanum-140                            | U         | 0.0295   | 0.104  | +/-0.0344  |       | pCi/g |    |         |          |      |        |      |
| Lead-212                                 |           | 1.81     | 0.0787 | +/-0.0805  | 0.100 | pCi/g |    |         |          |      |        |      |
| Lead-214                                 |           | 1.36     | 0.0884 | +/-0.0858  | 0.100 | pCi/g |    |         |          |      |        |      |
| Mercury-203                              | U         | 0.0192   | 0.059  | +/-0.0194  | 0.100 | pCi/g |    |         |          |      |        |      |
| Potassium-40                             |           | 33.2     | 0.357  | +/-1.44    | 1.00  | pCi/g |    |         |          |      |        |      |
| Radium-223                               | U         | 0.160    | 0.898  | +/-0.303   |       | pCi/g |    |         |          |      |        |      |
| Radium-224                               | UI        | 5.19     | 0.894  | +/-0.568   |       | pCi/g |    |         |          |      |        |      |
| Radium-226                               |           | 1.20     | 0.0883 | +/-0.0885  |       | pCi/g |    |         |          |      |        |      |
| Radium-228                               |           | 1.76     | 0.162  | +/-0.163   | 0.500 | pCi/g |    |         |          |      |        |      |
| Ruthenium-106                            | U         | -0.126   | 0.400  | +/-0.126   | 0.800 | pCi/g |    |         |          |      |        |      |
| Sodium-22                                | U         | -0.00732 | 0.0549 | +/-0.0169  | 0.080 | pCi/g |    |         |          |      |        |      |
| Strontium-85                             | UI        | 0.0927   | 0.0581 | +/-0.0171  |       | pCi/g |    |         |          |      |        |      |
| Thallium-208                             |           | 0.515    | 0.0458 | +/-0.0408  | 0.080 | pCi/g |    |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7266  
Sample ID: 244630002

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result  | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time | Batch | Mtd. |
|--|-----------|---------|--------|-----------|-------|-------|----|---------|------|------|-------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |         |        |           |       |       |    |         |      |      |       |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |         |        |           |       |       |    |         |      |      |       |      |
| Thorium-227                              | U         | -0.145  | 0.524  | +/-0.157  |       | pCi/g |    |         |      |      |       |      |
| Thorium-231                              | U         | 0.160   | 0.898  | +/-0.303  |       | pCi/g |    |         |      |      |       |      |
| Thorium-234                              | U         | 1.84    | 2.38   | +/-1.13   | 2.00  | pCi/g |    |         |      |      |       |      |
| Tin-113                                  | U         | -0.0272 | 0.0598 | +/-0.0179 | 0.100 | pCi/g |    |         |      |      |       |      |
| Uranium-235                              | U         | 0.0562  | 0.324  | +/-0.0971 | 0.500 | pCi/g |    |         |      |      |       |      |
| Yttrium-88                               | U         | 0.00872 | 0.0504 | +/-0.0164 | 0.100 | pCi/g |    |         |      |      |       |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery % | Acceptable Limits |
|---------------------------|------------------------------|------------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 85.6       | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 95.6       | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 65.8       | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.

## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

### Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7266  
Sample ID: 244630002  
Project: LANL01004  
Client ID: LANL010

| Parameter | Qualifier | Result | DL | TPU | RL | Units | DF | Analyst | Date | Time | Batch | Mtd. |
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|

ND Analyte concentration is not detected above the detection limit  
NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier  
R Sample results are rejected  
U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.  
UI Gamma Spectroscopy--Uncertain identification  
X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier  
Y QC Samples were not spiked with this compound  
^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.  
h Preparation or preservation holding time was exceeded  
The above sample is reported on a dry weight basis.



# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7258  
Sample ID: 244630003  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 14.3%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result    | DL     | TPU        | RL    | Units | DF | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|-----------|--------|------------|-------|-------|----|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |           |        |            |       |       |    |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |           |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | -0.000665 | 0.0191 | +/-0.00113 | 0.050 | pCi/g |    | MXA1    | 01/22/10 | 1203 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |           |        |            |       |       |    |         |          |      |        |      |
| Plutonium-238                            | U         | 0.0011    | 0.0182 | +/-0.0011  | 0.050 | pCi/g |    | MXA1    | 01/20/10 | 1641 | 941752 | 2    |
| Plutonium-239/240                        | U         | 0.0033    | 0.0208 | +/-0.00291 | 0.050 | pCi/g |    |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |           |        |            |       |       |    |         |          |      |        |      |
| Uranium-233/234                          |           | 0.948     | 0.106  | +/-0.0876  | 0.100 | pCi/g |    | MXA1    | 01/23/10 | 1120 | 941758 | 3    |
| Uranium-235/236                          | U         | 0.059     | 0.0656 | +/-0.0163  | 0.100 | pCi/g |    |         |          |      |        |      |
| Uranium-238                              |           | 0.996     | 0.0613 | +/-0.0911  | 0.100 | pCi/g |    |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |           |        |            |       |       |    |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |           |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.00372   | 0.393  | +/-0.110   | 0.200 | pCi/g |    | MXR1    | 01/23/10 | 1145 | 941639 | 4    |
| Bismuth-211                              | UI        | 4.08      | 0.335  | +/-0.255   |       | pCi/g |    |         |          |      |        |      |
| Bismuth-214                              |           | 1.15      | 0.108  | +/-0.0889  | 0.200 | pCi/g |    |         |          |      |        |      |
| Cadmium-109                              | UI        | 3.14      | 1.43   | +/-0.588   |       | pCi/g |    |         |          |      |        |      |
| Cerium-139                               | U         | -0.0317   | 0.0467 | +/-0.0146  | 0.050 | pCi/g |    |         |          |      |        |      |
| Cesium-134                               | UI        | 0.129     | 0.0847 | +/-0.0253  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cesium-137                               | U         | 0.0538    | 0.0641 | +/-0.0243  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cobalt-60                                | U         | 0.0109    | 0.0724 | +/-0.0211  | 0.100 | pCi/g |    |         |          |      |        |      |
| Europium-152                             | U         | -0.011    | 0.157  | +/-0.0463  | 0.200 | pCi/g |    |         |          |      |        |      |
| Lanthanum-140                            | U         | -0.148    | 0.130  | +/-0.0507  |       | pCi/g |    |         |          |      |        |      |
| Lead-212                                 |           | 1.91      | 0.0927 | +/-0.0967  | 0.100 | pCi/g |    |         |          |      |        |      |
| Lead-214                                 |           | 1.42      | 0.118  | +/-0.0961  | 0.100 | pCi/g |    |         |          |      |        |      |
| Mercury-203                              | U         | 0.015     | 0.065  | +/-0.0206  | 0.100 | pCi/g |    |         |          |      |        |      |
| Potassium-40                             |           | 34.9      | 0.466  | +/-1.55    | 1.00  | pCi/g |    |         |          |      |        |      |
| Radium-223                               | U         | 0.178     | 1.08   | +/-0.350   |       | pCi/g |    |         |          |      |        |      |
| Radium-224                               | UI        | 4.83      | 1.06   | +/-0.651   |       | pCi/g |    |         |          |      |        |      |
| Radium-226                               |           | 1.15      | 0.108  | +/-0.0889  |       | pCi/g |    |         |          |      |        |      |
| Radium-228                               |           | 1.86      | 0.244  | +/-0.163   | 0.500 | pCi/g |    |         |          |      |        |      |
| Ruthenium-106                            | U         | -0.0596   | 0.465  | +/-0.146   | 0.800 | pCi/g |    |         |          |      |        |      |
| Sodium-22                                | U         | -0.0272   | 0.0704 | +/-0.0223  | 0.080 | pCi/g |    |         |          |      |        |      |
| Strontium-85                             | U         | 0.0407    | 0.0658 | +/-0.0208  |       | pCi/g |    |         |          |      |        |      |
| Thallium-208                             |           | 0.601     | 0.0557 | +/-0.045   | 0.080 | pCi/g |    |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7258  
Sample ID: 244630003

Project: LANL01004  
Client ID: LANL010

| Parameter | Qualifier | Result | DL | TPU | RL | Units | DF | Analyst | Date | Time | Batch | Mtd. |
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|

### Rad Gamma Spec Analysis

#### GAMMA SPEC "Dry Weight Corrected"

|             |   |         |        |           |       |       |  |  |  |  |  |  |
|-------------|---|---------|--------|-----------|-------|-------|--|--|--|--|--|--|
| Thorium-227 | U | -0.156  | 0.615  | +/-0.180  |       | pCi/g |  |  |  |  |  |  |
| Thorium-231 | U | 0.178   | 1.08   | +/-0.350  |       | pCi/g |  |  |  |  |  |  |
| Thorium-234 | U | 0.484   | 3.08   | +/-0.854  | 2.00  | pCi/g |  |  |  |  |  |  |
| Tin-113     | U | 0.0166  | 0.0737 | +/-0.0212 | 0.100 | pCi/g |  |  |  |  |  |  |
| Uranium-235 | U | -0.0163 | 0.352  | +/-0.104  | 0.500 | pCi/g |  |  |  |  |  |  |
| Yttrium-88  | U | 0.0377  | 0.063  | +/-0.0157 | 0.100 | pCi/g |  |  |  |  |  |  |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery % | Acceptable Limits |
|---------------------------|------------------------------|------------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 85.6       | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 94.5       | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 82.1       | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.

## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

### Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7258  
Sample ID: 244630003

Project: LANL01004  
Client ID: LANL010

| Parameter | Qualifier | Result | DL | TPU | RL | Units | DF | Analyst | Date | Time Batch | Mtd. |
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------------|------|
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------------|------|

ND Analyte concentration is not detected above the detection limit

NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

R Sample results are rejected

U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

UI Gamma Spectroscopy--Uncertain identification

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Y QC Samples were not spiked with this compound

^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7268  
Sample ID: 244630004  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 9.81%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result    | DL     | TPU        | RL    | Units | DF | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|-----------|--------|------------|-------|-------|----|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |           |        |            |       |       |    |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |           |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.00266   | 0.0188 | +/-0.00172 | 0.050 | pCi/g |    | MXA1    | 01/22/10 | 1203 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |           |        |            |       |       |    |         |          |      |        |      |
| Plutonium-238                            | U         | 0.00      | 0.0192 | +/-0.00164 | 0.050 | pCi/g |    | MXA1    | 01/20/10 | 1641 | 941752 | 2    |
| Plutonium-239/240                        |           | 0.0244    | 0.0219 | +/-0.00616 | 0.050 | pCi/g |    |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |           |        |            |       |       |    |         |          |      |        |      |
| Uranium-233/234                          |           | 1.58      | 0.117  | +/-0.136   | 0.100 | pCi/g |    | MXA1    | 01/23/10 | 1120 | 941758 | 3    |
| Uranium-235/236                          |           | 0.159     | 0.0729 | +/-0.0303  | 0.100 | pCi/g |    |         |          |      |        |      |
| Uranium-238                              |           | 2.57      | 0.0681 | +/-0.208   | 0.100 | pCi/g |    |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |           |        |            |       |       |    |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |           |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.190     | 0.378  | +/-0.116   | 0.200 | pCi/g |    | MXR1    | 01/23/10 | 1146 | 941639 | 4    |
| Bismuth-211                              | UI        | 4.35      | 0.429  | +/-0.290   |       | pCi/g |    |         |          |      |        |      |
| Bismuth-214                              |           | 1.41      | 0.130  | +/-0.113   | 0.200 | pCi/g |    |         |          |      |        |      |
| Cadmium-109                              | UI        | 3.83      | 2.08   | +/-0.619   |       | pCi/g |    |         |          |      |        |      |
| Cerium-139                               | U         | -0.00795  | 0.0629 | +/-0.0186  | 0.050 | pCi/g |    |         |          |      |        |      |
| Cesium-134                               | UI        | 0.116     | 0.109  | +/-0.046   | 0.100 | pCi/g |    |         |          |      |        |      |
| Cesium-137                               |           | 0.483     | 0.0722 | +/-0.0494  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cobalt-60                                | U         | 2.06E-05  | 0.0763 | +/-0.0235  | 0.100 | pCi/g |    |         |          |      |        |      |
| Europium-152                             | U         | 0.00764   | 0.211  | +/-0.0644  | 0.200 | pCi/g |    |         |          |      |        |      |
| Lanthanum-140                            | U         | -0.0258   | 0.124  | +/-0.0468  |       | pCi/g |    |         |          |      |        |      |
| Lead-212                                 |           | 2.01      | 0.109  | +/-0.0973  | 0.100 | pCi/g |    |         |          |      |        |      |
| Lead-214                                 |           | 1.51      | 0.139  | +/-0.108   | 0.100 | pCi/g |    |         |          |      |        |      |
| Mercury-203                              | U         | 0.0102    | 0.0855 | +/-0.0246  | 0.100 | pCi/g |    |         |          |      |        |      |
| Potassium-40                             |           | 29.7      | 0.677  | +/-1.35    | 1.00  | pCi/g |    |         |          |      |        |      |
| Radium-223                               | U         | -0.477    | 1.24   | +/-0.431   |       | pCi/g |    |         |          |      |        |      |
| Radium-224                               | UI        | 4.74      | 1.25   | +/-0.700   |       | pCi/g |    |         |          |      |        |      |
| Radium-226                               |           | 1.41      | 0.130  | +/-0.113   |       | pCi/g |    |         |          |      |        |      |
| Radium-228                               |           | 1.84      | 0.250  | +/-0.181   | 0.500 | pCi/g |    |         |          |      |        |      |
| Ruthenium-106                            | U         | 0.243     | 0.636  | +/-0.182   | 0.800 | pCi/g |    |         |          |      |        |      |
| Sodium-22                                | U         | -0.000773 | 0.0832 | +/-0.0254  | 0.080 | pCi/g |    |         |          |      |        |      |
| Strontium-85                             | UI        | 0.084     | 0.0811 | +/-0.0244  |       | pCi/g |    |         |          |      |        |      |
| Thallium-208                             |           | 0.623     | 0.0719 | +/-0.0513  | 0.080 | pCi/g |    |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7268  
Sample ID: 244630004

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time Batch | Mtd. |
|--|-----------|----------|--------|-----------|-------|-------|----|---------|------|------------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |           |       |       |    |         |      |            |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |           |       |       |    |         |      |            |      |
| Thorium-227                              | U         | 0.078    | 0.749  | +/-0.223  |       | pCi/g |    |         |      |            |      |
| Thorium-231                              | U         | -0.477   | 1.24   | +/-0.431  |       | pCi/g |    |         |      |            |      |
| Thorium-234                              |           | 3.44     | 3.02   | +/-1.29   | 2.00  | pCi/g |    |         |      |            |      |
| Tin-113                                  | U         | -0.00703 | 0.0892 | +/-0.0262 | 0.100 | pCi/g |    |         |      |            |      |
| Uranium-235                              | U         | 0.243    | 0.454  | +/-0.131  | 0.500 | pCi/g |    |         |      |            |      |
| Yttrium-88                               | U         | 0.0166   | 0.0657 | +/-0.0184 | 0.100 | pCi/g |    |         |      |            |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery % | Acceptable Limits |
|---------------------------|------------------------------|------------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 83.8       | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 85.9       | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 75.8       | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.

## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

### Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7268  
Sample ID: 244630004

Project: LANL01004  
Client ID: LANL010

| Parameter | Qualifier | Result | DL | TPU | RL | Units | DF | Analyst | Date | Time | Batch | Mtd. |
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|

ND Analyte concentration is not detected above the detection limit

NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

R Sample results are rejected

U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

UI Gamma Spectroscopy--Uncertain identification

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Y QC Samples were not spiked with this compound

^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7265  
Sample ID: 244630005  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 6.16%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU        | RL    | Units | DF | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|----------|--------|------------|-------|-------|----|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |          |        |            |       |       |    |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |          |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.00139  | 0.018  | +/-0.00122 | 0.050 | pCi/g |    | MXA1    | 01/22/10 | 1203 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |          |        |            |       |       |    |         |          |      |        |      |
| Plutonium-238                            | U         | -0.00757 | 0.0313 | +/-0.00803 | 0.050 | pCi/g |    | MXA1    | 01/20/10 | 1641 | 941752 | 2    |
| Plutonium-239/240                        | U         | 0.00     | 0.0358 | +/-0.00268 | 0.050 | pCi/g |    |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |          |        |            |       |       |    |         |          |      |        |      |
| Uranium-233/234                          |           | 0.905    | 0.090  | +/-0.0813  | 0.100 | pCi/g |    | MXA1    | 01/23/10 | 1120 | 941758 | 3    |
| Uranium-235/236                          |           | 0.108    | 0.0559 | +/-0.021   | 0.100 | pCi/g |    |         |          |      |        |      |
| Uranium-238                              |           | 0.988    | 0.0522 | +/-0.087   | 0.100 | pCi/g |    |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |            |       |       |    |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.132    | 0.202  | +/-0.0623  | 0.200 | pCi/g |    | MXR1    | 01/23/10 | 1146 | 941639 | 4    |
| Bismuth-211                              | UI        | 5.32     | 0.388  | +/-0.349   |       | pCi/g |    |         |          |      |        |      |
| Bismuth-214                              |           | 1.63     | 0.128  | +/-0.122   | 0.200 | pCi/g |    |         |          |      |        |      |
| Cadmium-109                              | UI        | 4.01     | 1.17   | +/-0.541   |       | pCi/g |    |         |          |      |        |      |
| Cerium-139                               | U         | -0.0183  | 0.0531 | +/-0.0166  | 0.050 | pCi/g |    |         |          |      |        |      |
| Cesium-134                               | UI        | 0.258    | 0.103  | +/-0.0675  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cesium-137                               | U         | -0.0388  | 0.0648 | +/-0.0208  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cobalt-60                                | U         | 0.000259 | 0.0718 | +/-0.0217  | 0.100 | pCi/g |    |         |          |      |        |      |
| Europium-152                             | U         | -0.0549  | 0.180  | +/-0.0574  | 0.200 | pCi/g |    |         |          |      |        |      |
| Lanthanum-140                            | U         | 0.0781   | 0.151  | +/-0.0452  |       | pCi/g |    |         |          |      |        |      |
| Lead-212                                 |           | 2.15     | 0.129  | +/-0.123   | 0.100 | pCi/g |    |         |          |      |        |      |
| Lead-214                                 |           | 1.85     | 0.135  | +/-0.131   | 0.100 | pCi/g |    |         |          |      |        |      |
| Mercury-203                              | U         | 0.0343   | 0.0788 | +/-0.0224  | 0.100 | pCi/g |    |         |          |      |        |      |
| Potassium-40                             |           | 39.6     | 0.559  | +/-1.99    | 1.00  | pCi/g |    |         |          |      |        |      |
| Radium-223                               | U         | -0.212   | 1.19   | +/-0.412   |       | pCi/g |    |         |          |      |        |      |
| Radium-224                               | UI        | 4.90     | 1.55   | +/-0.518   |       | pCi/g |    |         |          |      |        |      |
| Radium-226                               |           | 1.63     | 0.128  | +/-0.122   |       | pCi/g |    |         |          |      |        |      |
| Radium-228                               |           | 2.58     | 0.236  | +/-0.224   | 0.500 | pCi/g |    |         |          |      |        |      |
| Ruthenium-106                            | U         | 0.0357   | 0.577  | +/-0.170   | 0.800 | pCi/g |    |         |          |      |        |      |
| Sodium-22                                | U         | 0.0257   | 0.0786 | +/-0.0225  | 0.080 | pCi/g |    |         |          |      |        |      |
| Strontium-85                             | UI        | 0.102    | 0.0776 | +/-0.0224  |       | pCi/g |    |         |          |      |        |      |
| Thallium-208                             |           | 0.768    | 0.0598 | +/-0.057   | 0.080 | pCi/g |    |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7265  
Sample ID: 244630005  
Project: LANL01004  
Client ID: LANL010

| Parameter | Qualifier | Result | DL | TPU | RL | Units | DF | Analyst | Date | Time Batch | Mtd. |
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------------|------|
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------------|------|

### Rad Gamma Spec Analysis

#### GAMMA SPEC "Dry Weight Corrected"

|             |   |          |        |           |       |       |  |  |  |  |  |
|-------------|---|----------|--------|-----------|-------|-------|--|--|--|--|--|
| Thorium-227 | U | -0.208   | 0.661  | +/-0.199  |       | pCi/g |  |  |  |  |  |
| Thorium-231 | U | -0.212   | 1.19   | +/-0.412  |       | pCi/g |  |  |  |  |  |
| Thorium-234 |   | 2.23     | 1.76   | +/-0.781  | 2.00  | pCi/g |  |  |  |  |  |
| Tin-113     | U | -0.00302 | 0.0842 | +/-0.0255 | 0.100 | pCi/g |  |  |  |  |  |
| Uranium-235 | U | 0.233    | 0.381  | +/-0.114  | 0.500 | pCi/g |  |  |  |  |  |
| Yttrium-88  | U | 0.0149   | 0.0542 | +/-0.0148 | 0.100 | pCi/g |  |  |  |  |  |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery % | Acceptable Limits |
|---------------------------|------------------------------|------------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 86.9       | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 58.5       | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 92.1       | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.



# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7265  
Sample ID: 244630005

Project: LANL01004  
Client ID: LANL010

| Parameter | Qualifier | Result | DL | TPU | RL | Units | DF | Analyst | Date | Time | Batch | Mtd. |
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|

ND Analyte concentration is not detected above the detection limit

NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

R Sample results are rejected

U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

UI Gamma Spectroscopy--Uncertain identification

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Y QC Samples were not spiked with this compound

^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7261  
Sample ID: 244630006  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 13.3%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU        | RL    | Units | DF | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|----------|--------|------------|-------|-------|----|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |          |        |            |       |       |    |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |          |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.00533  | 0.0202 | +/-0.00254 | 0.050 | pCi/g |    | MXA1    | 01/22/10 | 1203 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |          |        |            |       |       |    |         |          |      |        |      |
| Plutonium-238                            | U         | 0.00116  | 0.0191 | +/-0.00116 | 0.050 | pCi/g |    | MXA1    | 01/20/10 | 1641 | 941752 | 2    |
| Plutonium-239/240                        | U         | 0.00579  | 0.0219 | +/-0.00349 | 0.050 | pCi/g |    |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |          |        |            |       |       |    |         |          |      |        |      |
| Uranium-233/234                          |           | 0.969    | 0.141  | +/-0.0965  | 0.100 | pCi/g |    | MXA1    | 01/23/10 | 1120 | 941758 | 3    |
| Uranium-235/236                          | U         | 0.0787   | 0.0874 | +/-0.0218  | 0.100 | pCi/g |    |         |          |      |        |      |
| Uranium-238                              |           | 0.991    | 0.0817 | +/-0.098   | 0.100 | pCi/g |    |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |            |       |       |    |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | -0.0302  | 0.177  | +/-0.0588  | 0.200 | pCi/g |    | MXR1    | 01/23/10 | 1147 | 941639 | 4    |
| Bismuth-211                              | UI        | 3.47     | 0.287  | +/-0.322   |       | pCi/g |    |         |          |      |        |      |
| Bismuth-214                              |           | 1.07     | 0.0948 | +/-0.0902  | 0.200 | pCi/g |    |         |          |      |        |      |
| Cadmium-109                              | UI        | 3.03     | 0.938  | +/-0.469   |       | pCi/g |    |         |          |      |        |      |
| Cerium-139                               | U         | 0.00249  | 0.0423 | +/-0.0123  | 0.050 | pCi/g |    |         |          |      |        |      |
| Cesium-134                               | UI        | 0.112    | 0.0922 | +/-0.0332  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cesium-137                               |           | 0.123    | 0.0554 | +/-0.0383  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cobalt-60                                | U         | -0.00433 | 0.0632 | +/-0.0198  | 0.100 | pCi/g |    |         |          |      |        |      |
| Europium-152                             | U         | 0.0102   | 0.138  | +/-0.0473  | 0.200 | pCi/g |    |         |          |      |        |      |
| Lanthanum-140                            | U         | -0.0506  | 0.115  | +/-0.0388  |       | pCi/g |    |         |          |      |        |      |
| Lead-212                                 |           | 1.65     | 0.084  | +/-0.128   | 0.100 | pCi/g |    |         |          |      |        |      |
| Lead-214                                 |           | 1.21     | 0.0999 | +/-0.116   | 0.100 | pCi/g |    |         |          |      |        |      |
| Mercury-203                              | U         | 0.048    | 0.0647 | +/-0.0186  | 0.100 | pCi/g |    |         |          |      |        |      |
| Potassium-40                             |           | 28.6     | 0.440  | +/-1.55    | 1.00  | pCi/g |    |         |          |      |        |      |
| Radium-223                               | U         | 0.715    | 1.04   | +/-0.336   |       | pCi/g |    |         |          |      |        |      |
| Radium-224                               | UI        | 4.52     | 0.956  | +/-0.655   |       | pCi/g |    |         |          |      |        |      |
| Radium-226                               |           | 1.07     | 0.0948 | +/-0.0902  |       | pCi/g |    |         |          |      |        |      |
| Radium-228                               |           | 1.70     | 0.191  | +/-0.174   | 0.500 | pCi/g |    |         |          |      |        |      |
| Ruthenium-106                            | U         | 0.051    | 0.462  | +/-0.137   | 0.800 | pCi/g |    |         |          |      |        |      |
| Sodium-22                                | U         | 0.0357   | 0.072  | +/-0.0202  | 0.080 | pCi/g |    |         |          |      |        |      |
| Strontium-85                             | UI        | 0.0609   | 0.0605 | +/-0.0177  |       | pCi/g |    |         |          |      |        |      |
| Thallium-208                             |           | 0.501    | 0.0576 | +/-0.0452  | 0.080 | pCi/g |    |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID:  
Sample ID:

RE12-10-7261  
244630006

Project: LANL01004  
Client ID: LANL010

| Parameter | Qualifier | Result | DL | TPU | RL | Units | DF | Analyst | Date | Time Batch | Mtd. |
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------------|------|
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------------|------|

### Rad Gamma Spec Analysis

#### GAMMA SPEC "Dry Weight Corrected"

|             |   |         |        |           |       |       |  |  |  |  |  |
|-------------|---|---------|--------|-----------|-------|-------|--|--|--|--|--|
| Thorium-227 | U | -0.031  | 0.554  | +/-0.168  |       | pCi/g |  |  |  |  |  |
| Thorium-231 | U | 0.715   | 1.04   | +/-0.336  |       | pCi/g |  |  |  |  |  |
| Thorium-234 | U | 1.35    | 1.56   | +/-0.780  | 2.00  | pCi/g |  |  |  |  |  |
| Tin-113     | U | 0.0139  | 0.0693 | +/-0.0197 | 0.100 | pCi/g |  |  |  |  |  |
| Uranium-235 | U | 0.0998  | 0.310  | +/-0.0902 | 0.500 | pCi/g |  |  |  |  |  |
| Yttrium-88  | U | 0.00683 | 0.0581 | +/-0.0171 | 0.100 | pCi/g |  |  |  |  |  |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery% | Acceptable Limits |
|---------------------------|------------------------------|-----------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 79.5      | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 91.5      | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 64.5      | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.

## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

### Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7261  
Sample ID: 244630006

Project: LANL01004  
Client ID: LANL010

| Parameter | Qualifier | Result | DL | TPU | RL | Units | DF | Analyst | Date | Time | Batch | Mtd. |
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|

ND Analyte concentration is not detected above the detection limit  
NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier  
R Sample results are rejected  
U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.  
UI Gamma Spectroscopy--Uncertain identification  
X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier  
Y QC Samples were not spiked with this compound  
^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.  
h Preparation or preservation holding time was exceeded  
The above sample is reported on a dry weight basis.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7259  
Sample ID: 244630007  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 6.49%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU        | RL    | Units | DF | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|----------|--------|------------|-------|-------|----|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |          |        |            |       |       |    |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |          |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | -0.00281 | 0.0177 | +/-0.0024  | 0.050 | pCi/g |    | MXA1    | 01/22/10 | 1203 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |          |        |            |       |       |    |         |          |      |        |      |
| Plutonium-238                            | U         | 0.00118  | 0.0194 | +/-0.00118 | 0.050 | pCi/g |    | MXA1    | 01/20/10 | 1641 | 941752 | 2    |
| Plutonium-239/240                        | U         | 0.00235  | 0.0222 | +/-0.00288 | 0.050 | pCi/g |    |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |          |        |            |       |       |    |         |          |      |        |      |
| Uranium-233/234                          |           | 0.809    | 0.104  | +/-0.0778  | 0.100 | pCi/g |    | MXA1    | 01/23/10 | 1120 | 941758 | 3    |
| Uranium-235/236                          |           | 0.0834   | 0.0649 | +/-0.0212  | 0.100 | pCi/g |    |         |          |      |        |      |
| Uranium-238                              |           | 0.776    | 0.0606 | +/-0.0754  | 0.100 | pCi/g |    |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |            |       |       |    |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | -0.177   | 0.566  | +/-0.165   | 0.200 | pCi/g |    | MXR1    | 01/23/10 | 1147 | 941639 | 4    |
| Bismuth-211                              | UI        | 4.11     | 0.405  | +/-0.321   |       | pCi/g |    |         |          |      |        |      |
| Bismuth-214                              |           | 1.26     | 0.137  | +/-0.106   | 0.200 | pCi/g |    |         |          |      |        |      |
| Cadmium-109                              | U         | 0.773    | 2.18   | +/-0.975   |       | pCi/g |    |         |          |      |        |      |
| Cerium-139                               | U         | 0.00994  | 0.0685 | +/-0.0203  | 0.050 | pCi/g |    |         |          |      |        |      |
| Cesium-134                               | U         | 0.0864   | 0.104  | +/-0.0278  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cesium-137                               | U         | -0.0126  | 0.071  | +/-0.0223  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cobalt-60                                | U         | 0.0447   | 0.0853 | +/-0.0239  | 0.100 | pCi/g |    |         |          |      |        |      |
| Europium-152                             | U         | -0.139   | 0.189  | +/-0.0807  | 0.200 | pCi/g |    |         |          |      |        |      |
| Lanthanum-140                            | U         | 0.0482   | 0.159  | +/-0.0442  |       | pCi/g |    |         |          |      |        |      |
| Lead-212                                 |           | 1.92     | 0.120  | +/-0.107   | 0.100 | pCi/g |    |         |          |      |        |      |
| Lead-214                                 |           | 1.43     | 0.141  | +/-0.118   | 0.100 | pCi/g |    |         |          |      |        |      |
| Mercury-203                              | U         | 0.0381   | 0.0943 | +/-0.0266  | 0.100 | pCi/g |    |         |          |      |        |      |
| Potassium-40                             |           | 35.3     | 0.699  | +/-1.74    | 1.00  | pCi/g |    |         |          |      |        |      |
| Radium-223                               | U         | 0.410    | 1.46   | +/-0.479   |       | pCi/g |    |         |          |      |        |      |
| Radium-224                               | UI        | 6.79     | 1.37   | +/-0.957   |       | pCi/g |    |         |          |      |        |      |
| Radium-226                               |           | 1.26     | 0.137  | +/-0.106   |       | pCi/g |    |         |          |      |        |      |
| Radium-228                               |           | 2.21     | 0.250  | +/-0.206   | 0.500 | pCi/g |    |         |          |      |        |      |
| Ruthenium-106                            | U         | 0.215    | 0.669  | +/-0.196   | 0.800 | pCi/g |    |         |          |      |        |      |
| Sodium-22                                | U         | -0.015   | 0.0885 | +/-0.028   | 0.080 | pCi/g |    |         |          |      |        |      |
| Strontium-85                             | U         | 0.0263   | 0.0743 | +/-0.0247  |       | pCi/g |    |         |          |      |        |      |
| Thallium-208                             |           | 0.562    | 0.0771 | +/-0.046   | 0.080 | pCi/g |    |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7259  
Sample ID: 244630007

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result  | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time | Batch | Mtd. |
|--|-----------|---------|--------|-----------|-------|-------|----|---------|------|------|-------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |         |        |           |       |       |    |         |      |      |       |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |         |        |           |       |       |    |         |      |      |       |      |
| Thorium-227                              | U         | 0.312   | 0.884  | +/-0.251  |       | pCi/g |    |         |      |      |       |      |
| Thorium-231                              | U         | 0.410   | 1.46   | +/-0.479  |       | pCi/g |    |         |      |      |       |      |
| Thorium-234                              | U         | 1.51    | 4.29   | +/-1.22   | 2.00  | pCi/g |    |         |      |      |       |      |
| Tin-113                                  | U         | -0.0562 | 0.0861 | +/-0.0273 | 0.100 | pCi/g |    |         |      |      |       |      |
| Uranium-235                              | U         | 0.182   | 0.471  | +/-0.139  | 0.500 | pCi/g |    |         |      |      |       |      |
| Yttrium-88                               | U         | 0.0249  | 0.0699 | +/-0.0191 | 0.100 | pCi/g |    |         |      |      |       |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery% | Acceptable Limits |
|---------------------------|------------------------------|-----------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 90.0      | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 94.0      | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 83.6      | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.

## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

### Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7259  
Sample ID: 244630007

Project: LANL01004  
Client ID: LANL010

| Parameter | Qualifier | Result | DL | TPU | RL | Units | DF | Analyst | Date | Time | Batch | Mtd. |
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|

ND Analyte concentration is not detected above the detection limit

NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

R Sample results are rejected

U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

UI Gamma Spectroscopy--Uncertain identification

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Y QC Samples were not spiked with this compound

^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7263  
Sample ID: 244630008  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 5.59%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU        | RL    | Units | DF | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|----------|--------|------------|-------|-------|----|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |          |        |            |       |       |    |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |          |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.000388 | 0.0185 | +/-0.00109 | 0.050 | pCi/g |    | MXA1    | 01/22/10 | 1203 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |          |        |            |       |       |    |         |          |      |        |      |
| Plutonium-238                            | U         | 0.00     | 0.0166 | +/-0.001   | 0.050 | pCi/g |    | MXA1    | 01/20/10 | 1636 | 941752 | 2    |
| Plutonium-239/240                        | U         | 0.00201  | 0.019  | +/-0.00142 | 0.050 | pCi/g |    |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |          |        |            |       |       |    |         |          |      |        |      |
| Uranium-233/234                          |           | 0.883    | 0.113  | +/-0.0845  | 0.100 | pCi/g |    | MXA1    | 01/23/10 | 1120 | 941758 | 3    |
| Uranium-235/236                          |           | 0.0767   | 0.0702 | +/-0.0204  | 0.100 | pCi/g |    |         |          |      |        |      |
| Uranium-238                              |           | 0.887    | 0.0656 | +/-0.0851  | 0.100 | pCi/g |    |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |            |       |       |    |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | -0.104   | 0.236  | +/-0.0803  | 0.200 | pCi/g |    | MXR1    | 01/23/10 | 1147 | 941639 | 4    |
| Bismuth-211                              | UI        | 4.12     | 0.287  | +/-0.300   |       | pCi/g |    |         |          |      |        |      |
| Bismuth-214                              |           | 1.31     | 0.0988 | +/-0.105   | 0.200 | pCi/g |    |         |          |      |        |      |
| Cadmium-109                              | UI        | 3.09     | 1.13   | +/-0.478   |       | pCi/g |    |         |          |      |        |      |
| Cerium-139                               | U         | 0.00233  | 0.0456 | +/-0.0132  | 0.050 | pCi/g |    |         |          |      |        |      |
| Cesium-134                               | UI        | 0.150    | 0.0953 | +/-0.0322  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cesium-137                               | U         | 0.00699  | 0.0593 | +/-0.0177  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cobalt-60                                | U         | -0.0513  | 0.0586 | +/-0.0212  | 0.100 | pCi/g |    |         |          |      |        |      |
| Europium-152                             | U         | -0.0331  | 0.140  | +/-0.0427  | 0.200 | pCi/g |    |         |          |      |        |      |
| Lanthanum-140                            | U         | -0.112   | 0.0945 | +/-0.038   |       | pCi/g |    |         |          |      |        |      |
| Lead-212                                 |           | 1.92     | 0.0772 | +/-0.126   | 0.100 | pCi/g |    |         |          |      |        |      |
| Lead-214                                 |           | 1.43     | 0.111  | +/-0.111   | 0.100 | pCi/g |    |         |          |      |        |      |
| Mercury-203                              | U         | 0.0498   | 0.0598 | +/-0.0293  | 0.100 | pCi/g |    |         |          |      |        |      |
| Potassium-40                             |           | 32.8     | 0.482  | +/-1.69    | 1.00  | pCi/g |    |         |          |      |        |      |
| Radium-223                               | U         | 0.0689   | 0.980  | +/-0.336   |       | pCi/g |    |         |          |      |        |      |
| Radium-224                               | UI        | 5.34     | 0.878  | +/-0.672   |       | pCi/g |    |         |          |      |        |      |
| Radium-226                               |           | 1.31     | 0.0988 | +/-0.105   |       | pCi/g |    |         |          |      |        |      |
| Radium-228                               |           | 2.03     | 0.178  | +/-0.183   | 0.500 | pCi/g |    |         |          |      |        |      |
| Ruthenium-106                            | U         | 0.0629   | 0.500  | +/-0.148   | 0.800 | pCi/g |    |         |          |      |        |      |
| Sodium-22                                | U         | -0.0374  | 0.0683 | +/-0.0229  | 0.080 | pCi/g |    |         |          |      |        |      |
| Strontium-85                             | U         | 0.0299   | 0.0524 | +/-0.0162  |       | pCi/g |    |         |          |      |        |      |
| Thallium-208                             |           | 0.613    | 0.0538 | +/-0.0501  | 0.080 | pCi/g |    |         |          |      |        |      |



# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7263  
Sample ID: 244630008

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time | Batch | Mtd. |
|--|-----------|----------|--------|-----------|-------|-------|----|---------|------|------|-------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |           |       |       |    |         |      |      |       |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |           |       |       |    |         |      |      |       |      |
| Thorium-227                              | U         | -0.0687  | 0.577  | +/-0.175  |       | pCi/g |    |         |      |      |       |      |
| Thorium-231                              | U         | 0.0689   | 0.980  | +/-0.336  |       | pCi/g |    |         |      |      |       |      |
| Thorium-234                              | U         | 1.59     | 1.75   | +/-0.834  | 2.00  | pCi/g |    |         |      |      |       |      |
| Tin-113                                  | U         | -0.0261  | 0.0674 | +/-0.0203 | 0.100 | pCi/g |    |         |      |      |       |      |
| Uranium-235                              | U         | 0.139    | 0.337  | +/-0.0969 | 0.500 | pCi/g |    |         |      |      |       |      |
| Yttrium-88                               | U         | -0.00978 | 0.0332 | +/-0.0115 | 0.100 | pCi/g |    |         |      |      |       |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery % | Acceptable Limits |
|---------------------------|------------------------------|------------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 90.9       | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 92.1       | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 71.8       | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.

## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

### Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7263  
Sample ID: 244630008  
Project: LANL01004  
Client ID: LANL010

| Parameter | Qualifier | Result | DL | TPU | RL | Units | DF | Analyst | Date | Time Batch | Mtd. |
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------------|------|
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------------|------|

ND Analyte concentration is not detected above the detection limit  
NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier  
R Sample results are rejected  
U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.  
UI Gamma Spectroscopy--Uncertain identification  
X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier  
Y QC Samples were not spiked with this compound  
^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.  
h Preparation or preservation holding time was exceeded  
The above sample is reported on a dry weight basis.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7271  
Sample ID: 244630009  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 7.57%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU        | RL    | Units | DF | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|----------|--------|------------|-------|-------|----|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |          |        |            |       |       |    |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |          |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | -0.00179 | 0.0193 | +/-0.00161 | 0.050 | pCi/g |    | MXA1    | 01/22/10 | 1203 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |          |        |            |       |       |    |         |          |      |        |      |
| Plutonium-238                            | U         | -0.0012  | 0.0198 | +/-0.00465 | 0.050 | pCi/g |    | MXA1    | 01/21/10 | 1704 | 941752 | 2    |
| Plutonium-239/240                        | U         | 0.0204   | 0.0227 | +/-0.0056  | 0.050 | pCi/g |    |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |          |        |            |       |       |    |         |          |      |        |      |
| Uranium-233/234                          |           | 1.87     | 0.104  | +/-0.153   | 0.100 | pCi/g |    | MXA1    | 01/23/10 | 1120 | 941758 | 4    |
| Uranium-235/236                          |           | 0.124    | 0.0645 | +/-0.025   | 0.100 | pCi/g |    |         |          |      |        |      |
| Uranium-238                              |           | 4.54     | 0.0602 | +/-0.342   | 0.100 | pCi/g |    |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |            |       |       |    |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | -0.00906 | 0.120  | +/-0.0372  | 0.200 | pCi/g |    | MXR1    | 01/23/10 | 1148 | 941639 | 5    |
| Bismuth-211                              | UI        | 5.70     | 0.405  | +/-0.404   |       | pCi/g |    |         |          |      |        |      |
| Bismuth-214                              |           | 1.83     | 0.138  | +/-0.142   | 0.200 | pCi/g |    |         |          |      |        |      |
| Cadmium-109                              | UI        | 4.92     | 1.11   | +/-0.540   |       | pCi/g |    |         |          |      |        |      |
| Cerium-139                               | U         | -0.0236  | 0.055  | +/-0.0168  | 0.050 | pCi/g |    |         |          |      |        |      |
| Cesium-134                               | UI        | 0.165    | 0.138  | +/-0.0586  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cesium-137                               | U         | 0.033    | 0.0988 | +/-0.0293  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cobalt-60                                | U         | -0.0186  | 0.0861 | +/-0.0267  | 0.100 | pCi/g |    |         |          |      |        |      |
| Europium-152                             | U         | -0.0105  | 0.185  | +/-0.054   | 0.200 | pCi/g |    |         |          |      |        |      |
| Lanthanum-140                            | U         | 0.00566  | 0.168  | +/-0.0586  |       | pCi/g |    |         |          |      |        |      |
| Lead-212                                 |           | 2.20     | 0.105  | +/-0.130   | 0.100 | pCi/g |    |         |          |      |        |      |
| Lead-214                                 |           | 1.98     | 0.141  | +/-0.150   | 0.100 | pCi/g |    |         |          |      |        |      |
| Mercury-203                              | U         | 0.042    | 0.0827 | +/-0.0253  | 0.100 | pCi/g |    |         |          |      |        |      |
| Potassium-40                             |           | 33.3     | 0.633  | +/-1.85    | 1.00  | pCi/g |    |         |          |      |        |      |
| Radium-223                               | U         | 0.0217   | 1.26   | +/-0.411   |       | pCi/g |    |         |          |      |        |      |
| Radium-224                               | UI        | 7.32     | 1.19   | +/-0.749   |       | pCi/g |    |         |          |      |        |      |
| Radium-226                               |           | 1.83     | 0.138  | +/-0.142   |       | pCi/g |    |         |          |      |        |      |
| Radium-228                               |           | 2.54     | 0.307  | +/-0.227   | 0.500 | pCi/g |    |         |          |      |        |      |
| Ruthenium-106                            | U         | 0.0757   | 0.711  | +/-0.214   | 0.800 | pCi/g |    |         |          |      |        |      |
| Sodium-22                                | U         | 0.0122   | 0.108  | +/-0.0327  | 0.080 | pCi/g |    |         |          |      |        |      |
| Strontium-85                             | UI        | 0.0789   | 0.0785 | +/-0.023   |       | pCi/g |    |         |          |      |        |      |
| Thallium-208                             |           | 0.756    | 0.0744 | +/-0.068   | 0.080 | pCi/g |    |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7271  
Sample ID: 244630009

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time | Batch | Mtd. |
|--|-----------|----------|--------|-----------|-------|-------|----|---------|------|------|-------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |           |       |       |    |         |      |      |       |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |           |       |       |    |         |      |      |       |      |
| Thorium-227                              | U         | 0.050    | 0.764  | +/-0.231  |       | pCi/g |    |         |      |      |       |      |
| Thorium-231                              | U         | 0.0217   | 1.26   | +/-0.411  |       | pCi/g |    |         |      |      |       |      |
| Thorium-234                              |           | 2.36     | 1.19   | +/-0.585  | 2.00  | pCi/g |    |         |      |      |       |      |
| Tin-113                                  | U         | 0.00704  | 0.0931 | +/-0.0271 | 0.100 | pCi/g |    |         |      |      |       |      |
| Uranium-235                              | U         | 0.0408   | 0.399  | +/-0.117  | 0.500 | pCi/g |    |         |      |      |       |      |
| Yttrium-88                               | U         | -0.00655 | 0.0696 | +/-0.0221 | 0.100 | pCi/g |    |         |      |      |       |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, Pu-11-RC Modified |
| 4      | DOE EML HASL-300, U-02-RC Modified  |
| 5      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery % | Acceptable Limits |
|---------------------------|------------------------------|------------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 83.8       | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 97.6       | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 75.8       | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure

## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

### Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7271  
Sample ID: 244630009

Project: LANL01004  
Client ID: LANL010

| Parameter | Qualifier | Result | DL | TPU | RL | Units | DF | Analyst | Date | Time | Batch | Mtd. |
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|

N/A RPD or %Recovery limits do not apply.

ND Analyte concentration is not detected above the detection limit

NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

R Sample results are rejected

U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

UI Gamma Spectroscopy--Uncertain identification

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Y QC Samples were not spiked with this compound

^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7260  
Sample ID: 244630010  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 19.9%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU        | RL    | Units | DF | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|----------|--------|------------|-------|-------|----|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |          |        |            |       |       |    |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |          |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.00908  | 0.0185 | +/-0.00354 | 0.050 | pCi/g |    | MXA1    | 01/25/10 | 1715 | 941748 | 2    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |          |        |            |       |       |    |         |          |      |        |      |
| Plutonium-238                            | U         | 0.002    | 0.0165 | +/-0.00142 | 0.050 | pCi/g |    | MXA1    | 01/20/10 | 1637 | 941752 | 3    |
| Plutonium-239/240                        |           | 0.030    | 0.0189 | +/-0.00568 | 0.050 | pCi/g |    |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |          |        |            |       |       |    |         |          |      |        |      |
| Uranium-233/234                          |           | 1.84     | 0.168  | +/-0.170   | 0.100 | pCi/g |    | MXA1    | 01/23/10 | 1120 | 941758 | 4    |
| Uranium-235/236                          |           | 0.128    | 0.104  | +/-0.0322  | 0.100 | pCi/g |    |         |          |      |        |      |
| Uranium-238                              |           | 3.18     | 0.0976 | +/-0.269   | 0.100 | pCi/g |    |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |            |       |       |    |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.0731   | 0.0883 | +/-0.0277  | 0.200 | pCi/g |    | MXR1    | 01/23/10 | 1148 | 941639 | 5    |
| Bismuth-211                              | UI        | 4.30     | 0.348  | +/-0.343   |       | pCi/g |    |         |          |      |        |      |
| Bismuth-214                              |           | 1.33     | 0.124  | +/-0.118   | 0.200 | pCi/g |    |         |          |      |        |      |
| Cadmium-109                              | UI        | 4.27     | 0.818  | +/-0.400   |       | pCi/g |    |         |          |      |        |      |
| Cerium-139                               | U         | -0.00721 | 0.0462 | +/-0.0139  | 0.050 | pCi/g |    |         |          |      |        |      |
| Cesium-134                               | UI        | 0.131    | 0.101  | +/-0.0292  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cesium-137                               |           | 0.971    | 0.0868 | +/-0.0731  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cobalt-60                                | U         | -0.00711 | 0.0685 | +/-0.0214  | 0.100 | pCi/g |    |         |          |      |        |      |
| Europium-152                             | U         | -0.0289  | 0.167  | +/-0.0518  | 0.200 | pCi/g |    |         |          |      |        |      |
| Lanthanum-140                            | U         | -0.0207  | 0.156  | +/-0.0486  |       | pCi/g |    |         |          |      |        |      |
| Lead-212                                 |           | 2.05     | 0.0897 | +/-0.132   | 0.100 | pCi/g |    |         |          |      |        |      |
| Lead-214                                 |           | 1.50     | 0.122  | +/-0.126   | 0.100 | pCi/g |    |         |          |      |        |      |
| Mercury-203                              | U         | -0.00322 | 0.0651 | +/-0.023   | 0.100 | pCi/g |    |         |          |      |        |      |
| Potassium-40                             |           | 27.2     | 0.636  | +/-1.50    | 1.00  | pCi/g |    |         |          |      |        |      |
| Radium-223                               | U         | -0.318   | 1.12   | +/-0.385   |       | pCi/g |    |         |          |      |        |      |
| Radium-224                               | UI        | 2.75     | 1.02   | +/-0.537   |       | pCi/g |    |         |          |      |        |      |
| Radium-226                               |           | 1.33     | 0.124  | +/-0.118   |       | pCi/g |    |         |          |      |        |      |
| Radium-228                               |           | 1.96     | 0.212  | +/-0.224   | 0.500 | pCi/g |    |         |          |      |        |      |
| Ruthenium-106                            | U         | -0.0278  | 0.569  | +/-0.169   | 0.800 | pCi/g |    |         |          |      |        |      |
| Sodium-22                                | U         | 0.00217  | 0.0725 | +/-0.022   | 0.080 | pCi/g |    |         |          |      |        |      |
| Strontium-85                             | U         | 0.0425   | 0.0729 | +/-0.0237  |       | pCi/g |    |         |          |      |        |      |
| Thallium-208                             |           | 0.678    | 0.0642 | +/-0.0601  | 0.080 | pCi/g |    |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID:  
Sample ID:

RE12-10-7260  
244630010

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL    | TPU       | RL    | Units | DF | Analyst | Date | Time | Batch | Mtd. |
|--|-----------|----------|-------|-----------|-------|-------|----|---------|------|------|-------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |          |       |           |       |       |    |         |      |      |       |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |       |           |       |       |    |         |      |      |       |      |
| Thorium-227                              | U         | -0.0889  | 0.614 | +/-0.192  |       | pCi/g |    |         |      |      |       |      |
| Thorium-231                              | U         | -0.318   | 1.12  | +/-0.385  |       | pCi/g |    |         |      |      |       |      |
| Thorium-234                              |           | 4.40     | 0.823 | +/-0.624  | 2.00  | pCi/g |    |         |      |      |       |      |
| Tin-113                                  | U         | -0.00896 | 0.075 | +/-0.0227 | 0.100 | pCi/g |    |         |      |      |       |      |
| Uranium-235                              |           | 0.327    | 0.310 | +/-0.112  | 0.500 | pCi/g |    |         |      |      |       |      |
| Yttrium-88                               | U         | -0.00688 | 0.073 | +/-0.0229 | 0.100 | pCi/g |    |         |      |      |       |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Am-05-RC Modified |
| 3      | DOE EML HASL-300, Pu-11-RC Modified |
| 4      | DOE EML HASL-300, U-02-RC Modified  |
| 5      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery % | Acceptable Limits |
|---------------------------|------------------------------|------------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 87.1       | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 96.5       | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 50.3       | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure

## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

### Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7260  
Sample ID: 244630010

Project: LANL01004  
Client ID: LANL010

| Parameter | Qualifier | Result | DL | TPU | RL | Units | DF | Analyst | Date | Time | Batch | Mtd. |
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|

N/A RPD or %Recovery limits do not apply.

ND Analyte concentration is not detected above the detection limit

NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

R Sample results are rejected

U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

UI Gamma Spectroscopy--Uncertain identification

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Y QC Samples were not spiked with this compound

^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.



# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7267  
Sample ID: 244630011  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 7.12%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU        | RL    | Units | DF | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|----------|--------|------------|-------|-------|----|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |          |        |            |       |       |    |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |          |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.0012   | 0.0168 | +/-0.00109 | 0.050 | pCi/g |    | MXA1    | 01/22/10 | 1203 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |          |        |            |       |       |    |         |          |      |        |      |
| Plutonium-238                            | U         | 0.00     | 0.0165 | +/-0.00141 | 0.050 | pCi/g |    | MXA1    | 01/20/10 | 1637 | 941752 | 2    |
| Plutonium-239/240                        | U         | 0.000997 | 0.0188 | +/-0.00223 | 0.050 | pCi/g |    |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |          |        |            |       |       |    |         |          |      |        |      |
| Uranium-233/234                          |           | 0.928    | 0.103  | +/-0.0858  | 0.100 | pCi/g |    | MXA1    | 01/23/10 | 1120 | 941758 | 3    |
| Uranium-235/236                          |           | 0.082    | 0.0638 | +/-0.0201  | 0.100 | pCi/g |    |         |          |      |        |      |
| Uranium-238                              |           | 0.998    | 0.0596 | +/-0.0916  | 0.100 | pCi/g |    |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |            |       |       |    |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.0509   | 0.288  | +/-0.0875  | 0.200 | pCi/g |    | MXR1    | 01/23/10 | 1149 | 941639 | 4    |
| Bismuth-211                              | UI        | 5.20     | 0.290  | +/-0.244   |       | pCi/g |    |         |          |      |        |      |
| Bismuth-214                              |           | 1.47     | 0.0861 | +/-0.096   | 0.200 | pCi/g |    |         |          |      |        |      |
| Cadmium-109                              | UI        | 4.81     | 1.18   | +/-0.565   |       | pCi/g |    |         |          |      |        |      |
| Cerium-139                               | U         | -0.0314  | 0.0416 | +/-0.0122  | 0.050 | pCi/g |    |         |          |      |        |      |
| Cesium-134                               | UI        | 0.124    | 0.0742 | +/-0.0271  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cesium-137                               | U         | 0.0227   | 0.0566 | +/-0.0159  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cobalt-60                                | U         | -0.00428 | 0.0553 | +/-0.0169  | 0.100 | pCi/g |    |         |          |      |        |      |
| Europium-152                             | U         | -0.0375  | 0.133  | +/-0.0449  | 0.200 | pCi/g |    |         |          |      |        |      |
| Lanthanum-140                            | U         | -0.05    | 0.0913 | +/-0.0365  |       | pCi/g |    |         |          |      |        |      |
| Lead-212                                 |           | 2.15     | 0.0762 | +/-0.0913  | 0.100 | pCi/g |    |         |          |      |        |      |
| Lead-214                                 |           | 1.81     | 0.0958 | +/-0.0971  | 0.100 | pCi/g |    |         |          |      |        |      |
| Mercury-203                              | U         | 0.0519   | 0.0608 | +/-0.0169  | 0.100 | pCi/g |    |         |          |      |        |      |
| Potassium-40                             |           | 33.6     | 0.437  | +/-1.46    | 1.00  | pCi/g |    |         |          |      |        |      |
| Radium-223                               | U         | -0.412   | 0.924  | +/-0.331   |       | pCi/g |    |         |          |      |        |      |
| Radium-224                               | UI        | 5.47     | 0.866  | +/-0.493   |       | pCi/g |    |         |          |      |        |      |
| Radium-226                               |           | 1.47     | 0.0861 | +/-0.096   |       | pCi/g |    |         |          |      |        |      |
| Radium-228                               |           | 2.12     | 0.174  | +/-0.186   | 0.500 | pCi/g |    |         |          |      |        |      |
| Ruthenium-106                            | U         | -0.0259  | 0.425  | +/-0.129   | 0.800 | pCi/g |    |         |          |      |        |      |
| Sodium-22                                | U         | -0.0347  | 0.0562 | +/-0.0182  | 0.080 | pCi/g |    |         |          |      |        |      |
| Strontium-85                             | UI        | 0.080    | 0.0563 | +/-0.0168  |       | pCi/g |    |         |          |      |        |      |
| Thallium-208                             |           | 0.638    | 0.0443 | +/-0.0405  | 0.080 | pCi/g |    |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7267  
Sample ID: 244630011  
Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time | Batch | Mtd. |
|--|-----------|--------|--------|-----------|-------|-------|----|---------|------|------|-------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |        |        |           |       |       |    |         |      |      |       |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |        |        |           |       |       |    |         |      |      |       |      |
| Thorium-227                              | U         | 0.170  | 0.546  | +/-0.156  |       | pCi/g |    |         |      |      |       |      |
| Thorium-231                              | U         | -0.412 | 0.924  | +/-0.331  |       | pCi/g |    |         |      |      |       |      |
| Thorium-234                              |           | 2.57   | 2.33   | +/-1.24   | 2.00  | pCi/g |    |         |      |      |       |      |
| Tin-113                                  | U         | 0.0199 | 0.0632 | +/-0.0178 | 0.100 | pCi/g |    |         |      |      |       |      |
| Uranium-235                              | U         | -0.023 | 0.325  | +/-0.0978 | 0.500 | pCi/g |    |         |      |      |       |      |
| Yttrium-88                               | U         | 0.015  | 0.0458 | +/-0.013  | 0.100 | pCi/g |    |         |      |      |       |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery % | Acceptable Limits |
|---------------------------|------------------------------|------------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 89.6       | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 91.0       | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 89.8       | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.

## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

### Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7267  
Sample ID: 244630011

Project: LANL01004  
Client ID: LANL010

| Parameter | Qualifier | Result | DL | TPU | RL | Units | DF | Analyst | Date | Time | Batch | Mtd. |
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|

ND Analyte concentration is not detected above the detection limit

NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

R Sample results are rejected

U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

UI Gamma Spectroscopy--Uncertain identification

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Y QC Samples were not spiked with this compound

^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7264  
Sample ID: 244630012  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 11%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU        | RL    | Units | DF | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|----------|--------|------------|-------|-------|----|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |          |        |            |       |       |    |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |          |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.00345  | 0.0179 | +/-0.00243 | 0.050 | pCi/g |    | MXA1    | 01/22/10 | 1203 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |          |        |            |       |       |    |         |          |      |        |      |
| Plutonium-238                            | U         | 0.00     | 0.0168 | +/-0.00144 | 0.050 | pCi/g |    | MXA1    | 01/20/10 | 1637 | 941752 | 2    |
| Plutonium-239/240                        | U         | 0.0172   | 0.0192 | +/-0.00427 | 0.050 | pCi/g |    |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |          |        |            |       |       |    |         |          |      |        |      |
| Uranium-233/234                          |           | 1.22     | 0.209  | +/-0.131   | 0.100 | pCi/g |    | MXA1    | 01/23/10 | 1120 | 941758 | 3    |
| Uranium-235/236                          | U         | 0.0918   | 0.130  | +/-0.0309  | 0.100 | pCi/g |    |         |          |      |        |      |
| Uranium-238                              |           | 1.88     | 0.121  | +/-0.183   | 0.100 | pCi/g |    |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |            |       |       |    |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.134    | 0.249  | +/-0.0815  | 0.200 | pCi/g |    | MXR1    | 01/23/10 | 1229 | 941639 | 4    |
| Bismuth-211                              | UI        | 4.79     | 0.355  | +/-0.264   |       | pCi/g |    |         |          |      |        |      |
| Bismuth-214                              |           | 1.29     | 0.122  | +/-0.104   | 0.200 | pCi/g |    |         |          |      |        |      |
| Cadmium-109                              | UI        | 3.91     | 1.54   | +/-0.810   |       | pCi/g |    |         |          |      |        |      |
| Cerium-139                               | U         | -0.0275  | 0.0521 | +/-0.0165  | 0.050 | pCi/g |    |         |          |      |        |      |
| Cesium-134                               | U         | 0.0746   | 0.0942 | +/-0.0387  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cesium-137                               |           | 0.236    | 0.0635 | +/-0.0499  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cobalt-60                                | U         | 0.0132   | 0.0724 | +/-0.0214  | 0.100 | pCi/g |    |         |          |      |        |      |
| Europium-152                             | U         | -0.0108  | 0.170  | +/-0.0584  | 0.200 | pCi/g |    |         |          |      |        |      |
| Lanthanum-140                            | U         | -0.00507 | 0.142  | +/-0.0478  |       | pCi/g |    |         |          |      |        |      |
| Lead-212                                 |           | 2.15     | 0.101  | +/-0.101   | 0.100 | pCi/g |    |         |          |      |        |      |
| Lead-214                                 |           | 1.67     | 0.126  | +/-0.102   | 0.100 | pCi/g |    |         |          |      |        |      |
| Mercury-203                              | U         | 0.079    | 0.080  | +/-0.0248  | 0.100 | pCi/g |    |         |          |      |        |      |
| Potassium-40                             |           | 32.1     | 0.567  | +/-1.48    | 1.00  | pCi/g |    |         |          |      |        |      |
| Radium-223                               | U         | -1.16    | 1.15   | +/-0.380   |       | pCi/g |    |         |          |      |        |      |
| Radium-224                               | UI        | 5.03     | 1.15   | +/-0.549   |       | pCi/g |    |         |          |      |        |      |
| Radium-226                               |           | 1.29     | 0.122  | +/-0.104   |       | pCi/g |    |         |          |      |        |      |
| Radium-228                               |           | 2.09     | 0.239  | +/-0.205   | 0.500 | pCi/g |    |         |          |      |        |      |
| Ruthenium-106                            | U         | -0.0594  | 0.564  | +/-0.174   | 0.800 | pCi/g |    |         |          |      |        |      |
| Sodium-22                                | U         | -0.0125  | 0.0823 | +/-0.0256  | 0.080 | pCi/g |    |         |          |      |        |      |
| Strontium-85                             | UI        | 0.111    | 0.076  | +/-0.0222  |       | pCi/g |    |         |          |      |        |      |
| Thallium-208                             |           | 0.570    | 0.0626 | +/-0.0456  | 0.080 | pCi/g |    |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7264  
Sample ID: 244630012

Project: LANL01004  
Client ID: LANL010

| Parameter | Qualifier | Result | DL | TPU | RL | Units | DF | Analyst | Date | Time | Batch | Mtd. |
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|

### Rad Gamma Spec Analysis

#### GAMMA SPEC "Dry Weight Corrected"

|             |   |          |        |           |       |       |  |  |  |  |  |  |
|-------------|---|----------|--------|-----------|-------|-------|--|--|--|--|--|--|
| Thorium-227 | U | -0.0544  | 0.693  | +/-0.216  |       | pCi/g |  |  |  |  |  |  |
| Thorium-231 | U | -1.16    | 1.15   | +/-0.380  |       | pCi/g |  |  |  |  |  |  |
| Thorium-234 | U | 1.93     | 2.12   | +/-0.847  | 2.00  | pCi/g |  |  |  |  |  |  |
| Tin-113     | U | 0.00499  | 0.0802 | +/-0.0238 | 0.100 | pCi/g |  |  |  |  |  |  |
| Uranium-235 | U | 0.121    | 0.393  | +/-0.117  | 0.500 | pCi/g |  |  |  |  |  |  |
| Yttrium-88  | U | -0.00243 | 0.0575 | +/-0.0181 | 0.100 | pCi/g |  |  |  |  |  |  |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery % | Acceptable Limits |
|---------------------------|------------------------------|------------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 91.4       | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 89.4       | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 42.9 *     | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.

## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

### Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7264  
Sample ID: 244630012

Project: LANL01004  
Client ID: LANL010

| Parameter | Qualifier | Result | DL | TPU | RL | Units | DF | Analyst | Date | Time Batch | Mtd. |
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------------|------|
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------------|------|

ND Analyte concentration is not detected above the detection limit  
NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier  
R Sample results are rejected  
U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.  
UI Gamma Spectroscopy--Uncertain identification  
X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier  
Y QC Samples were not spiked with this compound  
^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.  
h Preparation or preservation holding time was exceeded  
The above sample is reported on a dry weight basis.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7270  
Sample ID: 244630013  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 12.5%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result  | DL     | TPU        | RL    | Units | DF | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|---------|--------|------------|-------|-------|----|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |         |        |            |       |       |    |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |         |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.00868 | 0.0223 | +/-0.00342 | 0.050 | pCi/g |    | MXA1    | 01/22/10 | 1203 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |         |        |            |       |       |    |         |          |      |        |      |
| Plutonium-238                            | U         | 0.00291 | 0.016  | +/-0.00168 | 0.050 | pCi/g |    | MXA1    | 01/20/10 | 1637 | 941752 | 2    |
| Plutonium-239/240                        |           | 0.0261  | 0.0183 | +/-0.00537 | 0.050 | pCi/g |    |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |         |        |            |       |       |    |         |          |      |        |      |
| Uranium-233/234                          |           | 2.16    | 0.149  | +/-0.188   | 0.100 | pCi/g |    | MXA1    | 01/23/10 | 1116 | 941758 | 3    |
| Uranium-235/236                          |           | 0.161   | 0.0927 | +/-0.0352  | 0.100 | pCi/g |    |         |          |      |        |      |
| Uranium-238                              |           | 3.10    | 0.0866 | +/-0.257   | 0.100 | pCi/g |    |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |         |        |            |       |       |    |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |         |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.102   | 0.362  | +/-0.122   | 0.200 | pCi/g |    | MXR1    | 01/23/10 | 1405 | 941639 | 4    |
| Bismuth-211                              | UI        | 4.76    | 0.452  | +/-0.398   |       | pCi/g |    |         |          |      |        |      |
| Bismuth-214                              |           | 1.42    | 0.164  | +/-0.142   | 0.200 | pCi/g |    |         |          |      |        |      |
| Cadmium-109                              | UI        | 4.63    | 1.65   | +/-0.777   |       | pCi/g |    |         |          |      |        |      |
| Cerium-139                               | U         | -0.0121 | 0.0626 | +/-0.0189  | 0.050 | pCi/g |    |         |          |      |        |      |
| Cesium-134                               | U         | 0.0544  | 0.120  | +/-0.0345  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cesium-137                               |           | 0.598   | 0.0923 | +/-0.0595  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cobalt-60                                | U         | 0.00586 | 0.101  | +/-0.0303  | 0.100 | pCi/g |    |         |          |      |        |      |
| Europium-152                             | U         | -0.0998 | 0.223  | +/-0.0781  | 0.200 | pCi/g |    |         |          |      |        |      |
| Lanthanum-140                            | U         | -0.10   | 0.124  | +/-0.0609  |       | pCi/g |    |         |          |      |        |      |
| Lead-212                                 |           | 1.90    | 0.119  | +/-0.123   | 0.100 | pCi/g |    |         |          |      |        |      |
| Lead-214                                 |           | 1.66    | 0.163  | +/-0.145   | 0.100 | pCi/g |    |         |          |      |        |      |
| Mercury-203                              | U         | 0.102   | 0.103  | +/-0.029   | 0.100 | pCi/g |    |         |          |      |        |      |
| Potassium-40                             |           | 31.7    | 0.651  | +/-1.85    | 1.00  | pCi/g |    |         |          |      |        |      |
| Radium-223                               | U         | 0.725   | 1.56   | +/-0.519   |       | pCi/g |    |         |          |      |        |      |
| Radium-224                               | UI        | 4.35    | 1.35   | +/-0.770   |       | pCi/g |    |         |          |      |        |      |
| Radium-226                               |           | 1.42    | 0.164  | +/-0.142   |       | pCi/g |    |         |          |      |        |      |
| Radium-228                               |           | 1.60    | 0.303  | +/-0.196   | 0.500 | pCi/g |    |         |          |      |        |      |
| Ruthenium-106                            | U         | -0.0694 | 0.695  | +/-0.212   | 0.800 | pCi/g |    |         |          |      |        |      |
| Sodium-22                                | U         | 0.00288 | 0.106  | +/-0.0319  | 0.080 | pCi/g |    |         |          |      |        |      |
| Strontium-85                             | UI        | 0.0986  | 0.0943 | +/-0.0292  |       | pCi/g |    |         |          |      |        |      |
| Thallium-208                             |           | 0.546   | 0.0733 | +/-0.0575  | 0.080 | pCi/g |    |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7270  
Sample ID: 244630013

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result  | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time | Batch | Mtd. |
|--|-----------|---------|--------|-----------|-------|-------|----|---------|------|------|-------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |         |        |           |       |       |    |         |      |      |       |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |         |        |           |       |       |    |         |      |      |       |      |
| Thorium-227                              | U         | 0.0729  | 0.851  | +/-0.256  |       | pCi/g |    |         |      |      |       |      |
| Thorium-231                              | U         | 0.725   | 1.56   | +/-0.519  |       | pCi/g |    |         |      |      |       |      |
| Thorium-234                              | U         | 1.38    | 2.98   | +/-1.48   | 2.00  | pCi/g |    |         |      |      |       |      |
| Tin-113                                  | U         | -0.0311 | 0.101  | +/-0.0324 | 0.100 | pCi/g |    |         |      |      |       |      |
| Uranium-235                              | U         | 0.0185  | 0.468  | +/-0.142  | 0.500 | pCi/g |    |         |      |      |       |      |
| Yttrium-88                               | U         | 0.00233 | 0.0851 | +/-0.0262 | 0.100 | pCi/g |    |         |      |      |       |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery % | Acceptable Limits |
|---------------------------|------------------------------|------------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 71.1       | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 93.6       | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 71.4       | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.



## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

### Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7270  
Sample ID: 244630013

Project: LANL01004  
Client ID: LANL010

| Parameter | Qualifier | Result | DL | TPU | RL | Units | DF | Analyst | Date | Time | Batch | Mtd. |
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|

ND Analyte concentration is not detected above the detection limit

NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

R Sample results are rejected

U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

UI Gamma Spectroscopy--Uncertain identification

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Y QC Samples were not spiked with this compound

^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

h Preparation or preservation holding time was exceeded

The above sample is reported on a dry weight basis.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7269  
Sample ID: 244630014  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 6%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU         | RL    | Units | DF | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|----------|--------|-------------|-------|-------|----|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |          |        |             |       |       |    |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |          |        |             |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.00356  | 0.0181 | +/-0.00247  | 0.050 | pCi/g |    | MXA1    | 01/22/10 | 1204 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |          |        |             |       |       |    |         |          |      |        |      |
| Plutonium-238                            | U         | 0.00     | 0.0158 | +/-0.000957 | 0.050 | pCi/g |    | MXA1    | 01/20/10 | 1637 | 941752 | 2    |
| Plutonium-239/240                        | U         | 0.00191  | 0.0181 | +/-0.00191  | 0.050 | pCi/g |    |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |          |        |             |       |       |    |         |          |      |        |      |
| Uranium-233/234                          |           | 1.32     | 0.132  | +/-0.120    | 0.100 | pCi/g |    | MXA1    | 01/23/10 | 1116 | 941758 | 3    |
| Uranium-235/236                          |           | 0.105    | 0.0818 | +/-0.0247   | 0.100 | pCi/g |    |         |          |      |        |      |
| Uranium-238                              |           | 1.16     | 0.0764 | +/-0.109    | 0.100 | pCi/g |    |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |             |       |       |    |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |             |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | -0.00946 | 0.354  | +/-0.110    | 0.200 | pCi/g |    | MXR1    | 01/23/10 | 1405 | 941639 | 4    |
| Bismuth-211                              | UI        | 5.99     | 0.409  | +/-0.450    |       | pCi/g |    |         |          |      |        |      |
| Bismuth-214                              |           | 1.79     | 0.133  | +/-0.145    | 0.200 | pCi/g |    |         |          |      |        |      |
| Cadmium-109                              | UI        | 5.81     | 1.39   | +/-0.726    |       | pCi/g |    |         |          |      |        |      |
| Cerium-139                               | U         | 0.000893 | 0.0608 | +/-0.0181   | 0.050 | pCi/g |    |         |          |      |        |      |
| Cesium-134                               | UI        | 0.167    | 0.116  | +/-0.0407   | 0.100 | pCi/g |    |         |          |      |        |      |
| Cesium-137                               |           | 0.126    | 0.074  | +/-0.0296   | 0.100 | pCi/g |    |         |          |      |        |      |
| Cobalt-60                                | U         | 0.0121   | 0.0756 | +/-0.0223   | 0.100 | pCi/g |    |         |          |      |        |      |
| Europium-152                             | U         | -0.075   | 0.190  | +/-0.0583   | 0.200 | pCi/g |    |         |          |      |        |      |
| Lanthanum-140                            | U         | -0.0935  | 0.140  | +/-0.049    |       | pCi/g |    |         |          |      |        |      |
| Lead-212                                 |           | 2.45     | 0.108  | +/-0.169    | 0.100 | pCi/g |    |         |          |      |        |      |
| Lead-214                                 |           | 2.08     | 0.143  | +/-0.166    | 0.100 | pCi/g |    |         |          |      |        |      |
| Mercury-203                              | U         | -0.0389  | 0.0795 | +/-0.0241   | 0.100 | pCi/g |    |         |          |      |        |      |
| Potassium-40                             |           | 35.7     | 0.605  | +/-2.01     | 1.00  | pCi/g |    |         |          |      |        |      |
| Radium-223                               | U         | -0.259   | 1.36   | +/-0.463    |       | pCi/g |    |         |          |      |        |      |
| Radium-224                               | UI        | 6.54     | 1.23   | +/-0.843    |       | pCi/g |    |         |          |      |        |      |
| Radium-226                               |           | 1.79     | 0.133  | +/-0.145    |       | pCi/g |    |         |          |      |        |      |
| Radium-228                               |           | 2.14     | 0.256  | +/-0.225    | 0.500 | pCi/g |    |         |          |      |        |      |
| Ruthenium-106                            | U         | 0.0963   | 0.640  | +/-0.185    | 0.800 | pCi/g |    |         |          |      |        |      |
| Sodium-22                                | U         | 0.0348   | 0.0953 | +/-0.0274   | 0.080 | pCi/g |    |         |          |      |        |      |
| Strontium-85                             | U         | 0.00219  | 0.0709 | +/-0.0248   |       | pCi/g |    |         |          |      |        |      |
| Thallium-208                             |           | 0.672    | 0.075  | +/-0.058    | 0.080 | pCi/g |    |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID:  
Sample ID:

RE12-10-7269  
244630014

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result  | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time Batch | Mtd. |
|--|-----------|---------|--------|-----------|-------|-------|----|---------|------|------------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |         |        |           |       |       |    |         |      |            |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |         |        |           |       |       |    |         |      |            |      |
| Thorium-227                              | U         | 0.379   | 0.830  | +/-0.234  |       | pCi/g |    |         |      |            |      |
| Thorium-231                              | U         | -0.259  | 1.36   | +/-0.463  |       | pCi/g |    |         |      |            |      |
| Thorium-234                              | U         | 1.71    | 2.93   | +/-1.09   | 2.00  | pCi/g |    |         |      |            |      |
| Tin-113                                  | U         | 0.0459  | 0.0919 | +/-0.0262 | 0.100 | pCi/g |    |         |      |            |      |
| Uranium-235                              | U         | 0.021   | 0.436  | +/-0.129  | 0.500 | pCi/g |    |         |      |            |      |
| Yttrium-88                               | U         | 0.00723 | 0.0671 | +/-0.0197 | 0.100 | pCi/g |    |         |      |            |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery % | Acceptable Limits |
|---------------------------|------------------------------|------------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 88.9       | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 95.6       | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 82.2       | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.

## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

### Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7269 Project: LANL01004  
Sample ID: 244630014 Client ID: LANL010

| Parameter | Qualifier | Result | DL | TPU | RL | Units | DF | Analyst | Date | Time Batch | Mtd. |
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------------|------|
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------------|------|

ND Analyte concentration is not detected above the detection limit  
NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier  
R Sample results are rejected  
U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.  
UI Gamma Spectroscopy--Uncertain identification  
X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier  
Y QC Samples were not spiked with this compound  
^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.  
h Preparation or preservation holding time was exceeded  
The above sample is reported on a dry weight basis.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7283  
Sample ID: 244630015  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 18.2%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result   | DL     | TPU        | RL    | Units | DF | Analyst | Date     | Time | Batch  | Mtd. |
|--|-----------|----------|--------|------------|-------|-------|----|---------|----------|------|--------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |          |        |            |       |       |    |         |          |      |        |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |          |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.0138   | 0.019  | +/-0.00401 | 0.050 | pCi/g |    | MXA1    | 01/22/10 | 1204 | 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |          |        |            |       |       |    |         |          |      |        |      |
| Plutonium-238                            | U         | -0.00103 | 0.0169 | +/-0.00145 | 0.050 | pCi/g |    | MXA1    | 01/20/10 | 1637 | 941752 | 2    |
| Plutonium-239/240                        |           | 0.0308   | 0.0194 | +/-0.006   | 0.050 | pCi/g |    |         |          |      |        |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |          |        |            |       |       |    |         |          |      |        |      |
| Uranium-233/234                          |           | 1.88     | 0.199  | +/-0.180   | 0.100 | pCi/g |    | MXA1    | 01/23/10 | 1116 | 941758 | 3    |
| Uranium-235/236                          |           | 0.143    | 0.124  | +/-0.0371  | 0.100 | pCi/g |    |         |          |      |        |      |
| Uranium-238                              |           | 3.11     | 0.115  | +/-0.274   | 0.100 | pCi/g |    |         |          |      |        |      |
| <b>Rad Gamma Spec Analysis</b>           |           |          |        |            |       |       |    |         |          |      |        |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |          |        |            |       |       |    |         |          |      |        |      |
| Americium-241                            | U         | 0.106    | 0.570  | +/-0.185   | 0.200 | pCi/g |    | MXR1    | 01/23/10 | 1406 | 941639 | 4    |
| Bismuth-211                              | UI        | 4.14     | 0.428  | +/-0.338   |       | pCi/g |    |         |          |      |        |      |
| Bismuth-214                              |           | 1.19     | 0.144  | +/-0.0976  | 0.200 | pCi/g |    |         |          |      |        |      |
| Cadmium-109                              | UI        | 2.83     | 1.85   | +/-0.785   |       | pCi/g |    |         |          |      |        |      |
| Cerium-139                               | U         | -0.0111  | 0.0665 | +/-0.0203  | 0.050 | pCi/g |    |         |          |      |        |      |
| Cesium-134                               | U         | 0.0848   | 0.113  | +/-0.0409  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cesium-137                               |           | 0.643    | 0.0725 | +/-0.0592  | 0.100 | pCi/g |    |         |          |      |        |      |
| Cobalt-60                                | U         | 0.0401   | 0.0819 | +/-0.0229  | 0.100 | pCi/g |    |         |          |      |        |      |
| Europium-152                             | U         | -0.00958 | 0.220  | +/-0.0959  | 0.200 | pCi/g |    |         |          |      |        |      |
| Lanthanum-140                            | U         | -0.0566  | 0.170  | +/-0.0552  |       | pCi/g |    |         |          |      |        |      |
| Lead-212                                 |           | 1.88     | 0.124  | +/-0.107   | 0.100 | pCi/g |    |         |          |      |        |      |
| Lead-214                                 |           | 1.44     | 0.149  | +/-0.123   | 0.100 | pCi/g |    |         |          |      |        |      |
| Mercury-203                              | U         | 0.0219   | 0.0963 | +/-0.0277  | 0.100 | pCi/g |    |         |          |      |        |      |
| Potassium-40                             |           | 26.0     | 0.573  | +/-1.38    | 1.00  | pCi/g |    |         |          |      |        |      |
| Radium-223                               | U         | -0.0194  | 1.48   | +/-0.502   |       | pCi/g |    |         |          |      |        |      |
| Radium-224                               | UI        | 5.97     | 1.41   | +/-0.969   |       | pCi/g |    |         |          |      |        |      |
| Radium-226                               |           | 1.19     | 0.144  | +/-0.0976  |       | pCi/g |    |         |          |      |        |      |
| Radium-228                               |           | 1.90     | 0.280  | +/-0.202   | 0.500 | pCi/g |    |         |          |      |        |      |
| Ruthenium-106                            | U         | -0.113   | 0.646  | +/-0.203   | 0.800 | pCi/g |    |         |          |      |        |      |
| Sodium-22                                | U         | -0.00957 | 0.0914 | +/-0.0287  | 0.080 | pCi/g |    |         |          |      |        |      |
| Strontium-85                             | UI        | 0.105    | 0.0849 | +/-0.0251  |       | pCi/g |    |         |          |      |        |      |
| Thallium-208                             |           | 0.558    | 0.0708 | +/-0.0494  | 0.080 | pCi/g |    |         |          |      |        |      |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7283  
Sample ID: 244630015

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result  | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time Batch | Mtd. |
|--|-----------|---------|--------|-----------|-------|-------|----|---------|------|------------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |         |        |           |       |       |    |         |      |            |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |         |        |           |       |       |    |         |      |            |      |
| Thorium-227                              | U         | 0.0863  | 0.858  | +/-0.248  |       | pCi/g |    |         |      |            |      |
| Thorium-231                              | U         | -0.0194 | 1.48   | +/-0.502  |       | pCi/g |    |         |      |            |      |
| Thorium-234                              |           | 4.47    | 4.34   | +/-1.92   | 2.00  | pCi/g |    |         |      |            |      |
| Tin-113                                  | U         | -0.0323 | 0.0959 | +/-0.0295 | 0.100 | pCi/g |    |         |      |            |      |
| Uranium-235                              | U         | 0.0989  | 0.479  | +/-0.144  | 0.500 | pCi/g |    |         |      |            |      |
| Yttrium-88                               | U         | -0.0146 | 0.0629 | +/-0.0207 | 0.100 | pCi/g |    |         |      |            |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery % | Acceptable Limits |
|---------------------------|------------------------------|------------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 85.8       | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 94.1       | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 53.1       | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.

## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

### Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID:  
Sample ID:

RE12-10-7283  
244630015

Project: LANL01004  
Client ID: LANL010

| Parameter | Qualifier | Result | DL | TPU | RL | Units | DF | Analyst | Date | Time | Batch | Mtd. |
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|

ND Analyte concentration is not detected above the detection limit  
NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier  
R Sample results are rejected  
U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.  
UI Gamma Spectroscopy--Uncertain identification  
X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier  
Y QC Samples were not spiked with this compound  
^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.  
h Preparation or preservation holding time was exceeded  
The above sample is reported on a dry weight basis.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7282  
Sample ID: 244630016  
Matrix: R  
Collect Date: 08-JAN-10  
Receive Date: 14-JAN-10  
Collector: Client  
Moisture: 6.2%

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result    | DL     | TPU        | RL    | Units | DF | Analyst | Date     | Time Batch  | Mtd. |
|--|-----------|-----------|--------|------------|-------|-------|----|---------|----------|-------------|------|
| <b>Rad Alpha Spec Analysis</b>           |           |           |        |            |       |       |    |         |          |             |      |
| <i>AM241 "Dry Weight Corrected"</i>      |           |           |        |            |       |       |    |         |          |             |      |
| Americium-241                            | U         | -0.000764 | 0.0178 | +/-0.00105 | 0.050 | pCi/g |    | MXA1    | 01/22/10 | 1204 941748 | 1    |
| <i>ISOPU "Dry Weight Corrected"</i>      |           |           |        |            |       |       |    |         |          |             |      |
| Plutonium-238                            | U         | 0.00108   | 0.0179 | +/-0.00108 | 0.050 | pCi/g |    | MXA1    | 01/20/10 | 1637 941752 | 2    |
| Plutonium-239/240                        | U         | 0.00324   | 0.0204 | +/-0.00188 | 0.050 | pCi/g |    |         |          |             |      |
| <i>ISOU "Dry Weight Corrected"</i>       |           |           |        |            |       |       |    |         |          |             |      |
| Uranium-233/234                          |           | 1.02      | 0.126  | +/-0.0975  | 0.100 | pCi/g |    | MXA1    | 01/23/10 | 1116 941758 | 3    |
| Uranium-235/236                          |           | 0.0951    | 0.0779 | +/-0.0229  | 0.100 | pCi/g |    |         |          |             |      |
| Uranium-238                              |           | 1.01      | 0.0728 | +/-0.0967  | 0.100 | pCi/g |    |         |          |             |      |
| <b>Rad Gamma Spec Analysis</b>           |           |           |        |            |       |       |    |         |          |             |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |           |        |            |       |       |    |         |          |             |      |
| Americium-241                            | U         | -0.0182   | 0.321  | +/-0.0952  | 0.200 | pCi/g |    | MXR1    | 01/23/10 | 1406 941639 | 4    |
| Bismuth-211                              | UI        | 5.25      | 0.267  | +/-0.262   |       | pCi/g |    |         |          |             |      |
| Bismuth-214                              |           | 1.44      | 0.0983 | +/-0.094   | 0.200 | pCi/g |    |         |          |             |      |
| Cadmium-109                              | UI        | 3.10      | 1.25   | +/-0.564   |       | pCi/g |    |         |          |             |      |
| Cerium-139                               | U         | -0.00265  | 0.0463 | +/-0.0132  | 0.050 | pCi/g |    |         |          |             |      |
| Cesium-134                               | UI        | 0.121     | 0.0763 | +/-0.0313  | 0.100 | pCi/g |    |         |          |             |      |
| Cesium-137                               | U         | -0.0339   | 0.0492 | +/-0.0154  | 0.100 | pCi/g |    |         |          |             |      |
| Cobalt-60                                | U         | -0.0136   | 0.0513 | +/-0.0162  | 0.100 | pCi/g |    |         |          |             |      |
| Europium-152                             | U         | 0.0268    | 0.128  | +/-0.0521  | 0.200 | pCi/g |    |         |          |             |      |
| Lanthanum-140                            | U         | 0.0815    | 0.113  | +/-0.0331  |       | pCi/g |    |         |          |             |      |
| Lead-212                                 |           | 2.19      | 0.0802 | +/-0.094   | 0.100 | pCi/g |    |         |          |             |      |
| Lead-214                                 |           | 1.83      | 0.093  | +/-0.103   | 0.100 | pCi/g |    |         |          |             |      |
| Mercury-203                              | U         | 0.027     | 0.0616 | +/-0.0202  | 0.100 | pCi/g |    |         |          |             |      |
| Potassium-40                             |           | 37.6      | 0.458  | +/-1.63    | 1.00  | pCi/g |    |         |          |             |      |
| Radium-223                               | U         | -0.48     | 0.885  | +/-0.325   |       | pCi/g |    |         |          |             |      |
| Radium-224                               | UI        | 6.44      | 0.912  | +/-0.632   |       | pCi/g |    |         |          |             |      |
| Radium-226                               |           | 1.44      | 0.0983 | +/-0.094   |       | pCi/g |    |         |          |             |      |
| Radium-228                               |           | 1.89      | 0.193  | +/-0.186   | 0.500 | pCi/g |    |         |          |             |      |
| Ruthenium-106                            | U         | 0.216     | 0.459  | +/-0.133   | 0.800 | pCi/g |    |         |          |             |      |
| Sodium-22                                | U         | -0.0464   | 0.061  | +/-0.0202  | 0.080 | pCi/g |    |         |          |             |      |
| Strontium-85                             | UI        | 0.096     | 0.0629 | +/-0.0189  |       | pCi/g |    |         |          |             |      |
| Thallium-208                             |           | 0.697     | 0.0479 | +/-0.0445  | 0.080 | pCi/g |    |         |          |             |      |



# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID:  
Sample ID:

RE12-10-7282  
244630016

Project: LANL01004  
Client ID: LANL010

| Parameter                                | Qualifier | Result  | DL     | TPU       | RL    | Units | DF | Analyst | Date | Time Batch | Mtd. |
|--|-----------|---------|--------|-----------|-------|-------|----|---------|------|------------|------|
| <b>Rad Gamma Spec Analysis</b>           |           |         |        |           |       |       |    |         |      |            |      |
| <i>GAMMA SPEC "Dry Weight Corrected"</i> |           |         |        |           |       |       |    |         |      |            |      |
| Thorium-227                              | U         | 0.0968  | 0.581  | +/-0.170  |       | pCi/g |    |         |      |            |      |
| Thorium-231                              | U         | -0.48   | 0.885  | +/-0.325  |       | pCi/g |    |         |      |            |      |
| Thorium-234                              | U         | 1.41    | 2.58   | +/-0.969  | 2.00  | pCi/g |    |         |      |            |      |
| Tin-113                                  | U         | -0.0083 | 0.0656 | +/-0.0193 | 0.100 | pCi/g |    |         |      |            |      |
| Uranium-235                              | U         | 0.0233  | 0.345  | +/-0.105  | 0.500 | pCi/g |    |         |      |            |      |
| Yttrium-88                               | U         | 0.0034  | 0.0436 | +/-0.0131 | 0.100 | pCi/g |    |         |      |            |      |

### The following Analytical Methods were performed

| Method | Description                         |
|--------|-------------------------------------|
| 1      | DOE EML HASL-300, Am-05-RC Modified |
| 2      | DOE EML HASL-300, Pu-11-RC Modified |
| 3      | DOE EML HASL-300, U-02-RC Modified  |
| 4      | DOE HASL 300, 4.5.2.3/Ga-01-R       |

| Surrogate/Tracer recovery | Test                         | Recovery % | Acceptable Limits |
|---------------------------|------------------------------|------------|-------------------|
| Americium-243 Tracer      | AM241 "Dry Weight Corrected" | 90.7       | (50%-105%)        |
| Plutonium-242 Tracer      | ISOPU "Dry Weight Corrected" | 87.8       | (50%-105%)        |
| Uranium-232 Tracer        | ISOU "Dry Weight Corrected"  | 80.4       | (50%-105%)        |

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: January 27, 2010

Client Sample ID: RE12-10-7282  
Sample ID: 244630016

Project: LANL01004  
Client ID: LANL010

| Parameter | Qualifier | Result | DL | TPU | RL | Units | DF | Analyst | Date | Time | Batch | Mtd. |
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|
|-----------|-----------|--------|----|-----|----|-------|----|---------|------|------|-------|------|

ND Analyte concentration is not detected above the detection limit  
NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier  
R Sample results are rejected  
U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.  
UI Gamma Spectroscopy--Uncertain identification  
X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier  
Y QC Samples were not spiked with this compound  
^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.  
h Preparation or preservation holding time was exceeded  
The above sample is reported on a dry weight basis.

# QUALITY CONTROL DATA

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## QC Summary

Report Date: January 27, 2010

Page 1 of 6

**Client :** Los Alamos National Laboratory  
**PO Box 1663**  
**TA-03, SM271, Drop Pt. 02U, Rm**  
**Los Alamos, New Mexico**  
**Contact:** Ms. Joylene Valdez  
**Workorder:** 244630

| Parmname          |           | NOM  | Sample | Qual       | QC         | Units      | RER   | REC %  | Range      | Anlst | Date     | Time  |
|-------------------|-----------|------|--------|------------|------------|------------|-------|--------|------------|-------|----------|-------|
| Rad Alpha Spec    |           |      |        |            |            |            |       |        |            |       |          |       |
| Batch             | 941748    |      |        |            |            |            |       |        |            |       |          |       |
| QC1202015728      | 244630007 | DUP  |        |            |            |            |       |        |            |       |          |       |
| Americium-241     |           |      | U      | -0.00281   | U          | -0.000693  | pCi/g | 0.135  | (0-1)      | MXA1  | 01/22/10 | 12:03 |
|                   |           |      | TPU:   | +/-0.0024  |            | +/-0.00548 |       |        |            |       |          |       |
|                   |           |      | Yield: | 90.0       |            | 99.1       |       |        |            |       |          |       |
| QC1202015729      | LCS       |      |        |            |            |            |       |        |            |       |          |       |
| Americium-241     |           | 33.2 |        |            |            | 32.3       | pCi/g | 97.3   | (75%-125%) |       | 01/22/10 | 12:03 |
|                   |           |      | TPU:   |            |            | +/-2.02    |       |        |            |       |          |       |
|                   |           |      | Yield: |            |            | 99.3       |       |        |            |       |          |       |
| QC1202015727      | MB        |      |        |            |            |            |       |        |            |       |          |       |
| Americium-241     |           |      |        | U          | 0.00555    | pCi/g      |       |        |            |       | 01/22/10 | 12:03 |
|                   |           |      | TPU:   |            | +/-0.00908 |            |       |        |            |       |          |       |
|                   |           |      | Yield: |            | 88.6       |            |       |        |            |       |          |       |
| Batch             | 941752    |      |        |            |            |            |       |        |            |       |          |       |
| QC1202015739      | 244630007 | DUP  |        |            |            |            |       |        |            |       |          |       |
| Plutonium-238     |           |      | U      | 0.00118    | U          | 0.00       | pCi/g | 0.267  | (0-1)      | MXA1  | 01/20/10 | 16:37 |
|                   |           |      | TPU:   | +/-0.00118 |            | +/-0.00102 |       |        |            |       |          |       |
|                   |           |      | Yield: | 94.0       |            | 95.0       |       |        |            |       |          |       |
| Plutonium-239/240 |           |      | U      | 0.00235    | U          | 0.00       | pCi/g | 0.301  | (0-1)      |       |          |       |
|                   |           |      | TPU:   | +/-0.00288 |            | +/-0.00102 |       |        |            |       |          |       |
|                   |           |      | Yield: | 94.0       |            | 95.0       |       |        |            |       |          |       |
| QC1202015740      | LCS       |      |        |            |            | 6.00       | pCi/g |        | (75%-125%) |       | 01/20/10 | 16:37 |
|                   |           |      | TPU:   |            |            | +/-0.392   |       |        |            |       |          |       |
|                   |           |      | Yield: |            |            | 106        |       |        |            |       |          |       |
| Plutonium-239/240 |           | 41.8 |        |            |            | 34.7       | pCi/g | 83.2   | (75%-125%) |       |          |       |
|                   |           |      | TPU:   |            |            | +/-1.79    |       |        |            |       |          |       |
|                   |           |      | Yield: |            |            | 106        |       |        |            |       |          |       |
| QC1202015738      | MB        |      |        |            |            |            |       |        |            |       |          |       |
| Plutonium-238     |           |      |        | U          | -0.00124   | pCi/g      |       |        |            |       | 01/20/10 | 16:37 |
|                   |           |      | TPU:   |            | +/-0.00176 |            |       |        |            |       |          |       |
|                   |           |      | Yield: |            | 95.2       |            |       |        |            |       |          |       |
| Plutonium-239/240 |           |      |        | U          | 0.00373    | pCi/g      |       |        |            |       |          |       |
|                   |           |      | TPU:   |            | +/-0.00216 |            |       |        |            |       |          |       |
|                   |           |      | Yield: |            | 95.2       |            |       |        |            |       |          |       |
| Batch             | 941758    |      |        |            |            |            |       |        |            |       |          |       |
| QC1202015748      | 244630007 | DUP  |        |            |            |            |       |        |            |       |          |       |
| Uranium-233/234   |           |      |        | 0.809      |            | 0.792      | pCi/g | 0.0534 | (0-1)      | MXA1  | 01/23/10 | 11:16 |
|                   |           |      | TPU:   | +/-0.0778  |            | +/-0.0814  |       |        |            |       |          |       |
|                   |           |      | Yield: | 83.6       |            | 81.2       |       |        |            |       |          |       |
| Uranium-235/236   |           |      |        | 0.0834     | U          | 0.0512     | pCi/g | 0.425  | (0-1)      |       |          |       |
|                   |           |      | TPU:   | +/-0.0212  |            | +/-0.0166  |       |        |            |       |          |       |
|                   |           |      | Yield: | 83.6       |            | 81.2       |       |        |            |       |          |       |
| Uranium-238       |           |      |        | 0.776      |            | 0.746      | pCi/g | 0.0981 | (0-1)      |       |          |       |
|                   |           |      | TPU:   | +/-0.0754  |            | +/-0.0775  |       |        |            |       |          |       |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## QC Summary

Workorder: 244630

Page 2 of 6

| Parmname              | NOM       | Sample | Qual      | QC         | Units     | RER   | REC%  | Range      | Anlst | Date     | Time  |
|-----------------------|-----------|--------|-----------|------------|-----------|-------|-------|------------|-------|----------|-------|
| <b>Rad Alpha Spec</b> |           |        |           |            |           |       |       |            |       |          |       |
| Batch                 | 941758    |        |           |            |           |       |       |            |       |          |       |
|                       |           | Yield: | 83.6      | 81.2       |           |       |       |            |       |          |       |
| QC1202015749          | LCS       |        |           |            |           |       |       |            |       |          |       |
| Uranium-233/234       |           |        |           | 6.51       | pCi/g     |       |       | (75%-125%) |       | 01/23/10 | 11:16 |
|                       |           | TPU:   |           | +/-0.612   |           |       |       |            |       |          |       |
|                       |           | Yield: |           | 91.5       |           |       |       |            |       |          |       |
| Uranium-235/236       |           |        |           | 0.510      | pCi/g     |       |       | (75%-125%) |       |          |       |
|                       |           | TPU:   |           | +/-0.116   |           |       |       |            |       |          |       |
|                       |           | Yield: |           | 91.5       |           |       |       |            |       |          |       |
| Uranium-238           | 5.75      |        |           | 5.91       | pCi/g     |       | 103   | (75%-125%) |       |          |       |
|                       |           | TPU:   |           | +/-0.565   |           |       |       |            |       |          |       |
|                       |           | Yield: |           | 91.5       |           |       |       |            |       |          |       |
| QC1202015747          | MB        |        |           |            |           |       |       |            |       |          |       |
| Uranium-233/234       |           | U      |           | 0.0119     | pCi/g     |       |       |            |       | 01/26/10 | 20:27 |
|                       |           | TPU:   |           | +/-0.0057  |           |       |       |            |       |          |       |
|                       |           | Yield: |           | 92.3       |           |       |       |            |       |          |       |
| Uranium-235/236       |           | U      |           | 0.0148     | pCi/g     |       |       |            |       |          |       |
|                       |           | TPU:   |           | +/-0.00613 |           |       |       |            |       |          |       |
|                       |           | Yield: |           | 92.3       |           |       |       |            |       |          |       |
| Uranium-238           |           | U      |           | 0.018      | pCi/g     |       |       |            |       |          |       |
|                       |           | TPU:   |           | +/-0.00674 |           |       |       |            |       |          |       |
|                       |           | Yield: |           | 92.3       |           |       |       |            |       |          |       |
| <b>Rad Gamma Spec</b> |           |        |           |            |           |       |       |            |       |          |       |
| Batch                 | 941639    |        |           |            |           |       |       |            |       |          |       |
| QC1202015450          | 244630001 | DUP    |           |            |           |       |       |            |       |          |       |
| Americium-241         |           | U      | 0.097     | U          | -0.168    | pCi/g | 0.507 | (0-1)      | MXR1  | 01/23/10 | 14:07 |
|                       |           | TPU:   | +/-0.161  |            | +/-0.100  |       |       |            |       |          |       |
| Bismuth-211           |           | UI     | 3.73      | UI         | 4.45      | pCi/g | 0.615 | (0-1)      |       |          |       |
|                       |           | TPU:   | +/-0.286  |            | +/-0.298  |       |       |            |       |          |       |
| Bismuth-214           |           |        | 1.21      |            | 1.14      | pCi/g | 0.169 | (0-1)      |       |          |       |
|                       |           | TPU:   | +/-0.101  |            | +/-0.0948 |       |       |            |       |          |       |
| Cadmium-109           |           | U      | 1.93      | UI         | 3.48      | pCi/g | 0.626 | (0-1)      |       |          |       |
|                       |           | TPU:   | +/-0.737  |            | +/-0.501  |       |       |            |       |          |       |
| Cerium-139            |           | U      | -0.00332  | U          | 0.0258    | pCi/g | 0.412 | (0-1)      |       |          |       |
|                       |           | TPU:   | +/-0.0179 |            | +/-0.0175 |       |       |            |       |          |       |
| Cesium-134            |           | U      | 0.0565    | U          | 0.0804    | pCi/g | 0.225 | (0-1)      |       |          |       |
|                       |           | TPU:   | +/-0.0267 |            | +/-0.0266 |       |       |            |       |          |       |
| Cesium-137            |           | U      | 0.0826    | U          | 0.0223    | pCi/g | 0.615 | (0-1)      |       |          |       |
|                       |           | TPU:   | +/-0.0251 |            | +/-0.0239 |       |       |            |       |          |       |
| Cobalt-60             |           | U      | 0.0633    | U          | 0.0343    | pCi/g | 0.322 | (0-1)      |       |          |       |
|                       |           | TPU:   | +/-0.0221 |            | +/-0.0229 |       |       |            |       |          |       |
| Europium-152          |           | U      | -0.103    | U          | -0.0126   | pCi/g | 0.291 | (0-1)      |       |          |       |
|                       |           | TPU:   | +/-0.0767 |            | +/-0.0786 |       |       |            |       |          |       |
| Lanthanum-140         |           | U      | 0.0794    | U          | -0.033    | pCi/g | 0.610 | (0-1)      |       |          |       |
|                       |           | TPU:   | +/-0.0444 |            | +/-0.0477 |       |       |            |       |          |       |
| Lead-212              |           |        | 1.78      |            | 1.74      | pCi/g | 0.100 | (0-1)      |       |          |       |
|                       |           | TPU:   | +/-0.101  |            | +/-0.0884 |       |       |            |       |          |       |
| Lead-214              |           |        | 1.30      |            | 1.55      | pCi/g | 0.578 | (0-1)      |       |          |       |
|                       |           | TPU:   | +/-0.105  |            | +/-0.111  |       |       |            |       |          |       |
| Mercury-203           |           | U      | -0.00349  | U          | 0.0179    | pCi/g | 0.217 | (0-1)      |       |          |       |
|                       |           | TPU:   | +/-0.0249 |            | +/-0.0245 |       |       |            |       |          |       |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## QC Summary

Workorder: 244630

Page 3 of 6

| Parmname              | NOM    | Sample    | Qual | QC        | Units | RER    | REC%            | Range | Anlst | Date     | Time  |
|-----------------------|--------|-----------|------|-----------|-------|--------|-----------------|-------|-------|----------|-------|
| <b>Rad Gamma Spec</b> |        |           |      |           |       |        |                 |       |       |          |       |
| Batch                 | 941639 |           |      |           |       |        |                 |       |       |          |       |
| Potassium-40          |        | 28.1      |      | 28.4      | pCi/g | 0.0476 |                 | (0-1) |       |          |       |
|                       | TPU:   | +/-1.42   |      | +/-1.31   |       |        |                 |       |       |          |       |
| Radium-223            | U      | -1.05     | U    | 0.917     | pCi/g | 1.20   |                 | (0-1) |       |          |       |
|                       | TPU:   | +/-0.416  |      | +/-0.403  |       |        |                 |       |       |          |       |
| Radium-224            | UI     | 4.28      | UI   | 5.00      | pCi/g | 0.230  |                 | (0-1) |       |          |       |
|                       | TPU:   | +/-0.764  |      | +/-0.805  |       |        |                 |       |       |          |       |
| Radium-226            |        | 1.21      |      | 1.14      | pCi/g | 0.169  |                 | (0-1) |       |          |       |
|                       | TPU:   | +/-0.101  |      | +/-0.0948 |       |        |                 |       |       |          |       |
| Radium-228            |        | 1.66      |      | 1.78      | pCi/g | 0.146  |                 | (0-1) |       |          |       |
|                       | TPU:   | +/-0.202  |      | +/-0.185  |       |        |                 |       |       |          |       |
| Ruthenium-106         | U      | -0.215    | U    | -0.176    | pCi/g | 0.0542 |                 | (0-1) |       |          |       |
|                       | TPU:   | +/-0.177  |      | +/-0.184  |       |        |                 |       |       |          |       |
| Sodium-22             | U      | -0.0544   | U    | 0.0123    | pCi/g | 0.657  |                 | (0-1) |       |          |       |
|                       | TPU:   | +/-0.0252 |      | +/-0.0257 |       |        |                 |       |       |          |       |
| Strontium-85          | U      | 0.070     | U    | 0.0685    | pCi/g | 0.0167 |                 | (0-1) |       |          |       |
|                       | TPU:   | +/-0.0212 |      | +/-0.0232 |       |        |                 |       |       |          |       |
| Thallium-208          |        | 0.554     |      | 0.425     | pCi/g | 0.651  |                 | (0-1) |       |          |       |
|                       | TPU:   | +/-0.0547 |      | +/-0.0442 |       |        |                 |       |       |          |       |
| Thorium-227           | U      | -0.227    | U    | 0.226     | pCi/g | 0.490  |                 | (0-1) |       |          |       |
|                       | TPU:   | +/-0.229  |      | +/-0.232  |       |        |                 |       |       |          |       |
| Thorium-231           | U      | -1.05     | U    | 0.917     | pCi/g | 1.20   |                 | (0-1) |       |          |       |
|                       | TPU:   | +/-0.416  |      | +/-0.403  |       |        |                 |       |       |          |       |
| Thorium-234           | U      | 3.24      | U    | 1.11      | pCi/g | 0.521  |                 | (0-1) |       |          |       |
|                       | TPU:   | +/-1.20   |      | +/-0.846  |       |        |                 |       |       |          |       |
| Tin-113               | U      | 0.0432    | U    | -0.0311   | pCi/g | 0.701  |                 | (0-1) |       |          |       |
|                       | TPU:   | +/-0.0269 |      | +/-0.0261 |       |        |                 |       |       |          |       |
| Uranium-235           | U      | 0.157     | U    | 0.075     | pCi/g | 0.157  |                 | (0-1) |       |          |       |
|                       | TPU:   | +/-0.135  |      | +/-0.125  |       |        |                 |       |       |          |       |
| Yttrium-88            | U      | -0.00348  | U    | 0.00613   | pCi/g | 0.142  |                 | (0-1) |       |          |       |
|                       | TPU:   | +/-0.0161 |      | +/-0.0178 |       |        |                 |       |       |          |       |
| QC1202015451          | LCS    |           |      |           |       |        |                 |       |       |          |       |
| Americium-241         | 15.9   |           |      | 14.3      | pCi/g |        | 89.6 (75%-125%) |       |       | 01/23/10 | 14:08 |
|                       | TPU:   |           |      | +/-0.644  |       |        |                 |       |       |          |       |
| Bismuth-211           |        |           |      | 2.05      | pCi/g |        |                 |       |       |          |       |
|                       | TPU:   |           |      | +/-0.314  |       |        |                 |       |       |          |       |
| Bismuth-214           |        |           |      | 0.526     | pCi/g |        |                 |       |       |          |       |
|                       | TPU:   |           |      | +/-0.106  |       |        |                 |       |       |          |       |
| Cadmium-109           |        |           |      | 33.6      | pCi/g |        |                 |       |       |          |       |
|                       | TPU:   |           |      | +/-1.87   |       |        |                 |       |       |          |       |
| Cerium-139            |        |           | U    | 0.0387    | pCi/g |        |                 |       |       |          |       |
|                       | TPU:   |           |      | +/-0.0217 |       |        |                 |       |       |          |       |
| Cesium-134            |        |           | U    | -0.02     | pCi/g |        |                 |       |       |          |       |
|                       | TPU:   |           |      | +/-0.0466 |       |        |                 |       |       |          |       |
| Cesium-137            | 5.57   |           |      | 5.75      | pCi/g |        | 103 (75%-125%)  |       |       |          |       |
|                       | TPU:   |           |      | +/-0.291  |       |        |                 |       |       |          |       |
| Cobalt-60             | 6.45   |           |      | 6.51      | pCi/g |        | 101 (75%-125%)  |       |       |          |       |
|                       | TPU:   |           |      | +/-0.315  |       |        |                 |       |       |          |       |
| Europium-152          |        |           | U    | -0.113    | pCi/g |        |                 |       |       |          |       |
|                       | TPU:   |           |      | +/-0.0968 |       |        |                 |       |       |          |       |
| Lanthanum-140         |        |           | U    | 0.0334    | pCi/g |        |                 |       |       |          |       |
|                       | TPU:   |           |      | +/-0.0451 |       |        |                 |       |       |          |       |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## QC Summary

Workorder: 244630

Page 4 of 6

| Paramname             | NOM    | Sample Qual | QC         | Units | RER | REC % | Range | Anlst | Date Time     |
|-----------------------|--------|-------------|------------|-------|-----|-------|-------|-------|---------------|
| <b>Rad Gamma Spec</b> |        |             |            |       |     |       |       |       |               |
| Batch                 | 941639 |             |            |       |     |       |       |       |               |
| Lead-212              |        |             | 1.07       | pCi/g |     |       |       |       |               |
|                       | TPU:   |             | +/-0.0863  |       |     |       |       |       |               |
| Lead-214              |        |             | 0.712      | pCi/g |     |       |       |       |               |
|                       | TPU:   |             | +/-0.111   |       |     |       |       |       |               |
| Mercury-203           |        | U           | -0.0055    | pCi/g |     |       |       |       |               |
|                       | TPU:   |             | +/-0.0318  |       |     |       |       |       |               |
| Potassium-40          |        |             | 0.633      | pCi/g |     |       |       |       |               |
|                       | TPU:   |             | +/-0.341   |       |     |       |       |       |               |
| Radium-223            |        | U           | -0.139     | pCi/g |     |       |       |       |               |
|                       | TPU:   |             | +/-0.577   |       |     |       |       |       |               |
| Radium-224            |        |             | 3.32       | pCi/g |     |       |       |       |               |
|                       | TPU:   |             | +/-0.859   |       |     |       |       |       |               |
| Radium-226            |        |             | 0.526      | pCi/g |     |       |       |       |               |
|                       | TPU:   |             | +/-0.106   |       |     |       |       |       |               |
| Radium-228            |        |             | 1.36       | pCi/g |     |       |       |       |               |
|                       | TPU:   |             | +/-0.317   |       |     |       |       |       |               |
| Ruthenium-106         |        | U           | 0.165      | pCi/g |     |       |       |       |               |
|                       | TPU:   |             | +/-0.287   |       |     |       |       |       |               |
| Sodium-22             |        | U           | 0.000657   | pCi/g |     |       |       |       |               |
|                       | TPU:   |             | +/-0.0234  |       |     |       |       |       |               |
| Strontium-85          |        | U           | 0.048      | pCi/g |     |       |       |       |               |
|                       | TPU:   |             | +/-0.0357  |       |     |       |       |       |               |
| Thallium-208          |        |             | 0.432      | pCi/g |     |       |       |       |               |
|                       | TPU:   |             | +/-0.0709  |       |     |       |       |       |               |
| Thorium-227           |        | U           | 0.0587     | pCi/g |     |       |       |       |               |
|                       | TPU:   |             | +/-0.329   |       |     |       |       |       |               |
| Thorium-231           |        | U           | -0.139     | pCi/g |     |       |       |       |               |
|                       | TPU:   |             | +/-0.577   |       |     |       |       |       |               |
| Thorium-234           |        | U           | -1.19      | pCi/g |     |       |       |       |               |
|                       | TPU:   |             | +/-0.761   |       |     |       |       |       |               |
| Tin-113               |        | U           | 0.0251     | pCi/g |     |       |       |       |               |
|                       | TPU:   |             | +/-0.0418  |       |     |       |       |       |               |
| Uranium-235           |        | U           | -0.175     | pCi/g |     |       |       |       |               |
|                       | TPU:   |             | +/-0.155   |       |     |       |       |       |               |
| Yttrium-88            |        | U           | 0.049      | pCi/g |     |       |       |       |               |
|                       | TPU:   |             | +/-0.0242  |       |     |       |       |       |               |
| QC1202015449 MB       |        |             |            |       |     |       |       |       |               |
| Americium-241         |        | U           | -0.0736    | pCi/g |     |       |       |       | 01/23/1014:07 |
|                       | TPU:   |             | +/-0.042   |       |     |       |       |       |               |
| Bismuth-211           |        | U           | 0.171      | pCi/g |     |       |       |       |               |
|                       | TPU:   |             | +/-0.0573  |       |     |       |       |       |               |
| Bismuth-214           |        | U           | -0.0116    | pCi/g |     |       |       |       |               |
|                       | TPU:   |             | +/-0.0192  |       |     |       |       |       |               |
| Cadmium-109           |        | U           | -0.0509    | pCi/g |     |       |       |       |               |
|                       | TPU:   |             | +/-0.148   |       |     |       |       |       |               |
| Cerium-139            |        | U           | 0.00298    | pCi/g |     |       |       |       |               |
|                       | TPU:   |             | +/-0.00614 |       |     |       |       |       |               |
| Cesium-134            |        | U           | 0.00284    | pCi/g |     |       |       |       |               |
|                       | TPU:   |             | +/-0.00733 |       |     |       |       |       |               |
| Cesium-137            |        | U           | -0.000998  | pCi/g |     |       |       |       |               |
|                       | TPU:   |             | +/-0.0127  |       |     |       |       |       |               |

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## QC Summary

Workorder: 244630

Page 5 of 6

| Parname        | NOM  | Sample | Qual | QC         | Units | RER | REC% | Range | Anlst | Date | Time |
|----------------|------|--------|------|------------|-------|-----|------|-------|-------|------|------|
| Rad Gamma Spec |      |        |      |            |       |     |      |       |       |      |      |
| Batch 941639   |      |        |      |            |       |     |      |       |       |      |      |
| Cobalt-60      |      |        | U    | -0.0121    | pCi/g |     |      |       |       |      |      |
|                | TPU: |        |      | +/-0.008   |       |     |      |       |       |      |      |
| Europium-152   |      |        | U    | -0.00259   | pCi/g |     |      |       |       |      |      |
|                | TPU: |        |      | +/-0.0216  |       |     |      |       |       |      |      |
| Lanthanum-140  |      |        | U    | -0.0312    | pCi/g |     |      |       |       |      |      |
|                | TPU: |        |      | +/-0.0185  |       |     |      |       |       |      |      |
| Lead-212       |      |        | U    | -0.00628   | pCi/g |     |      |       |       |      |      |
|                | TPU: |        |      | +/-0.0152  |       |     |      |       |       |      |      |
| Lead-214       |      |        | U    | 0.0338     | pCi/g |     |      |       |       |      |      |
|                | TPU: |        |      | +/-0.0199  |       |     |      |       |       |      |      |
| Mercury-203    |      |        | U    | 0.00631    | pCi/g |     |      |       |       |      |      |
|                | TPU: |        |      | +/-0.00837 |       |     |      |       |       |      |      |
| Potassium-40   |      |        | U    | -0.0624    | pCi/g |     |      |       |       |      |      |
|                | TPU: |        |      | +/-0.114   |       |     |      |       |       |      |      |
| Radium-223     |      |        | U    | -0.172     | pCi/g |     |      |       |       |      |      |
|                | TPU: |        |      | +/-0.168   |       |     |      |       |       |      |      |
| Radium-224     |      |        | U    | 0.242      | pCi/g |     |      |       |       |      |      |
|                | TPU: |        |      | +/-0.158   |       |     |      |       |       |      |      |
| Radium-226     |      |        | U    | -0.0116    | pCi/g |     |      |       |       |      |      |
|                | TPU: |        |      | +/-0.0192  |       |     |      |       |       |      |      |
| Radium-228     |      |        | U    | -0.00228   | pCi/g |     |      |       |       |      |      |
|                | TPU: |        |      | +/-0.0362  |       |     |      |       |       |      |      |
| Ruthenium-106  |      |        | U    | 0.0471     | pCi/g |     |      |       |       |      |      |
|                | TPU: |        |      | +/-0.0719  |       |     |      |       |       |      |      |
| Sodium-22      |      |        | U    | 0.0059     | pCi/g |     |      |       |       |      |      |
|                | TPU: |        |      | +/-0.00934 |       |     |      |       |       |      |      |
| Strontium-85   |      |        | U    | 0.0385     | pCi/g |     |      |       |       |      |      |
|                | TPU: |        |      | +/-0.0105  |       |     |      |       |       |      |      |
| Thallium-208   |      |        | U    | -0.0188    | pCi/g |     |      |       |       |      |      |
|                | TPU: |        |      | +/-0.0112  |       |     |      |       |       |      |      |
| Thorium-227    |      |        | U    | -0.0645    | pCi/g |     |      |       |       |      |      |
|                | TPU: |        |      | +/-0.080   |       |     |      |       |       |      |      |
| Thorium-231    |      |        | U    | -0.172     | pCi/g |     |      |       |       |      |      |
|                | TPU: |        |      | +/-0.168   |       |     |      |       |       |      |      |
| Thorium-234    |      |        | U    | 0.216      | pCi/g |     |      |       |       |      |      |
|                | TPU: |        |      | +/-0.366   |       |     |      |       |       |      |      |
| Tin-113        |      |        | U    | 0.0146     | pCi/g |     |      |       |       |      |      |
|                | TPU: |        |      | +/-0.00998 |       |     |      |       |       |      |      |
| Uranium-235    |      |        | U    | -0.00629   | pCi/g |     |      |       |       |      |      |
|                | TPU: |        |      | +/-0.0408  |       |     |      |       |       |      |      |
| Yttrium-88     |      |        | U    | -0.000806  | pCi/g |     |      |       |       |      |      |
|                | TPU: |        |      | +/-0.00948 |       |     |      |       |       |      |      |

### Notes:

The Qualifiers in this report are defined as follows:

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported



## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

### QC Summary

Workorder: 244630

Page 6 of 6

| Paramname | NOM  | Sample Qual | QC | Units | RER | REC% | Range | Anlst | Date | Time |
|-----------|--|-------------|----|-------|-----|------|-------|-------|------|------|
| A         | The TIC is a suspected aldol-condensation product  |             |    |       |     |      |       |       |      |      |
| B         | For General Chemistry and Organic analysis the target analyte was detected in the associated blank.                            |             |    |       |     |      |       |       |      |      |
| BD        | Results are either below the MDC or tracer recovery is low   |             |    |       |     |      |       |       |      |      |
| C         | Analyte has been confirmed by GC/MS analysis   |             |    |       |     |      |       |       |      |      |
| D         | Results are reported from a diluted aliquot of the sample  |             |    |       |     |      |       |       |      |      |
| F         | Estimated Value  |             |    |       |     |      |       |       |      |      |
| H         | Analytical holding time was exceeded   |             |    |       |     |      |       |       |      |      |
| J         | Value is estimated   |             |    |       |     |      |       |       |      |      |
| M         | M if above MDC and less than LLD   |             |    |       |     |      |       |       |      |      |
| M         | Matrix Related Failure   |             |    |       |     |      |       |       |      |      |
| N/A       | RPD or %Recovery limits do not apply.  |             |    |       |     |      |       |       |      |      |
| ND        | Analyte concentration is not detected above the detection limit  |             |    |       |     |      |       |       |      |      |
| NJ        | Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier                                     |             |    |       |     |      |       |       |      |      |
| R         | Sample results are rejected  |             |    |       |     |      |       |       |      |      |
| U         | Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.   |             |    |       |     |      |       |       |      |      |
| UI        | Gamma Spectroscopy--Uncertain identification   |             |    |       |     |      |       |       |      |      |
| X         | Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier                                     |             |    |       |     |      |       |       |      |      |
| Y         | QC Samples were not spiked with this compound  |             |    |       |     |      |       |       |      |      |
| ^         | RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry. |             |    |       |     |      |       |       |      |      |
| h         | Preparation or preservation holding time was exceeded  |             |    |       |     |      |       |       |      |      |

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.

\*\* Indicates analyte is a surrogate compound.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

**RAW DATA**

## Radiochemistry Batch Checklist, Rev10

Batch# 941748 Product: Am Date: 1/26/10

| Criteria:   | Yes | No | Comments |
|---|-----|----|----------|
| Sample Solids are less than or equal to 100 mg for GAB.   |     |    | N/A      |
| Samples have been blank corrected (if required)   | ✓   |    |          |
| If activity less 10* MDA/ MDC, error is 150% or less of sample activity. If greater 10* MDA/ MDC, error is 40% or less. If below the MDA/ MDC, error is okay. | ✓   |    |          |
| Instrument source check is within limits.   | ✓   |    |          |
| Instrument bkg check is within limits.  | ✓   |    |          |
| Method RDL/ LLD has been met.   | ✓   |    |          |
| If duplicate activities are less 5* MDA/ MDC, then RPD is 100% or less. If greater 5* MDA/ MDC, then RPD 20% or less. If below the MDA/ MDC, the RPD is 0%.   | ✓   |    |          |
| Or meets the client's required RER acceptance criteria.   | ✓   |    |          |
| Tracer yield is 15-125% . Carrier yield 25-125%.  | ✓   |    |          |
| Or meets the client's contract acceptance criteria.   | ✓   |    |          |
| Method blank is less than the RDL/ LLD.   | ✓   |    |          |
| (If rad samples, < 5% of lowest activity)   | ✓   |    |          |
| Sample was run within hold time.  | ✓   |    |          |
| Sample was correctly preserved if required.   | ✓   |    |          |
| Smears Taken for Radioactive batches.   |     |    | N/A      |
| Method Spike and LCS are within 75-125% or meets the client's contract acceptance criteria.   | ✓   |    |          |
| No blank spaces on data forms.  | ✓   |    |          |
| All line outs initialed and dated.  | ✓   |    |          |
| No transcription errors are apparent.   | ✓   |    |          |
| Aux data is correct.  |     |    | N/A      |
| Client Special requirements page has been checked.  | ✓   |    |          |
| Raw Data and/ or spectrum are included and properly stated.   | ✓   |    |          |
| QC data entered into QC database and batch is in REVW   | ✓   |    |          |
| Hit notification complete (if necessary)  |     |    | N/A      |
| Batch entered into Case Narrative.  | ✓   |    |          |
| Batch Data Exception Reports (DER) completed, if applicable.  |     |    | N/A      |
| Batch Data Exception Reports (DER) second reviewed and disposition verified to be completed.  |     |    | N/A      |
| Aliquot Correction completed if required.   |     |    | N/A      |
| Review sample historical results if available (If REMP, results above MDC have been verified by historical results, recount or re-analysis.)                  | ✓   |    |          |

GEL Laboratories, LLC

RADchecklistrev10, revised 1/13/2010

Primary Review Performed By: [Signature] 1/26/10Secondary Review Performed By: [Signature] 1/27/10

LANL

## Am/Cm Que Sheet

14-JAN-10

Batch #: 941748

Analyst: MXA1 First Client Due Date: 10-FEB-10

Internal Due Date: 50-JAN-10

Comments:

Tracer(s): Am243/Cm244

Tracer Code: 445-96-2-SS

Vol: 0.1mL

LCS Isotope(s): Am243/Cm244

LCS Code(s): 30000448

Expiration Date: 5/11/10

Vol(s): 0.1g / N/A

Spike Isotope(s): Am241/Cm244

Spike Code(s): N/A

Expiration Date: 4/30/201

Vol(s): N/A / N/A

Prep Date: 1/19/10

Initials: MDA

Expiration Date: N/A

Witness: KM 1-A-10

Pipet ID: 2971658

Balance ID: 5040272

Wet/Dry

| Sample ID    | Client Description         | Type   | Hazard | Min   | Code | CRDL       | Matrix     | Client     | Collection | Date | Pos. | Label | Aliquot | Am/Cm | Det # |
|--------------|----------------------------|--------|--------|-------|------|------------|------------|------------|------------|------|------|-------|---------|-------|-------|
| 244630001-1  | RE12-10-7262               | SAMPLE | .05    | pCi/g | SOIL | LANL010    | LANL010    | LANL010    | 08-JAN-10  | 1    | 1    | 1,290 | 215     |       |       |
| 244630002-1  | RE12-10-7266               | SAMPLE | .05    | pCi/g | SOIL | LANL010    | LANL010    | LANL010    | 08-JAN-10  | 2    | 2    | 1,252 | 216     |       |       |
| 244630003-1  | RE12-10-7258               | SAMPLE | .05    | pCi/g | SOIL | LANL010    | LANL010    | LANL010    | 08-JAN-10  | 3    | 3    | 1,274 | 217     |       |       |
| 244630004-1  | RE12-10-7268               | SAMPLE | .05    | pCi/g | SOIL | LANL010    | LANL010    | LANL010    | 08-JAN-10  | 4    | 4    | 1,298 | 218     |       |       |
| 244630005-1  | RE12-10-7265               | SAMPLE | .05    | pCi/g | SOIL | LANL010    | LANL010    | LANL010    | 08-JAN-10  | 5    | 5    | 1,278 | 219     |       |       |
| 244630006-1  | RE12-10-7261               | SAMPLE | .05    | pCi/g | SOIL | LANL010    | LANL010    | LANL010    | 08-JAN-10  | 6    | 6    | 1,264 | 220     |       |       |
| 244630007-1  | RE12-10-7259               | SAMPLE | .05    | pCi/g | SOIL | LANL010    | LANL010    | LANL010    | 08-JAN-10  | 7    | 7    | 1,288 | 221     |       |       |
| 244630008-1  | RE12-10-7263               | SAMPLE | .05    | pCi/g | SOIL | LANL010    | LANL010    | LANL010    | 08-JAN-10  | 8    | 8    | 1,280 | 222     |       |       |
| 244630009-1  | RE12-10-7271               | SAMPLE | .05    | pCi/g | SOIL | LANL010    | LANL010    | LANL010    | 08-JAN-10  | 9    | 9    | 1,277 | 223     |       |       |
| 244630010-1  | RE12-10-7260               | SAMPLE | .05    | pCi/g | SOIL | LANL010    | LANL010    | LANL010    | 08-JAN-10  | 10   | 10   | 1,254 | 224     | 251   |       |
| 244630011-1  | RE12-10-7267               | SAMPLE | .05    | pCi/g | SOIL | LANL010    | LANL010    | LANL010    | 08-JAN-10  | 11   | 11   | 1,288 | 225     |       |       |
| 244630012-1  | RE12-10-7264               | SAMPLE | .05    | pCi/g | SOIL | LANL010    | LANL010    | LANL010    | 08-JAN-10  | 12   | 12   | 1,252 | 226     |       |       |
| 244630013-1  | RE12-10-7270               | SAMPLE | .05    | pCi/g | SOIL | LANL010    | LANL010    | LANL010    | 08-JAN-10  | 13   | 13   | 1,256 | 227     |       |       |
| 244630014-1  | RE12-10-7269               | SAMPLE | .05    | pCi/g | SOIL | LANL010    | LANL010    | LANL010    | 08-JAN-10  | 14   | 14   | 1,291 | 228     |       |       |
| 244630015-1  | RE12-10-7283               | SAMPLE | .05    | pCi/g | SOIL | LANL010    | LANL010    | LANL010    | 08-JAN-10  | 15   | 15   | 1,263 | 229     |       |       |
| 244630016-1  | RE12-10-7282               | SAMPLE | .05    | pCi/g | SOIL | LANL010    | LANL010    | LANL010    | 08-JAN-10  | 16   | 16   | 1,259 | 230     |       |       |
| 1202015727-1 | MB for batch 941748        | MB     | .05    | pCi/g | SOIL | QC ACCOUNT | QC ACCOUNT | QC ACCOUNT | 08-JAN-10  | 17   | 17   | 1     | 25      |       |       |
| 1202015728-1 | RE12-10-7259(244630007DUP) | DUP    | .05    | pCi/g | SOIL | QC ACCOUNT | QC ACCOUNT | QC ACCOUNT | 08-JAN-10  | 18   | 18   | 1,250 | 30      |       |       |
| 1202015729-1 | LCS for batch 941748       | LCS    | .05    | pCi/g | SOIL | QC ACCOUNT | QC ACCOUNT | QC ACCOUNT | 08-JAN-10  | 19   | 19   | 0.098 | 31      |       |       |

Choose SOP Used: GL-RAD-A-011  
GL-RAD-A-036Solid Sample Dissolution by: LEACH or DIGESTION  
Circle OneData Reviewed By: [Signature] 1/26/10

GEL Laboratories LLC, Radiochemistry Division

Page 1 of 1

# Blank Correction Report

**Batch ID 941748**

| GEL Sample ID | Client sample ID | Parameter     | Aliquot | Result    | TPU     | MDA    | Aliquot Corrected Blank Result | Units | Activity <5X Corrected Blank |
|---------------|------------------|---------------|---------|-----------|---------|--------|--------------------------------|-------|------------------------------|
| 1202015728    | DUP              | Americium-241 | 1.25 g  | -0.000693 | 0.00548 | 0.0193 | .00444                         | pCi/g | YES                          |
| 1202015729    | LCS              | Americium-241 | 0.098 g | 32.3      | 2.02    | 0.235  | .056632653                     | pCi/g | NO                           |
| 1202015727    | MB               | Americium-241 | 1.00 g  | 0.00555   | 0.00908 | 0.0266 | .00555                         | pCi/g | YES                          |
| 244630001     | RE12-10-7262     | Americium-241 | 1.29 g  | 0.00483   | 0.00232 | 0.0187 | .004302326                     | pCi/g | YES                          |
| 244630002     | RE12-10-7266     | Americium-241 | 1.25 g  | 0.00674   | 0.00346 | 0.0182 | .00444                         | pCi/g | YES                          |
| 244630003     | RE12-10-7258     | Americium-241 | 1.27 g  | -0.000665 | 0.00113 | 0.0191 | .004370079                     | pCi/g | YES                          |
| 244630004     | RE12-10-7268     | Americium-241 | 1.30 g  | 0.00266   | 0.00172 | 0.0188 | .004269231                     | pCi/g | YES                          |
| 244630005     | RE12-10-7265     | Americium-241 | 1.28 g  | 0.00139   | 0.00122 | 0.018  | .004335938                     | pCi/g | YES                          |
| 244630006     | RE12-10-7261     | Americium-241 | 1.26 g  | 0.00533   | 0.00254 | 0.0202 | .004404762                     | pCi/g | YES                          |
| 244630007     | RE12-10-7259     | Americium-241 | 1.29 g  | -0.00281  | 0.0024  | 0.0177 | .004302326                     | pCi/g | YES                          |
| 244630008     | RE12-10-7263     | Americium-241 | 1.28 g  | 0.000388  | 0.00109 | 0.0185 | .004335938                     | pCi/g | YES                          |
| 244630009     | RE12-10-7271     | Americium-241 | 1.28 g  | -0.00179  | 0.00161 | 0.0193 | .004335938                     | pCi/g | YES                          |
| 244630010     | RE12-10-7260     | Americium-241 | 1.25 g  | 0.00908   | 0.00354 | 0.0185 | .00444                         | pCi/g | YES                          |
| 244630011     | RE12-10-7267     | Americium-241 | 1.29 g  | 0.0012    | 0.00109 | 0.0168 | .004302326                     | pCi/g | YES                          |
| 244630012     | RE12-10-7264     | Americium-241 | 1.25 g  | 0.00345   | 0.00243 | 0.0179 | .00444                         | pCi/g | YES                          |
| 244630013     | RE12-10-7270     | Americium-241 | 1.26 g  | 0.00668   | 0.00342 | 0.0223 | .004404762                     | pCi/g | YES                          |
| 244630014     | RE12-10-7269     | Americium-241 | 1.29 g  | 0.00356   | 0.00247 | 0.0181 | .004302326                     | pCi/g | YES                          |
| 244630015     | RE12-10-7283     | Americium-241 | 1.26 g  | 0.0138    | 0.00401 | 0.019  | .004404762                     | pCi/g | YES                          |
| 244630016     | RE12-10-7282     | Americium-241 | 1.26 g  | -0.000764 | 0.00105 | 0.0178 | .004404762                     | pCi/g | YES                          |

*Sam*  
11/27/10

GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941748  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630001\_AM  
SAMPLE QTY: 1.290 G

DETECTOR NUMBER :79468  
AVERAGE %EFFICIENCY :37.4871  
% YIELD : 84.790

COUNT DATE:22-JAN-2010 12:03:16  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

TRACER  
ID : 445-96-2-SS  
ISOTOPE : AM243  
NOMINAL : 2.91658 dpm  
RESULTS : 2.47296 dpm

LIB FILE : ENV\_ALPHA\_AM.N  
BKG FILE : B215.CNF;70  
BKG DATE : 17-JAN-2010  
EFF FILE : W215.CNF;29  
CAL DATE : 28-DEC-2009

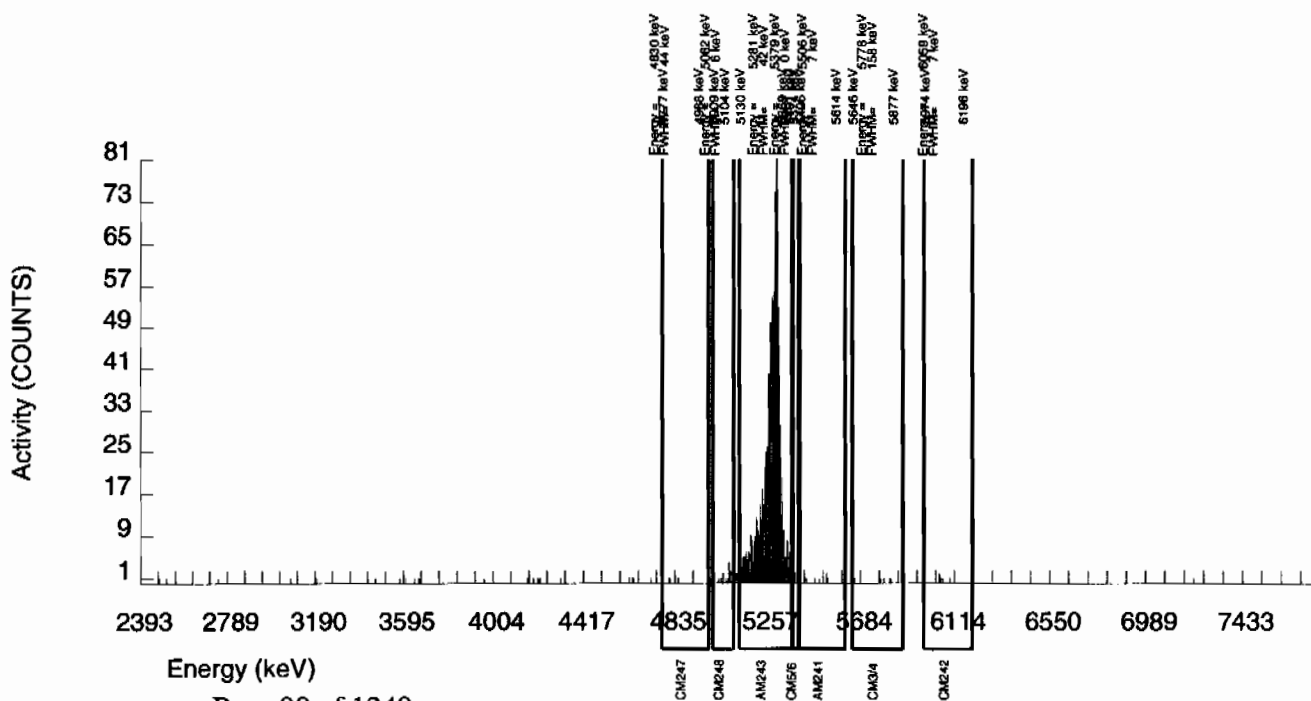
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS<br>AREA | NET<br>AREA | BKG<br>AREA | BKG<br>Sg | %ABUN    | ACTIVITY<br>pCi/G | TPU<br>1-SIGMA | DLC<br>pCi/G | MDC<br>pCi/G | UNC<br>pCi/G |
|---------|----------|---------------|-------------|-------------|-----------|----------|-------------------|----------------|--------------|--------------|--------------|
| CM-3/4  | 5795.020 | 5.000         | 5.000       | 0.000       | 5.2338    | 100.0000 | 5.50E-03          | 2.48E-03       | 1.34E-02     | 2.97E-02     | 2.46E-03     |
| CM-5/6  | 5386.000 | 10.000        | 10.000      | 0.000       | 19.8463   | 86.09000 | 1.28E-02          | 4.11E-03       | 5.89E-02     | 1.21E-01     | 4.04E-03     |
| AM-241  | 5479.150 | 6.000         | 4.390       | 0.000       | 3.0704    | 99.94000 | 4.83E-03          | 2.32E-03       | 7.85E-03     | 1.87E-02     | 2.30E-03     |
| CM-242  | 6102.000 | 6.000         | 6.000       | 0.000       | 4.3186    | 100.0000 | 7.02E-03          | 2.90E-03       | 1.10E-02     | 2.51E-02     | 2.87E-03     |
| AM243   | 5270.000 | 926.000       | 925.000     | 1.000       | 1.0000    | 99.78000 | 1.02E+00          | 6.89E-02       | 2.56E-03     | 8.11E-03     | 3.35E-02     |
| CM-247  | 4946.000 | 3.000         | 3.000       | 0.000       | 15.3366   | 79.30000 | 4.16E-03          | 2.41E-03       | 4.94E-02     | 1.03E-01     | 2.40E-03     |
| CM-248  | 5078.600 | 12.000        | 12.000      | 0.000       | 22.1555   | 91.00000 | 1.45E-02          | 4.27E-03       | 6.22E-02     | 1.28E-01     | 4.18E-03     |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of AM243 calculated as sqrt(BKG AREA)

NOTE: Corrections made to AM-241 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

|  |  |   |   |
|--|--|---|---|
| BATCH NUMBER: 941748<br>SAMPLE DATE : 8-JAN-2010 00:00:00.                 |  | SAMPLE ID : S0244630002_AM<br>SAMPLE QTY: 1.252 G   |   |
| DETECTOR NUMBER :79195<br>AVERAGE %EFFICIENCY :39.3107<br>% YIELD : 85.577 |  | COUNT DATE:22-JAN-2010 12:03:19<br>ELAPSED LIVE TIME(SEC): 60000.00<br>ANALYST :MXA1            |   |
| MS/MSD<br>ID : 0244-B<br>ISOTOPE : AM-241<br>PCI/G : 3.316E+01             | LCS/LCSD<br>ID : 0244-B<br>ISOTOPE : AM-241<br>PCI/G : 3.316E+01 | TRACER<br>ID : 445-96-2-SS<br>ISOTOPE : AM243<br>NOMINAL : 2.91658 dpm<br>RESULTS : 2.49591 dpm | LIB FILE : ENV_ALPHA_AM.N<br>BKG FILE : B216.CNF;70<br>BKG DATE : 17-JAN-2010<br>EFF FILE : W216.CNF;24<br>CAL DATE : 28-DEC-2009 |

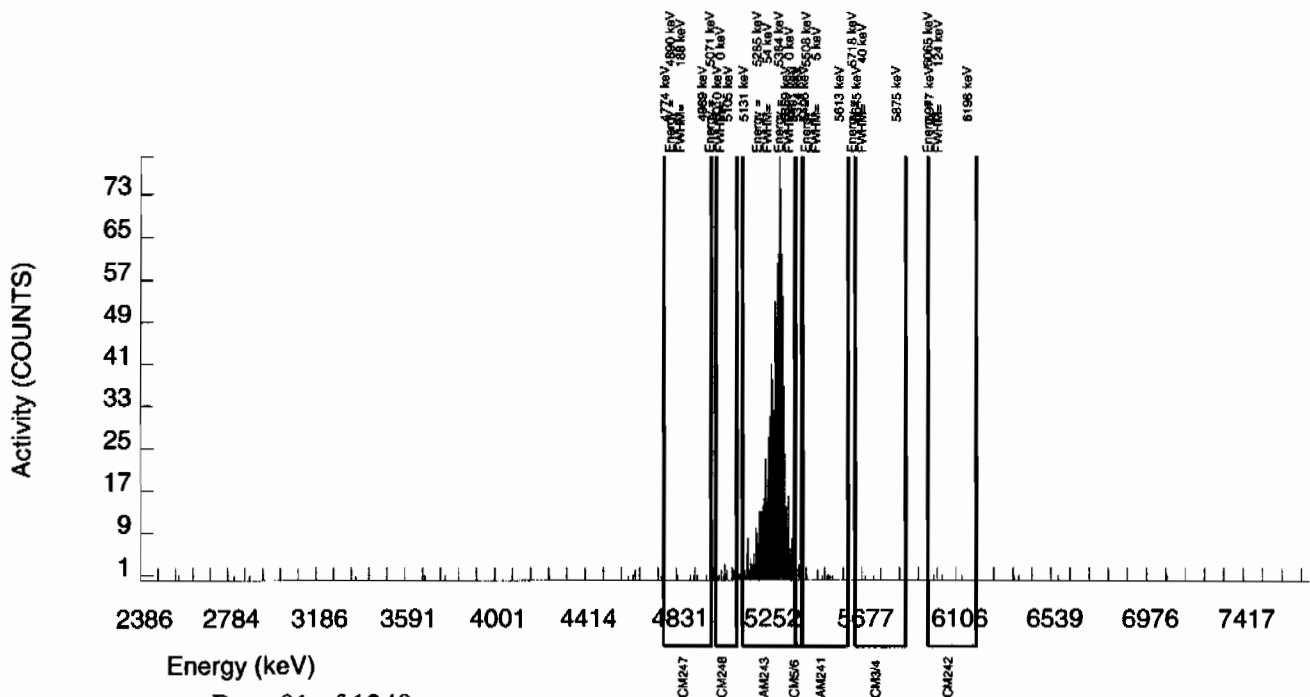
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg  | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|---------|----------|----------------|-------------|-----------|-----------|-----------|
| CM-3/4  | 5795.020 | 2.000      | 2.000    | 0.000    | 5.2338  | 100.0000 | 2.14E-03       | 1.52E-03    | 1.30E-02  | 2.89E-02  | 1.51E-03  |
| CM-5/6  | 5386.000 | 15.000     | 15.000   | 0.000    | 19.8463 | 86.09000 | 1.86E-02       | 4.93E-03    | 5.74E-02  | 1.18E-01  | 4.81E-03  |
| AM-241  | 5479.150 | 10.000     | 6.296    | 2.000    | 3.0704  | 99.94000 | 6.74E-03       | 3.46E-03    | 7.64E-03  | 1.82E-02  | 3.43E-03  |
| CM-242  | 6102.000 | 3.000      | 3.000    | 0.000    | 4.3186  | 100.0000 | 3.42E-03       | 1.98E-03    | 1.07E-02  | 2.44E-02  | 1.97E-03  |
| AM243   | 5270.000 | 981.000    | 979.000  | 2.000    | 1.4142  | 99.78000 | 1.05E+00       | 7.01E-02    | 3.53E-03  | 9.96E-03  | 3.36E-02  |
| CM-247  | 4946.000 | 6.000      | 6.000    | 0.000    | 15.3366 | 79.30000 | 8.09E-03       | 3.34E-03    | 4.81E-02  | 9.99E-02  | 3.30E-03  |
| CM-248  | 5078.600 | 19.000     | 19.000   | 0.000    | 22.1555 | 91.00000 | 2.23E-02       | 5.29E-03    | 6.06E-02  | 1.24E-01  | 5.12E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of AM243 calculated as sqrt(BKG AREA)

NOTE: Corrections made to AM-241 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941748  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630003\_AM  
SAMPLE QTY: 1.274 G

DETECTOR NUMBER :79410  
AVERAGE %EFFICIENCY :36.7043  
% YIELD : 85.568

COUNT DATE:22-JAN-2010 12:03:22  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

TRACER  
ID : 445-96-2-SS  
ISOTOPE : AM243  
NOMINAL : 2.91658 dpm  
RESULTS : 2.49567 dpm

LIB FILE : ENV\_ALPHA\_AM.N  
BKG FILE : B217.CNF;72  
BKG DATE : 17-JAN-2010  
EFF FILE : W217.CNF;26  
CAL DATE : 28-DEC-2009

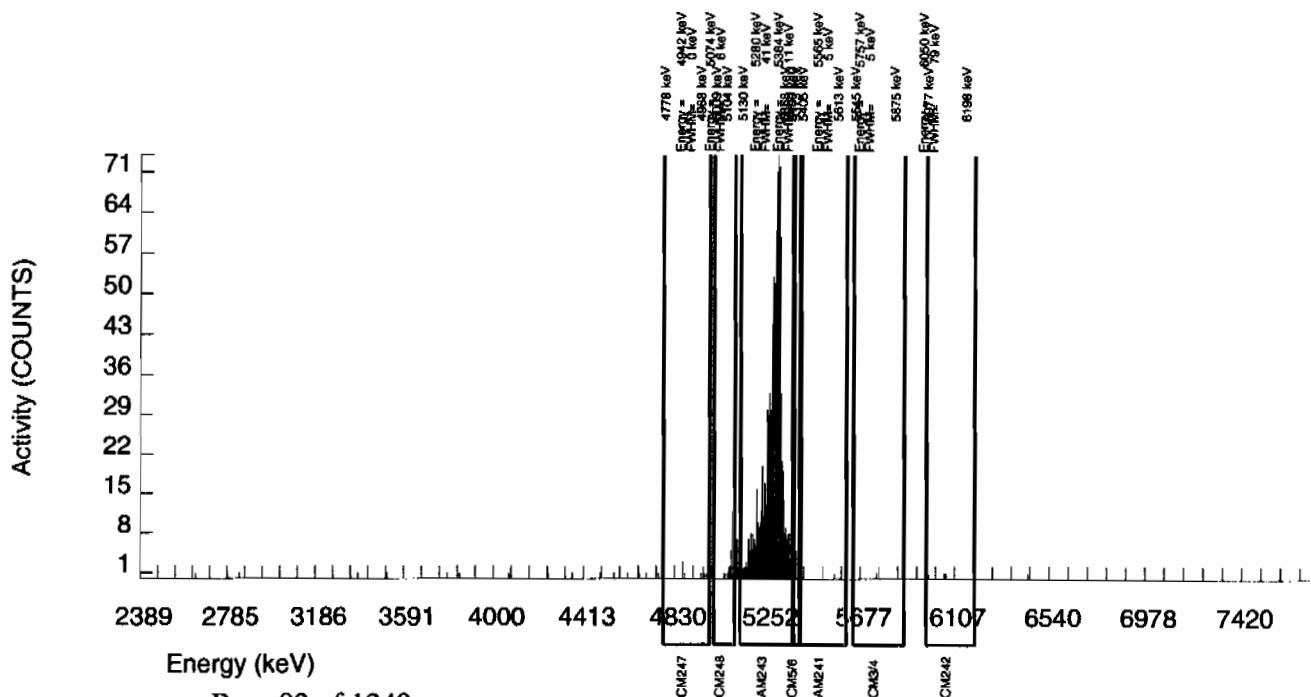
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg  | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|---------|----------|----------------|-------------|-----------|-----------|-----------|
| CM-3/4  | 5795.020 | 1.000      | 1.000    | 0.000    | 5.2338  | 100.0000 | 1.13E-03       | 1.13E-03    | 1.37E-02  | 3.05E-02  | 1.13E-03  |
| CM-5/6  | 5386.000 | 14.000     | 14.000   | 0.000    | 19.8463 | 86.09000 | 1.83E-02       | 5.01E-03    | 6.04E-02  | 1.24E-01  | 4.89E-03  |
| AM-241  | 5479.150 | 1.000      | -0.591   | 0.000    | 3.0704  | 99.94000 | -6.65E-04      | 1.13E-03    | 8.05E-03  | 1.91E-02  | 1.13E-03  |
| CM-242  | 6102.000 | 4.000      | 2.000    | 2.000    | 4.3186  | 100.0000 | 2.40E-03       | 2.94E-03    | 1.13E-02  | 2.57E-02  | 2.94E-03  |
| AM243   | 5270.000 | 914.000    | 914.000  | 0.000    | 0.0000  | 99.78000 | 1.03E+00       | 6.99E-02    | 0.00E+00  | 3.06E-03  | 3.41E-02  |
| CM-247  | 4946.000 | 12.000     | 12.000   | 0.000    | 15.3366 | 79.30000 | 1.70E-02       | 5.02E-03    | 5.07E-02  | 1.05E-01  | 4.92E-03  |
| CM-248  | 5078.600 | 16.000     | 16.000   | 0.000    | 22.1555 | 91.00000 | 1.98E-02       | 5.09E-03    | 6.38E-02  | 1.31E-01  | 4.95E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of AM243 calculated as sqrt(BKG AREA)

NOTE: Corrections made to AM-241 net area due to tracer impurity





GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941748  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630004\_AM  
SAMPLE QTY: 1.298 G

DETECTOR NUMBER :79411  
AVERAGE %EFFICIENCY :37.5005  
% YIELD : 83.752

COUNT DATE:22-JAN-2010 12:03:26  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

TRACER  
ID : 445-96-2-SS  
ISOTOPE : AM243  
NOMINAL : 2.91658 dpm  
RESULTS : 2.44268 dpm

LIB FILE : ENV\_ALPHA\_AM.N  
BKG FILE : B218.CNF;70  
BKG DATE : 17-JAN-2010  
EFF FILE : W218.CNF;24  
CAL DATE : 28-DEC-2009

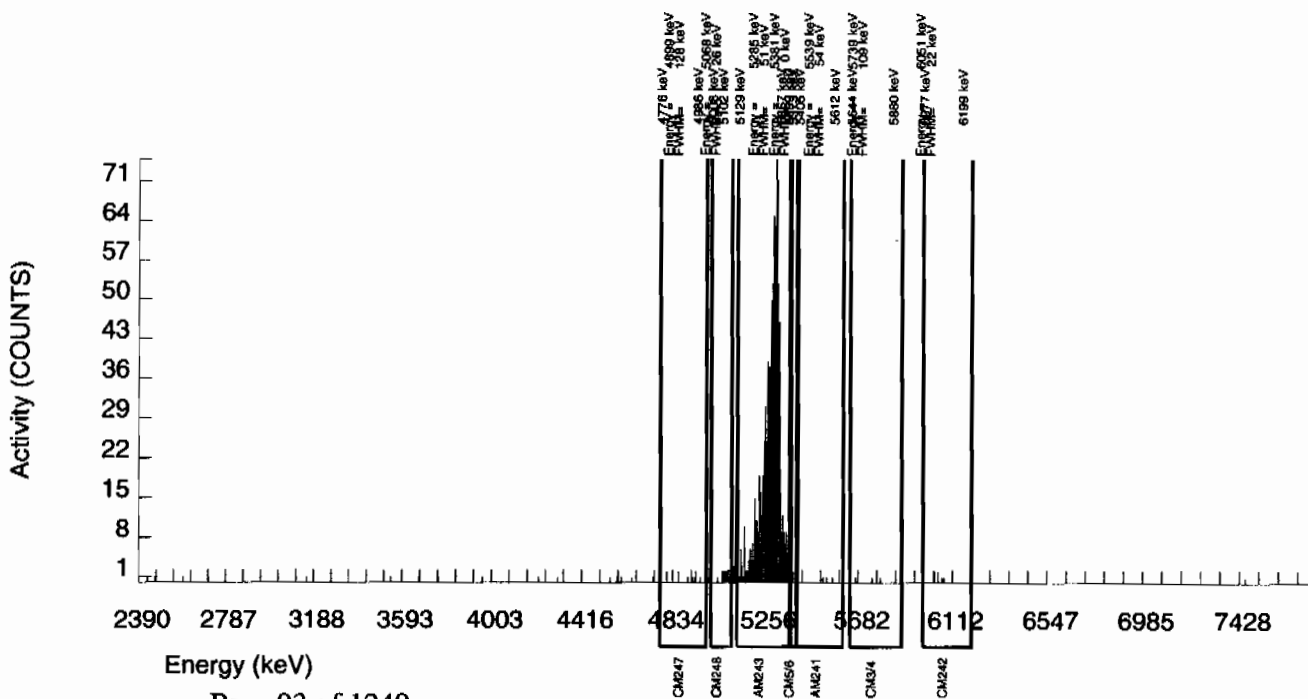
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg  | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|---------|----------|----------------|-------------|-----------|-----------|-----------|
| CM-3/4  | 5795.020 | 3.000      | 2.000    | 1.000    | 5.2338  | 100.0000 | 2.21E-03       | 2.22E-03    | 1.35E-02  | 2.99E-02  | 2.21E-03  |
| CM-5/6  | 5386.000 | 18.000     | 18.000   | 0.000    | 19.8463 | 86.09000 | 2.31E-02       | 5.61E-03    | 5.93E-02  | 1.22E-01  | 5.45E-03  |
| AM-241  | 5479.150 | 4.000      | 2.409    | 0.000    | 3.0704  | 99.94000 | 2.66E-03       | 1.72E-03    | 7.90E-03  | 1.88E-02  | 1.72E-03  |
| CM-242  | 6102.000 | 7.000      | 7.000    | 0.000    | 4.3186  | 100.0000 | 8.24E-03       | 3.15E-03    | 1.11E-02  | 2.52E-02  | 3.11E-03  |
| AM243   | 5270.000 | 918.000    | 914.000  | 4.000    | 2.0000  | 99.78000 | 1.01E+00       | 6.88E-02    | 5.15E-03  | 1.33E-02  | 3.36E-02  |
| CM-247  | 4946.000 | 10.000     | 8.000    | 2.000    | 15.3366 | 79.30000 | 1.11E-02       | 4.87E-03    | 4.97E-02  | 1.03E-01  | 4.83E-03  |
| CM-248  | 5078.600 | 15.000     | 15.000   | 0.000    | 22.1555 | 91.00000 | 1.82E-02       | 4.83E-03    | 6.26E-02  | 1.28E-01  | 4.70E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of AM243 calculated as sqrt(BKG AREA)

NOTE: Corrections made to AM-241 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941748  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630005\_AM  
SAMPLE QTY: 1.278 G

DETECTOR NUMBER :79412  
AVERAGE %EFFICIENCY :38.2986  
% YIELD : 86.851

COUNT DATE:22-JAN-2010 12:03:31  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

TRACER  
ID : 445-96-2-SS  
ISOTOPE : AM243  
NOMINAL : 2.91658 dpm  
RESULTS : 2.53309 dpm

LIB FILE : ENV\_ALPHA\_AM.N  
BKG FILE : B219.CNF;70  
BKG DATE : 17-JAN-2010  
EFF FILE : W219.CNF;24  
CAL DATE : 28-DEC-2009

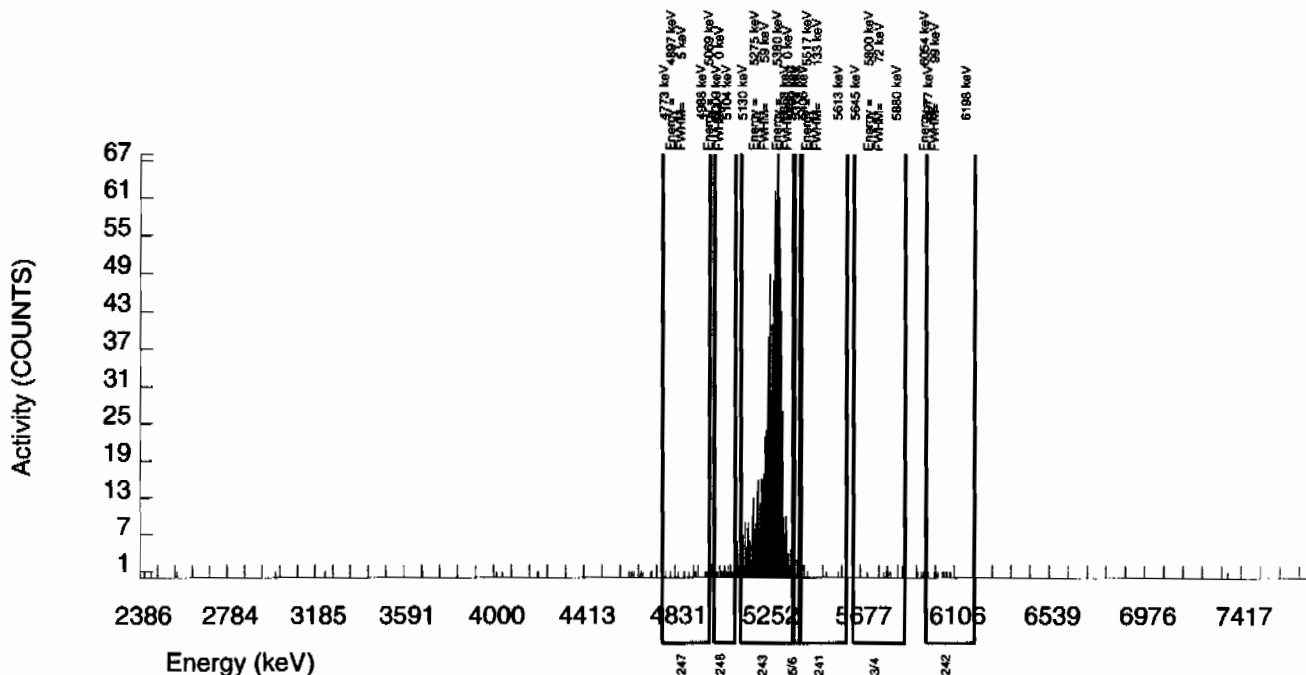
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg  | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|---------|----------|----------------|-------------|-----------|-----------|-----------|
| CM-3/4  | 5795.020 | 11.000     | 10.000   | 1.000    | 5.2338  | 100.0000 | 1.06E-02       | 3.73E-03    | 1.29E-02  | 2.87E-02  | 3.68E-03  |
| CM-5/6  | 5386.000 | 14.000     | 14.000   | 0.000    | 19.8463 | 86.09000 | 1.72E-02       | 4.72E-03    | 5.68E-02  | 1.17E-01  | 4.61E-03  |
| AM-241  | 5479.150 | 3.000      | 1.315    | 0.000    | 3.0704  | 99.94000 | 1.39E-03       | 1.22E-03    | 7.57E-03  | 1.80E-02  | 1.22E-03  |
| CM-242  | 6102.000 | 10.000     | 10.000   | 0.000    | 4.3186  | 100.0000 | 1.13E-02       | 3.63E-03    | 1.06E-02  | 2.42E-02  | 3.57E-03  |
| AM243   | 5270.000 | 969.000    | 968.000  | 1.000    | 1.0000  | 99.78000 | 1.03E+00       | 6.88E-02    | 2.47E-03  | 7.82E-03  | 3.31E-02  |
| CM-247  | 4946.000 | 12.000     | 11.000   | 1.000    | 15.3366 | 79.30000 | 1.47E-02       | 4.89E-03    | 4.77E-02  | 9.90E-02  | 4.82E-03  |
| CM-248  | 5078.600 | 20.000     | 20.000   | 0.000    | 22.1555 | 91.00000 | 2.33E-02       | 5.38E-03    | 6.00E-02  | 1.23E-01  | 5.21E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of AM243 calculated as sqrt(BKG AREA)

NOTE: Corrections made to AM-241 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941748  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630006\_AM  
SAMPLE QTY: 1.264 G

DETECTOR NUMBER :79413  
AVERAGE %EFFICIENCY :37.7498  
% YIELD : 79.466

COUNT DATE:22-JAN-2010 12:03:33  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

TRACER  
ID : 445-96-2-SS  
ISOTOPE : AM243  
NOMINAL : 2.91658 dpm  
RESULTS : 2.31770 dpm

LIB FILE : ENV\_ALPHA\_AM.N  
BKG FILE : B220.CNF;70  
BKG DATE : 17-JAN-2010  
EFF FILE : W220.CNF;26  
CAL DATE : 28-DEC-2009

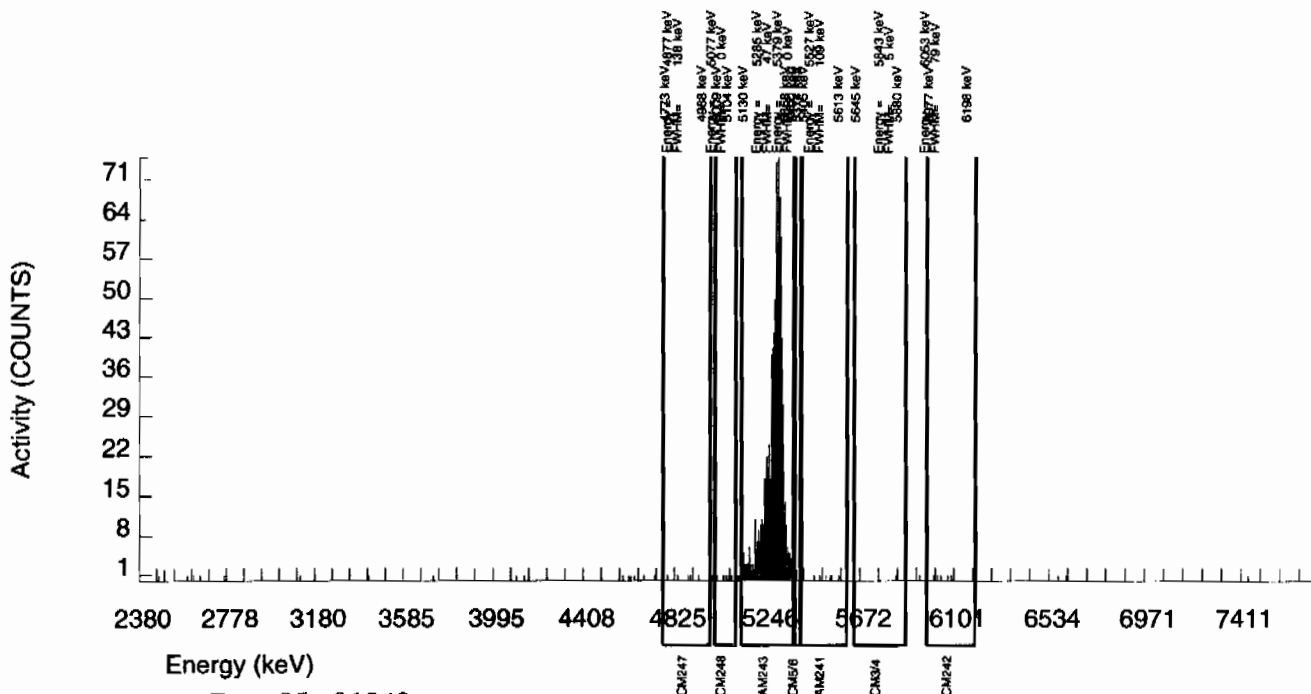
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg  | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|---------|----------|----------------|-------------|-----------|-----------|-----------|
| CM-3/4  | 5795.020 | 1.000      | 1.000    | 0.000    | 5.2338  | 100.0000 | 1.19E-03       | 1.19E-03    | 1.45E-02  | 3.21E-02  | 1.19E-03  |
| CM-5/6  | 5386.000 | 13.000     | 12.000   | 1.000    | 19.8463 | 86.09000 | 1.66E-02       | 5.26E-03    | 6.37E-02  | 1.31E-01  | 5.16E-03  |
| AM-241  | 5479.150 | 6.000      | 4.481    | 0.000    | 3.0704  | 99.94000 | 5.33E-03       | 2.54E-03    | 8.49E-03  | 2.02E-02  | 2.52E-03  |
| CM-242  | 6102.000 | 5.000      | 5.000    | 0.000    | 4.3186  | 100.0000 | 6.33E-03       | 2.85E-03    | 1.19E-02  | 2.71E-02  | 2.83E-03  |
| AM243   | 5270.000 | 874.000    | 873.000  | 1.000    | 1.0000  | 99.78000 | 1.04E+00       | 7.13E-02    | 2.77E-03  | 8.77E-03  | 3.52E-02  |
| CM-247  | 4946.000 | 5.000      | 3.000    | 2.000    | 15.3366 | 79.30000 | 4.49E-03       | 3.97E-03    | 5.34E-02  | 1.11E-01  | 3.96E-03  |
| CM-248  | 5078.600 | 10.000     | 10.000   | 0.000    | 22.1555 | 91.00000 | 1.31E-02       | 4.20E-03    | 6.73E-02  | 1.38E-01  | 4.13E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of AM243 calculated as sqrt(BKG AREA)

NOTE: Corrections made to AM-241 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

|  |  |   |   |
|--|--|---|---|
| BATCH NUMBER: 941748<br>SAMPLE DATE : 8-JAN-2010 00:00:00.                 |  | SAMPLE ID : S0244630007_AM<br>SAMPLE QTY: 1.288 G   |   |
| DETECTOR NUMBER :79414<br>AVERAGE %EFFICIENCY :37.2887<br>% YIELD : 90.033 |  | COUNT DATE:22-JAN-2010 12:03:36<br>ELAPSED LIVE TIME(SEC): 60000.00<br>ANALYST :MXA1            |   |
| MS/MSD<br>ID : 0244-B<br>ISOTOPE : AM-241<br>PCI/G : 3.316E+01             | LCS/LCSD<br>ID : 0244-B<br>ISOTOPE : AM-241<br>PCI/G : 3.316E+01 | TRACER<br>ID : 445-96-2-SS<br>ISOTOPE : AM243<br>NOMINAL : 2.91658 dpm<br>RESULTS : 2.62588 dpm | LIB FILE : ENV_ALPHA_AM.N<br>BKG FILE : B221.CNF;70<br>BKG DATE : 17-JAN-2010<br>EFF FILE : W221.CNF;24<br>CAL DATE : 28-DEC-2009 |

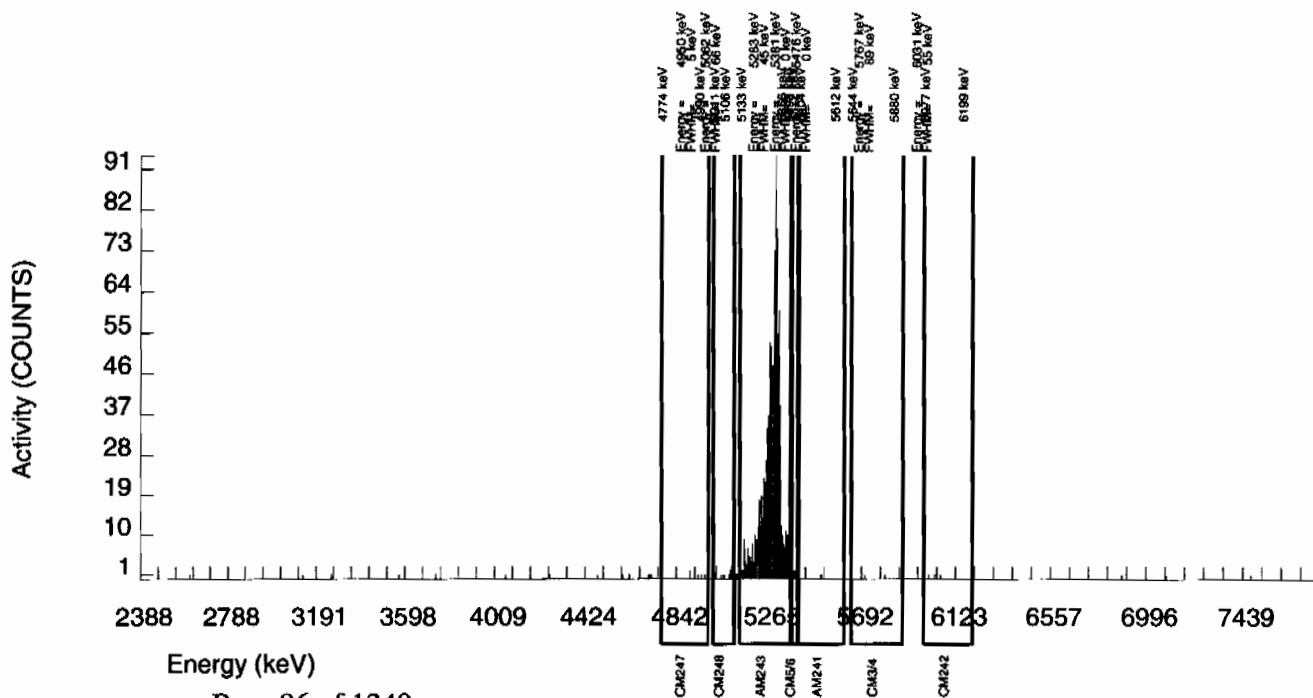
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg  | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|---------|----------|----------------|-------------|-----------|-----------|-----------|
| CM-3/4  | 5795.020 | 3.000      | 3.000    | 0.000    | 5.2338  | 100.0000 | 3.13E-03       | 1.82E-03    | 1.27E-02  | 2.82E-02  | 1.81E-03  |
| CM-5/6  | 5386.000 | 19.000     | 19.000   | 0.000    | 19.8463 | 86.09000 | 2.30E-02       | 5.44E-03    | 5.59E-02  | 1.15E-01  | 5.27E-03  |
| AM-241  | 5479.150 | 3.000      | -2.700   | 4.000    | 3.0704  | 99.94000 | -2.81E-03      | 2.40E-03    | 7.45E-03  | 1.77E-02  | 2.40E-03  |
| CM-242  | 6102.000 | 3.000      | 1.000    | 2.000    | 4.3186  | 100.0000 | 1.11E-03       | 2.48E-03    | 1.05E-02  | 2.38E-02  | 2.48E-03  |
| AM243   | 5270.000 | 977.000    | 977.000  | 0.000    | 0.0000  | 99.78000 | 1.02E+00       | 6.81E-02    | 0.00E+00  | 2.83E-03  | 3.26E-02  |
| CM-247  | 4946.000 | 6.000      | 5.000    | 1.000    | 15.3366 | 79.30000 | 6.57E-03       | 3.50E-03    | 4.69E-02  | 9.73E-02  | 3.48E-03  |
| CM-248  | 5078.600 | 13.000     | 13.000   | 0.000    | 22.1555 | 91.00000 | 1.49E-02       | 4.22E-03    | 5.90E-02  | 1.21E-01  | 4.13E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of AM243 calculated as sqrt(BKG AREA)

NOTE: Corrections made to AM-241 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

|  |  |   |   |
|--|--|---|---|
| BATCH NUMBER: 941748<br>SAMPLE DATE : 8-JAN-2010 00:00:00.                 |  | SAMPLE ID : S0244630008_AM<br>SAMPLE QTY: 1.280 G   |   |
| DETECTOR NUMBER :79415<br>AVERAGE %EFFICIENCY :35.6666<br>% YIELD : 90.948 |  | COUNT DATE:22-JAN-2010 12:03:40<br>ELAPSED LIVE TIME(SEC): 60000.00<br>ANALYST :MXA1            |   |
| MS/MSD<br>ID : 0244-B<br>ISOTOPE : AM-241<br>PCI/G : 3.316E+01             | LCS/LCSD<br>ID : 0244-B<br>ISOTOPE : AM-241<br>PCI/G : 3.316E+01 | TRACER<br>ID : 445-96-2-SS<br>ISOTOPE : AM243<br>NOMINAL : 2.91658 dpm<br>RESULTS : 2.65257 dpm | LIB FILE : ENV_ALPHA_AM.N<br>BKG FILE : B222.CNF;70<br>BKG DATE : 17-JAN-2010<br>EFF FILE : W222.CNF;24<br>CAL DATE : 28-DEC-2009 |

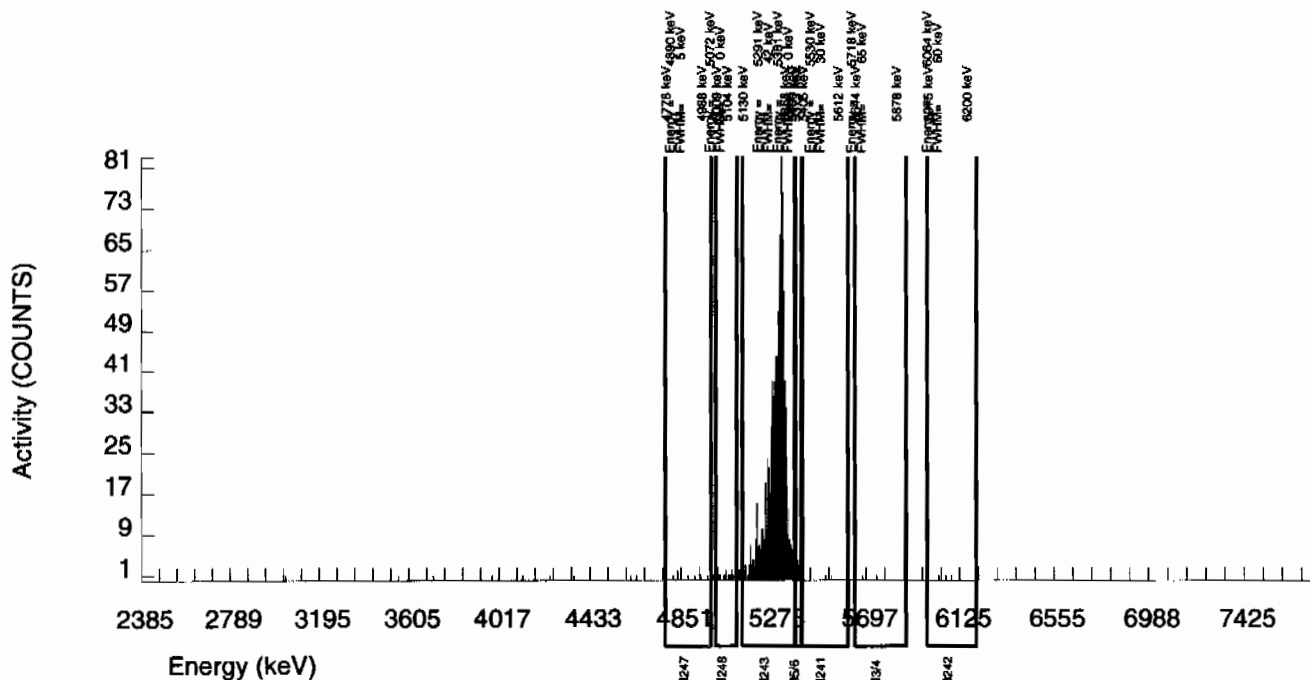
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS<br>AREA | NET<br>AREA | BKG<br>AREA | BKG<br>Sg | %ABUN    | ACTIVITY<br>pCi/G | TPU<br>1-SIGMA | DLC<br>pCi/G | MDC<br>pCi/G | UNC<br>pCi/G |
|---------|----------|---------------|-------------|-------------|-----------|----------|-------------------|----------------|--------------|--------------|--------------|
| CM-3/4  | 5795.020 | 2.000         | 2.000       | 0.000       | 5.2338    | 100.0000 | 2.17E-03          | 1.54E-03       | 1.32E-02     | 2.94E-02     | 1.54E-03     |
| CM-5/6  | 5386.000 | 22.000        | 22.000      | 0.000       | 19.8463   | 86.09000 | 2.77E-02          | 6.13E-03       | 5.82E-02     | 1.20E-01     | 5.91E-03     |
| AM-241  | 5479.150 | 2.000         | 0.357       | 0.000       | 3.0704    | 99.94000 | 3.88E-04          | 1.09E-03       | 7.75E-03     | 1.84E-02     | 1.09E-03     |
| CM-242  | 6102.000 | 3.000         | 2.000       | 1.000       | 4.3186    | 100.0000 | 2.31E-03          | 2.32E-03       | 1.09E-02     | 2.47E-02     | 2.31E-03     |
| AM243   | 5270.000 | 944.000       | 944.000     | 0.000       | 0.0000    | 99.78000 | 1.03E+00          | 6.91E-02       | 0.00E+00     | 2.95E-03     | 3.34E-02     |
| CM-247  | 4946.000 | 7.000         | 7.000       | 0.000       | 15.3366   | 79.30000 | 9.58E-03          | 3.66E-03       | 4.88E-02     | 1.01E-01     | 3.62E-03     |
| CM-248  | 5078.600 | 14.000        | 14.000      | 0.000       | 22.1555   | 91.00000 | 1.67E-02          | 4.57E-03       | 6.14E-02     | 1.26E-01     | 4.46E-03     |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of AM243 calculated as sqrt(BKG AREA)

NOTE: Corrections made to AM-241 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941748  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630009\_AM  
SAMPLE QTY: 1.277 G

DETECTOR NUMBER :79416  
AVERAGE %EFFICIENCY :37.0261  
% YIELD : 83.804

COUNT DATE:22-JAN-2010 12:03:44  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

TRACER  
ID : 445-96-2-SS  
ISOTOPE : AM243  
NOMINAL : 2.91658 dpm  
RESULTS : 2.44420 dpm

LIB FILE : ENV\_ALPHA\_AM.N  
BKG FILE : B223.CNF;72  
BKG DATE : 17-JAN-2010  
EFF FILE : W223.CNF;24  
CAL DATE : 28-DEC-2009

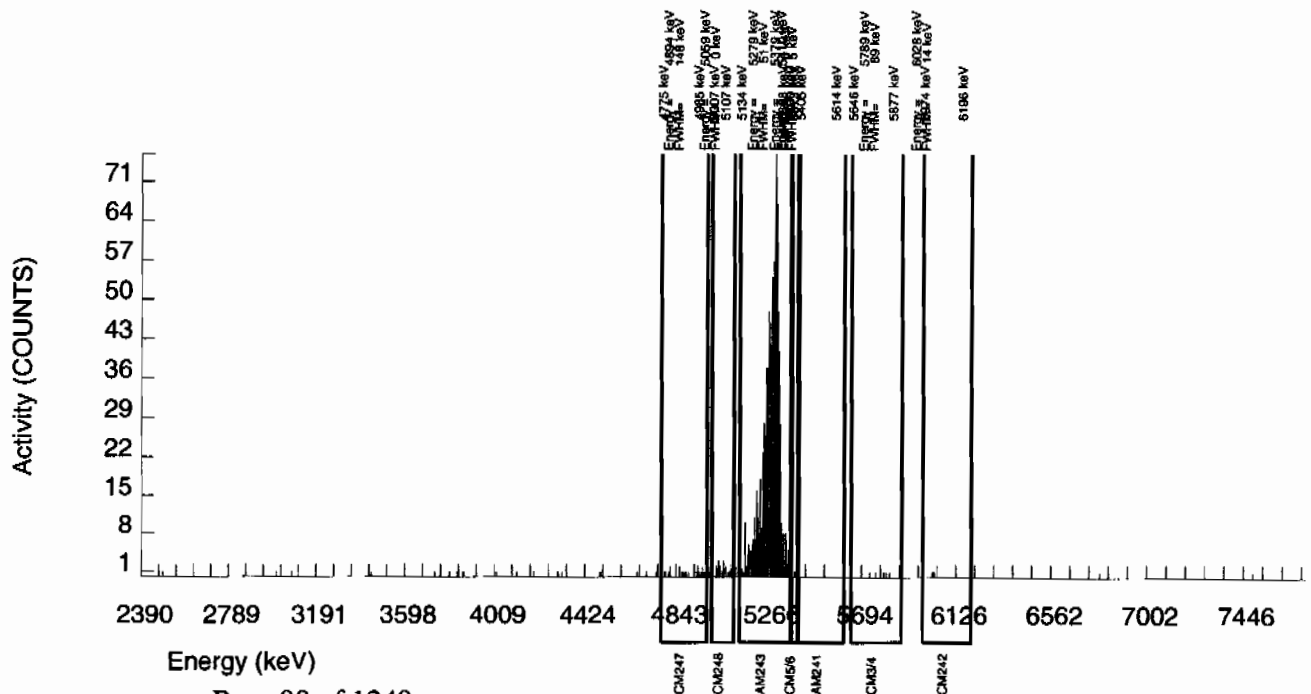
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg  | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|---------|----------|----------------|-------------|-----------|-----------|-----------|
| CM-3/4  | 5795.020 | 5.000      | 5.000    | 0.000    | 5.2338  | 100.0000 | 5.69E-03       | 2.57E-03    | 1.38E-02  | 3.08E-02  | 2.55E-03  |
| CM-5/6  | 5386.000 | 8.000      | 8.000    | 0.000    | 19.8463 | 86.09000 | 1.06E-02       | 3.79E-03    | 6.10E-02  | 1.26E-01  | 3.73E-03  |
| AM-241  | 5479.150 | 1.000      | -1.572   | 1.000    | 3.0704  | 99.94000 | -1.79E-03      | 1.61E-03    | 8.12E-03  | 1.93E-02  | 1.61E-03  |
| CM-242  | 6102.000 | 3.000      | 3.000    | 0.000    | 4.3186  | 100.0000 | 3.63E-03       | 2.11E-03    | 1.14E-02  | 2.59E-02  | 2.10E-03  |
| AM243   | 5270.000 | 903.000    | 903.000  | 0.000    | 0.0000  | 99.78000 | 1.03E+00       | 7.00E-02    | 0.00E+00  | 3.09E-03  | 3.42E-02  |
| CM-247  | 4946.000 | 22.000     | 21.000   | 1.000    | 15.3366 | 79.30000 | 3.01E-02       | 7.10E-03    | 5.11E-02  | 1.06E-01  | 6.88E-03  |
| CM-248  | 5078.600 | 21.000     | 21.000   | 0.000    | 22.1555 | 91.00000 | 2.62E-02       | 5.93E-03    | 6.44E-02  | 1.32E-01  | 5.72E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of AM243 calculated as sqrt(BKG AREA)

NOTE: Corrections made to AM-241 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941748  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630010\_AM  
SAMPLE QTY: 1.254 G

DETECTOR NUMBER :79449  
AVERAGE %EFFICIENCY :37.8660  
% YIELD : 87.117

COUNT DATE:25-JAN-2010 17:15:44  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

TRACER  
ID : 445-96-2-SS  
ISOTOPE : AM243  
NOMINAL : 2.91658 dpm  
RESULTS : 2.54085 dpm

LIB FILE : ENV\_ALPHA\_AM.N  
BKG FILE : B256.CNF;76  
BKG DATE : 24-JAN-2010  
EFF FILE : W256.CNF;24  
CAL DATE : 28-DEC-2009

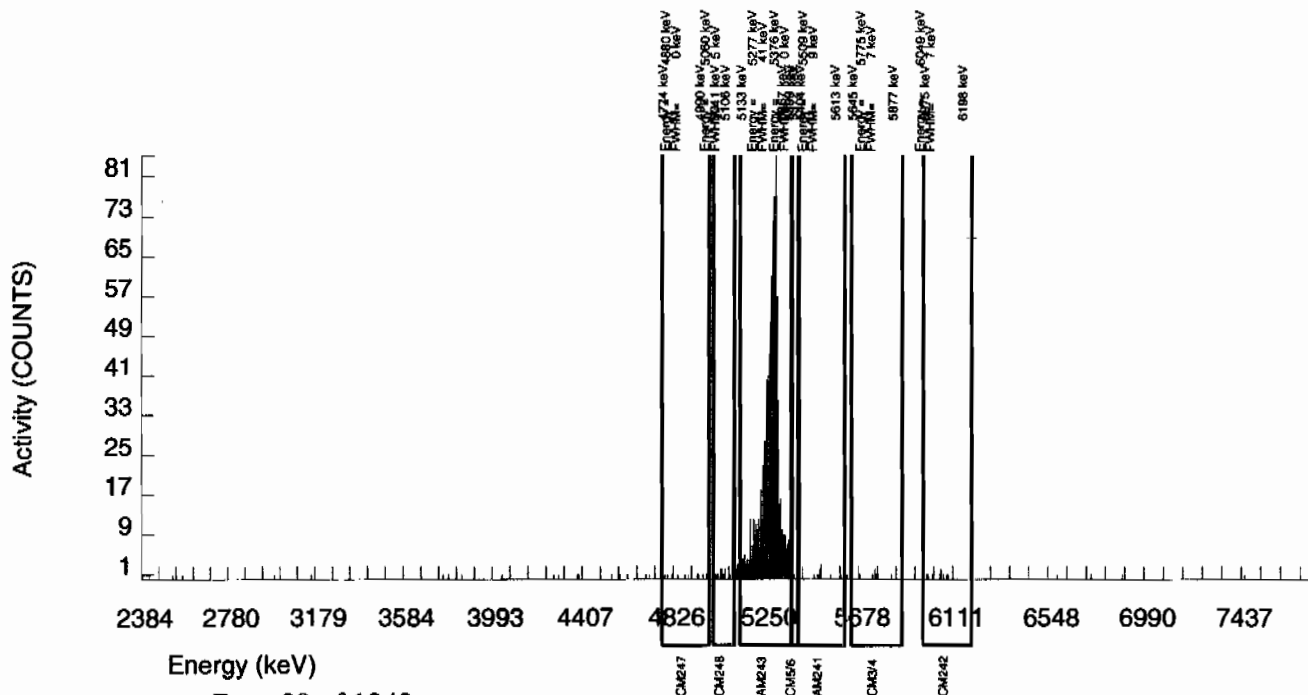
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS<br>AREA | NET<br>AREA | BKG<br>AREA | BKG<br>Sg | %ABUN    | ACTIVITY<br>pCi/G | TPU<br>1-SIGMA | DLC<br>pCi/G | MDC<br>pCi/G | UNC<br>pCi/G |
|---------|----------|---------------|-------------|-------------|-----------|----------|-------------------|----------------|--------------|--------------|--------------|
| CM-3/4  | 5795.020 | 8.000         | 8.000       | 0.000       | 5.2338    | 100.0000 | 8.73E-03          | 3.13E-03       | 1.33E-02     | 2.95E-02     | 3.09E-03     |
| CM-5/6  | 5386.000 | 10.000        | 10.000      | 0.000       | 19.8463   | 86.09000 | 1.26E-02          | 4.07E-03       | 5.84E-02     | 1.20E-01     | 4.00E-03     |
| AM-241  | 5479.150 | 11.000        | 8.329       | 1.000       | 3.0704    | 99.94000 | 9.08E-03          | 3.54E-03       | 7.78E-03     | 1.85E-02     | 3.50E-03     |
| CM-242  | 6102.000 | 10.000        | 10.000      | 0.000       | 4.3186    | 100.0000 | 1.18E-02          | 3.78E-03       | 1.09E-02     | 2.48E-02     | 3.72E-03     |
| AM243   | 5270.000 | 961.000       | 960.000     | 1.000       | 1.0000    | 99.78000 | 1.05E+00          | 7.03E-02       | 2.54E-03     | 8.04E-03     | 3.38E-02     |
| CM-247  | 4946.000 | 11.000        | 11.000      | 0.000       | 15.3366   | 79.30000 | 1.51E-02          | 4.64E-03       | 4.90E-02     | 1.02E-01     | 4.55E-03     |
| CM-248  | 5078.600 | 18.000        | 17.000      | 1.000       | 22.1555   | 91.00000 | 2.03E-02          | 5.35E-03       | 6.17E-02     | 1.27E-01     | 5.22E-03     |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of AM243 calculated as sqrt(BKG AREA)

NOTE: Corrections made to AM-241 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941748  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630011\_AM  
SAMPLE QTY: 1.288 G

DETECTOR NUMBER :79418  
AVERAGE %EFFICIENCY :39.4165  
% YIELD : 89.619

COUNT DATE:22-JAN-2010 12:03:51  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

TRACER  
ID : 445-96-2-SS  
ISOTOPE : AM243  
NOMINAL : 2.91658 dpm  
RESULTS : 2.61380 dpm

LIB FILE : ENV\_ALPHA\_AM.N  
BKG FILE : B225.CNF;70  
BKG DATE : 17-JAN-2010  
EFF FILE : W225.CNF;24  
CAL DATE : 28-DEC-2009

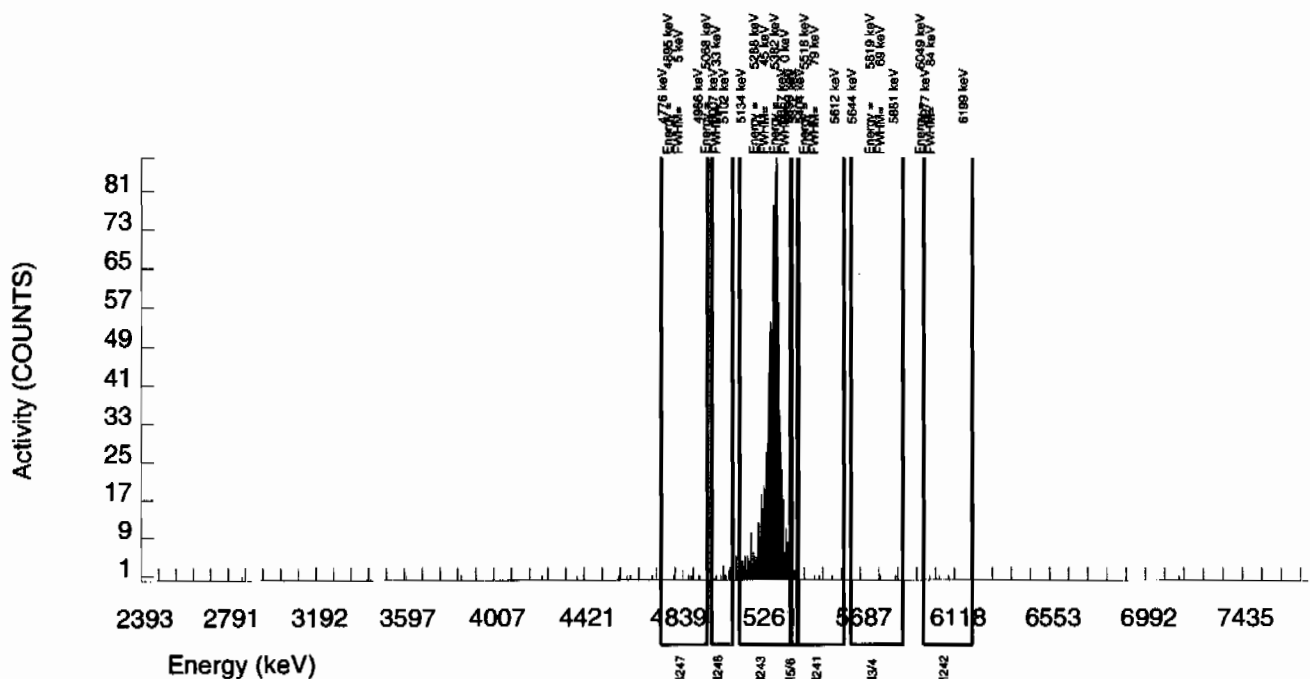
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg  | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|---------|----------|----------------|-------------|-----------|-----------|-----------|
| CM-3/4  | 5795.020 | 2.000      | 2.000    | 0.000    | 5.2338  | 100.0000 | 1.98E-03       | 1.41E-03    | 1.21E-02  | 2.68E-02  | 1.40E-03  |
| CM-5/6  | 5386.000 | 14.000     | 14.000   | 0.000    | 19.8463 | 86.09000 | 1.61E-02       | 4.40E-03    | 5.31E-02  | 1.09E-01  | 4.30E-03  |
| AM-241  | 5479.150 | 3.000      | 1.211    | 0.000    | 3.0704  | 99.94000 | 1.20E-03       | 1.09E-03    | 7.08E-03  | 1.68E-02  | 1.09E-03  |
| CM-242  | 6102.000 | 4.000      | 4.000    | 0.000    | 4.3186  | 100.0000 | 4.22E-03       | 2.12E-03    | 9.95E-03  | 2.26E-02  | 2.11E-03  |
| AM243   | 5270.000 | 1029.000   | 1028.000 | 1.000    | 1.0000  | 99.78000 | 1.02E+00       | 6.74E-02    | 2.31E-03  | 7.31E-03  | 3.18E-02  |
| CM-247  | 4946.000 | 10.000     | 9.000    | 1.000    | 15.3366 | 79.30000 | 1.12E-02       | 4.19E-03    | 4.45E-02  | 9.25E-02  | 4.14E-03  |
| CM-248  | 5078.600 | 12.000     | 12.000   | 0.000    | 22.1555 | 91.00000 | 1.31E-02       | 3.84E-03    | 5.61E-02  | 1.15E-01  | 3.77E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of AM243 calculated as sqrt(BKG AREA)

NOTE: Corrections made to AM-241 net area due to tracer impurity





GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941748  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630012\_AM  
SAMPLE QTY: 1.252 G

DETECTOR NUMBER :79419  
AVERAGE %EFFICIENCY :37.3342  
% YIELD : 91.396

COUNT DATE:22-JAN-2010 12:03:55  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

TRACER  
ID : 445-96-2-SS  
ISOTOPE : AM243  
NOMINAL : 2.91658 dpm  
RESULTS : 2.66563 dpm

LIB FILE : ENV\_ALPHA\_AM.N  
BKG FILE : B226.CNF;70  
BKG DATE : 17-JAN-2010  
EFF FILE : W226.CNF;24  
CAL DATE : 28-DEC-2009

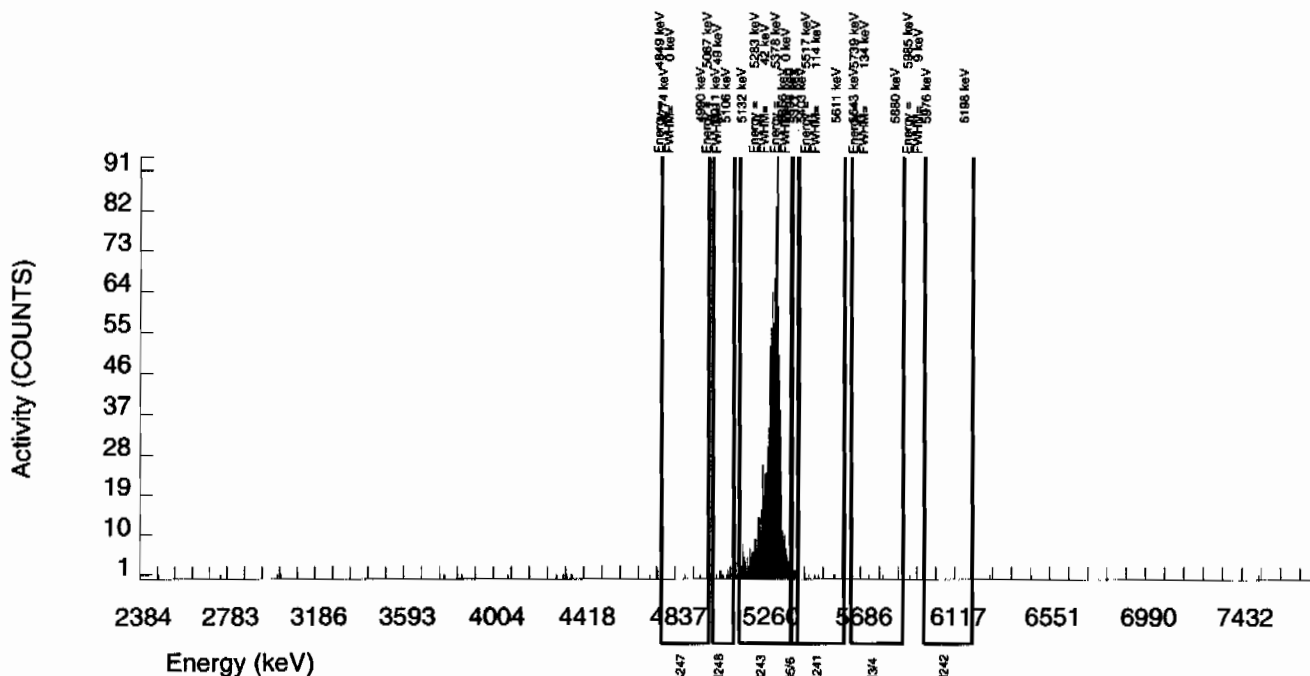
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg  | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|---------|----------|----------------|-------------|-----------|-----------|-----------|
| CM-3/4  | 5795.020 | 4.000      | 4.000    | 0.000    | 5.2338  | 100.0000 | 4.22E-03       | 2.13E-03    | 1.28E-02  | 2.85E-02  | 2.11E-03  |
| CM-5/6  | 5386.000 | 15.000     | 15.000   | 0.000    | 19.8463 | 86.09000 | 1.84E-02       | 4.86E-03    | 5.65E-02  | 1.16E-01  | 4.74E-03  |
| AM-241  | 5479.150 | 6.000      | 3.272    | 1.000    | 3.0704  | 99.94000 | 3.45E-03       | 2.43E-03    | 7.54E-03  | 1.79E-02  | 2.42E-03  |
| CM-242  | 6102.000 | 2.000      | 2.000    | 0.000    | 4.3186  | 100.0000 | 2.25E-03       | 1.59E-03    | 1.06E-02  | 2.40E-02  | 1.59E-03  |
| AM243   | 5270.000 | 993.000    | 993.000  | 0.000    | 0.0000  | 99.78000 | 1.05E+00       | 6.98E-02    | 0.00E+00  | 2.86E-03  | 3.33E-02  |
| CM-247  | 4946.000 | 4.000      | 4.000    | 0.000    | 15.3366 | 79.30000 | 5.32E-03       | 2.68E-03    | 4.74E-02  | 9.85E-02  | 2.66E-03  |
| CM-248  | 5078.600 | 15.000     | 15.000   | 0.000    | 22.1555 | 91.00000 | 1.74E-02       | 4.60E-03    | 5.97E-02  | 1.23E-01  | 4.49E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of AM243 calculated as sqrt(BKG AREA)

NOTE: Corrections made to AM-241 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941748  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630013\_AM  
SAMPLE QTY: 1.256 G

DETECTOR NUMBER :79420  
AVERAGE %EFFICIENCY :38.4824  
% YIELD : 71.078

COUNT DATE:22-JAN-2010 12:03:58  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

TRACER  
ID : 445-96-2-SS  
ISOTOPE : AM243  
NOMINAL : 2.91658 dpm  
RESULTS : 2.07304 dpm

LIB FILE : ENV\_ALPHA\_AM.N  
BKG FILE : B227.CNF;70  
BKG DATE : 17-JAN-2010  
EFF FILE : W227.CNF;24  
CAL DATE : 28-DEC-2009

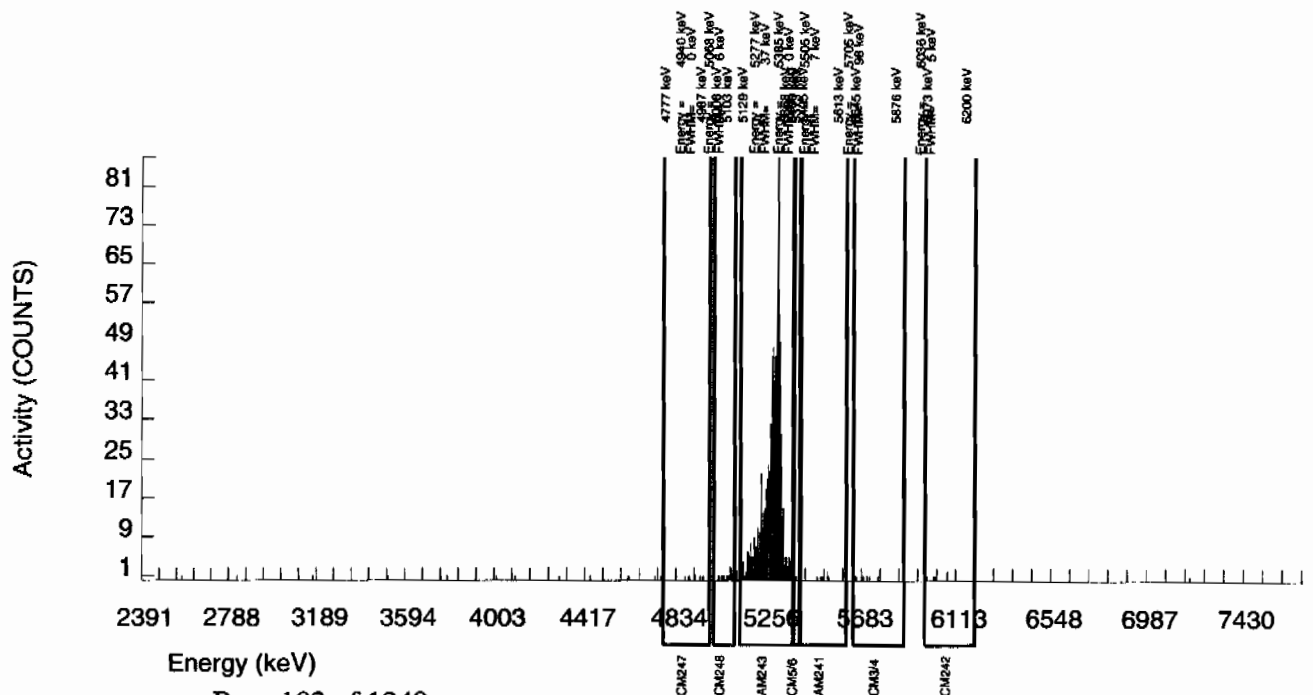
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg  | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|---------|----------|----------------|-------------|-----------|-----------|-----------|
| CM-3/4  | 5795.020 | 6.000      | 4.000    | 2.000    | 5.2338  | 100.0000 | 5.25E-03       | 3.73E-03    | 1.60E-02  | 3.55E-02  | 3.71E-03  |
| CM-5/6  | 5386.000 | 8.000      | 8.000    | 0.000    | 19.8463 | 86.09000 | 1.22E-02       | 4.37E-03    | 7.03E-02  | 1.45E-01  | 4.31E-03  |
| AM-241  | 5479.150 | 8.000      | 6.615    | 0.000    | 3.0704  | 99.94000 | 8.68E-03       | 3.42E-03    | 9.37E-03  | 2.23E-02  | 3.37E-03  |
| CM-242  | 6102.000 | 6.000      | 6.000    | 0.000    | 4.3186  | 100.0000 | 8.38E-03       | 3.46E-03    | 1.32E-02  | 2.99E-02  | 3.42E-03  |
| AM243   | 5270.000 | 797.000    | 796.000  | 1.000    | 1.0000  | 99.78000 | 1.05E+00       | 7.35E-02    | 3.06E-03  | 9.68E-03  | 3.71E-02  |
| CM-247  | 4946.000 | 9.000      | 8.000    | 1.000    | 15.3366 | 79.30000 | 1.32E-02       | 5.29E-03    | 5.90E-02  | 1.22E-01  | 5.23E-03  |
| CM-248  | 5078.600 | 14.000     | 14.000   | 0.000    | 22.1555 | 91.00000 | 2.02E-02       | 5.53E-03    | 7.43E-02  | 1.52E-01  | 5.39E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of AM243 calculated as sqrt(BKG AREA)

NOTE: Corrections made to AM-241 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941748  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630014\_AM  
SAMPLE QTY: 1.291 G

DETECTOR NUMBER :79421  
AVERAGE %EFFICIENCY :36.8770  
% YIELD : 88.895

COUNT DATE:22-JAN-2010 12:04:02  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

TRACER  
ID : 445-96-2-SS  
ISOTOPE : AM243  
NOMINAL : 2.91658 dpm  
RESULTS : 2.59269 dpm

LIB FILE : ENV\_ALPHA\_AM.N  
BKG FILE : B228.CNF;70  
BKG DATE : 17-JAN-2010  
EFF FILE : W228.CNF;24  
CAL DATE : 28-DEC-2009

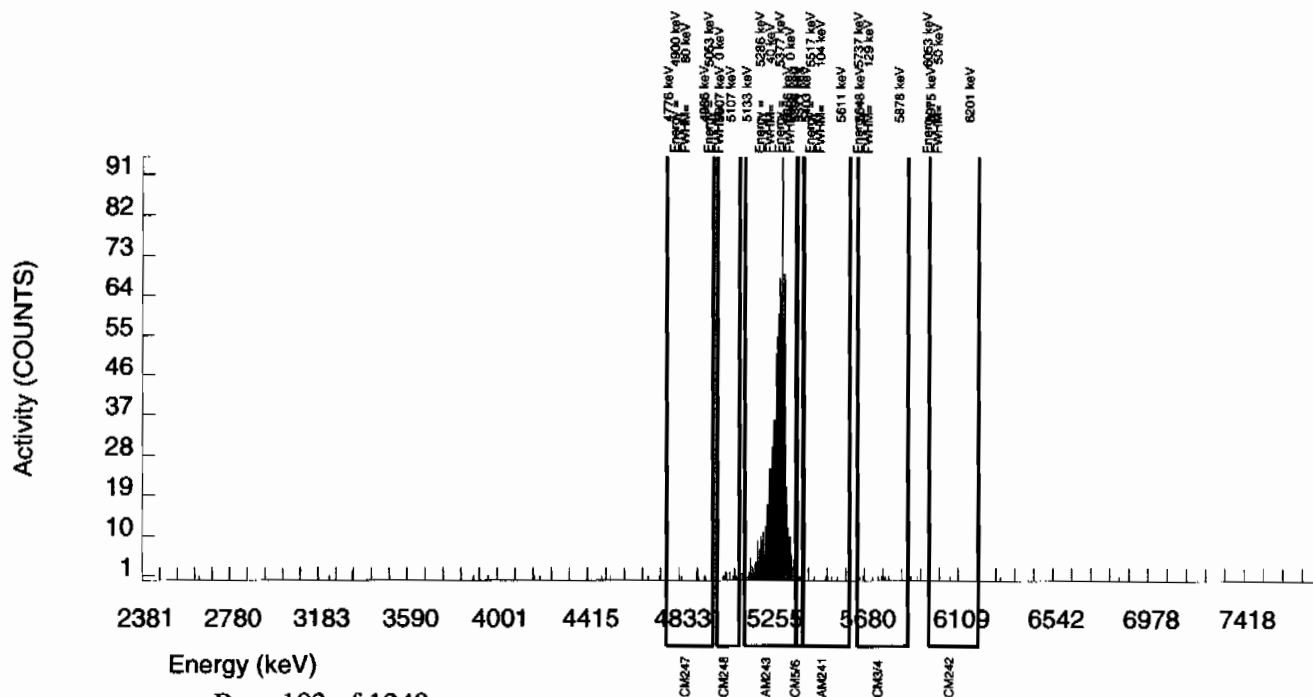
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg  | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|---------|----------|----------------|-------------|-----------|-----------|-----------|
| CM-3/4  | 5795.020 | 7.000      | 7.000    | 0.000    | 5.2338  | 100.0000 | 7.46E-03       | 2.85E-03    | 1.30E-02  | 2.88E-02  | 2.82E-03  |
| CM-5/6  | 5386.000 | 15.000     | 15.000   | 0.000    | 19.8463 | 86.09000 | 1.85E-02       | 4.91E-03    | 5.71E-02  | 1.18E-01  | 4.79E-03  |
| AM-241  | 5479.150 | 6.000      | 3.340    | 1.000    | 3.0704  | 99.94000 | 3.56E-03       | 2.47E-03    | 7.61E-03  | 1.81E-02  | 2.46E-03  |
| CM-242  | 6102.000 | 2.000      | 2.000    | 0.000    | 4.3186  | 100.0000 | 2.27E-03       | 1.61E-03    | 1.07E-02  | 2.43E-02  | 1.60E-03  |
| AM243   | 5270.000 | 954.000    | 954.000  | 0.000    | 0.0000  | 99.78000 | 1.02E+00       | 6.83E-02    | 0.00E+00  | 2.89E-03  | 3.29E-02  |
| CM-247  | 4946.000 | 8.000      | 8.000    | 0.000    | 15.3366 | 79.30000 | 1.07E-02       | 3.85E-03    | 4.79E-02  | 9.94E-02  | 3.80E-03  |
| CM-248  | 5078.600 | 14.000     | 14.000   | 0.000    | 22.1555 | 91.00000 | 1.64E-02       | 4.48E-03    | 6.03E-02  | 1.24E-01  | 4.38E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of AM243 calculated as sqrt(BKG AREA)

NOTE: Corrections made to AM-241 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941748  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630015\_AM  
SAMPLE QTY: 1.263 G

DETECTOR NUMBER :79422  
AVERAGE %EFFICIENCY :37.2913  
% YIELD : 85.788

COUNT DATE:22-JAN-2010 12:04:06  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

TRACER  
ID : 445-96-2-SS  
ISOTOPE : AM243  
NOMINAL : 2.91658 dpm  
RESULTS : 2.50207 dpm

LIB FILE : ENV\_ALPHA\_AM.N  
BKG FILE : B229.CNF;70  
BKG DATE : 17-JAN-2010  
EFF FILE : W229.CNF;24  
CAL DATE : 28-DEC-2009

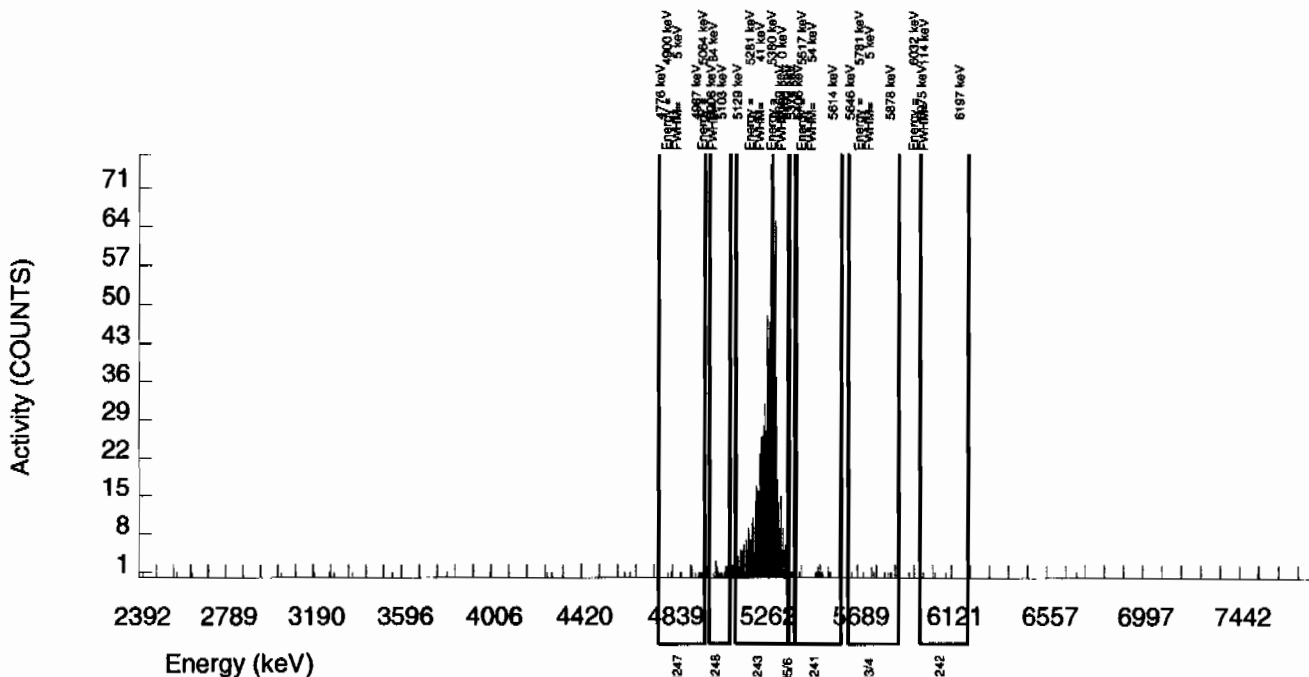
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg  | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|---------|----------|----------------|-------------|-----------|-----------|-----------|
| CM-3/4  | 5795.020 | 9.000      | 9.000    | 0.000    | 5.2338  | 100.0000 | 1.00E-02       | 3.40E-03    | 1.36E-02  | 3.02E-02  | 3.35E-03  |
| CM-5/6  | 5386.000 | 14.000     | 14.000   | 0.000    | 19.8463 | 86.09000 | 1.81E-02       | 4.96E-03    | 5.98E-02  | 1.23E-01  | 4.85E-03  |
| AM-241  | 5479.150 | 14.000     | 12.380   | 0.000    | 3.0704  | 99.94000 | 1.38E-02       | 4.01E-03    | 7.97E-03  | 1.90E-02  | 3.93E-03  |
| CM-242  | 6102.000 | 4.000      | 4.000    | 0.000    | 4.3186  | 100.0000 | 4.75E-03       | 2.39E-03    | 1.12E-02  | 2.54E-02  | 2.38E-03  |
| AM243   | 5270.000 | 932.000    | 931.000  | 1.000    | 1.0000  | 99.78000 | 1.04E+00       | 7.03E-02    | 2.60E-03  | 8.23E-03  | 3.41E-02  |
| CM-247  | 4946.000 | 13.000     | 12.000   | 1.000    | 15.3366 | 79.30000 | 1.69E-02       | 5.35E-03    | 5.02E-02  | 1.04E-01  | 5.26E-03  |
| CM-248  | 5078.600 | 21.000     | 21.000   | 0.000    | 22.1555 | 91.00000 | 2.57E-02       | 5.82E-03    | 6.31E-02  | 1.30E-01  | 5.61E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of AM243 calculated as sqrt(BKG AREA)

NOTE: Corrections made to AM-241 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941748  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630016\_AM  
SAMPLE QTY: 1.259 G

DETECTOR NUMBER :79423  
AVERAGE %EFFICIENCY :37.6072  
% YIELD : 90.732

COUNT DATE:22-JAN-2010 12:04:09  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

TRACER  
ID : 445-96-2-SS  
ISOTOPE : AM243  
NOMINAL : 2.91658 dpm  
RESULTS : 2.64628 dpm

LIB FILE : ENV\_ALPHA\_AM.N  
BKG FILE : B230.CNF;70  
BKG DATE : 17-JAN-2010  
EFF FILE : W230.CNF;24  
CAL DATE : 28-DEC-2009

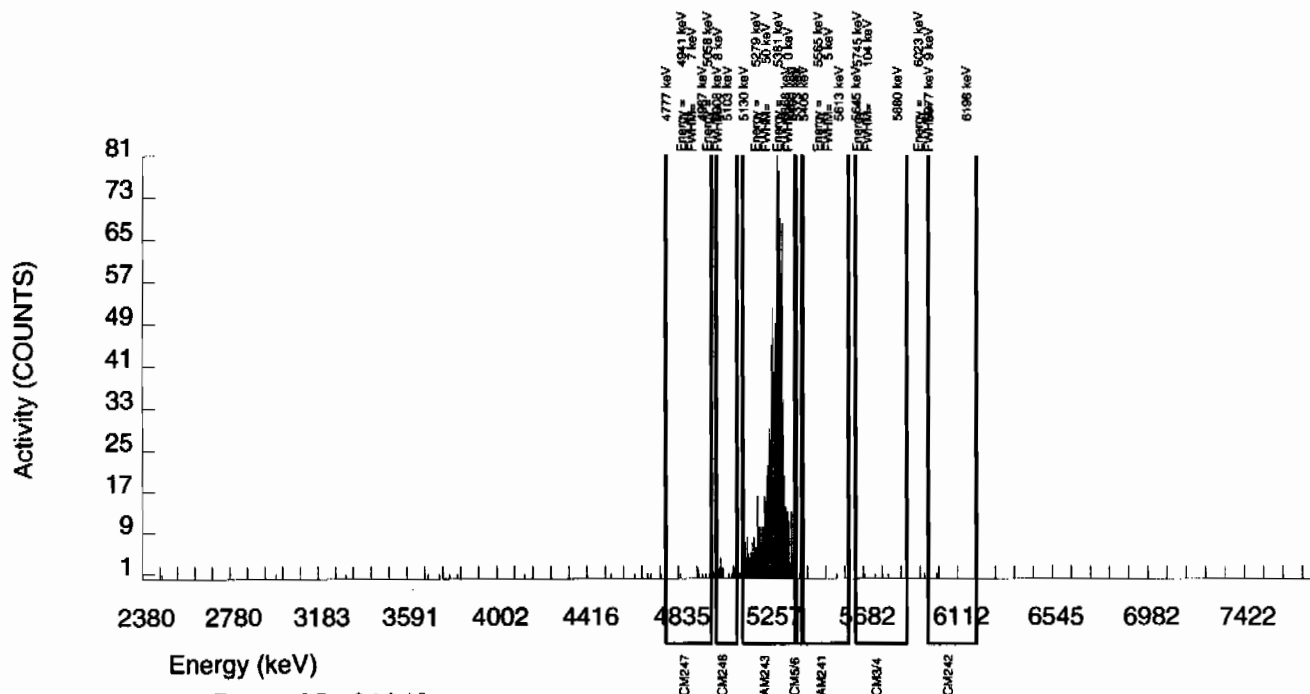
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg  | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|---------|----------|----------------|-------------|-----------|-----------|-----------|
| CM-3/4  | 5795.020 | 3.000      | 3.000    | 0.000    | 5.2338  | 100.0000 | 3.15E-03       | 1.83E-03    | 1.28E-02  | 2.84E-02  | 1.82E-03  |
| CM-5/6  | 5386.000 | 12.000     | 12.000   | 0.000    | 19.8463 | 86.09000 | 1.46E-02       | 4.30E-03    | 5.62E-02  | 1.16E-01  | 4.22E-03  |
| AM-241  | 5479.150 | 1.000      | -0.728   | 0.000    | 3.0704  | 99.94000 | -7.64E-04      | 1.05E-03    | 7.49E-03  | 1.78E-02  | 1.05E-03  |
| CM-242  | 6102.000 | 2.000      | 2.000    | 0.000    | 4.3186  | 100.0000 | 2.23E-03       | 1.58E-03    | 1.05E-02  | 2.39E-02  | 1.58E-03  |
| AM243   | 5270.000 | 993.000    | 993.000  | 0.000    | 0.0000  | 99.78000 | 1.04E+00       | 6.94E-02    | 0.00E+00  | 2.85E-03  | 3.31E-02  |
| CM-247  | 4946.000 | 8.000      | 8.000    | 0.000    | 15.3366 | 79.30000 | 1.06E-02       | 3.79E-03    | 4.72E-02  | 9.79E-02  | 3.74E-03  |
| CM-248  | 5078.600 | 17.000     | 16.000   | 1.000    | 22.1555 | 91.00000 | 1.84E-02       | 5.01E-03    | 5.94E-02  | 1.22E-01  | 4.89E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of AM243 calculated as sqrt(BKG AREA)

NOTE: Corrections made to AM-241 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

|  |  |  |  |   |  |   |  |
|--|--|--|--|---|--|---|--|
| BATCH NUMBER: 941748<br>SAMPLE DATE : 19-JAN-2010 00:00:00                     |  |  |  | SAMPLE ID : S1202015727_AM<br>SAMPLE QTY: 1.000 G   |  |   |  |
| DETECTOR NUMBER :45-149AA5<br>AVERAGE %EFFICIENCY :32.4684<br>% YIELD : 88.583 |  |  |  | COUNT DATE:22-JAN-2010 12:03:14<br>ELAPSED LIVE TIME(SEC): 60000.00<br>ANALYST :MXA1            |  |   |  |
| MS/MSD<br>ID : 0244-B<br>ISOTOPE : AM-241<br>PCI/G : 3.316E+01                 |  | LCS/LCSD<br>ID : 0244-B<br>ISOTOPE : AM-241<br>PCI/G : 3.316E+01 |  | TRACER<br>ID : 445-96-2-SS<br>ISOTOPE : AM243<br>NOMINAL : 2.91658 dpm<br>RESULTS : 2.58358 dpm |  | LIB FILE : ENV_ALPHA_AM.N<br>BKG FILE : B025.CNF;1104<br>BKG DATE : 17-JAN-2010<br>EFF FILE : W025.CNF;326<br>CAL DATE : 4-JAN-2010 |  |

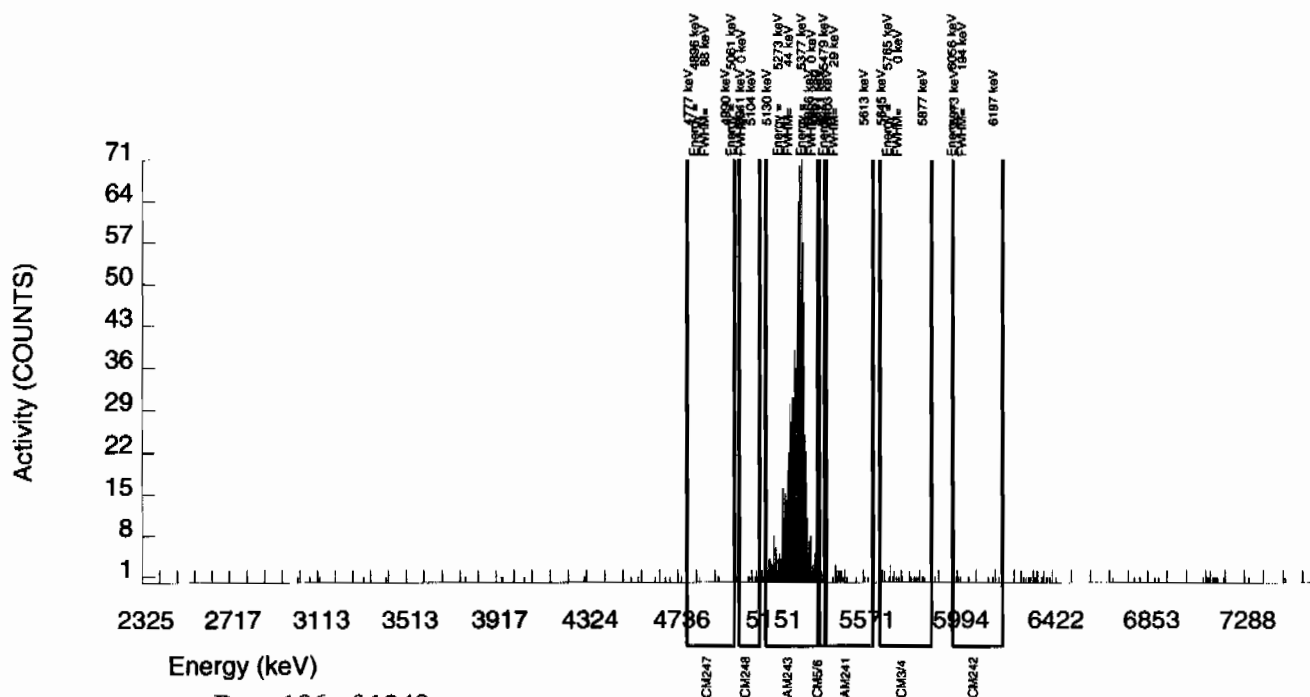
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg  | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|---------|----------|----------------|-------------|-----------|-----------|-----------|
| CM-3/4  | 5795.020 | 30.000     | 2.000    | 28.000   | 5.2338  | 100.0000 | 3.13E-03       | 1.19E-02    | 1.91E-02  | 4.24E-02  | 1.19E-02  |
| CM-5/6  | 5386.000 | 5.000      | 3.000    | 2.000    | 19.8463 | 86.09000 | 5.46E-03       | 4.82E-03    | 8.40E-02  | 1.73E-01  | 4.81E-03  |
| AM-241  | 5479.150 | 20.000     | 3.543    | 15.000   | 3.0704  | 99.94000 | 5.55E-03       | 9.08E-03    | 1.12E-02  | 2.66E-02  | 9.08E-03  |
| CM-242  | 6102.000 | 10.000     | 4.000    | 6.000    | 4.3186  | 100.0000 | 6.37E-03       | 6.38E-03    | 1.57E-02  | 3.57E-02  | 6.37E-03  |
| AM243   | 5270.000 | 840.000    | 837.000  | 3.000    | 1.7321  | 99.78000 | 1.31E+00       | 9.14E-02    | 6.32E-03  | 1.69E-02  | 4.56E-02  |
| CM-247  | 4946.000 | 3.000      | 3.000    | 0.000    | 15.3366 | 79.30000 | 5.92E-03       | 3.44E-03    | 7.05E-02  | 1.46E-01  | 3.42E-03  |
| CM-248  | 5078.600 | 10.000     | 10.000   | 0.000    | 22.1555 | 91.00000 | 1.72E-02       | 5.54E-03    | 8.87E-02  | 1.82E-01  | 5.44E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of AM243 calculated as sqrt(BKG AREA)

NOTE: Corrections made to AM-241 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941748  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S1202015728\_AM  
SAMPLE QTY: 1.250 G

DETECTOR NUMBER :33447  
AVERAGE %EFFICIENCY :32.1103  
% YIELD : 99.095

COUNT DATE:22-JAN-2010 12:03:14  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

TRACER  
ID : 445-96-2-SS  
ISOTOPE : AM243  
NOMINAL : 2.91658 dpm  
RESULTS : 2.89018 dpm

LIB FILE : ENV\_ALPHA\_AM.N  
BKG FILE : B030.CNF;1103  
BKG DATE : 17-JAN-2010  
EFF FILE : W030.CNF;303  
CAL DATE : 4-JAN-2010

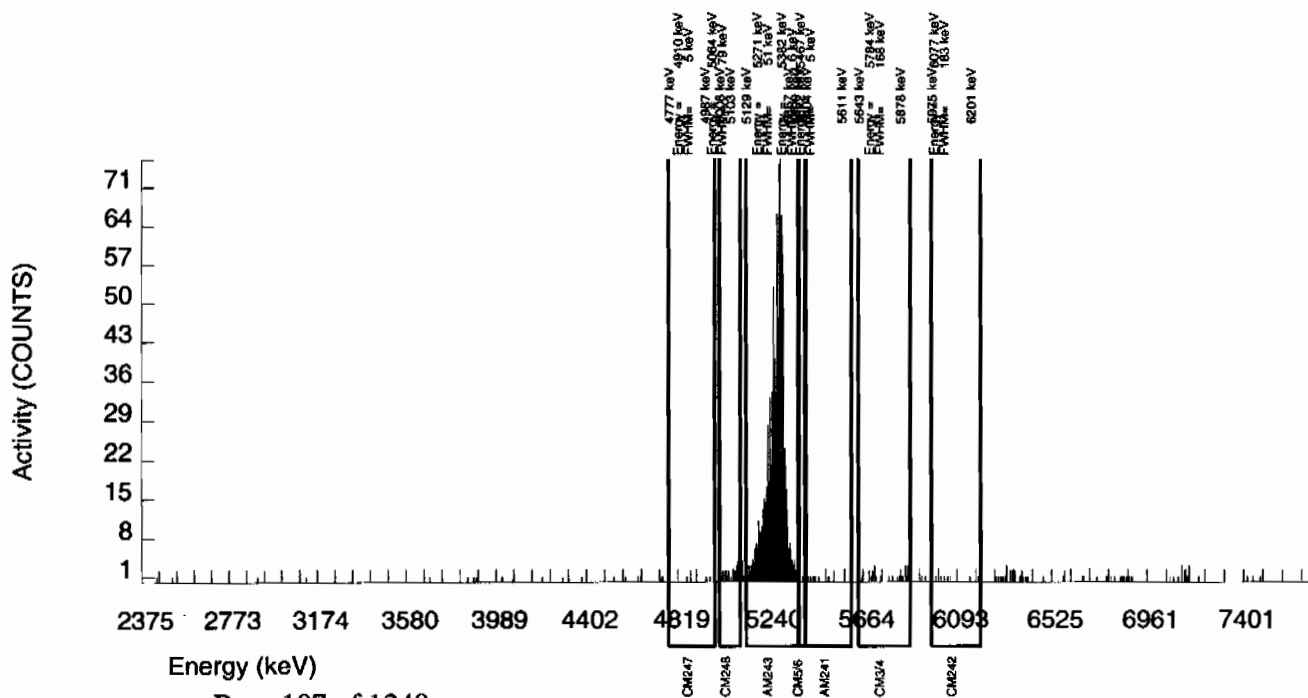
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS<br>AREA | NET<br>AREA | BKG<br>AREA | BKG<br>Sg | %ABUN    | ACTIVITY<br>pCi/G | TPU<br>1-SIGMA | DLC<br>pCi/G | MDC<br>pCi/G | UNC<br>pCi/G |
|---------|----------|---------------|-------------|-------------|-----------|----------|-------------------|----------------|--------------|--------------|--------------|
| CM-3/4  | 5795.020 | 26.000        | 3.000       | 23.000      | 5.2338    | 100.0000 | 3.40E-03          | 7.94E-03       | 1.38E-02     | 3.06E-02     | 7.94E-03     |
| CM-5/6  | 5386.000 | 5.000         | 5.000       | 0.000       | 19.8463   | 86.09000 | 6.58E-03          | 2.97E-03       | 6.07E-02     | 1.25E-01     | 2.94E-03     |
| AM-241  | 5479.150 | 13.000        | -0.612      | 12.000      | 3.0704    | 99.94000 | -6.93E-04         | 5.48E-03       | 8.09E-03     | 1.93E-02     | 5.48E-03     |
| CM-242  | 6102.000 | 7.000         | 2.000       | 5.000       | 4.3186    | 100.0000 | 2.41E-03          | 4.18E-03       | 1.14E-02     | 2.58E-02     | 4.18E-03     |
| AM243   | 5270.000 | 929.000       | 926.000     | 3.000       | 1.7321    | 99.78000 | 1.05E+00          | 7.29E-02       | 4.57E-03     | 1.22E-02     | 3.47E-02     |
| CM-247  | 4946.000 | 8.000         | 3.000       | 5.000       | 15.3366   | 79.30000 | 4.28E-03          | 5.16E-03       | 5.10E-02     | 1.06E-01     | 5.15E-03     |
| CM-248  | 5078.600 | 27.000        | 25.000      | 2.000       | 22.1555   | 91.00000 | 3.11E-02          | 6.97E-03       | 6.41E-02     | 1.32E-01     | 6.70E-03     |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of AM243 calculated as sqrt(BKG AREA)

NOTE: Corrections made to AM-241 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941748  
SAMPLE DATE : 19-JAN-2010 00:00:00

SAMPLE ID : S1202015729\_AM  
SAMPLE QTY: 0.098 G

DETECTOR NUMBER :79988  
AVERAGE %EFFICIENCY :33.5512  
% YIELD : 99.345

COUNT DATE:22-JAN-2010 12:03:20  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : AM-241  
PCI/G : 3.316E+01

TRACER  
ID : 445-96-2-SS  
ISOTOPE : AM243  
NOMINAL : 2.91658 dpm  
RESULTS : 2.89748 dpm

LIB FILE : ENV\_ALPHA\_AM.N  
BKG FILE : B031.CNF;1101  
BKG DATE : 17-JAN-2010  
EFF FILE : W031.CNF;343  
CAL DATE : 4-JAN-2010

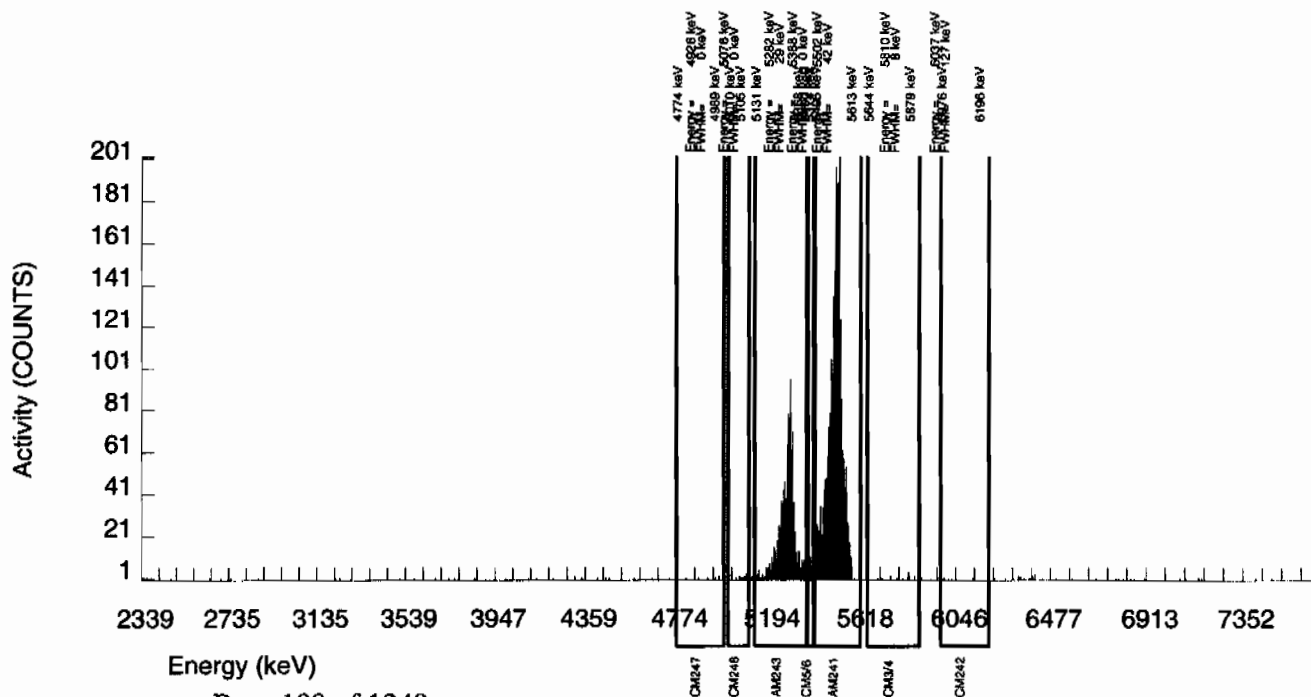
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg  | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|---------|----------|----------------|-------------|-----------|-----------|-----------|
| CM-3/4  | 5795.020 | 18.000     | 3.000    | 15.000   | 5.2338  | 100.0000 | 4.14E-02       | 7.93E-02    | 1.68E-01  | 3.73E-01  | 7.92E-02  |
| CM-5/6  | 5386.000 | 66.000     | 66.000   | 0.000    | 19.8463 | 86.09000 | 1.06E+00       | 1.44E-01    | 7.40E-01  | 1.52E+00  | 1.30E-01  |
| AM-241  | 5479.150 | 2346.000   | 2342.312 | 2.000    | 3.0704  | 99.94000 | 3.23E+01       | 2.02E+00    | 9.86E-02  | 2.35E-01  | 6.68E-01  |
| CM-242  | 6102.000 | 5.000      | 3.000    | 2.000    | 4.3186  | 100.0000 | 4.21E-02       | 3.72E-02    | 1.39E-01  | 3.14E-01  | 3.71E-02  |
| AM243   | 5270.000 | 975.000    | 970.000  | 5.000    | 2.2361  | 99.78000 | 1.34E+01       | 9.02E-01    | 7.19E-02  | 1.81E-01  | 4.33E-01  |
| CM-247  | 4946.000 | 10.000     | 6.000    | 4.000    | 15.3366 | 79.30000 | 1.04E-01       | 6.54E-02    | 6.20E-01  | 1.29E+00  | 6.51E-02  |
| CM-248  | 5078.600 | 18.000     | 15.000   | 3.000    | 22.1555 | 91.00000 | 2.27E-01       | 7.07E-02    | 7.81E-01  | 1.60E+00  | 6.94E-02  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of AM243 calculated as sqrt(BKG AREA)

NOTE: Corrections made to AM-241 net area due to tracer impurity





## Radiochemistry Batch Checklist, Rev10

Batch#

941752

Product:

Pu

Date:

1/22/10

| Criteria:   | Yes | No | Comments       |
|---|-----|----|----------------|
| Sample Solids are less than or equal to 100 mg for GAB.   |     |    | N/A            |
| Samples have been blank corrected (if required)   | ✓   |    |                |
| If activity less 10* MDA/ MDC, error is 150% or less of sample activity. If greater 10* MDA/ MDC, error is 40% or less. If below the MDA/ MDC, error is okay. | ✓   |    |                |
| Instrument source check is within limits.   | ✓   |    |                |
| Instrument bkg check is within limits.  | ✓   |    |                |
| Method RDL/ LLD has been met.   | ✓   |    |                |
| If duplicate activities are less 5* MDA/ MDC, then RPD is 100% or less. If greater 5* MDA/ MDC, then RPD 20% or less. If below the MDA/ MDC, the RPD is 0%.   | ✓   |    |                |
| Or meets the client's required RER acceptance criteria.   | ✓   |    |                |
| Tracer yield is 15-125% . Carrier yield 25-125%.  | ✓   |    | case narrative |
| Or meets the client's contract acceptance criteria.   | ✓   |    |                |
| Method blank is less than the RDL/ LLD.   | ✓   |    |                |
| (If rad samples, < 5% of lowest activity)   | ✓   |    |                |
| Sample was run within hold time.  | ✓   |    |                |
| Sample was correctly preserved if required.   |     |    | N/A            |
| Smears Taken for Radioactive batches.   | ✓   |    |                |
| Method Spike and LCS are within 75-125% or meets the client's contract acceptance criteria.   | ✓   |    |                |
| No blank spaces on data forms.  | ✓   |    |                |
| All line outs initiated and dated.  | ✓   |    |                |
| No transcription errors are apparent.   |     |    | N/A            |
| Aux data is correct.  |     |    | N/A            |
| Client Special requirements page has been checked.  | ✓   |    |                |
| Raw Data and/ or spectrum are included and properly statused.   | ✓   |    |                |
| QC data entered into QC database and batch is in REVW   | ✓   |    |                |
| Hit notification complete (if necessary)  |     |    | N/A            |
| Batch entered into Case Narrative.  | ✓   |    |                |
| Batch Data Exception Reports (DER) completed, if applicable.  |     |    | N/A            |
| Batch Data Exception Reports (DER) second reviewed and disposition verified to be completed.  |     |    | N/A            |
| Aliquot Correction completed if required.   |     |    | N/A            |
| Review sample historical results if available (If REMP, results above MDC have been verified by historical results, recount or re-analysis.)                  | ✓   |    |                |

GEL Laboratories, LLC

RADcheckdistrev10, revised 1/13/2010

Primary Review Performed By:

Denise Green

1/22/10

Secondary Review Performed By:

JpL Maf - 1/22/10

2/10

LANL

# Plutonium Que Sheet

14-JAN-10

Batch #: 941752 Analyst: MXA1 First Client Due Date: 10-FEB-10 Internal Due Date: 30-JAN-10  
 Tracer Isotope(s): Pu-238 Tracer Code: 1574-A Expiration Date: 12/8/10 Vol: 0.141  
 LCS Isotope(s): Pu-238 LCS Code: SRM 0144-B Expiration Date: 4/30/20 Vol: 0.19  
 Spike Isotope(s): Pu-239/Pu-238 Spike Code: N/A Expiration Date: N/A Vol: N/A  
 Prep Date: 1/19/10 Initials: MDA Pipet ID: 2971058 Balance ID: 50410272 Witness: KMM 1-19-10


| Sample ID    | Client Description         | Type   | Hazard Code | Min CRDL | Matrix | Client     | Collection Date | Pos. | Label # | Wet/ Aliquot (g/l/f) | Pu Det # |
|--------------|----------------------------|--------|-------------|----------|--------|------------|-----------------|------|---------|----------------------|----------|
| 244630001-1  | RE12-10-7262               | SAMPLE | .05 pCi/g   |          | SOIL   | LANL010    | 08-JAN-10       | 1    | 1       | 1.270                | 106      |
| 244630002-1  | RE12-10-7266               | SAMPLE | .05 pCi/g   |          | SOIL   | LANL010    | 08-JAN-10       | 2    | 2       | 1.252                | 107      |
| 244630003-1  | RE12-10-7258               | SAMPLE | .05 pCi/g   |          | SOIL   | LANL010    | 08-JAN-10       | 3    | 3       | 1.274                | 108      |
| 244630004-1  | RE12-10-7268               | SAMPLE | .05 pCi/g   |          | SOIL   | LANL010    | 08-JAN-10       | 4    | 4       | 1.298                | 109      |
| 244630005-1  | RE12-10-7265               | SAMPLE | .05 pCi/g   |          | SOIL   | LANL010    | 08-JAN-10       | 5    | 5       | 1.278                | 110      |
| 244630006-1  | RE12-10-7261               | SAMPLE | .05 pCi/g   |          | SOIL   | LANL010    | 08-JAN-10       | 6    | 6       | 1.264                | 111      |
| 244630007-1  | RE12-10-7259               | SAMPLE | .05 pCi/g   |          | SOIL   | LANL010    | 08-JAN-10       | 7    | 7       | 1.288                | 112      |
| 244630008-1  | RE12-10-7263               | SAMPLE | .05 pCi/g   |          | SOIL   | LANL010    | 08-JAN-10       | 8    | 8       | 1.280                | 232      |
| 244630009-1  | RE12-10-7271               | SAMPLE | .05 pCi/g   |          | SOIL   | LANL010    | 08-JAN-10       | 9    | 9       | 1.277                | 98 239   |
| 244630010-1  | RE12-10-7260               | SAMPLE | .05 pCi/g   |          | SOIL   | LANL010    | 08-JAN-10       | 10   | 10      | 1.254                | 235      |
| 244630011-1  | RE12-10-7267               | SAMPLE | .05 pCi/g   |          | SOIL   | LANL010    | 08-JAN-10       | 11   | 11      | 1.288                | 236      |
| 244630012-1  | RE12-10-7264               | SAMPLE | .05 pCi/g   |          | SOIL   | LANL010    | 08-JAN-10       | 12   | 12      | 1.252                | 237      |
| 244630013-1  | RE12-10-7270               | SAMPLE | .05 pCi/g   |          | SOIL   | LANL010    | 08-JAN-10       | 13   | 13      | 1.256                | 238      |
| 244630014-1  | RE12-10-7269               | SAMPLE | .05 pCi/g   |          | SOIL   | LANL010    | 08-JAN-10       | 14   | 14      | 1.291                | 239      |
| 244630015-1  | RE12-10-7283               | SAMPLE | .05 pCi/g   |          | SOIL   | LANL010    | 08-JAN-10       | 15   | 15      | 1.263                | 240      |
| 244630016-1  | RE12-10-7282               | SAMPLE | .05 pCi/g   |          | SOIL   | LANL010    | 08-JAN-10       | 16   | 16      | 1.259                | 241      |
| 1202015738-1 | MB for batch 941752        | MB     | .05 pCi/g   |          |        | QC ACCOUNT |                 | 17   | 17      | 1                    | 242      |
| 1202015739-1 | RE12-10-7259(244630007DUP) | DUP    | .05 pCi/g   |          | SOIL   | QC ACCOUNT | 08-JAN-10       | 18   | 18      | 1.250                | 243      |
| 1202015740-1 | LCS for batch 941752       | LCS    | .05 pCi/g   |          | SOIL   | QC ACCOUNT |                 | 19   | 19      | 0.098                | 244      |

Choose SOP Used: GL-RAD-A-011, GL-RAD-A-036, GL-RAD-A-045, GL-RAD-A-043  
 Solid Sample Dissolution by: LEACH or DIGESTION Circle One  
 Data Reviewed By: [Signature] 1/22/10

# Blank Correction Report

**Batch ID 941752**

| GEL Sample ID | Client sample ID | Parameter         | Aliquot | Result   | TPU      | MDA    | Aliquot<br>Corrected<br>Blank Result | Units | Activity <5X<br>Corrected<br>Blank |
|---------------|------------------|-------------------|---------|----------|----------|--------|--------------------------------------|-------|------------------------------------|
| 1202015739    | DUP              | Plutonium-238     | 1.25 g  | 0.00     | 0.00102  | 0.0168 | -.000992                             | pCi/g | NO                                 |
|               |                  | Plutonium-239/240 | 1.25 g  | 0.00     | 0.00102  | 0.0193 | .002984                              | pCi/g | YES                                |
| 1202015740    | LCS              | Plutonium-238     | 0.098 g | 6.00     | 0.392    | 0.192  | -.01265306                           | pCi/g | NO                                 |
|               |                  | Plutonium-239/240 | 0.098 g | 34.7     | 1.79     | 0.220  | .038061224                           | pCi/g | NO                                 |
| 1202015738    | MB               | Plutonium-238     | 1.00 g  | -0.00124 | 0.00176  | 0.0205 | -.00124                              | pCi/g | NO                                 |
|               |                  | Plutonium-239/240 | 1.00 g  | 0.00373  | 0.00216  | 0.0235 | .00373                               | pCi/g | YES                                |
| 244630001     | RE12-10-7262     | Plutonium-238     | 1.29 g  | 0.00     | 0.00115  | 0.0189 | -.00096124                           | pCi/g | NO                                 |
|               |                  | Plutonium-239/240 | 1.29 g  | 0.00229  | 0.00229  | 0.0217 | .002891473                           | pCi/g | YES                                |
| 244630002     | RE12-10-7266     | Plutonium-238     | 1.25 g  | 0.00122  | 0.00272  | 0.0201 | -.000992                             | pCi/g | NO                                 |
|               |                  | Plutonium-239/240 | 1.25 g  | 0.0292   | 0.00661  | 0.023  | .002984                              | pCi/g | NO                                 |
| 244630003     | RE12-10-7258     | Plutonium-238     | 1.27 g  | 0.0011   | 0.0011   | 0.0182 | -.00097638                           | pCi/g | NO                                 |
|               |                  | Plutonium-239/240 | 1.27 g  | 0.0033   | 0.00291  | 0.0208 | .002937008                           | pCi/g | YES                                |
| 244630004     | RE12-10-7268     | Plutonium-238     | 1.30 g  | 0.00     | 0.00164  | 0.0192 | -.00095385                           | pCi/g | NO                                 |
|               |                  | Plutonium-239/240 | 1.30 g  | 0.0244   | 0.00616  | 0.0219 | .002869231                           | pCi/g | NO                                 |
| 244630005     | RE12-10-7265     | Plutonium-238     | 1.28 g  | -0.00757 | 0.00803  | 0.0313 | -.00096875                           | pCi/g | YES                                |
|               |                  | Plutonium-239/240 | 1.28 g  | 0.00     | 0.00268  | 0.0358 | .002914063                           | pCi/g | YES                                |
| 244630006     | RE12-10-7261     | Plutonium-238     | 1.26 g  | 0.00116  | 0.00116  | 0.0191 | -.00098413                           | pCi/g | NO                                 |
|               |                  | Plutonium-239/240 | 1.26 g  | 0.00579  | 0.00349  | 0.0219 | .002960317                           | pCi/g | YES                                |
| 244630007     | RE12-10-7259     | Plutonium-238     | 1.29 g  | 0.00118  | 0.00118  | 0.0194 | -.00096124                           | pCi/g | NO                                 |
|               |                  | Plutonium-239/240 | 1.29 g  | 0.00235  | 0.00288  | 0.0222 | .002891473                           | pCi/g | YES                                |
| 244630008     | RE12-10-7263     | Plutonium-238     | 1.28 g  | 0.00     | 0.001    | 0.0166 | -.00096875                           | pCi/g | NO                                 |
|               |                  | Plutonium-239/240 | 1.28 g  | 0.00201  | 0.00142  | 0.019  | .002914063                           | pCi/g | YES                                |
| 244630009     | RE12-10-7271     | Plutonium-238     | 1.28 g  | -0.0012  | 0.00465  | 0.0198 | -.00096875                           | pCi/g | NO                                 |
|               |                  | Plutonium-239/240 | 1.28 g  | 0.0204   | 0.0056   | 0.0227 | .002914063                           | pCi/g | NO                                 |
| 244630010     | RE12-10-7260     | Plutonium-238     | 1.25 g  | 0.002    | 0.00142  | 0.0165 | -.000992                             | pCi/g | NO                                 |
|               |                  | Plutonium-239/240 | 1.25 g  | 0.030    | 0.00568  | 0.0189 | .002984                              | pCi/g | NO                                 |
| 244630011     | RE12-10-7267     | Plutonium-238     | 1.29 g  | 0.00     | 0.00141  | 0.0165 | -.00096124                           | pCi/g | NO                                 |
|               |                  | Plutonium-239/240 | 1.29 g  | 0.000997 | 0.00223  | 0.0188 | .002891473                           | pCi/g | YES                                |
| 244630012     | RE12-10-7264     | Plutonium-238     | 1.25 g  | 0.00     | 0.00144  | 0.0168 | -.000992                             | pCi/g | NO                                 |
|               |                  | Plutonium-239/240 | 1.25 g  | 0.0172   | 0.00427  | 0.0192 | .002984                              | pCi/g | NO                                 |
| 244630013     | RE12-10-7270     | Plutonium-238     | 1.26 g  | 0.00291  | 0.00168  | 0.016  | -.00098413                           | pCi/g | NO                                 |
|               |                  | Plutonium-239/240 | 1.26 g  | 0.0261   | 0.00537  | 0.0183 | .002960317                           | pCi/g | NO                                 |
| 244630014     | RE12-10-7269     | Plutonium-238     | 1.29 g  | 0.00     | 0.000957 | 0.0158 | -.00096124                           | pCi/g | NO                                 |
|               |                  | Plutonium-239/240 | 1.29 g  | 0.00191  | 0.00191  | 0.0181 | .002891473                           | pCi/g | YES                                |
| 244630015     | RE12-10-7283     | Plutonium-238     | 1.26 g  | -0.00103 | 0.00145  | 0.0169 | -.00098413                           | pCi/g | NO                                 |
|               |                  | Plutonium-239/240 | 1.26 g  | 0.0308   | 0.006    | 0.0194 | .002960317                           | pCi/g | NO                                 |
| 244630016     | RE12-10-7282     | Plutonium-238     | 1.26 g  | 0.00108  | 0.00108  | 0.0179 | -.00098413                           | pCi/g | NO                                 |
|               |                  | Plutonium-239/240 | 1.26 g  | 0.00324  | 0.00188  | 0.0204 | .002960317                           | pCi/g | YES                                |

 1/22/10

GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941752  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630001\_PU  
SAMPLE QTY: 1.290 G

DETECTOR NUMBER :64274  
AVERAGE %EFFICIENCY :32.1326  
% YIELD : 94.960

COUNT DATE:20-JAN-2010 16:41:43  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : PU-9/0  
PCI/G : 4.178E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : PU-9/0  
PCI/G : 4.178E+01

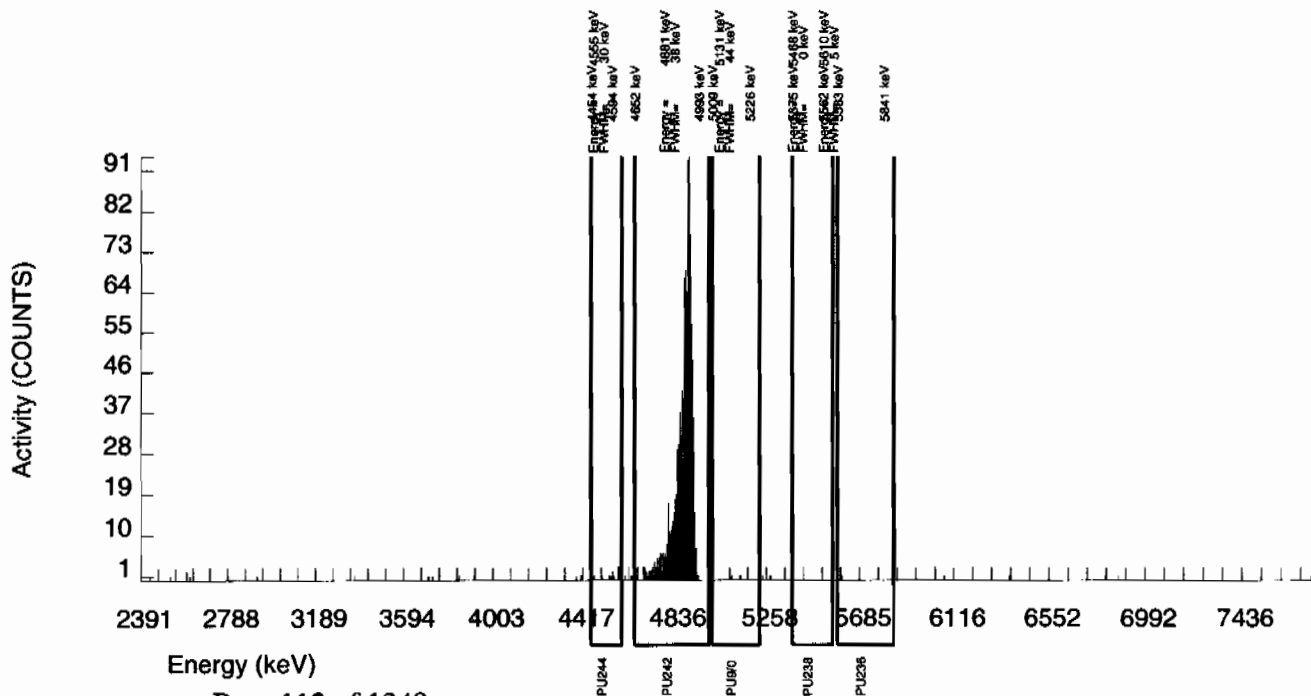
TRACER  
ID : 1374-A  
ISOTOPE : PU242  
NOMINAL : 3.38543 dpm  
RESULTS : 3.21480 dpm

LIB FILE : ENV\_ALPHA\_PU.N  
BKG FILE : B106.CNF;674  
BKG DATE : 17-JAN-2010  
EFF FILE : W106.CNF;184  
CAL DATE : 14-JAN-2010

NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS<br>AREA | NET<br>AREA | BKG<br>AREA | BKG<br>Sg | %ABUN    | ACTIVITY<br>pCi/G | TPU<br>1-SIGMA | DLC<br>pCi/G | MDC<br>pCi/G | UNC<br>pCi/G |
|---------|----------|---------------|-------------|-------------|-----------|----------|-------------------|----------------|--------------|--------------|--------------|
| PU-9/0  | 5155.000 | 3.000         | 2.000       | 1.000       | 3.4797    | 99.90000 | 2.29E-03          | 2.29E-03       | 9.27E-03     | 2.17E-02     | 2.29E-03     |
| PU-236  | 5749.000 | 1.000         | 0.000       | 1.000       | 2.1286    | 100.0000 | -1.38E-10         | 1.63E-03       | 5.67E-03     | 1.44E-02     | 1.63E-03     |
| PU-238  | 5499.000 | 0.000         | 0.000       | 0.000       | 2.9680    | 99.90000 | 0.00E+00          | 1.15E-03       | 7.91E-03     | 1.89E-02     | 1.15E-03     |
| PU242   | 4890.000 | 1035.000      | 1033.000    | 2.000       | 1.4142    | 100.0000 | 1.18E+00          | 7.02E-02       | 3.77E-03     | 1.06E-02     | 3.69E-02     |
| PU-244  | 4589.000 | 11.000        | 10.000      | 1.000       | 5.2050    | 99.90000 | 1.15E-02          | 4.01E-03       | 1.39E-02     | 3.08E-02     | 3.97E-03     |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)  
NOTE: Sg of PU242 calculated as sqrt(BKG AREA)



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941752  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630002\_PU  
SAMPLE QTY: 1.252 G

DETECTOR NUMBER :67578  
AVERAGE %EFFICIENCY :30.9640  
% YIELD : 95.587

COUNT DATE:20-JAN-2010 16:41:44  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : PU-9/0  
PCI/G : 4.178E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : PU-9/0  
PCI/G : 4.178E+01

TRACER  
ID : 1374-A  
ISOTOPE : PU242  
NOMINAL : 3.38543 dpm  
RESULTS : 3.23602 dpm

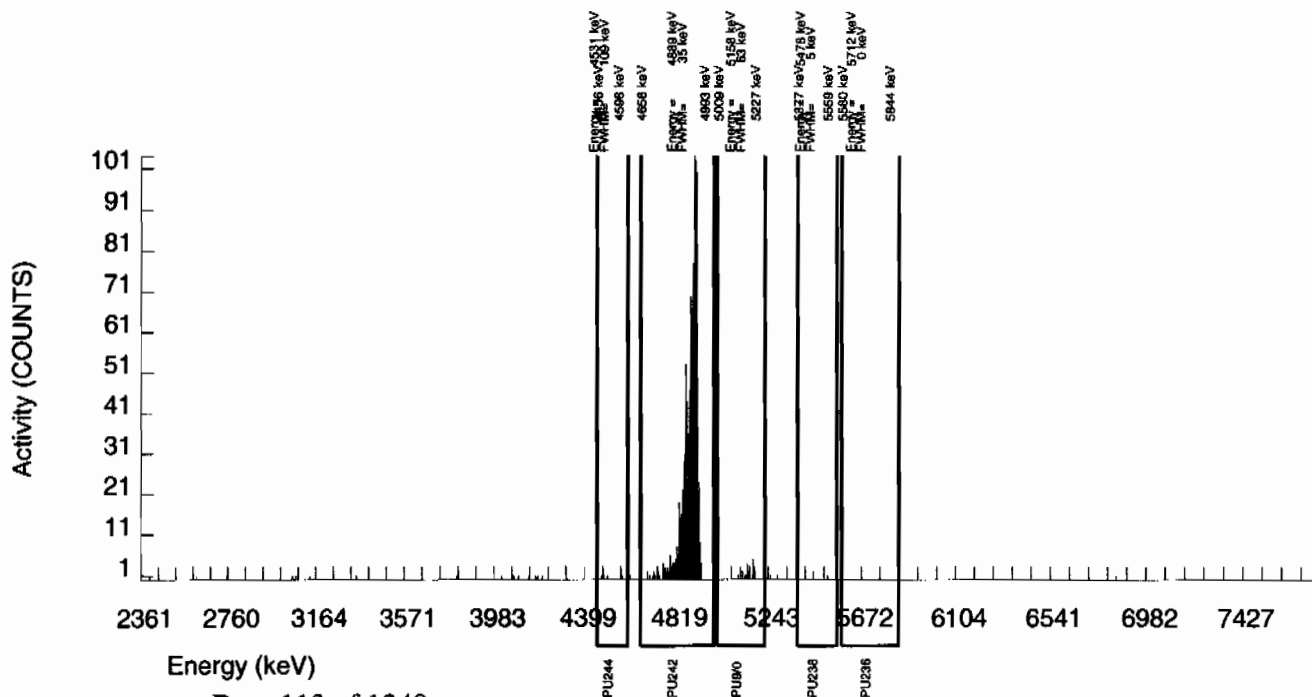
LIB FILE : ENV\_ALPHA\_PU.N  
BKG FILE : B107.CNF;676  
BKG DATE : 17-JAN-2010  
EFF FILE : W107.CNF;230  
CAL DATE : 11-JAN-2010

NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| PU-9/0  | 5155.000 | 26.000     | 24.000   | 2.000    | 3.4797 | 99.90000 | 2.92E-02       | 6.61E-03    | 9.85E-03  | 2.30E-02  | 6.44E-03  |
| PU-236  | 5749.000 | 0.000      | -2.000   | 2.000    | 2.1286 | 100.0000 | -2.45E-03      | 2.12E-03    | 6.02E-03  | 1.53E-02  | 2.12E-03  |
| PU-238  | 5499.000 | 3.000      | 1.000    | 2.000    | 2.9680 | 99.90000 | 1.22E-03       | 2.72E-03    | 8.40E-03  | 2.01E-02  | 2.72E-03  |
| PU242   | 4890.000 | 1006.000   | 1002.000 | 4.000    | 2.0000 | 100.0000 | 1.22E+00       | 7.31E-02    | 5.66E-03  | 1.46E-02  | 3.86E-02  |
| PU-244  | 4589.000 | 5.000      | 5.000    | 0.000    | 5.2050 | 99.90000 | 6.08E-03       | 2.74E-03    | 1.47E-02  | 3.28E-02  | 2.72E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of PU242 calculated as sqrt(BKG AREA)



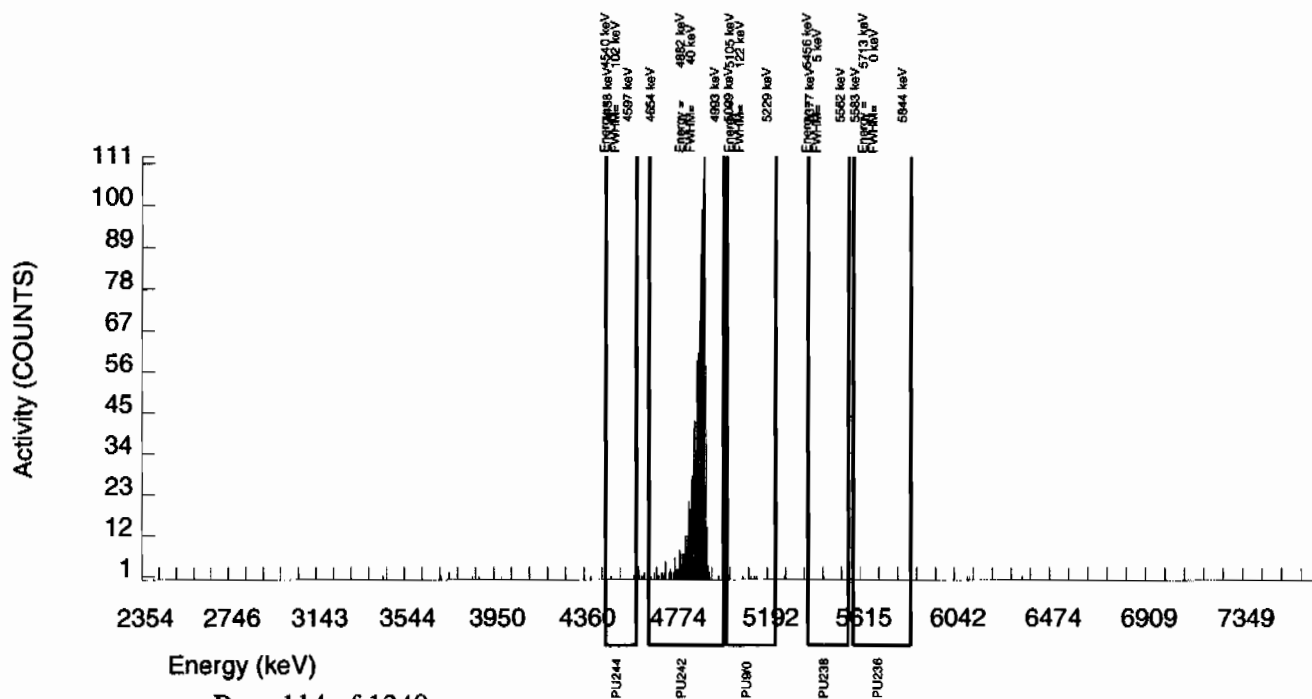
GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

|  |  |  |   |
|--|--|--|---|
| BATCH NUMBER: 941752<br>SAMPLE DATE : 8-JAN-2010 00:00:00.                 |  | SAMPLE ID : S0244630003_PU<br>SAMPLE QTY: 1.274 G  |   |
| DETECTOR NUMBER :78778<br>AVERAGE %EFFICIENCY :34.0779<br>% YIELD : 94.480 |  | COUNT DATE:20-JAN-2010 16:41:44<br>ELAPSED LIVE TIME(SEC): 60000.00<br>ANALYST :MXA1       |   |
| MS/MSD<br>ID : 0244-B<br>ISOTOPE : PU-9/0<br>PCI/G : 4.178E+01             | LCS/LCSD<br>ID : 0244-B<br>ISOTOPE : PU-9/0<br>PCI/G : 4.178E+01 | TRACER<br>ID : 1374-A<br>ISOTOPE : PU242<br>NOMINAL : 3.38543 dpm<br>RESULTS : 3.19855 dpm | LIB FILE : ENV_ALPHA_PU.N<br>BKG FILE : B108.CNF;674<br>BKG DATE : 17-JAN-2010<br>EFF FILE : W108.CNF;211<br>CAL DATE : 11-JAN-2010 |

NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| PU-9/0  | 5155.000 | 5.000      | 3.000    | 2.000    | 3.4797 | 99.90000 | 3.30E-03       | 2.91E-03    | 8.90E-03  | 2.08E-02  | 2.91E-03  |
| PU-236  | 5749.000 | 0.000      | -1.000   | 1.000    | 2.1286 | 100.0000 | -1.11E-03      | 1.57E-03    | 5.44E-03  | 1.39E-02  | 1.57E-03  |
| PU-238  | 5499.000 | 1.000      | 1.000    | 0.000    | 2.9680 | 99.90000 | 1.10E-03       | 1.10E-03    | 7.59E-03  | 1.82E-02  | 1.10E-03  |
| PU242   | 4890.000 | 1093.000   | 1090.000 | 3.000    | 1.7321 | 100.0000 | 1.20E+00       | 7.01E-02    | 4.42E-03  | 1.18E-02  | 3.64E-02  |
| PU-244  | 4589.000 | 2.000      | 2.000    | 0.000    | 5.2050 | 99.90000 | 2.20E-03       | 1.56E-03    | 1.33E-02  | 2.96E-02  | 1.55E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)  
NOTE: Sg of PU242 calculated as sqrt(BKG AREA)



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941752  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630004\_PU  
SAMPLE QTY: 1.298 G

DETECTOR NUMBER :79463  
AVERAGE %EFFICIENCY :34.8172  
% YIELD : 85.941

COUNT DATE:20-JAN-2010 16:41:44  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : PU-9/0  
PCI/G : 4.178E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : PU-9/0  
PCI/G : 4.178E+01

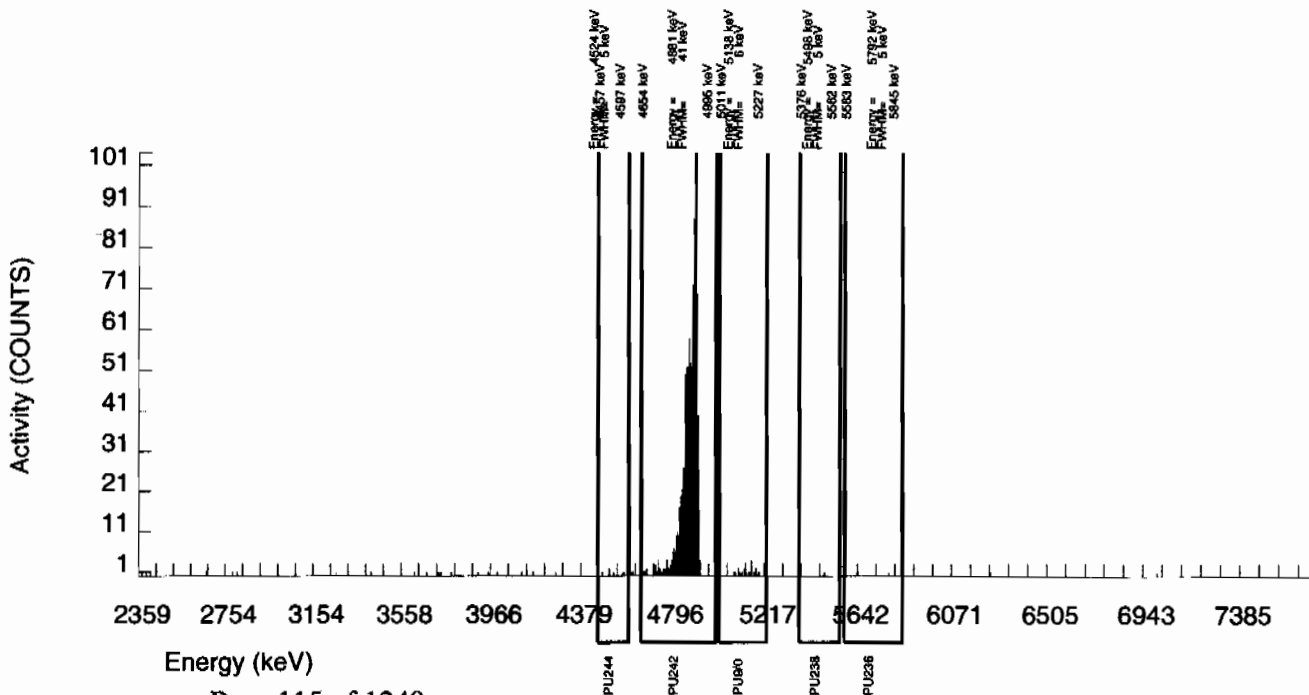
TRACER  
ID : 1374-A  
ISOTOPE : PU242  
NOMINAL : 3.38543 dpm  
RESULTS : 2.90948 dpm

LIB FILE : ENV\_ALPHA\_PU.N  
BKG FILE : B109.CNF;672  
BKG DATE : 17-JAN-2010  
EFF FILE : W109.CNF;192  
CAL DATE : 11-JAN-2010

NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS<br>AREA | NET<br>AREA | BKG<br>AREA | BKG<br>Sg | %ABUN    | ACTIVITY<br>pCi/G | TPU<br>1-SIGMA | DLC<br>pCi/G | MDC<br>pCi/G | UNC<br>pCi/G |
|---------|----------|---------------|-------------|-------------|-----------|----------|-------------------|----------------|--------------|--------------|--------------|
| PU-9/0  | 5155.000 | 24.000        | 21.000      | 3.000       | 3.4797    | 99.90000 | 2.44E-02          | 6.16E-03       | 9.40E-03     | 2.19E-02     | 6.03E-03     |
| PU-236  | 5749.000 | 1.000         | 0.000       | 1.000       | 2.1286    | 100.0000 | 0.00E+00          | 1.66E-03       | 5.74E-03     | 1.46E-02     | 1.65E-03     |
| PU-238  | 5499.000 | 1.000         | 0.000       | 1.000       | 2.9680    | 99.90000 | 0.00E+00          | 1.64E-03       | 8.02E-03     | 1.92E-02     | 1.64E-03     |
| PU242   | 4890.000 | 1016.000      | 1013.000    | 3.000       | 1.7321    | 100.0000 | 1.17E+00          | 7.02E-02       | 4.67E-03     | 1.25E-02     | 3.70E-02     |
| PU-244  | 4589.000 | 7.000         | 7.000       | 0.000       | 5.2050    | 99.90000 | 8.13E-03          | 3.10E-03       | 1.41E-02     | 3.13E-02     | 3.07E-03     |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)  
NOTE: Sg of PU242 calculated as sqrt(BKG AREA)



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941752  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630005\_PU  
SAMPLE QTY: 1.278 G

DETECTOR NUMBER :67602  
AVERAGE %EFFICIENCY :31.8603  
% YIELD : 58.501

COUNT DATE:20-JAN-2010 16:41:44  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : PU-9/0  
PCI/G : 4.178E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : PU-9/0  
PCI/G : 4.178E+01

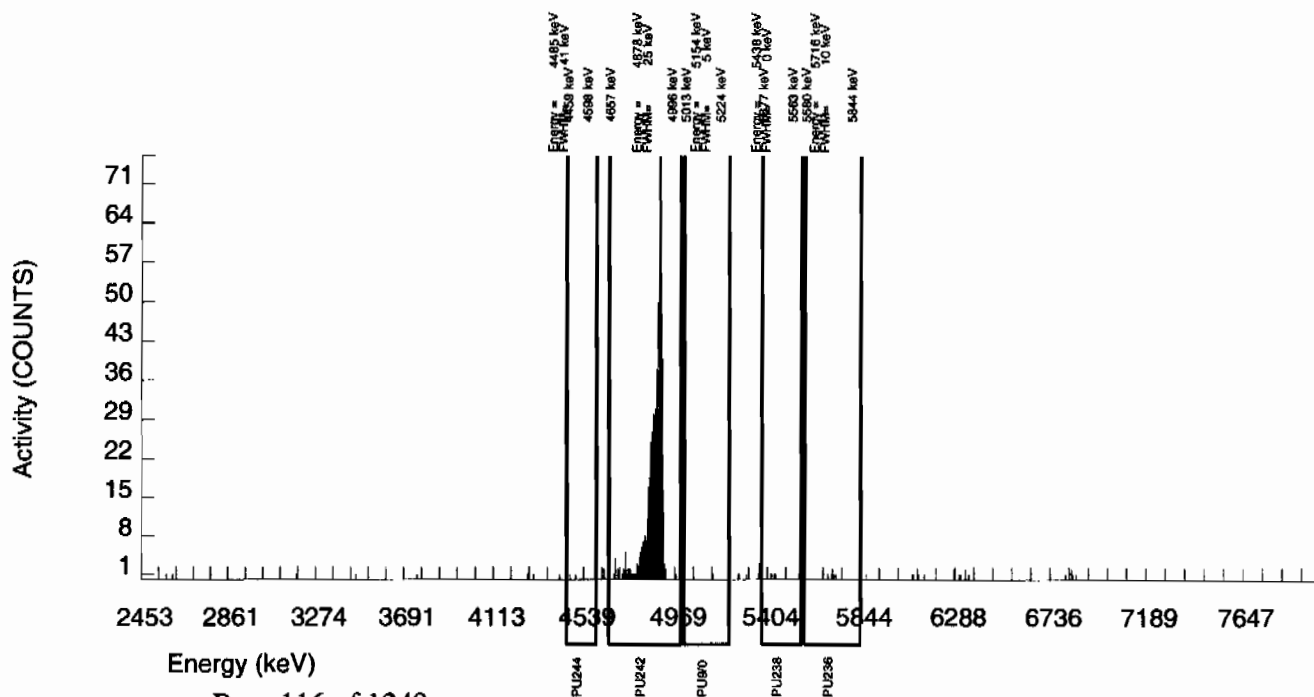
TRACER  
ID : 1374-A  
ISOTOPE : PU242  
NOMINAL : 3.38543 dpm  
RESULTS : 1.98052 dpm

LIB FILE : ENV\_ALPHA\_PU.N  
BKG FILE : B110.CNF;676  
BKG DATE : 17-JAN-2010  
EFF FILE : W110.CNF;211  
CAL DATE : 11-JAN-2010

NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| PU-9/0  | 5155.000 | 1.000      | 0.000    | 1.000    | 3.4797 | 99.90000 | 0.00E+00       | 2.68E-03    | 1.53E-02  | 3.58E-02  | 2.68E-03  |
| PU-236  | 5749.000 | 6.000      | -3.000   | 9.000    | 2.1286 | 100.0000 | -5.72E-03      | 7.39E-03    | 9.36E-03  | 2.39E-02  | 7.39E-03  |
| PU-238  | 5499.000 | 7.000      | -4.000   | 11.000   | 2.9680 | 99.90000 | -7.57E-03      | 8.03E-03    | 1.31E-02  | 3.13E-02  | 8.03E-03  |
| PU242   | 4890.000 | 632.000    | 631.000  | 1.000    | 1.0000 | 100.0000 | 1.19E+00       | 8.24E-02    | 4.40E-03  | 1.39E-02  | 4.76E-02  |
| PU-244  | 4589.000 | 3.000      | 1.000    | 2.000    | 5.2050 | 99.90000 | 1.89E-03       | 4.23E-03    | 2.29E-02  | 5.10E-02  | 4.23E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)  
NOTE: Sg of PU242 calculated as sqrt(BKG AREA)





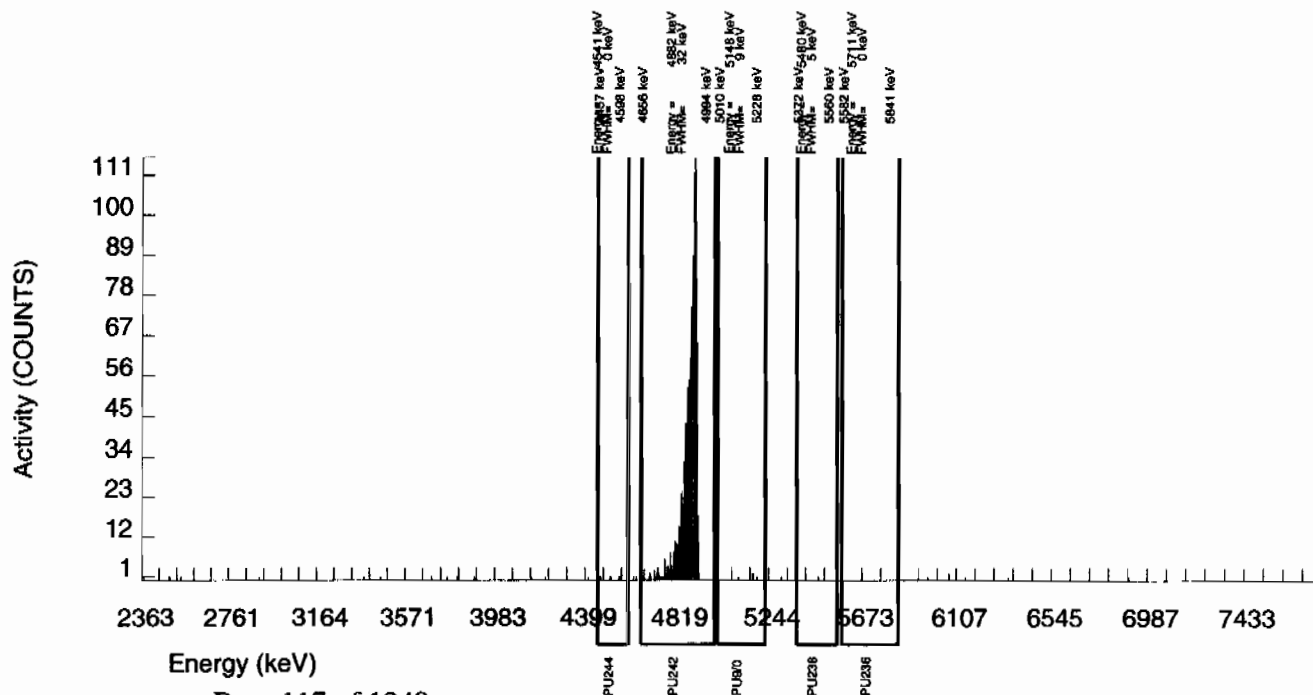
GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

|  |  |  |   |
|--|--|--|---|
| BATCH NUMBER: 941752<br>SAMPLE DATE : 8-JAN-2010 00:00:00.                 |  | SAMPLE ID : S0244630006_PU<br>SAMPLE QTY: 1.264 G  |   |
| DETECTOR NUMBER :79462<br>AVERAGE %EFFICIENCY :33.6570<br>% YIELD : 91.537 |  | COUNT DATE:20-JAN-2010 16:41:44<br>ELAPSED LIVE TIME(SEC): 60000.00<br>ANALYST :MXA1       |   |
| MS/MSD<br>ID : 0244-B<br>ISOTOPE : PU-9/0<br>PCI/G : 4.178E+01             | LCS/LCSD<br>ID : 0244-B<br>ISOTOPE : PU-9/0<br>PCI/G : 4.178E+01 | TRACER<br>ID : 1374-A<br>ISOTOPE : PU242<br>NOMINAL : 3.38543 dpm<br>RESULTS : 3.09891 dpm | LIB FILE : ENV_ALPHA_PU.N<br>BKG FILE : B111.CNF;671<br>BKG DATE : 17-JAN-2010<br>EFF FILE : W111.CNF;207<br>CAL DATE : 11-JAN-2010 |

NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| PU-9/0  | 5155.000 | 7.000      | 5.000    | 2.000    | 3.4797 | 99.90000 | 5.79E-03       | 3.49E-03    | 9.37E-03  | 2.19E-02  | 3.47E-03  |
| PU-236  | 5749.000 | 0.000      | -1.000   | 1.000    | 2.1286 | 100.0000 | -1.17E-03      | 1.65E-03    | 5.73E-03  | 1.46E-02  | 1.65E-03  |
| PU-238  | 5499.000 | 1.000      | 1.000    | 0.000    | 2.9680 | 99.90000 | 1.16E-03       | 1.16E-03    | 7.99E-03  | 1.91E-02  | 1.16E-03  |
| PU242   | 4890.000 | 1048.000   | 1043.000 | 5.000    | 2.2361 | 100.0000 | 1.21E+00       | 7.16E-02    | 6.02E-03  | 1.52E-02  | 3.75E-02  |
| PU-244  | 4589.000 | 6.000      | 5.000    | 1.000    | 5.2050 | 99.90000 | 5.79E-03       | 3.08E-03    | 1.40E-02  | 3.12E-02  | 3.06E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)  
NOTE: Sg of PU242 calculated as sqrt(BKG AREA)



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941752  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630007\_PU  
SAMPLE QTY: 1.288 G

DETECTOR NUMBER :78261  
AVERAGE %EFFICIENCY :31.6677  
% YIELD : 94.022

COUNT DATE:20-JAN-2010 16:41:44  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : PU-9/0  
PCI/G : 4.178E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : PU-9/0  
PCI/G : 4.178E+01

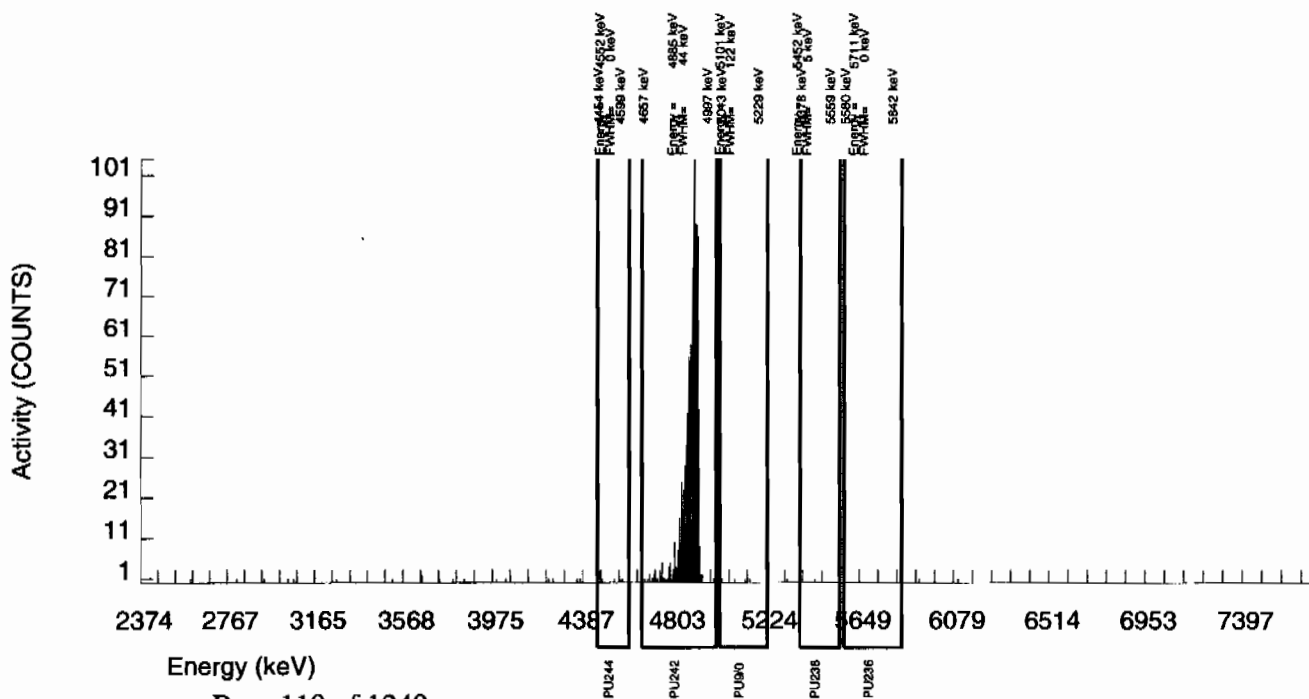
TRACER  
ID : 1374-A  
ISOTOPE : PU242  
NOMINAL : 3.38543 dpm  
RESULTS : 3.18305 dpm

LIB FILE : ENV\_ALPHA\_PU.N  
BKG FILE : B112.CNF;679  
BKG DATE : 17-JAN-2010  
EFF FILE : W112.CNF;218  
CAL DATE : 11-JAN-2010

NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| PU-9/0  | 5155.000 | 4.000      | 2.000    | 2.000    | 3.4797 | 99.90000 | 2.35E-03       | 2.88E-03    | 9.52E-03  | 2.22E-02  | 2.88E-03  |
| PU-236  | 5749.000 | 0.000      | -1.000   | 1.000    | 2.1286 | 100.0000 | -1.18E-03      | 1.68E-03    | 5.82E-03  | 1.48E-02  | 1.68E-03  |
| PU-238  | 5499.000 | 1.000      | 1.000    | 0.000    | 2.9680 | 99.90000 | 1.18E-03       | 1.18E-03    | 8.12E-03  | 1.94E-02  | 1.18E-03  |
| PU242   | 4890.000 | 1013.000   | 1008.000 | 5.000    | 2.2361 | 100.0000 | 1.18E+00       | 7.09E-02    | 6.11E-03  | 1.54E-02  | 3.75E-02  |
| PU-244  | 4589.000 | 6.000      | 6.000    | 0.000    | 5.2050 | 99.90000 | 7.05E-03       | 2.90E-03    | 1.42E-02  | 3.17E-02  | 2.88E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)  
NOTE: Sg of PU242 calculated as sqrt(BKG AREA)



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941752  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630008\_PU  
SAMPLE QTY: 1.280 G

DETECTOR NUMBER :SAMPLE  
AVERAGE %EFFICIENCY :38.1505  
% YIELD : 92.059

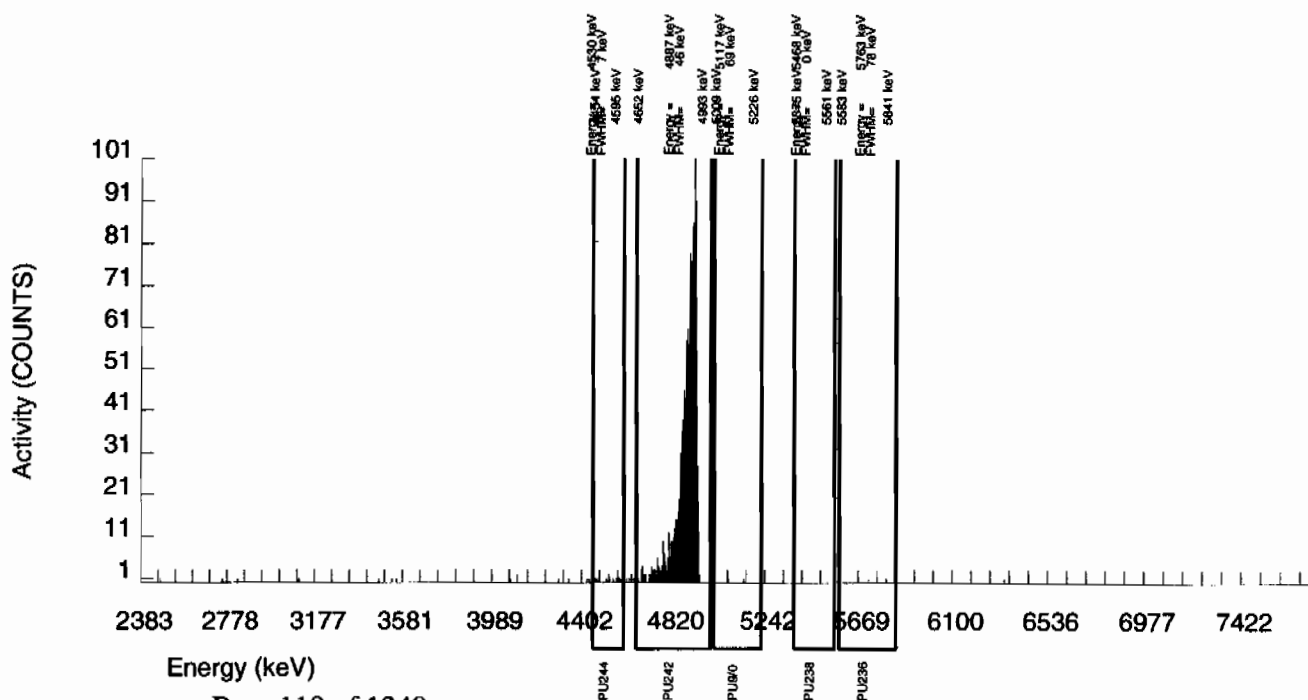
COUNT DATE:20-JAN-2010 16:36:56  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

| MS/MSD            | LCS/LCSD          | TRACER                | LIB FILE : ENV_ALPHA_PU.N |
|-------------------|-------------------|-----------------------|---------------------------|
| ID : 0244-B       | ID : 0244-B       | ID : 1374-A           | BKG FILE : B233.CNF;70    |
| ISOTOPE : PU-9/0  | ISOTOPE : PU-9/0  | ISOTOPE : PU242       | BKG DATE : 17-JAN-2010    |
| PCI/G : 4.178E+01 | PCI/G : 4.178E+01 | NOMINAL : 3.38543 dpm | EFF FILE : W233.CNF;24    |
|                   |                   | RESULTS : 3.11660 dpm | CAL DATE : 28-DEC-2009    |

NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| PU-9/0  | 5155.000 | 2.000      | 2.000    | 0.000    | 3.4797 | 99.90000 | 2.01E-03       | 1.42E-03    | 8.12E-03  | 1.90E-02  | 1.42E-03  |
| PU-236  | 5749.000 | 2.000      | 2.000    | 0.000    | 2.1286 | 100.0000 | 2.02E-03       | 1.43E-03    | 4.96E-03  | 1.26E-02  | 1.43E-03  |
| PU-238  | 5499.000 | 0.000      | 0.000    | 0.000    | 2.9680 | 99.90000 | 0.00E+00       | 1.00E-03    | 6.93E-03  | 1.66E-02  | 1.00E-03  |
| PU242   | 4890.000 | 1189.000   | 1189.000 | 0.000    | 0.0000 | 100.0000 | 1.19E+00       | 6.79E-02    | 0.00E+00  | 2.72E-03  | 3.46E-02  |
| PU-244  | 4589.000 | 13.000     | 13.000   | 0.000    | 5.2050 | 99.90000 | 1.30E-02       | 3.67E-03    | 1.21E-02  | 2.70E-02  | 3.62E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)  
NOTE: Sg of PU242 calculated as sqrt(BKG AREA)



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941752  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630009\_PU  
SAMPLE QTY: 1.277 G

DETECTOR NUMBER :33452  
AVERAGE %EFFICIENCY :30.1337  
% YIELD : 97.632

COUNT DATE:21-JAN-2010 17:04:14  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : PU-9/0  
PCI/G : 4.178E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : PU-9/0  
PCI/G : 4.178E+01

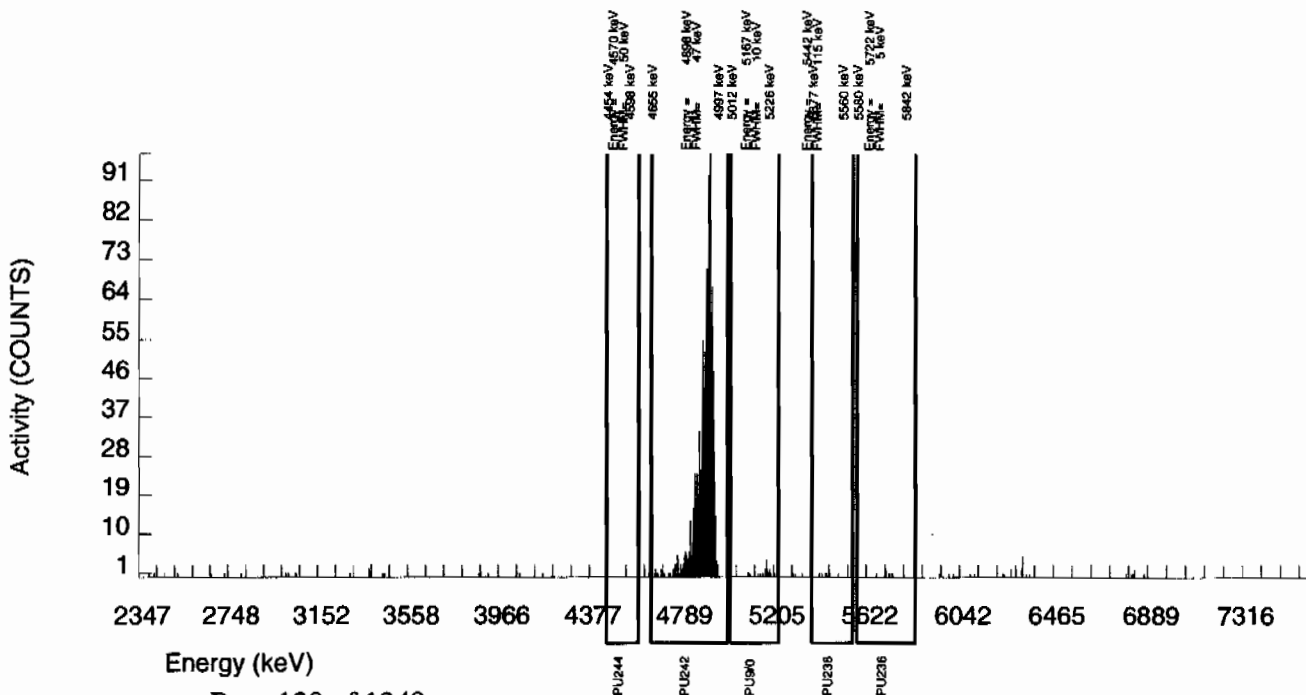
TRACER  
ID : 1374-A  
ISOTOPE : PU242  
NOMINAL : 3.38543 dpm  
RESULTS : 3.30526 dpm

LIB FILE : ENV\_ALPHA\_PU.N  
BKG FILE : B088.CNF;1010  
BKG DATE : 17-JAN-2010  
EFF FILE : W088.CNF;284  
CAL DATE : 11-JAN-2010

NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS<br>AREA | NET<br>AREA | BKG<br>AREA | BKG<br>Sg | %ABUN    | ACTIVITY<br>pCi/G | TPU<br>1-SIGMA | DLC<br>pCi/G | MDC<br>pCi/G | UNC<br>pCi/G |
|---------|----------|---------------|-------------|-------------|-----------|----------|-------------------|----------------|--------------|--------------|--------------|
| PU-9/0  | 5155.000 | 19.000        | 17.000      | 2.000       | 3.4797    | 99.90000 | 2.04E-02          | 5.60E-03       | 9.72E-03     | 2.27E-02     | 5.50E-03     |
| PU-236  | 5749.000 | 6.000         | -6.000      | 12.000      | 2.1286    | 100.0000 | -7.26E-03         | 5.13E-03       | 5.94E-03     | 1.51E-02     | 5.13E-03     |
| PU-238  | 5499.000 | 7.000         | -1.000      | 8.000       | 2.9680    | 99.90000 | -1.20E-03         | 4.65E-03       | 8.29E-03     | 1.98E-02     | 4.65E-03     |
| PU242   | 4890.000 | 997.000       | 996.000     | 1.000       | 1.0000    | 100.0000 | 1.19E+00          | 7.16E-02       | 2.79E-03     | 8.83E-03     | 3.79E-02     |
| PU-244  | 4589.000 | 2.000         | 2.000       | 0.000       | 5.2050    | 99.90000 | 2.40E-03          | 1.70E-03       | 1.45E-02     | 3.23E-02     | 1.70E-03     |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)  
NOTE: Sg of PU242 calculated as sqrt(BKG AREA)



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941752  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630010\_PU  
SAMPLE QTY: 1.254 G

DETECTOR NUMBER :79428  
AVERAGE %EFFICIENCY :37.2918  
% YIELD : 96.476

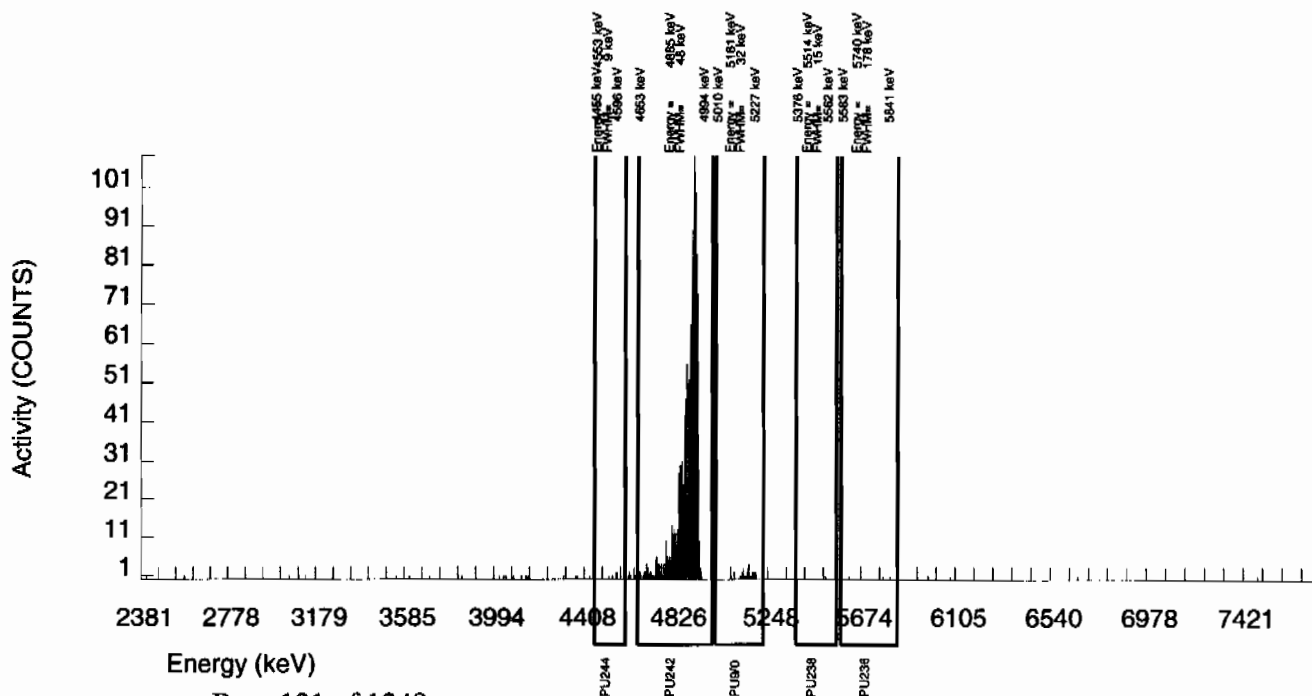
COUNT DATE:20-JAN-2010 16:37:00  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

| MS/MSD            | LCS/LCSD          | TRACER                | LIB FILE : ENV_ALPHA_PU.N |
|-------------------|-------------------|-----------------------|---------------------------|
| ID : 0244-B       | ID : 0244-B       | ID : 1374-A           | BKG FILE : B235.CNF;70    |
| ISOTOPE : PU-9/0  | ISOTOPE : PU-9/0  | ISOTOPE : PU242       | BKG DATE : 17-JAN-2010    |
| PCI/G : 4.178E+01 | PCI/G : 4.178E+01 | NOMINAL : 3.38543 dpm | EFF FILE : W235.CNF;24    |
|                   |                   | RESULTS : 3.26613 dpm | CAL DATE : 28-DEC-2009    |

NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| PU-9/0  | 5155.000 | 30.000     | 30.000   | 0.000    | 3.4797 | 99.90000 | 3.00E-02       | 5.68E-03    | 8.09E-03  | 1.89E-02  | 5.47E-03  |
| PU-236  | 5749.000 | 3.000      | 3.000    | 0.000    | 2.1286 | 100.0000 | 3.02E-03       | 1.75E-03    | 4.94E-03  | 1.26E-02  | 1.74E-03  |
| PU-238  | 5499.000 | 2.000      | 2.000    | 0.000    | 2.9680 | 99.90000 | 2.00E-03       | 1.42E-03    | 6.90E-03  | 1.65E-02  | 1.41E-03  |
| PU242   | 4890.000 | 1220.000   | 1218.000 | 2.000    | 1.4142 | 100.0000 | 1.22E+00       | 7.10E-02    | 3.28E-03  | 9.28E-03  | 3.49E-02  |
| PU-244  | 4589.000 | 6.000      | 4.000    | 2.000    | 5.2050 | 99.90000 | 4.00E-03       | 2.83E-03    | 1.21E-02  | 2.69E-02  | 2.83E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)  
NOTE: Sg of PU242 calculated as sqrt(BKG AREA)



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941752  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630011\_PU  
SAMPLE QTY: 1.288 G

DETECTOR NUMBER :79429  
AVERAGE %EFFICIENCY :38.5832  
% YIELD : 91.027

COUNT DATE:20-JAN-2010 16:37:03  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : PU-9/0  
PCI/G : 4.178E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : PU-9/0  
PCI/G : 4.178E+01

TRACER  
ID : 1374-A  
ISOTOPE : PU242  
NOMINAL : 3.38543 dpm  
RESULTS : 3.08165 dpm

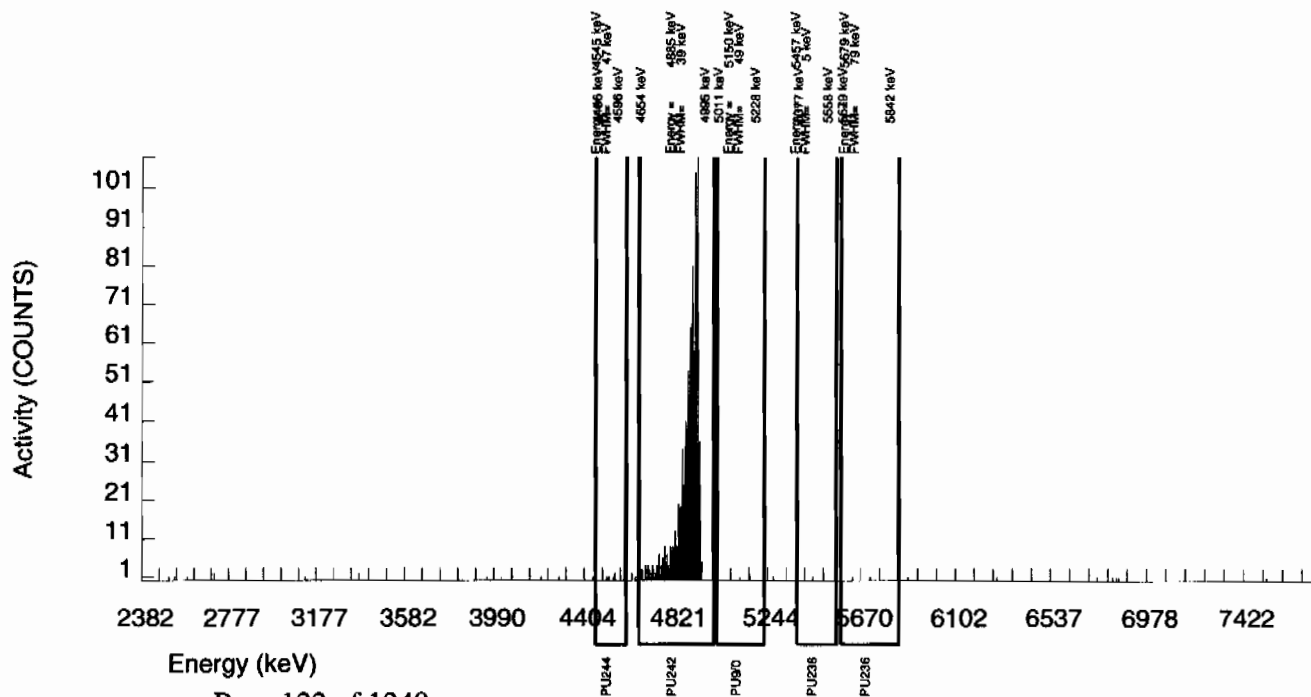
LIB FILE : ENV\_ALPHA\_PU.N  
BKG FILE : B236.CNF;70  
BKG DATE : 17-JAN-2010  
EFF FILE : W236.CNF;24  
CAL DATE : 28-DEC-2009

NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| PU-9/0  | 5155.000 | 3.000      | 1.000    | 2.000    | 3.4797 | 99.90000 | 9.97E-04       | 2.23E-03    | 8.07E-03  | 1.88E-02  | 2.23E-03  |
| PU-236  | 5749.000 | 2.000      | 2.000    | 0.000    | 2.1286 | 100.0000 | 2.01E-03       | 1.42E-03    | 4.93E-03  | 1.26E-02  | 1.42E-03  |
| PU-238  | 5499.000 | 1.000      | 0.000    | 1.000    | 2.9680 | 99.90000 | 0.00E+00       | 1.41E-03    | 6.88E-03  | 1.65E-02  | 1.41E-03  |
| PU242   | 4890.000 | 1191.000   | 1189.000 | 2.000    | 1.4142 | 100.0000 | 1.18E+00       | 6.75E-02    | 3.28E-03  | 9.25E-03  | 3.44E-02  |
| PU-244  | 4589.000 | 9.000      | 9.000    | 0.000    | 5.2050 | 99.90000 | 8.97E-03       | 3.02E-03    | 1.21E-02  | 2.68E-02  | 2.99E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of PU242 calculated as sqrt(BKG AREA)



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941752  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630012\_PU  
SAMPLE QTY: 1.252 G

DETECTOR NUMBER :79430  
AVERAGE %EFFICIENCY :39.7183  
% YIELD : 89.392

COUNT DATE:20-JAN-2010 16:37:05  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : PU-9/0  
PCI/G : 4.178E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : PU-9/0  
PCI/G : 4.178E+01

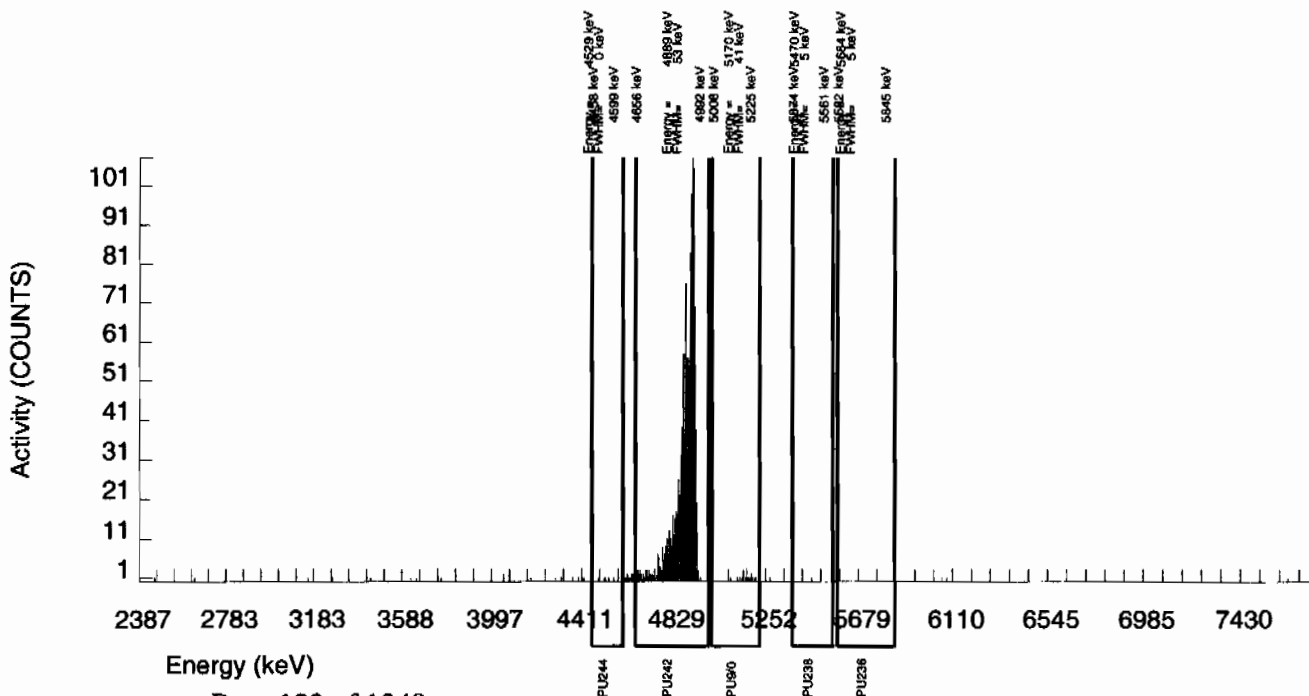
TRACER  
ID : 1374-A  
ISOTOPE : PU242  
NOMINAL : 3.38543 dpm  
RESULTS : 3.02631 dpm

LIB FILE : ENV\_ALPHA\_PU.N  
BKG FILE : B237.CNF;70  
BKG DATE : 17-JAN-2010  
EFF FILE : W237.CNF;24  
CAL DATE : 28-DEC-2009

NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS<br>AREA | NET<br>AREA | BKG<br>AREA | BKG<br>Sg | %ABUN    | ACTIVITY<br>pCi/G | TPU<br>1-SIGMA | DLC<br>pCi/G | MDC<br>pCi/G | UNC<br>pCi/G |
|---------|----------|---------------|-------------|-------------|-----------|----------|-------------------|----------------|--------------|--------------|--------------|
| PU-9/0  | 5155.000 | 17.000        | 17.000      | 0.000       | 3.4797    | 99.90000 | 1.72E-02          | 4.27E-03       | 8.21E-03     | 1.92E-02     | 4.18E-03     |
| PU-236  | 5749.000 | 1.000         | 1.000       | 0.000       | 2.1286    | 100.0000 | 1.02E-03          | 1.02E-03       | 5.02E-03     | 1.28E-02     | 1.02E-03     |
| PU-238  | 5499.000 | 1.000         | 0.000       | 1.000       | 2.9680    | 99.90000 | 0.00E+00          | 1.44E-03       | 7.00E-03     | 1.68E-02     | 1.43E-03     |
| PU242   | 4890.000 | 1203.000      | 1202.000    | 1.000       | 1.0000    | 100.0000 | 1.22E+00          | 7.14E-02       | 2.36E-03     | 7.46E-03     | 3.52E-02     |
| PU-244  | 4589.000 | 7.000         | 7.000       | 0.000       | 5.2050    | 99.90000 | 7.10E-03          | 2.71E-03       | 1.23E-02     | 2.73E-02     | 2.68E-03     |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)  
NOTE: Sg of PU242 calculated as sqrt(BKG AREA)



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941752  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630013\_PU  
SAMPLE QTY: 1.256 G

DETECTOR NUMBER :79431  
AVERAGE %EFFICIENCY :39.6257  
% YIELD : 93.552

COUNT DATE:20-JAN-2010 16:37:07  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : PU-9/0  
PCI/G : 4.178E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : PU-9/0  
PCI/G : 4.178E+01

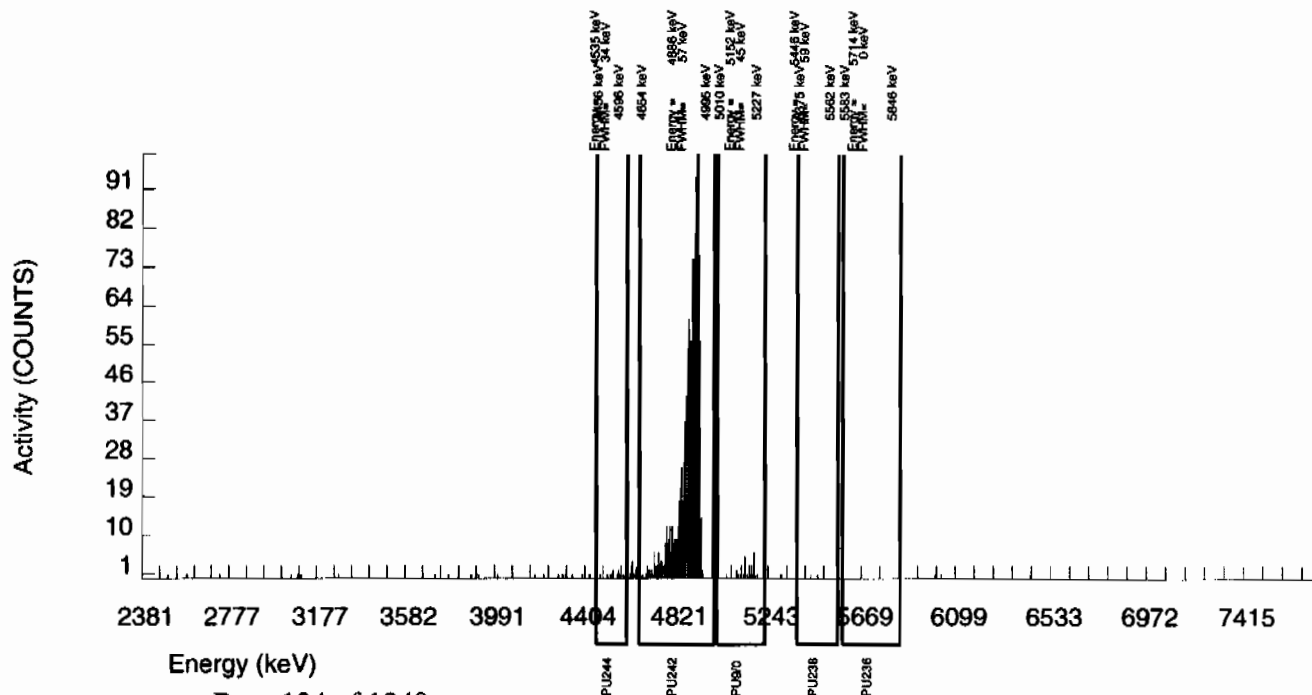
TRACER  
ID : 1374-A  
ISOTOPE : PU242  
NOMINAL : 3.38543 dpm  
RESULTS : 3.16714 dpm

LIB FILE : ENV\_ALPHA\_PU.N  
BKG FILE : B238.CNF;70  
BKG DATE : 17-JAN-2010  
EFF FILE : W238.CNF;26  
CAL DATE : 28-DEC-2009

NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS<br>AREA | NET<br>AREA | BKG<br>AREA | BKG<br>Sg | %ABUN    | ACTIVITY<br>pCi/G | TPU<br>1-SIGMA | DLC<br>pCi/G | MDC<br>pCi/G | UNC<br>pCi/G |
|---------|----------|---------------|-------------|-------------|-----------|----------|-------------------|----------------|--------------|--------------|--------------|
| PU-9/0  | 5155.000 | 28.000        | 27.000      | 1.000       | 3.4797    | 99.90000 | 2.61E-02          | 5.37E-03       | 7.84E-03     | 1.83E-02     | 5.22E-03     |
| PU-236  | 5749.000 | 0.000         | -1.000      | 1.000       | 2.1286    | 100.0000 | -9.76E-04         | 1.38E-03       | 4.79E-03     | 1.22E-02     | 1.38E-03     |
| PU-238  | 5499.000 | 3.000         | 3.000       | 0.000       | 2.9680    | 99.90000 | 2.91E-03          | 1.68E-03       | 6.69E-03     | 1.60E-02     | 1.68E-03     |
| PU242   | 4890.000 | 1256.000      | 1255.000    | 1.000       | 1.0000    | 100.0000 | 1.21E+00          | 6.83E-02       | 2.25E-03     | 7.12E-03     | 3.43E-02     |
| PU-244  | 4589.000 | 16.000        | 16.000      | 0.000       | 5.2050    | 99.90000 | 1.55E-02          | 3.95E-03       | 1.17E-02     | 2.61E-02     | 3.87E-03     |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)  
NOTE: Sg of PU242 calculated as sqrt(BKG AREA)





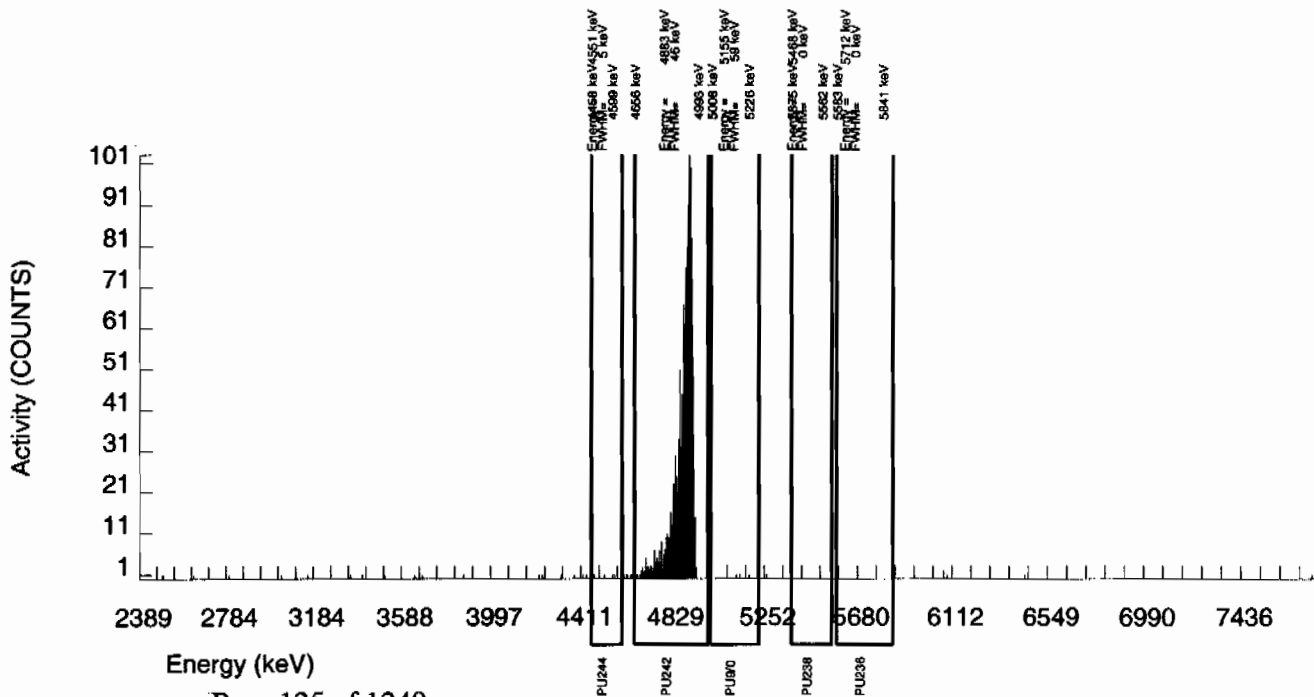
GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

|  |  |  |   |  |  |
|--|--|--|---|--|--|
| BATCH NUMBER: 941752<br>SAMPLE DATE : 8-JAN-2010 00:00:00.                 |  |  | SAMPLE ID : S0244630014_PU<br>SAMPLE QTY: 1.291 G   |  |  |
| DETECTOR NUMBER :79432<br>AVERAGE %EFFICIENCY :38.2608<br>% YIELD : 95.577 |  |  | COUNT DATE:20-JAN-2010 16:37:10<br>ELAPSED LIVE TIME(SEC): 60000.00<br>ANALYST :MXA1  |  |  |
| MS/MSD<br>ID : 0244-B<br>ISOTOPE : PU-9/0<br>PCI/G : 4.178E+01             | LCS/LCSD<br>ID : 0244-B<br>ISOTOPE : PU-9/0<br>PCI/G : 4.178E+01 | TRACER<br>ID : 1374-A<br>ISOTOPE : PU242<br>NOMINAL : 3.38543 dpm<br>RESULTS : 3.23568 dpm | LIB FILE : ENV_ALPHA_PU.N<br>BKG FILE : B239.CNF;70<br>BKG DATE : 17-JAN-2010<br>EFF FILE : W239.CNF;24<br>CAL DATE : 28-DEC-2009 |  |  |

NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| PU-9/0  | 5155.000 | 3.000      | 2.000    | 1.000    | 3.4797 | 99.90000 | 1.91E-03       | 1.91E-03    | 7.73E-03  | 1.81E-02  | 1.91E-03  |
| PU-236  | 5749.000 | 0.000      | 0.000    | 0.000    | 2.1286 | 100.0000 | 0.00E+00       | 9.64E-04    | 4.72E-03  | 1.20E-02  | 9.62E-04  |
| PU-238  | 5499.000 | 0.000      | 0.000    | 0.000    | 2.9680 | 99.90000 | 0.00E+00       | 9.57E-04    | 6.59E-03  | 1.58E-02  | 9.55E-04  |
| PU242   | 4890.000 | 1239.000   | 1238.000 | 1.000    | 1.0000 | 100.0000 | 1.18E+00       | 6.87E-02    | 2.22E-03  | 7.03E-03  | 3.36E-02  |
| PU-244  | 4589.000 | 6.000      | 4.000    | 2.000    | 5.2050 | 99.90000 | 3.82E-03       | 2.71E-03    | 1.16E-02  | 2.57E-02  | 2.70E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)  
NOTE: Sg of PU242 calculated as sqrt(BKG AREA)



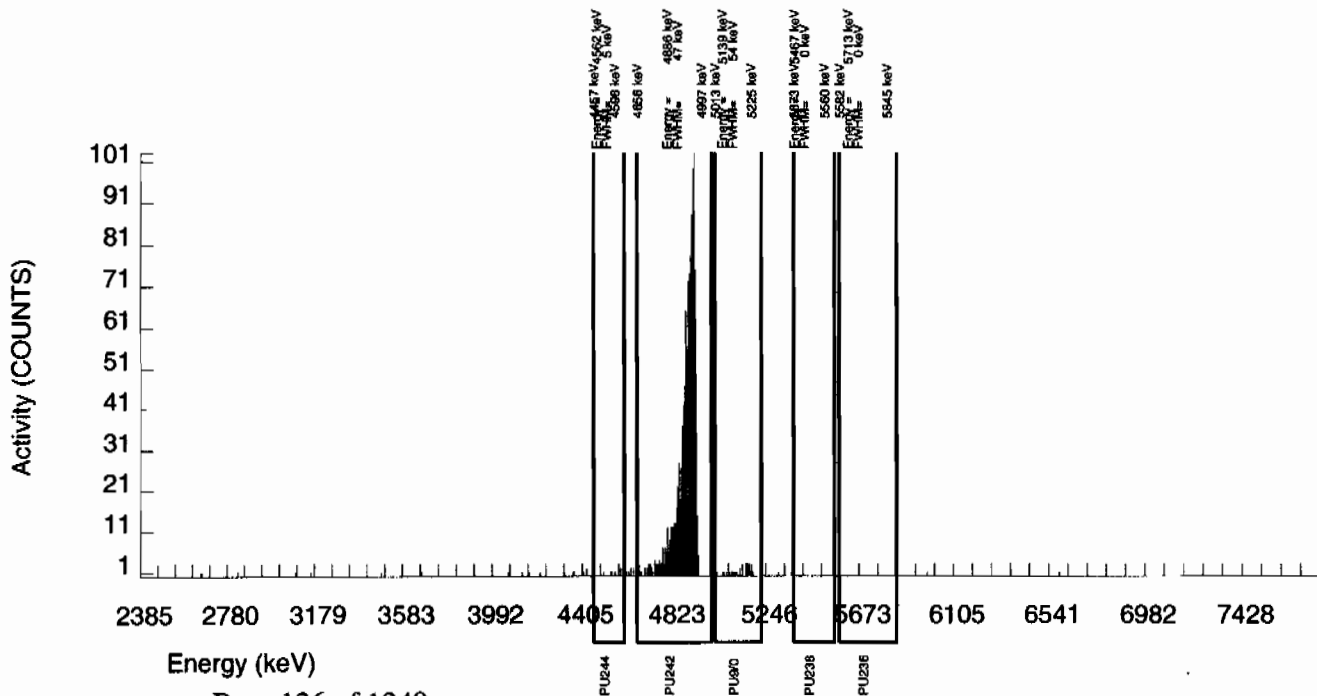
GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

|  |  |  |   |
|--|--|--|---|
| BATCH NUMBER: 941752<br>SAMPLE DATE : 8-JAN-2010 00:00:00.                 |  | SAMPLE ID : S0244630015_PU<br>SAMPLE QTY: 1.263 G  |   |
| DETECTOR NUMBER :79433<br>AVERAGE %EFFICIENCY :36.9892<br>% YIELD : 94.071 |  | COUNT DATE:20-JAN-2010 16:37:12<br>ELAPSED LIVE TIME(SEC): 60000.00<br>ANALYST :MXA1       |   |
| MS/MSD<br>ID : 0244-B<br>ISOTOPE : PU-9/0<br>PCI/G : 4.178E+01             | LCS/LCSD<br>ID : 0244-B<br>ISOTOPE : PU-9/0<br>PCI/G : 4.178E+01 | TRACER<br>ID : 1374-A<br>ISOTOPE : PU242<br>NOMINAL : 3.38543 dpm<br>RESULTS : 3.18471 dpm | LIB FILE : ENV_ALPHA_PU.N<br>BKG FILE : B240.CNF;70<br>BKG DATE : 17-JAN-2010<br>EFF FILE : W240.CNF;24<br>CAL DATE : 28-DEC-2009 |

NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| PU-9/0  | 5155.000 | 31.000     | 30.000   | 1.000    | 3.4797 | 99.90000 | 3.08E-02       | 6.00E-03    | 8.31E-03  | 1.94E-02  | 5.80E-03  |
| PU-236  | 5749.000 | 0.000      | -1.000   | 1.000    | 2.1286 | 100.0000 | -1.03E-03      | 1.46E-03    | 5.08E-03  | 1.29E-02  | 1.46E-03  |
| PU-238  | 5499.000 | 0.000      | -1.000   | 1.000    | 2.9680 | 99.90000 | -1.03E-03      | 1.45E-03    | 7.08E-03  | 1.69E-02  | 1.45E-03  |
| PU242   | 4890.000 | 1179.000   | 1178.000 | 1.000    | 1.0000 | 100.0000 | 1.21E+00       | 6.90E-02    | 2.38E-03  | 7.55E-03  | 3.52E-02  |
| PU-244  | 4589.000 | 7.000      | 7.000    | 0.000    | 5.2050 | 99.90000 | 7.18E-03       | 2.74E-03    | 1.24E-02  | 2.76E-02  | 2.71E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)  
NOTE: Sg of PU242 calculated as sqrt(BKG AREA)



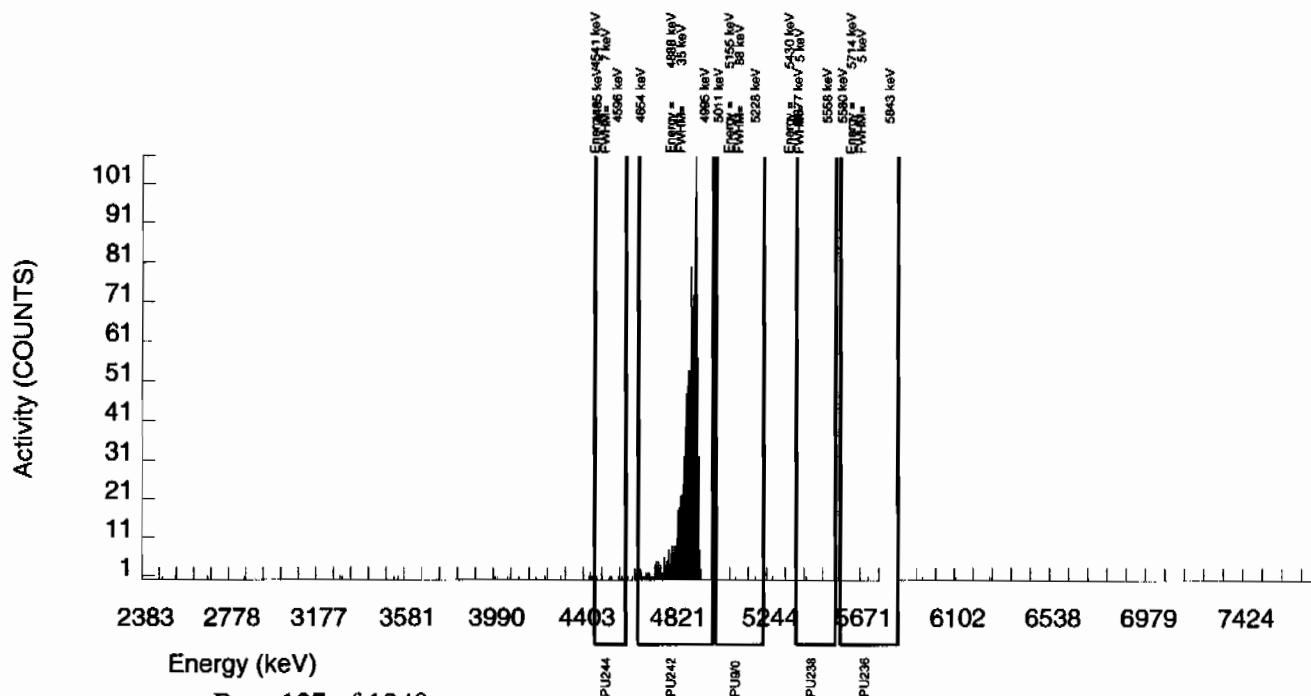
GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

|  |  |  |   |
|--|--|--|---|
| BATCH NUMBER: 941752<br>SAMPLE DATE : 8-JAN-2010 00:00:00.                 |  | SAMPLE ID : S0244630016_PU<br>SAMPLE QTY: 1.259 G  |   |
| DETECTOR NUMBER :79434<br>AVERAGE %EFFICIENCY :37.7240<br>% YIELD : 87.776 |  | COUNT DATE:20-JAN-2010 16:37:14<br>ELAPSED LIVE TIME(SEC): 60000.00<br>ANALYST :MXA1       |   |
| MS/MSD<br>ID : 0244-B<br>ISOTOPE : PU-9/0<br>PCI/G : 4.178E+01             | LCS/LCSD<br>ID : 0244-B<br>ISOTOPE : PU-9/0<br>PCI/G : 4.178E+01 | TRACER<br>ID : 1374-A<br>ISOTOPE : PU242<br>NOMINAL : 3.38543 dpm<br>RESULTS : 2.97158 dpm | LIB FILE : ENV_ALPHA_PU.N<br>BKG FILE : B241.CNF;70<br>BKG DATE : 17-JAN-2010<br>EFF FILE : W241.CNF;24<br>CAL DATE : 28-DEC-2009 |

NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| PU-9/0  | 5155.000 | 3.000      | 3.000    | 0.000    | 3.4797 | 99.90000 | 3.24E-03       | 1.88E-03    | 8.76E-03  | 2.04E-02  | 1.87E-03  |
| PU-236  | 5749.000 | 1.000      | 1.000    | 0.000    | 2.1286 | 100.0000 | 1.09E-03       | 1.09E-03    | 5.35E-03  | 1.36E-02  | 1.09E-03  |
| PU-238  | 5499.000 | 1.000      | 1.000    | 0.000    | 2.9680 | 99.90000 | 1.08E-03       | 1.08E-03    | 7.47E-03  | 1.79E-02  | 1.08E-03  |
| PU242   | 4890.000 | 1122.000   | 1121.000 | 1.000    | 1.0000 | 100.0000 | 1.21E+00       | 7.22E-02    | 2.51E-03  | 7.96E-03  | 3.62E-02  |
| PU-244  | 4589.000 | 9.000      | 9.000    | 0.000    | 5.2050 | 99.90000 | 9.73E-03       | 3.28E-03    | 1.31E-02  | 2.91E-02  | 3.24E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)  
NOTE: Sg of PU242 calculated as sqrt(BKG AREA)



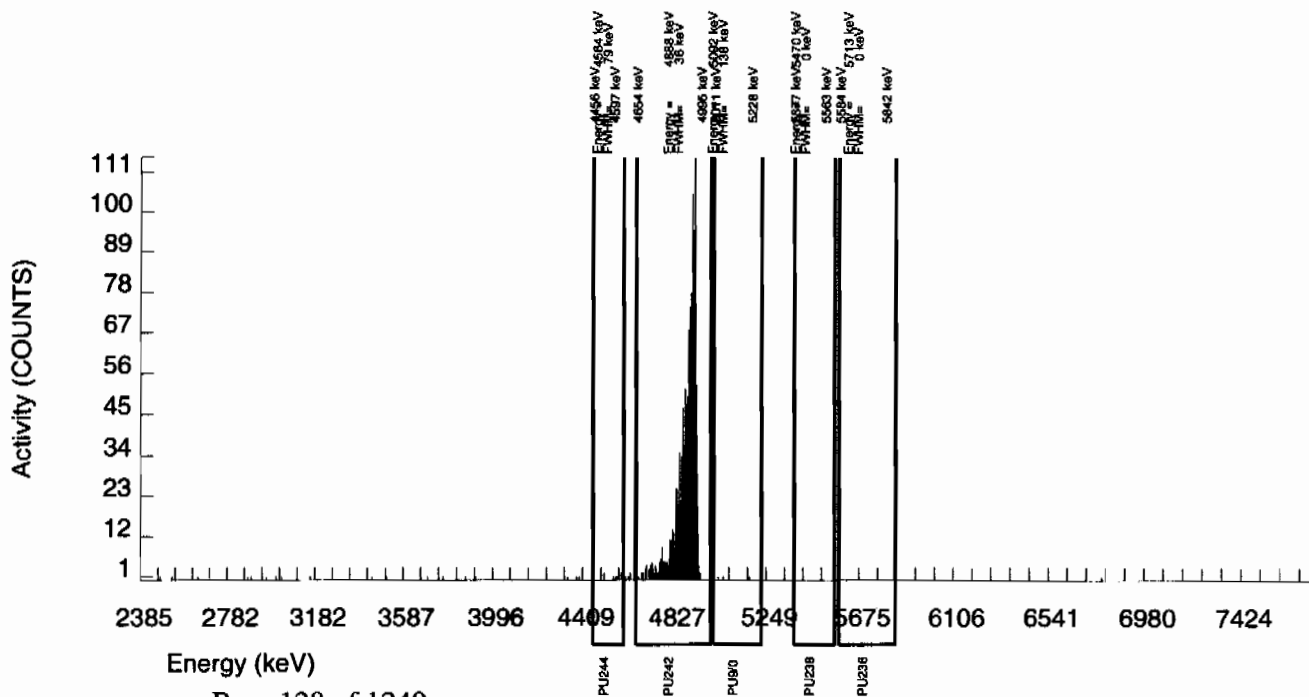
GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

|  |  |  |   |
|--|--|--|---|
| BATCH NUMBER: 941752<br>SAMPLE DATE : 19-JAN-2010 00:00:00                 |  | SAMPLE ID : S1202015738_PU<br>SAMPLE QTY: 1.000 G  |   |
| DETECTOR NUMBER :79435<br>AVERAGE %EFFICIENCY :38.1437<br>% YIELD : 95.173 |  | COUNT DATE:20-JAN-2010 16:37:16<br>ELAPSED LIVE TIME(SEC): 60000.00<br>ANALYST :MXA1       |   |
| MS/MSD<br>ID : 0244-B<br>ISOTOPE : PU-9/0<br>PCI/G : 4.178E+01             | LCS/LCSD<br>ID : 0244-B<br>ISOTOPE : PU-9/0<br>PCI/G : 4.178E+01 | TRACER<br>ID : 1374-A<br>ISOTOPE : PU242<br>NOMINAL : 3.38543 dpm<br>RESULTS : 3.22203 dpm | LIB FILE : ENV_ALPHA_PU.N<br>BKG FILE : B242.CNF;70<br>BKG DATE : 17-JAN-2010<br>EFF FILE : W242.CNF;24<br>CAL DATE : 28-DEC-2009 |

NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| PU-9/0  | 5155.000 | 3.000      | 3.000    | 0.000    | 3.4797 | 99.90000 | 3.73E-03       | 2.16E-03    | 1.01E-02  | 2.35E-02  | 2.15E-03  |
| PU-236  | 5749.000 | 0.000      | -1.000   | 1.000    | 2.1286 | 100.0000 | -1.24E-03      | 1.76E-03    | 6.14E-03  | 1.57E-02  | 1.76E-03  |
| PU-238  | 5499.000 | 0.000      | -1.000   | 1.000    | 2.9680 | 99.90000 | -1.24E-03      | 1.76E-03    | 8.58E-03  | 2.05E-02  | 1.76E-03  |
| PU242   | 4890.000 | 1230.000   | 1229.000 | 1.000    | 1.0000 | 100.0000 | 1.52E+00       | 8.63E-02    | 2.89E-03  | 9.14E-03  | 4.35E-02  |
| PU-244  | 4589.000 | 10.000     | 10.000   | 0.000    | 5.2050 | 99.90000 | 1.24E-02       | 3.97E-03    | 1.50E-02  | 3.34E-02  | 3.93E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)  
NOTE: Sg of PU242 calculated as sqrt(BKG AREA)



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941752  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S1202015739\_PU  
SAMPLE QTY: 1.250 G

DETECTOR NUMBER :79436  
AVERAGE %EFFICIENCY :37.2411  
% YIELD : 95.021

COUNT DATE:20-JAN-2010 16:37:19  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : PU-9/0  
PCI/G : 4.178E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : PU-9/0  
PCI/G : 4.178E+01

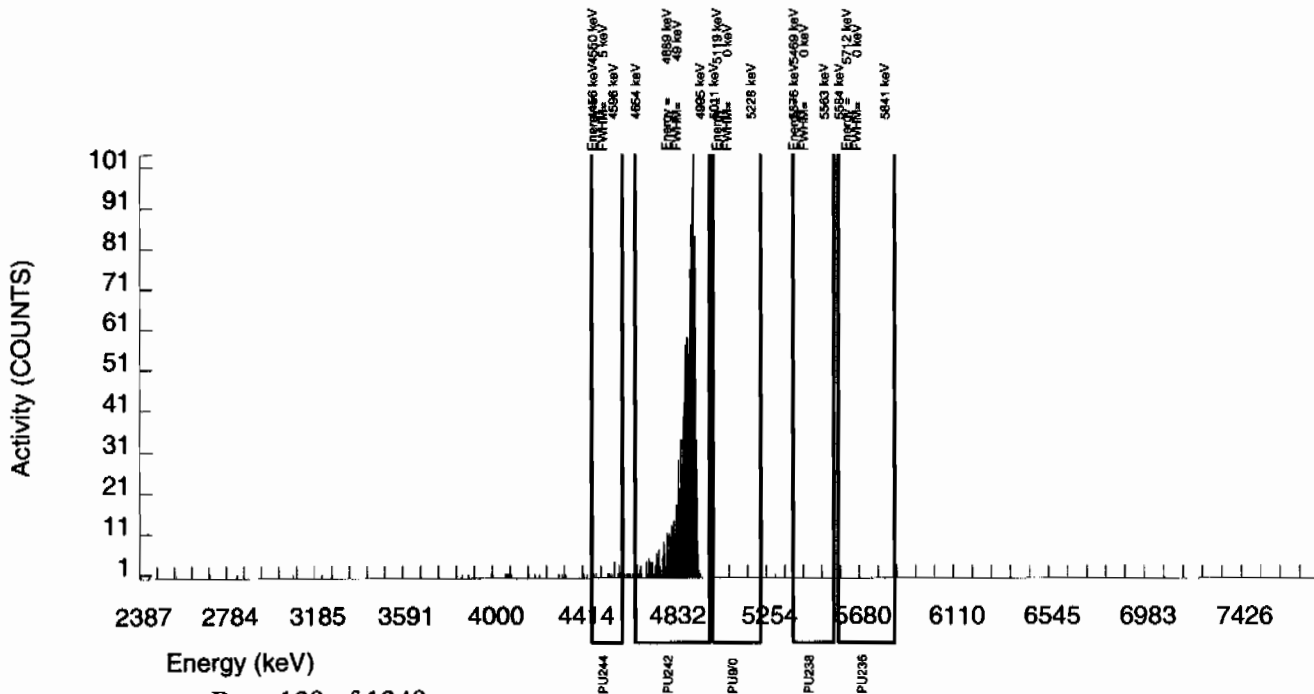
TRACER  
ID : 1374-A  
ISOTOPE : PU242  
NOMINAL : 3.38543 dpm  
RESULTS : 3.21687 dpm

LIB FILE : ENV\_ALPHA\_PU.N  
BKG FILE : B243.CNF;70  
BKG DATE : 17-JAN-2010  
EFF FILE : W243.CNF;24  
CAL DATE : 28-DEC-2009

NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| PU-9/0  | 5155.000 | 0.000      | 0.000    | 0.000    | 3.4797 | 99.90000 | 0.00E+00       | 1.02E-03    | 8.25E-03  | 1.93E-02  | 1.02E-03  |
| PU-236  | 5749.000 | 0.000      | 0.000    | 0.000    | 2.1286 | 100.0000 | 0.00E+00       | 1.03E-03    | 5.04E-03  | 1.28E-02  | 1.03E-03  |
| PU-238  | 5499.000 | 0.000      | 0.000    | 0.000    | 2.9680 | 99.90000 | 0.00E+00       | 1.02E-03    | 7.04E-03  | 1.68E-02  | 1.02E-03  |
| PU242   | 4890.000 | 1199.000   | 1198.000 | 1.000    | 1.0000 | 100.0000 | 1.22E+00       | 7.15E-02    | 2.37E-03  | 7.50E-03  | 3.53E-02  |
| PU-244  | 4589.000 | 13.000     | 12.000   | 1.000    | 5.2050 | 99.90000 | 1.22E-02       | 3.86E-03    | 1.23E-02  | 2.74E-02  | 3.81E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)  
NOTE: Sg of PU242 calculated as sqrt(BKG AREA)



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941752  
SAMPLE DATE : 19-JAN-2010 00:00:00

SAMPLE ID : S1202015740\_PU  
SAMPLE QTY: 0.098 G

DETECTOR NUMBER :79437  
AVERAGE %EFFICIENCY :37.3769  
% YIELD : 105.898

COUNT DATE:20-JAN-2010 16:37:21  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-B  
ISOTOPE : PU-9/0  
PCI/G : 4.178E+01

LCS/LCSD  
ID : 0244-B  
ISOTOPE : PU-9/0  
PCI/G : 4.178E+01

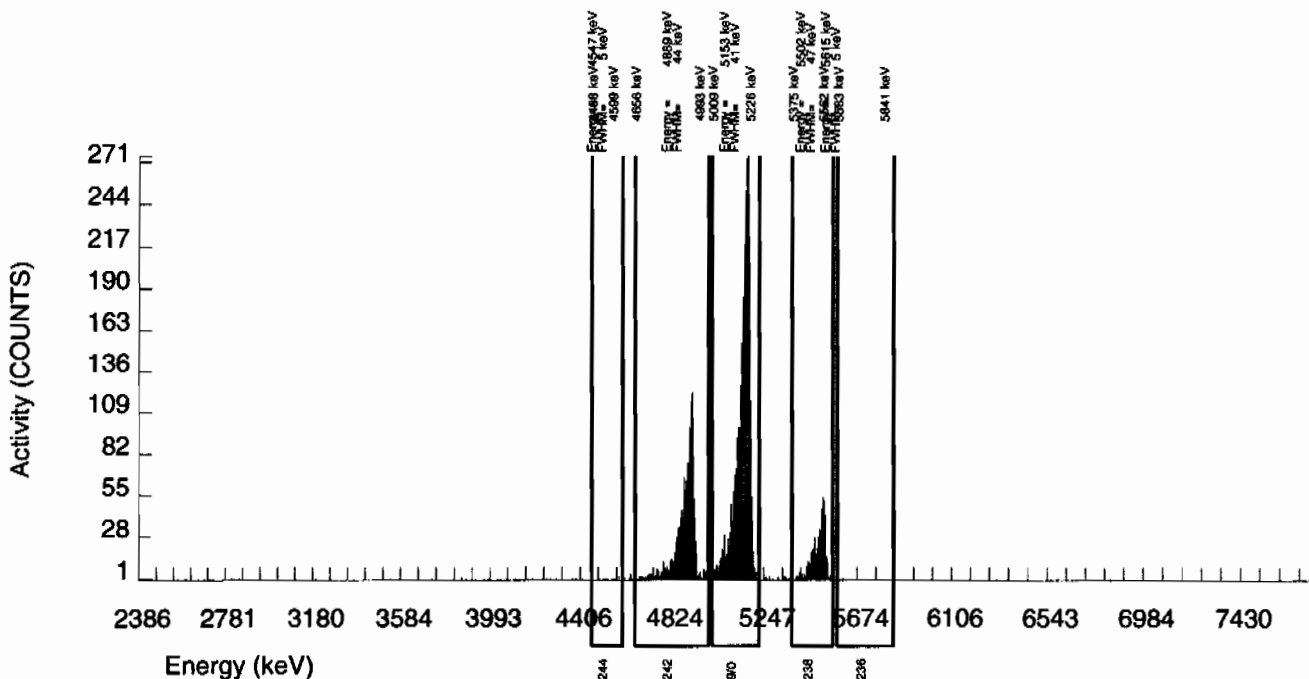
TRACER  
ID : 1374-A  
ISOTOPE : PU242  
NOMINAL : 3.38543 dpm  
RESULTS : 3.58510 dpm

LIB FILE : ENV\_ALPHA\_PU.N  
BKG FILE : B244.CNF;70  
BKG DATE : 17-JAN-2010  
EFF FILE : W244.CNF;24  
CAL DATE : 28-DEC-2009

NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| PU-9/0  | 5155.000 | 2989.000   | 2989.000 | 0.000    | 3.4797 | 99.90000 | 3.47E+01       | 1.79E+00    | 9.41E-02  | 2.20E-01  | 6.36E-01  |
| PU-236  | 5749.000 | 1.000      | -1.000   | 2.000    | 2.1286 | 100.0000 | -1.16E-02      | 2.01E-02    | 5.75E-02  | 1.46E-01  | 2.01E-02  |
| PU-238  | 5499.000 | 516.000    | 516.000  | 0.000    | 2.9680 | 99.90000 | 6.00E+00       | 3.92E-01    | 8.03E-02  | 1.92E-01  | 2.64E-01  |
| PU242   | 4890.000 | 1341.000   | 1340.000 | 1.000    | 1.0000 | 100.0000 | 1.56E+01       | 8.63E-01    | 2.70E-02  | 8.55E-02  | 4.25E-01  |
| PU-244  | 4589.000 | 14.000     | 14.000   | 0.000    | 5.2050 | 99.90000 | 1.63E-01       | 4.42E-02    | 1.41E-01  | 3.13E-01  | 4.35E-02  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)  
NOTE: Sg of PU242 calculated as sqrt(BKG AREA)



# Radiochemistry Batch Checklist, Rev10

Batch# 941758 Product: U Date: 1/25/10

| Criteria:   | Yes | No | Comments       |
|---|-----|----|----------------|
| Sample Solids are less than or equal to 100 mg for GAB.   |     |    | NIA            |
| Samples have been blank corrected (if required)   | ✓   |    |                |
| If activity less 10* MDA/ MDC, error is 150% or less of sample activity. If greater 10* MDA/ MDC, error is 40% or less. If below the MDA/ MDC, error is okay. | ✓   |    |                |
| Instrument source check is within limits.   | ✓   |    |                |
| Instrument bkg check is within limits.  | ✓   |    |                |
| Method RDL/ LLD has been met.   | ✓   |    |                |
| If duplicate activities are less 5* MDA/ MDC, then RPD is 100% or less. If greater 5* MDA/ MDC, then RPD 20% or less. If below the MDA/ MDC, the RPD is 0%.   | ✓   |    |                |
| Or meets the client's required RER acceptance criteria.   |     |    |                |
| Tracer yield is 15-125% . Carrier yield 25-125%.  | ✓   |    | case narrative |
| Or meets the client's contract acceptance criteria.   |     |    |                |
| Method blank is less than the RDL/ LLD.   | ✓   |    | case narrative |
| (If rad samples, < 5% of lowest activity)   | ✓   |    |                |
| Sample was run within hold time.  | ✓   |    |                |
| Sample was correctly preserved if required.   |     |    | NIA            |
| Smears Taken for Radioactive batches.   |     |    | NIA            |
| Method Spike and LCS are within 75-125% or meets the client's contract acceptance criteria.   | ✓   |    |                |
| No blank spaces on data forms.  |     |    |                |
| All line outs initialed and dated.  | ✓   |    |                |
| No transcription errors are apparent.   |     |    |                |
| Aux data is correct.  |     |    | NIA            |
| Client Special requirements page has been checked.  | ✓   |    |                |
| Raw Data and/ or spectrum are included and properly stashed.  | ✓   |    |                |
| QC data entered into QC database and batch is in REVW   | ✓   |    |                |
| Hit notification complete (if necessary)  |     |    | NIA            |
| Batch entered into Case Narrative.  | ✓   |    |                |
| Batch Data Exception Reports (DER) completed, if applicable.  |     |    | NIA            |
| Batch Data Exception Reports (DER) second reviewed and disposition verified to be completed.  |     |    | NIA            |
| Aliquot Correction completed if required.   |     |    | NIA            |
| Review sample historical results if available (If REMP, results above MDC have been verified by historical results, recount or re-analysis.)                  | ✓   |    |                |

GEL Laboratories, LLC

RADchecklistrev10, revised 1/13/2010

Primary Review Performed By: Jep L L - 1/25/10

Secondary Review Performed By: mu/ on 1/27/10

1/30 2/10

LANL

# Uranium Que Sheet

14-JAN-10

Batch #: 941758 Analyst: MXA1 First Client Due Date: 10-FEB-10 Internal Due Date: 30-JAN-10  
 Tracer Isotope: U-232 U-236 Tracer Code: 7833-H Expiration Date: 12/9/10 Vol: 0.144  
 LCS Isotope: U-238 LCS Code: SUM 044-A Expiration Date: 10/31/20 Vol: 0.13  
 Spike Isotope: U-238 1/9/10 Spike Code: N/A Expiration Date: N/A Vol: N/A  
 Prep Date: 1/9/10 Initials: MDA Pipet ID: 2971058 Balance ID: 20110272  
 Witness: KM 1-19-10

| Sample ID    | Client Description         | Type   | Hazard Code | Min CRDL | Matrix     | Client     | Collection Date | Pos. | Label # | Weight Aliquot | U Det # |
|--------------|----------------------------|--------|-------------|----------|------------|------------|-----------------|------|---------|----------------|---------|
| 244630001-1  | RE12-10-7262               | SAMPLE |             | .1 pCi/g | SOIL       | LANL010    | 08-JAN-10       | 1    |         | 0.522          | 1       |
| 244630002-1  | RE12-10-7266               | SAMPLE |             | .1 pCi/g | SOIL       | LANL010    | 08-JAN-10       | 2    |         | 0.501          | 2       |
| 244630003-1  | RE12-10-7258               | SAMPLE |             | .1 pCi/g | SOIL       | LANL010    | 08-JAN-10       | 3    |         | 0.516          | 3       |
| 244630004-1  | RE12-10-7268               | SAMPLE |             | .1 pCi/g | SOIL       | LANL010    | 08-JAN-10       | 4    |         | 0.509          | 4       |
| 244630005-1  | RE12-10-7265               | SAMPLE |             | .1 pCi/g | SOIL       | LANL010    | 08-JAN-10       | 5    |         | 0.525          | 5       |
| 244630006-1  | RE12-10-7261               | SAMPLE |             | .1 pCi/g | SOIL       | LANL010    | 08-JAN-10       | 6    |         | 0.503          | 6       |
| 244630007-1  | RE12-10-7259               | SAMPLE |             | .1 pCi/g | SOIL       | LANL010    | 08-JAN-10       | 7    |         | 0.539          | 7       |
| 244630008-1  | RE12-10-7263               | SAMPLE |             | .1 pCi/g | SOIL       | LANL010    | 08-JAN-10       | 8    |         | 0.538          | 8       |
| 244630009-1  | RE12-10-7271               | SAMPLE |             | .1 pCi/g | SOIL       | LANL010    | 08-JAN-10       | 9    |         | 0.520          | 9       |
| 244630010-1  | RE12-10-7260               | SAMPLE |             | .1 pCi/g | SOIL       | LANL010    | 08-JAN-10       | 10   |         | 0.525          | 10      |
| 244630011-1  | RE12-10-7267               | SAMPLE |             | .1 pCi/g | SOIL       | LANL010    | 08-JAN-10       | 11   |         | 0.511          | 11      |
| 244630012-1  | RE12-10-7264               | SAMPLE |             | .1 pCi/g | SOIL       | LANL010    | 08-JAN-10       | 12   |         | 0.521          | 12      |
| 244630013-1  | RE12-10-7270               | SAMPLE |             | .1 pCi/g | SOIL       | LANL010    | 08-JAN-10       | 13   |         | 0.522          | 13      |
| 244630014-1  | RE12-10-7269               | SAMPLE |             | .1 pCi/g | SOIL       | LANL010    | 08-JAN-10       | 14   |         | 0.506          | 14      |
| 244630015-1  | RE12-10-7283               | SAMPLE |             | .1 pCi/g | SOIL       | LANL010    | 08-JAN-10       | 15   |         | 0.515          | 15      |
| 244630016-1  | RE12-10-7282               | SAMPLE |             | .1 pCi/g | SOIL       | LANL010    | 08-JAN-10       | 16   |         | 0.532          | 16      |
| 1202015747-1 | MB for batch 941758        | MB     |             | .1 pCi/g | QC ACCOUNT | QC ACCOUNT |                 | 17   |         | 1.00           | 150     |
| 1202015748-1 | RE12-10-7259(244630007DUP) | DUP    |             | .1 pCi/g | SOIL       | QC ACCOUNT | 08-JAN-10       | 18   |         | 0.547          | 121     |
| 1202015749-1 | LCS for batch 941758       | LCS    |             | .1 pCi/g | SOIL       | QC ACCOUNT |                 | 19   |         | 0.105          | 122     |

Choose SOP used: GL-RAD-A-011

Solid Sample Dissolution by: LEACH or DIGESTION

Circle One

Data Reviewed By: Jp MRC 1/25/10



# Blank Correction Report

**Batch ID 941758**

| GEL Sample ID | Client sample ID | Parameter       | Aliquot | Result | TPU     | MDA    | Aliquot Corrected Blank Result | Units | Activity <5X Corrected Blank |
|---------------|------------------|-----------------|---------|--------|---------|--------|--------------------------------|-------|------------------------------|
| 1202015748    | DUP              | Uranium-233/234 | 0.547 g | 0.792  | 0.0814  | 0.128  | .021755027                     | pCi/g | NO                           |
|               |                  | Uranium-235/236 | 0.547 g | 0.0512 | 0.0166  | 0.0797 | .027056673                     | pCi/g | YES                          |
|               |                  | Uranium-238     | 0.547 g | 0.746  | 0.0775  | 0.0745 | .032906764                     | pCi/g | NO                           |
| 1202015749    | LCS              | Uranium-233/234 | 0.105 g | 6.51   | 0.612   | 0.582  | .113333333                     | pCi/g | NO                           |
|               |                  | Uranium-235/236 | 0.105 g | 0.510  | 0.116   | 0.361  | .140952381                     | pCi/g | YES                          |
|               |                  | Uranium-238     | 0.105 g | 5.91   | 0.565   | 0.337  | .171428571                     | pCi/g | NO                           |
| 1202015747    | MB               | Uranium-233/234 | 1.00 g  | 0.0119 | 0.0057  | 0.0619 | .0119                          | pCi/g | YES                          |
|               |                  | Uranium-235/236 | 1.00 g  | 0.0148 | 0.00613 | 0.0384 | .0148                          | pCi/g | YES                          |
|               |                  | Uranium-238     | 1.00 g  | 0.018  | 0.00674 | 0.0359 | .018                           | pCi/g | YES                          |
| 244630001     | RE12-10-7262     | Uranium-233/234 | 0.522 g | 0.859  | 0.0832  | 0.116  | .022796935                     | pCi/g | NO                           |
|               |                  | Uranium-235/236 | 0.522 g | 0.0648 | 0.0201  | 0.0719 | .028352490                     | pCi/g | YES                          |
|               |                  | Uranium-238     | 0.522 g | 1.06   | 0.0978  | 0.0672 | .034482759                     | pCi/g | NO                           |
| 244630002     | RE12-10-7266     | Uranium-233/234 | 0.501 g | 1.99   | 0.173   | 0.143  | .023752495                     | pCi/g | NO                           |
|               |                  | Uranium-235/236 | 0.501 g | 0.176  | 0.0341  | 0.0685 | .029540918                     | pCi/g | NO                           |
|               |                  | Uranium-238     | 0.501 g | 2.96   | 0.243   | 0.0827 | .035928144                     | pCi/g | NO                           |
| 244630003     | RE12-10-7258     | Uranium-233/234 | 0.516 g | 0.948  | 0.0876  | 0.106  | .023062016                     | pCi/g | NO                           |
|               |                  | Uranium-235/236 | 0.516 g | 0.059  | 0.0163  | 0.0656 | .028682171                     | pCi/g | YES                          |
|               |                  | Uranium-238     | 0.516 g | 0.996  | 0.0911  | 0.0613 | .034883721                     | pCi/g | NO                           |
| 244630004     | RE12-10-7268     | Uranium-233/234 | 0.509 g | 1.58   | 0.136   | 0.117  | .023379175                     | pCi/g | NO                           |
|               |                  | Uranium-235/236 | 0.509 g | 0.159  | 0.0303  | 0.0729 | .029076621                     | pCi/g | NO                           |
|               |                  | Uranium-238     | 0.509 g | 2.57   | 0.208   | 0.0681 | .035363458                     | pCi/g | NO                           |
| 244630005     | RE12-10-7265     | Uranium-233/234 | 0.525 g | 0.905  | 0.0813  | 0.090  | .022666667                     | pCi/g | NO                           |
|               |                  | Uranium-235/236 | 0.525 g | 0.108  | 0.021   | 0.0559 | .028190476                     | pCi/g | YES                          |
|               |                  | Uranium-238     | 0.525 g | 0.988  | 0.087   | 0.0522 | .034285714                     | pCi/g | NO                           |
| 244630006     | RE12-10-7261     | Uranium-233/234 | 0.503 g | 0.969  | 0.0965  | 0.141  | .023658052                     | pCi/g | NO                           |
|               |                  | Uranium-235/236 | 0.503 g | 0.0787 | 0.0218  | 0.0874 | .029423459                     | pCi/g | YES                          |
|               |                  | Uranium-238     | 0.503 g | 0.991  | 0.098   | 0.0817 | .035785288                     | pCi/g | NO                           |
| 244630007     | RE12-10-7259     | Uranium-233/234 | 0.539 g | 0.809  | 0.0778  | 0.104  | .022077922                     | pCi/g | NO                           |
|               |                  | Uranium-235/236 | 0.539 g | 0.0834 | 0.0212  | 0.0649 | .027458256                     | pCi/g | YES                          |
|               |                  | Uranium-238     | 0.539 g | 0.776  | 0.0754  | 0.0606 | .033395176                     | pCi/g | NO                           |
| 244630008     | RE12-10-7263     | Uranium-233/234 | 0.538 g | 0.883  | 0.0845  | 0.113  | .022118959                     | pCi/g | NO                           |
|               |                  | Uranium-235/236 | 0.538 g | 0.0767 | 0.0204  | 0.0702 | .027508294                     | pCi/g | YES                          |
|               |                  | Uranium-238     | 0.538 g | 0.887  | 0.0851  | 0.0656 | .033457249                     | pCi/g | NO                           |
| 244630009     | RE12-10-7271     | Uranium-233/234 | 0.520 g | 1.87   | 0.153   | 0.104  | .022884615                     | pCi/g | NO                           |
|               |                  | Uranium-235/236 | 0.520 g | 0.124  | 0.025   | 0.0645 | .028461538                     | pCi/g | YES                          |
|               |                  | Uranium-238     | 0.520 g | 4.54   | 0.342   | 0.0602 | .034615385                     | pCi/g | NO                           |
| 244630010     | RE12-10-7260     | Uranium-233/234 | 0.525 g | 1.84   | 0.170   | 0.168  | .022666667                     | pCi/g | NO                           |
|               |                  | Uranium-235/236 | 0.525 g | 0.128  | 0.0322  | 0.104  | .028190476                     | pCi/g | YES                          |
|               |                  | Uranium-238     | 0.525 g | 3.18   | 0.269   | 0.0976 | .034285714                     | pCi/g | NO                           |
| 244630011     | RE12-10-7267     | Uranium-233/234 | 0.511 g | 0.928  | 0.0858  | 0.103  | .023287671                     | pCi/g | NO                           |
|               |                  | Uranium-235/236 | 0.511 g | 0.082  | 0.0201  | 0.0638 | .028962818                     | pCi/g | YES                          |

# Blank Correction Report

| GEL Sample ID | Client sample ID | Parameter       | Allquot | Result | TPU    | MDA    | Allquot<br>Corrected<br>Blank Result | Units | Activity <5X<br>Corrected<br>Blank |
|---------------|------------------|-----------------|---------|--------|--------|--------|--------------------------------------|-------|------------------------------------|
| 244630011     | RE12-10-7267     | Uranium-238     | 0.511 g | 0.998  | 0.0916 | 0.0506 | .035225049                           | pCi/g | NO                                 |
| 244630012     | RE12-10-7264     | Uranium-233/234 | 0.521 g | 1.22   | 0.131  | 0.209  | .022840691                           | pCi/g | NO                                 |
|               |                  | Uranium-235/236 | 0.521 g | 0.0918 | 0.0309 | 0.130  | .028406910                           | pCi/g | YES                                |
|               |                  | Uranium-238     | 0.521 g | 1.88   | 0.183  | 0.121  | .034548944                           | pCi/g | NO                                 |
| 244630013     | RE12-10-7270     | Uranium-233/234 | 0.522 g | 2.16   | 0.188  | 0.149  | .022796935                           | pCi/g | NO                                 |
|               |                  | Uranium-235/236 | 0.522 g | 0.161  | 0.0352 | 0.0927 | .028352490                           | pCi/g | NO                                 |
|               |                  | Uranium-238     | 0.522 g | 3.10   | 0.257  | 0.0866 | .034482759                           | pCi/g | NO                                 |
| 244630014     | RE12-10-7269     | Uranium-233/234 | 0.506 g | 1.32   | 0.120  | 0.132  | .023517787                           | pCi/g | NO                                 |
|               |                  | Uranium-235/236 | 0.506 g | 0.105  | 0.0247 | 0.0818 | .029249012                           | pCi/g | YES                                |
|               |                  | Uranium-238     | 0.506 g | 1.16   | 0.109  | 0.0764 | .035573123                           | pCi/g | NO                                 |
| 244630015     | RE12-10-7283     | Uranium-233/234 | 0.515 g | 1.88   | 0.180  | 0.199  | .023106796                           | pCi/g | NO                                 |
|               |                  | Uranium-235/236 | 0.515 g | 0.143  | 0.0371 | 0.124  | .028737864                           | pCi/g | YES                                |
|               |                  | Uranium-238     | 0.515 g | 3.11   | 0.274  | 0.115  | .034951456                           | pCi/g | NO                                 |
| 244630016     | RE12-10-7282     | Uranium-233/234 | 0.532 g | 1.02   | 0.0975 | 0.126  | .022368421                           | pCi/g | NO                                 |
|               |                  | Uranium-235/236 | 0.532 g | 0.0951 | 0.0229 | 0.0779 | .027819549                           | pCi/g | YES                                |
|               |                  | Uranium-238     | 0.532 g | 1.01   | 0.0967 | 0.0728 | .033834586                           | pCi/g | NO                                 |

GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

|  |   |   |   |  |  |
|--|---|---|---|--|--|
| BATCH NUMBER: 941758<br>SAMPLE DATE : 8-JAN-2010 00:00:00.                 |   |   | SAMPLE ID : S0244630001_UU<br>SAMPLE QTY: 0.522 G   |  |  |
| DETECTOR NUMBER :79451<br>AVERAGE %EFFICIENCY :32.5060<br>% YIELD : 71.061 |   |   | COUNT DATE:23-JAN-2010 11:20:44<br>ELAPSED LIVE TIME(SEC): 59999.99<br>ANALYST :MXA1  |  |  |
| MS/MSD<br>ID : 0244-A<br>ISOTOPE : U-238<br>PCI/G : 5.750E+00              | LCS/LCSD<br>ID : 0244-A<br>ISOTOPE : U-238<br>PCI/G : 5.750E+00 | TRACER<br>ID : 1283-H<br>ISOTOPE : U232<br>NOMINAL : 4.50865 dpm<br>RESULTS : 3.20388 dpm | LIB FILE : ENV_ALPHA_UU.N<br>BKG FILE : B001.CNF;1115<br>BKG DATE : 17-JAN-2010<br>EFF FILE : W001.CNF;380<br>CAL DATE : 4-JAN-2010 |  |  |

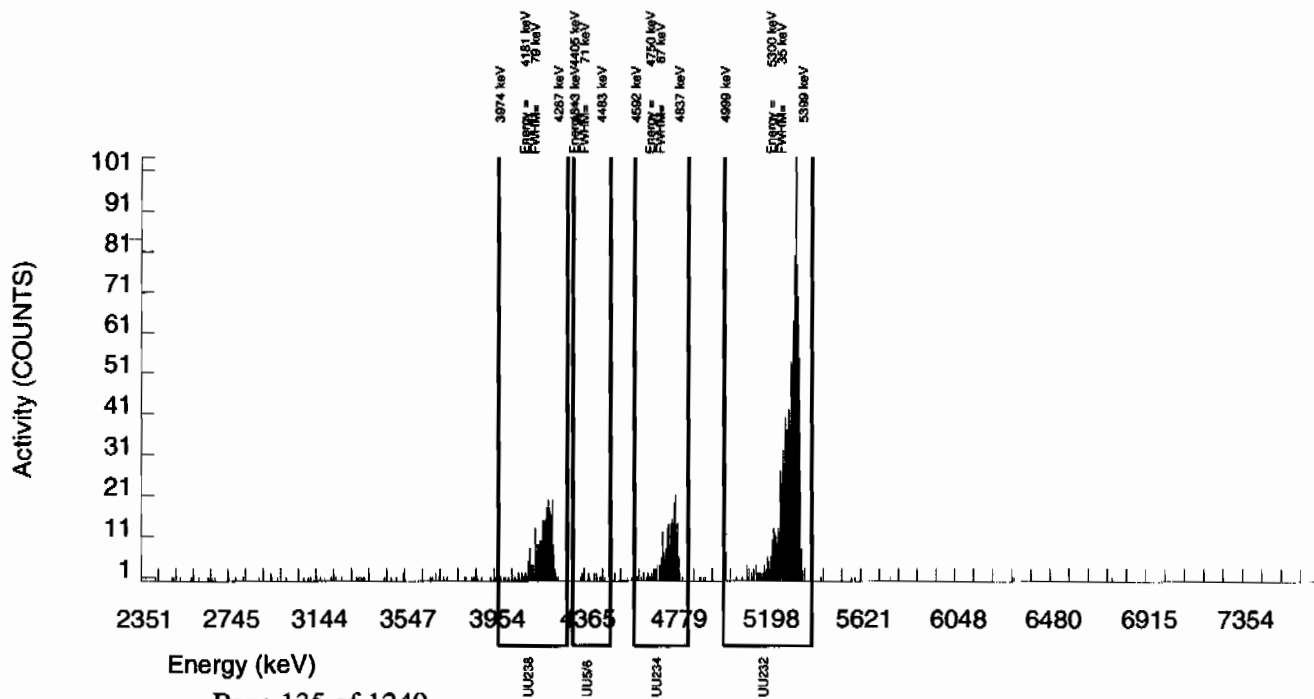
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| U-3/4   | 4763.020 | 231.000    | 229.947  | 0.000    | 6.0782 | 100.0000 | 8.59E-01       | 8.32E-02    | 5.28E-02  | 1.16E-01  | 5.66E-02  |
| U232    | 5302.100 | 1045.000   | 1041.000 | 4.000    | 2.0000 | 100.0000 | 3.89E+00       | 3.01E-01    | 1.74E-02  | 4.49E-02  | 1.21E-01  |
| U-235   | 4391.000 | 16.000     | 14.000   | 2.000    | 2.7628 | 80.90000 | 6.46E-02       | 2.01E-02    | 2.97E-02  | 7.19E-02  | 1.96E-02  |
| U-238   | 4184.730 | 283.000    | 283.000  | 0.000    | 3.2810 | 100.0000 | 1.06E+00       | 9.78E-02    | 2.85E-02  | 6.72E-02  | 6.28E-02  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of U232 calculated as sqrt(BKG AREA)

NOTE: Corrections made to U-3/4 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941758  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630002\_UU  
SAMPLE QTY: 0.501 G

DETECTOR NUMBER :79452  
AVERAGE %EFFICIENCY :29.6879  
% YIELD : 65.847

COUNT DATE:23-JAN-2010 11:20:44  
ELAPSED LIVE TIME(SEC): 59999.99  
ANALYST :MXA1

MS/MSD  
ID : 0244-A  
ISOTOPE : U-238  
PCI/G : 5.750E+00

LCS/LCSD  
ID : 0244-A  
ISOTOPE : U-238  
PCI/G : 5.750E+00

TRACER  
ID : 1283-H  
ISOTOPE : U232  
NOMINAL : 4.50865 dpm  
RESULTS : 2.96883 dpm

LIB FILE : ENV\_ALPHA\_UU.N  
BKG FILE : B002.CNF;1105  
BKG DATE : 17-JAN-2010  
EFF FILE : W002.CNF;326  
CAL DATE : 4-JAN-2010

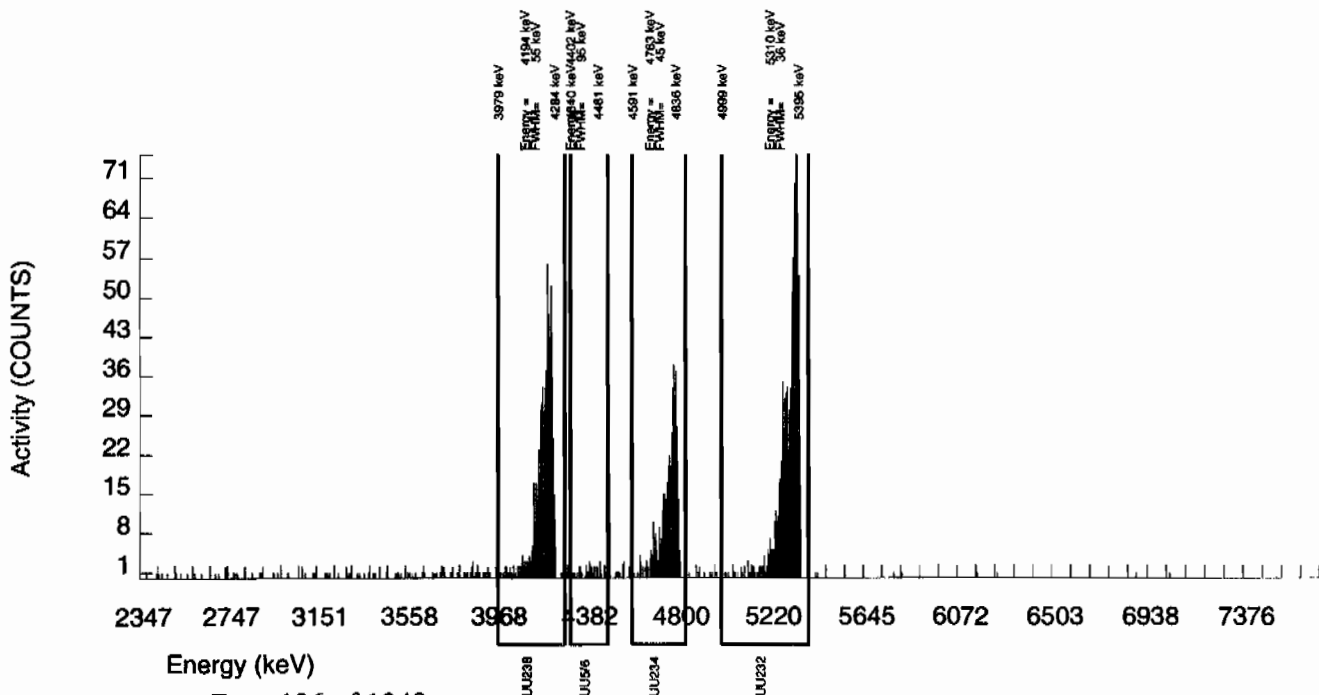
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| U-3/4   | 4763.020 | 435.000    | 433.109  | 1.000    | 6.0782 | 100.0000 | 1.99E+00       | 1.73E-01    | 6.50E-02  | 1.43E-01  | 9.59E-02  |
| U232    | 5302.100 | 884.000    | 881.000  | 3.000    | 1.7321 | 100.0000 | 4.05E+00       | 3.23E-01    | 1.85E-02  | 4.95E-02  | 1.37E-01  |
| U-235   | 4391.000 | 31.000     | 31.000   | 0.000    | 2.7628 | 80.90000 | 1.76E-01       | 3.41E-02    | 3.65E-02  | 8.85E-02  | 3.17E-02  |
| U-238   | 4184.730 | 643.000    | 643.000  | 0.000    | 3.2810 | 100.0000 | 2.96E+00       | 2.43E-01    | 3.51E-02  | 8.27E-02  | 1.17E-01  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of U232 calculated as sqrt(BKG AREA)

NOTE: Corrections made to U-3/4 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941758  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630003\_UU  
SAMPLE QTY: 0.516 G

DETECTOR NUMBER :79453  
AVERAGE %EFFICIENCY :31.1793  
% YIELD : 82.055

COUNT DATE:23-JAN-2010 11:20:44  
ELAPSED LIVE TIME(SEC): 59999.99  
ANALYST :MXA1

MS/MSD  
ID : 0244-A  
ISOTOPE : U-238  
PCI/G : 5.750E+00

LCS/LCSD  
ID : 0244-A  
ISOTOPE : U-238  
PCI/G : 5.750E+00

TRACER  
ID : 1283-H  
ISOTOPE : U232  
NOMINAL : 4.50865 dpm  
RESULTS : 3.69957 dpm

LIB FILE : ENV\_ALPHA\_UU.N  
BKG FILE : B003.CNF;1100  
BKG DATE : 17-JAN-2010  
EFF FILE : W003.CNF;339  
CAL DATE : 4-JAN-2010

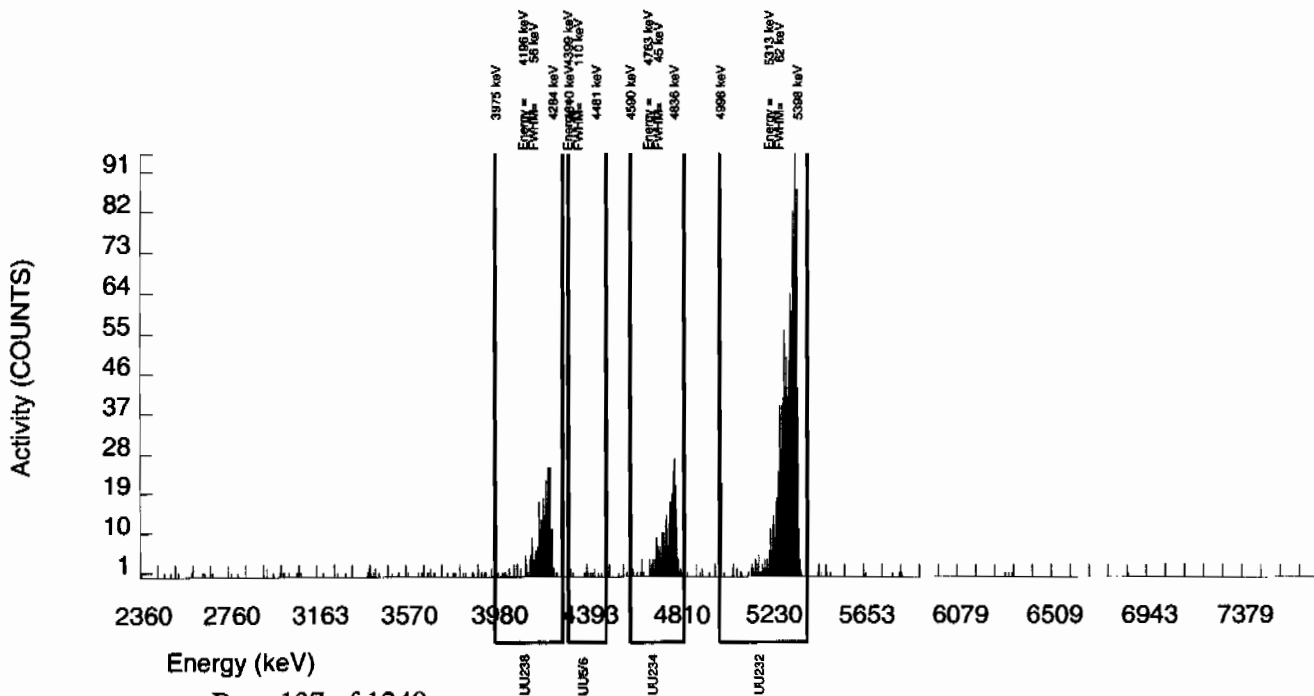
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| U-3/4   | 4763.020 | 279.000    | 277.834  | 0.000    | 6.0782 | 100.0000 | 9.48E-01       | 8.76E-02    | 4.82E-02  | 1.06E-01  | 5.69E-02  |
| U232    | 5302.100 | 1158.000   | 1153.000 | 5.000    | 2.2361 | 100.0000 | 3.94E+00       | 3.00E-01    | 1.77E-02  | 4.47E-02  | 1.16E-01  |
| U-235   | 4391.000 | 14.000     | 14.000   | 0.000    | 2.7628 | 80.90000 | 5.90E-02       | 1.63E-02    | 2.71E-02  | 6.56E-02  | 1.58E-02  |
| U-238   | 4184.730 | 292.000    | 292.000  | 0.000    | 3.2810 | 100.0000 | 9.96E-01       | 9.11E-02    | 2.60E-02  | 6.13E-02  | 5.83E-02  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of U232 calculated as sqrt(BKG AREA)

NOTE: Corrections made to U-3/4 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

|  |   |   |   |
|--|---|---|---|
| BATCH NUMBER: 941758<br>SAMPLE DATE : 8-JAN-2010 00:00:00.                 |   | SAMPLE ID : S0244630004_UU<br>SAMPLE QTY: 0.509 G   |   |
| DETECTOR NUMBER :68548<br>AVERAGE %EFFICIENCY :30.7853<br>% YIELD : 75.825 |   | COUNT DATE:23-JAN-2010 11:20:44<br>ELAPSED LIVE TIME(SEC): 59999.99<br>ANALYST :MXA1      |   |
| MS/MSD<br>ID : 0244-A<br>ISOTOPE : U-238<br>PCI/G : 5.750E+00              | LCS/LCSD<br>ID : 0244-A<br>ISOTOPE : U-238<br>PCI/G : 5.750E+00 | TRACER<br>ID : 1283-H<br>ISOTOPE : U232<br>NOMINAL : 4.50865 dpm<br>RESULTS : 3.41870 dpm | LIB FILE : ENV_ALPHA_UU.N<br>BKG FILE : B004.CNF;1109<br>BKG DATE : 17-JAN-2010<br>EFF FILE : W004.CNF;328<br>CAL DATE : 4-JAN-2010 |

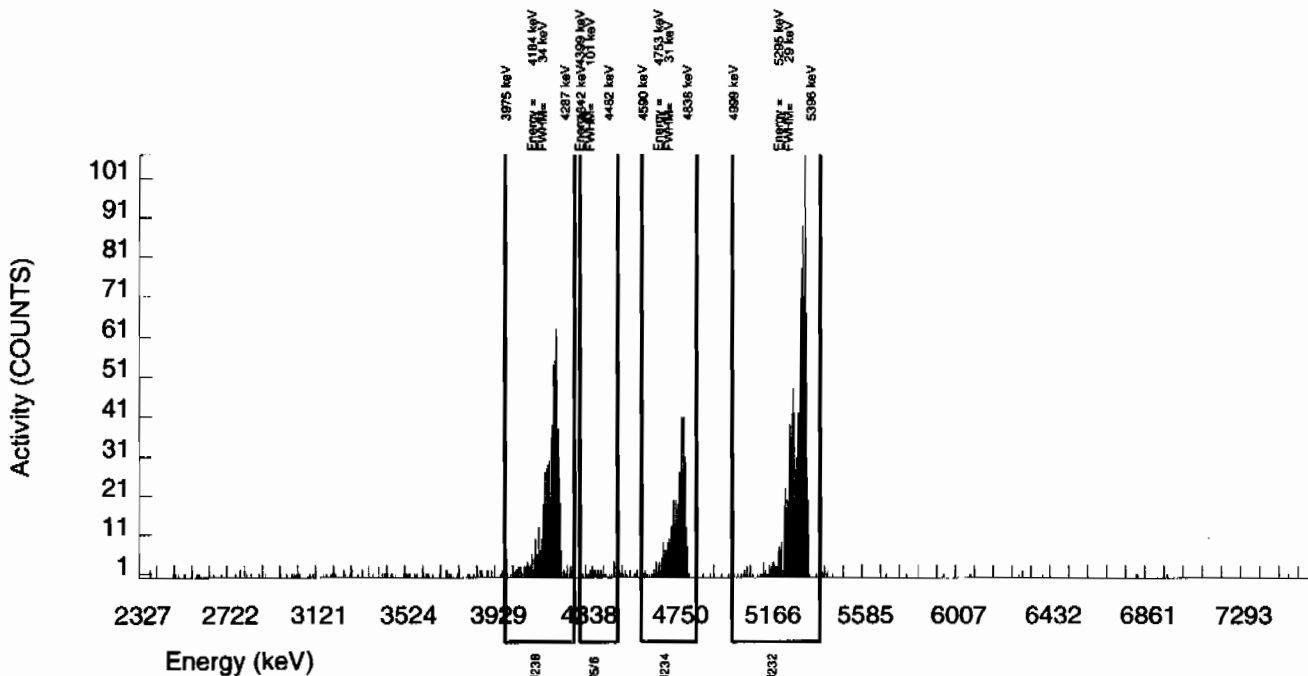
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| U-3/4   | 4763.020 | 421.000    | 416.936  | 3.000    | 6.0782 | 100.0000 | 1.58E+00       | 1.36E-01    | 5.36E-02  | 1.17E-01  | 7.80E-02  |
| U232    | 5302.100 | 1058.000   | 1052.000 | 6.000    | 2.4495 | 100.0000 | 3.99E+00       | 3.09E-01    | 2.16E-02  | 5.35E-02  | 1.24E-01  |
| U-235   | 4391.000 | 35.000     | 34.000   | 1.000    | 2.7628 | 80.90000 | 1.59E-01       | 3.03E-02    | 3.01E-02  | 7.29E-02  | 2.81E-02  |
| U-238   | 4184.730 | 684.000    | 679.000  | 5.000    | 3.2810 | 100.0000 | 2.57E+00       | 2.08E-01    | 2.89E-02  | 6.81E-02  | 9.95E-02  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of U232 calculated as sqrt(BKG AREA)

NOTE: Corrections made to U-3/4 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

|  |   |   |   |
|--|---|---|---|
| BATCH NUMBER: 941758<br>SAMPLE DATE : 8-JAN-2010 00:00:00.                 |   | SAMPLE ID : S0244630005_UU<br>SAMPLE QTY: 0.525 G   |   |
| DETECTOR NUMBER :79454<br>AVERAGE %EFFICIENCY :32.0695<br>% YIELD : 92.093 |   | COUNT DATE:23-JAN-2010 11:20:44<br>ELAPSED LIVE TIME(SEC): 59999.99<br>ANALYST :MXA1      |   |
| MS/MSD<br>ID : 0244-A<br>ISOTOPE : U-238<br>PCI/G : 5.750E+00              | LCS/LCSD<br>ID : 0244-A<br>ISOTOPE : U-238<br>PCI/G : 5.750E+00 | TRACER<br>ID : 1283-H<br>ISOTOPE : U232<br>NOMINAL : 4.50865 dpm<br>RESULTS : 4.15217 dpm | LIB FILE : ENV_ALPHA_UU.N<br>BKG FILE : B005.CNF;1095<br>BKG DATE : 17-JAN-2010<br>EFF FILE : W005.CNF;335<br>CAL DATE : 4-JAN-2010 |

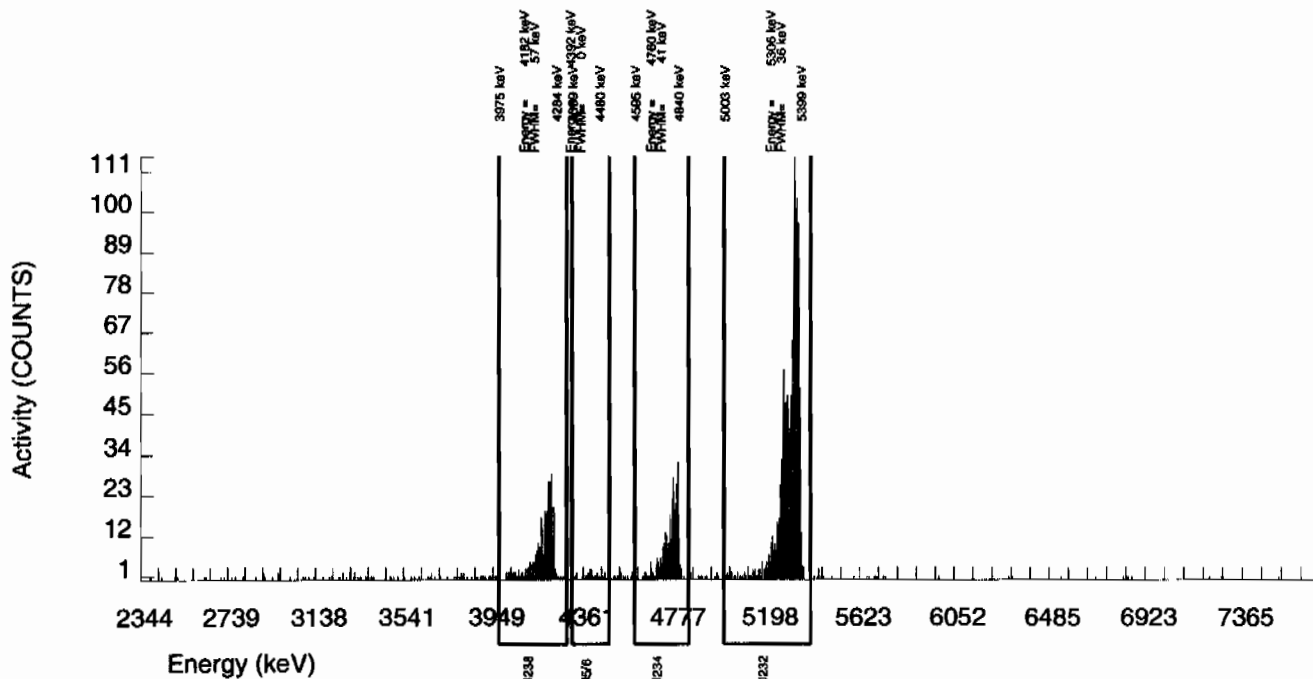
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| U-3/4   | 4763.020 | 315.000    | 311.654  | 2.000    | 6.0782 | 100.0000 | 9.05E-01       | 8.13E-02    | 4.11E-02  | 9.00E-02  | 5.16E-02  |
| U232    | 5302.100 | 1332.000   | 1331.000 | 1.000    | 1.0000 | 100.0000 | 3.87E+00       | 2.88E-01    | 6.76E-03  | 2.14E-02  | 1.06E-01  |
| U-235   | 4391.000 | 30.000     | 30.000   | 0.000    | 2.7628 | 80.90000 | 1.08E-01       | 2.10E-02    | 2.31E-02  | 5.59E-02  | 1.97E-02  |
| U-238   | 4184.730 | 340.000    | 340.000  | 0.000    | 3.2810 | 100.0000 | 9.88E-01       | 8.70E-02    | 2.22E-02  | 5.22E-02  | 5.36E-02  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of U232 calculated as sqrt(BKG AREA)

NOTE: Corrections made to U-3/4 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

|  |   |   |   |
|--|---|---|---|
| BATCH NUMBER: 941758<br>SAMPLE DATE : 8-JAN-2010 00:00:00.                 |   | SAMPLE ID : S0244630006_UU<br>SAMPLE QTY: 0.503 G   |   |
| DETECTOR NUMBER :79455<br>AVERAGE %EFFICIENCY :30.5320<br>% YIELD : 64.536 |   | COUNT DATE:23-JAN-2010 11:20:44<br>ELAPSED LIVE TIME(SEC): 59999.99<br>ANALYST :MXA1      |   |
| MS/MSD<br>ID : 0244-A<br>ISOTOPE : U-238<br>PCI/G : 5.750E+00              | LCS/LCSD<br>ID : 0244-A<br>ISOTOPE : U-238<br>PCI/G : 5.750E+00 | TRACER<br>ID : 1283-H<br>ISOTOPE : U232<br>NOMINAL : 4.50865 dpm<br>RESULTS : 2.90969 dpm | LIB FILE : ENV_ALPHA_UU.N<br>BKG FILE : B006.CNF;1108<br>BKG DATE : 17-JAN-2010<br>EFF FILE : W006.CNF;359<br>CAL DATE : 4-JAN-2010 |

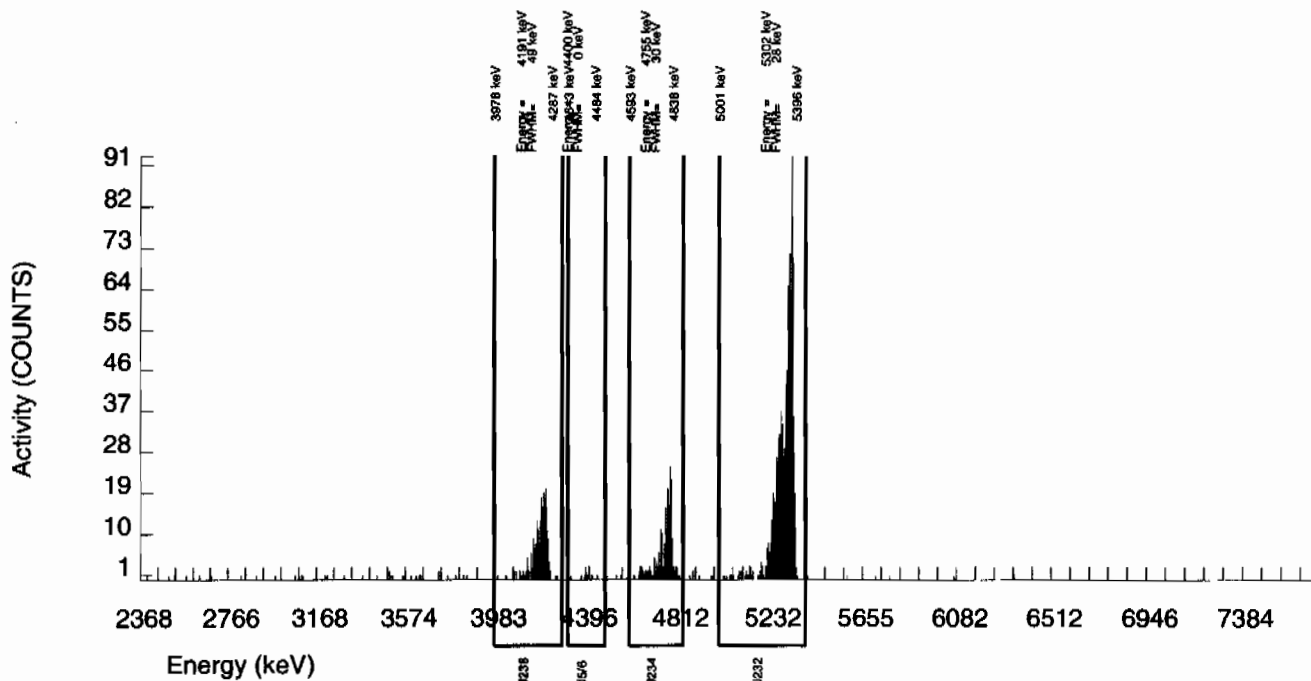
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| U-3/4   | 4763.020 | 215.000    | 213.102  | 1.000    | 6.0782 | 100.0000 | 9.69E-01       | 9.65E-02    | 6.43E-02  | 1.41E-01  | 6.67E-02  |
| U232    | 5302.100 | 889.000    | 888.000  | 1.000    | 1.0000 | 100.0000 | 4.04E+00       | 3.21E-01    | 1.06E-02  | 3.35E-02  | 1.36E-01  |
| U-235   | 4391.000 | 14.000     | 14.000   | 0.000    | 2.7628 | 80.90000 | 7.87E-02       | 2.18E-02    | 3.61E-02  | 8.74E-02  | 2.10E-02  |
| U-238   | 4184.730 | 218.000    | 218.000  | 0.000    | 3.2810 | 100.0000 | 9.91E-01       | 9.80E-02    | 3.47E-02  | 8.17E-02  | 6.71E-02  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of U232 calculated as sqrt(BKG AREA)

NOTE: Corrections made to U-3/4 net area due to tracer impurity





GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941758  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630007\_UU  
SAMPLE QTY: 0.539 G

DETECTOR NUMBER :67607  
AVERAGE %EFFICIENCY :29.6523  
% YIELD : 83.587

COUNT DATE:23-JAN-2010 11:20:46  
ELAPSED LIVE TIME(SEC): 59999.99  
ANALYST :MXA1

MS/MSD  
ID : 0244-A  
ISOTOPE : U-238  
PCI/G : 5.750E+00

LCS/LCSD  
ID : 0244-A  
ISOTOPE : U-238  
PCI/G : 5.750E+00

TRACER  
ID : 1283-H  
ISOTOPE : U232  
NOMINAL : 4.50865 dpm  
RESULTS : 3.76863 dpm

LIB FILE : ENV\_ALPHA\_UU.N  
BKG FILE : B007.CNF;1103  
BKG DATE : 17-JAN-2010  
EFF FILE : W007.CNF;310  
CAL DATE : 4-JAN-2010

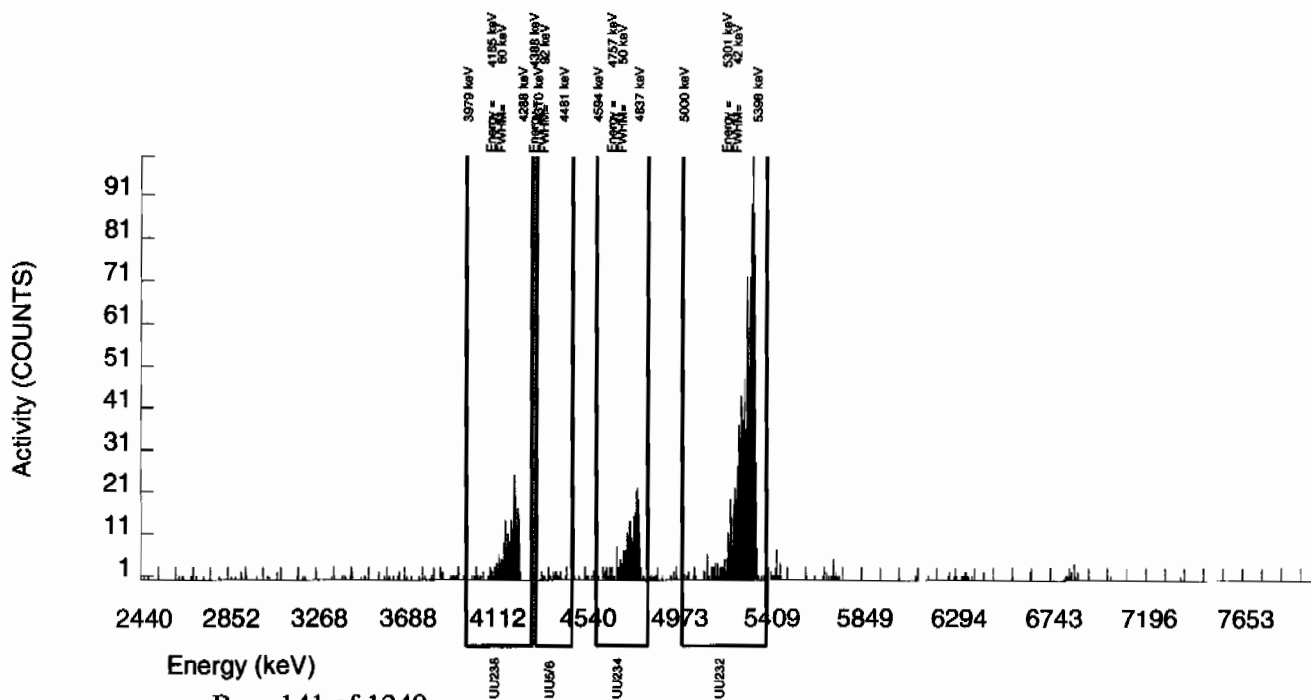
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| U-3/4   | 4763.020 | 244.000    | 239.870  | 3.000    | 6.0782 | 100.0000 | 8.09E-01       | 7.78E-02    | 4.77E-02  | 1.04E-01  | 5.29E-02  |
| U232    | 5302.100 | 1136.000   | 1117.000 | 19.000   | 4.3589 | 100.0000 | 3.77E+00       | 2.90E-01    | 3.42E-02  | 7.75E-02  | 1.15E-01  |
| U-235   | 4391.000 | 22.000     | 20.000   | 2.000    | 2.7628 | 80.90000 | 8.34E-02       | 2.12E-02    | 2.68E-02  | 6.49E-02  | 2.04E-02  |
| U-238   | 4184.730 | 233.000    | 230.000  | 3.000    | 3.2810 | 100.0000 | 7.76E-01       | 7.54E-02    | 2.57E-02  | 6.06E-02  | 5.18E-02  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of U232 calculated as sqrt(BKG AREA)

NOTE: Corrections made to U-3/4 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

|  |   |   |   |
|--|---|---|---|
| BATCH NUMBER: 941758<br>SAMPLE DATE : 8-JAN-2010 00:00:00.                 |   | SAMPLE ID : S0244630008_UU<br>SAMPLE QTY: 0.538 G   |   |
| DETECTOR NUMBER :78788<br>AVERAGE %EFFICIENCY :31.9627<br>% YIELD : 71.783 |   | COUNT DATE:23-JAN-2010 11:20:46<br>ELAPSED LIVE TIME(SEC): 59999.99<br>ANALYST :MXA1      |   |
| MS/MSD<br>ID : 0244-A<br>ISOTOPE : U-238<br>PCI/G : 5.750E+00              | LCS/LCSD<br>ID : 0244-A<br>ISOTOPE : U-238<br>PCI/G : 5.750E+00 | TRACER<br>ID : 1283-H<br>ISOTOPE : U232<br>NOMINAL : 4.50865 dpm<br>RESULTS : 3.23643 dpm | LIB FILE : ENV_ALPHA_UU.N<br>BKG FILE : B008.CNF;1105<br>BKG DATE : 17-JAN-2010<br>EFF FILE : W008.CNF;341<br>CAL DATE : 4-JAN-2010 |

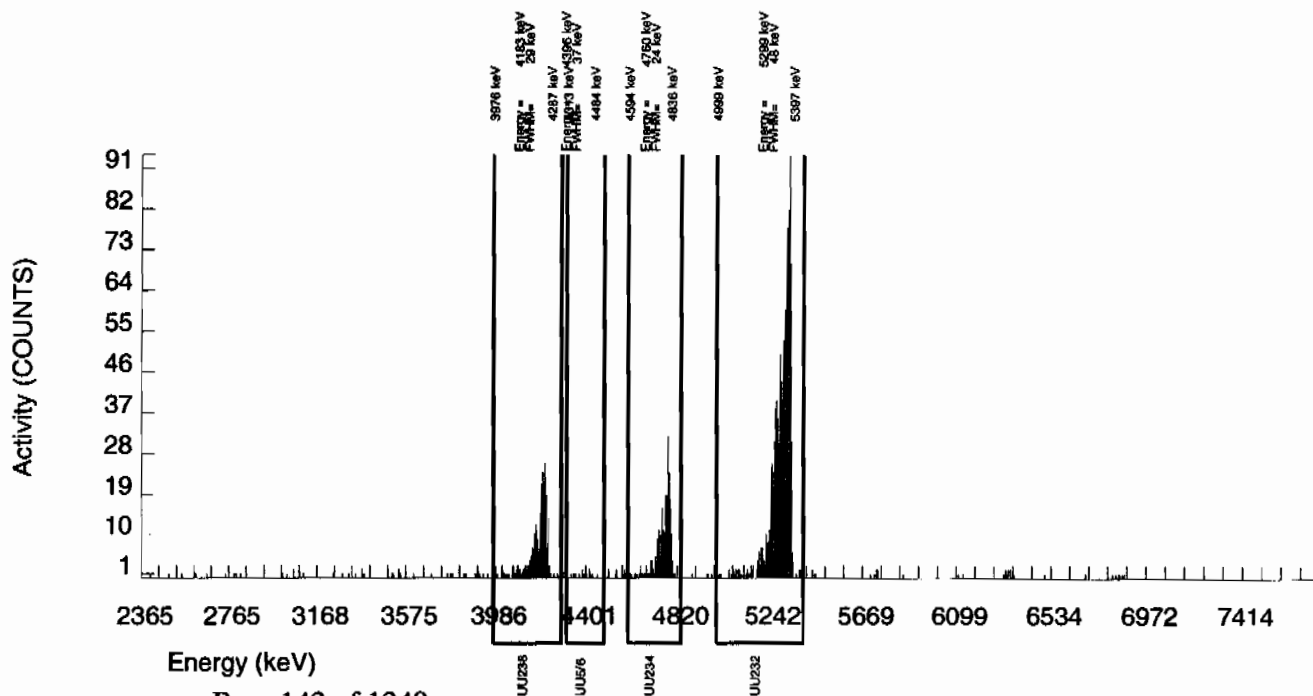
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| U-3/4   | 4763.020 | 243.000    | 241.954  | 0.000    | 6.0782 | 100.0000 | 8.83E-01       | 8.45E-02    | 5.16E-02  | 1.13E-01  | 5.68E-02  |
| U232    | 5302.100 | 1038.000   | 1034.000 | 4.000    | 2.0000 | 100.0000 | 3.77E+00       | 2.93E-01    | 1.70E-02  | 4.38E-02  | 1.18E-01  |
| U-235   | 4391.000 | 18.000     | 17.000   | 1.000    | 2.7628 | 80.90000 | 7.67E-02       | 2.04E-02    | 2.90E-02  | 7.02E-02  | 1.97E-02  |
| U-238   | 4184.730 | 245.000    | 243.000  | 2.000    | 3.2810 | 100.0000 | 8.87E-01       | 8.51E-02    | 2.79E-02  | 6.56E-02  | 5.74E-02  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of U232 calculated as sqrt(BKG AREA)

NOTE: Corrections made to U-3/4 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

|  |   |   |   |
|--|---|---|---|
| BATCH NUMBER: 941758<br>SAMPLE DATE : 8-JAN-2010 00:00:00.                 |   | SAMPLE ID : S0244630009_UU<br>SAMPLE QTY: 0.520 G   |   |
| DETECTOR NUMBER :72528<br>AVERAGE %EFFICIENCY :34.0896<br>% YIELD : 75.831 |   | COUNT DATE:23-JAN-2010 11:20:46<br>ELAPSED LIVE TIME(SEC): 59999.99<br>ANALYST :MXA1      |   |
| MS/MSD<br>ID : 0244-A<br>ISOTOPE : U-238<br>PCI/G : 5.750E+00              | LCS/LCSD<br>ID : 0244-A<br>ISOTOPE : U-238<br>PCI/G : 5.750E+00 | TRACER<br>ID : 1283-H<br>ISOTOPE : U232<br>NOMINAL : 4.50865 dpm<br>RESULTS : 3.41895 dpm | LIB FILE : ENV_ALPHA_UU.N<br>BKG FILE : B009.CNF;1096<br>BKG DATE : 17-JAN-2010<br>EFF FILE : W009.CNF;305<br>CAL DATE : 4-JAN-2010 |

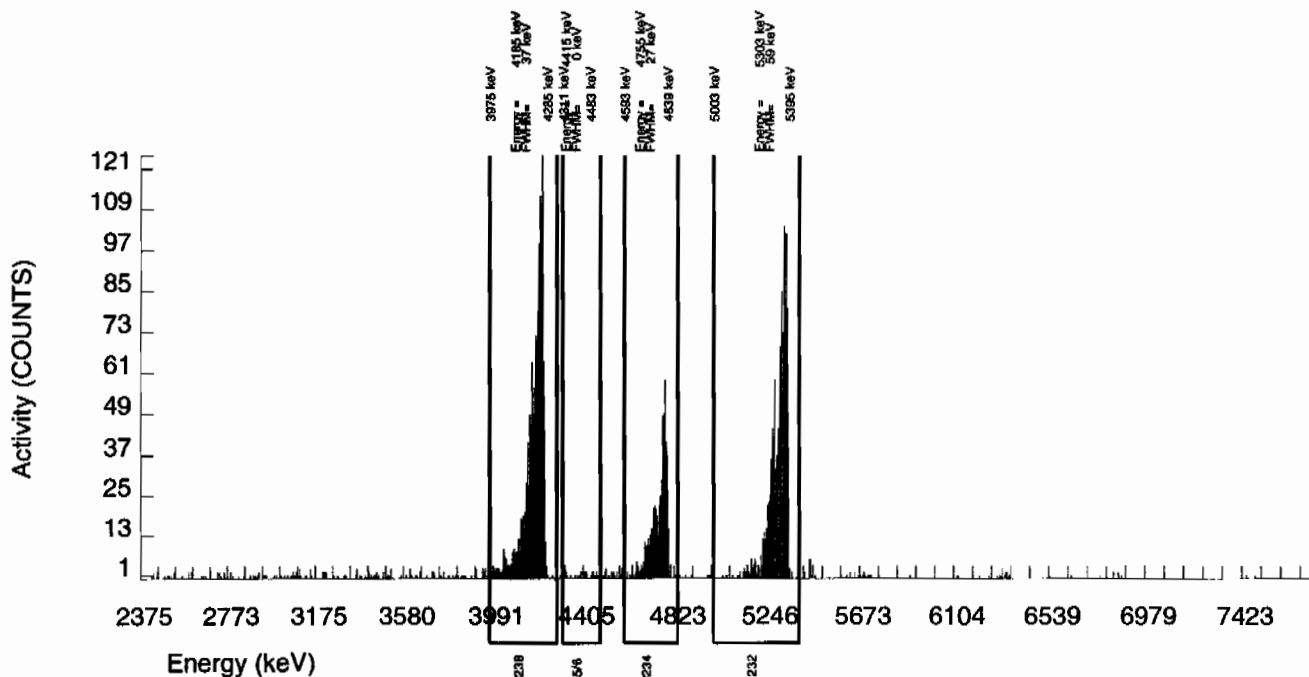
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| U-3/4   | 4763.020 | 561.000    | 556.822  | 3.000    | 6.0782 | 100.0000 | 1.87E+00       | 1.53E-01    | 4.74E-02  | 1.04E-01  | 7.95E-02  |
| U232    | 5302.100 | 1172.000   | 1165.000 | 7.000    | 2.6458 | 100.0000 | 3.91E+00       | 2.97E-01    | 2.06E-02  | 5.03E-02  | 1.15E-01  |
| U-235   | 4391.000 | 31.000     | 30.000   | 1.000    | 2.7628 | 80.90000 | 1.24E-01       | 2.50E-02    | 2.66E-02  | 6.45E-02  | 2.34E-02  |
| U-238   | 4184.730 | 1356.000   | 1355.000 | 1.000    | 3.2810 | 100.0000 | 4.54E+00       | 3.42E-01    | 2.56E-02  | 6.02E-02  | 1.23E-01  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of U232 calculated as sqrt(BKG AREA)

NOTE: Corrections made to U-3/4 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941758  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630010\_UU  
SAMPLE QTY: 0.525 G

DETECTOR NUMBER :72529  
AVERAGE %EFFICIENCY :31.4316  
% YIELD : 50.264

COUNT DATE:23-JAN-2010 11:20:46  
ELAPSED LIVE TIME(SEC): 59999.99  
ANALYST :MXA1

MS/MSD  
ID : 0244-A  
ISOTOPE : U-238  
PCI/G : 5.750E+00

LCS/LCSD  
ID : 0244-A  
ISOTOPE : U-238  
PCI/G : 5.750E+00

TRACER  
ID : 1283-H  
ISOTOPE : U232  
NOMINAL : 4.50865 dpm  
RESULTS : 2.26622 dpm

LIB FILE : ENV\_ALPHA\_UU.N  
BKG FILE : B010.CNF;1114  
BKG DATE : 17-JAN-2010  
EFF FILE : W010.CNF;333  
CAL DATE : 4-JAN-2010

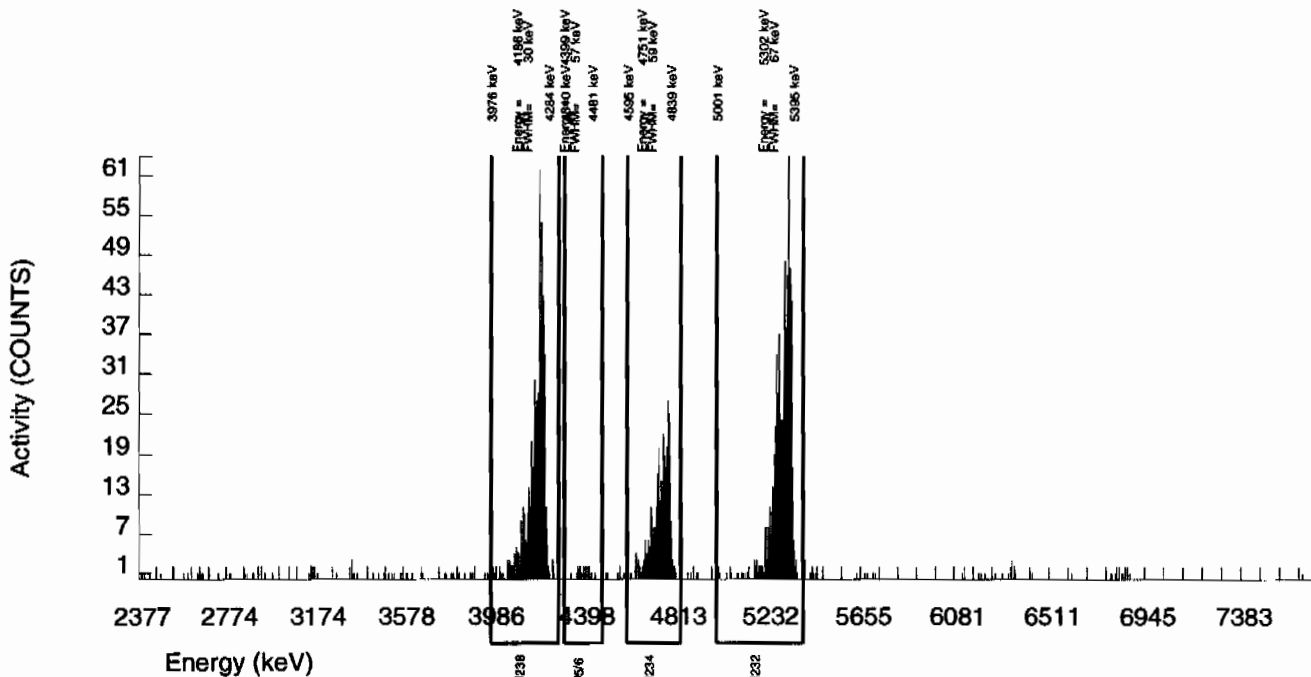
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| U-3/4   | 4763.020 | 343.000    | 339.280  | 3.000    | 6.0782 | 100.0000 | 1.84E+00       | 1.70E-01    | 7.68E-02  | 1.68E-01  | 1.01E-01  |
| U232    | 5302.100 | 716.000    | 712.000  | 4.000    | 2.0000 | 100.0000 | 3.87E+00       | 3.21E-01    | 2.53E-02  | 6.53E-02  | 1.46E-01  |
| U-235   | 4391.000 | 20.000     | 19.000   | 1.000    | 2.7628 | 80.90000 | 1.28E-01       | 3.22E-02    | 4.31E-02  | 1.04E-01  | 3.08E-02  |
| U-238   | 4184.730 | 586.000    | 585.000  | 1.000    | 3.2810 | 100.0000 | 3.18E+00       | 2.69E-01    | 4.15E-02  | 9.76E-02  | 1.32E-01  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of U232 calculated as sqrt(BKG AREA)

NOTE: Corrections made to U-3/4 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORTBATCH NUMBER: 941758  
SAMPLE DATE : 8-JAN-2010 00:00:00.SAMPLE ID : S0244630011\_UU  
SAMPLE QTY: 0.511 GDETECTOR NUMBER :72531  
AVERAGE %EFFICIENCY :29.5906  
% YIELD : 89.835COUNT DATE:23-JAN-2010 11:20:46  
ELAPSED LIVE TIME(SEC): 59999.99  
ANALYST :MXA1MS/MSD  
ID : 0244-A  
ISOTOPE : U-238  
PCI/G : 5.750E+00LCS/LCSD  
ID : 0244-A  
ISOTOPE : U-238  
PCI/G : 5.750E+00TRACER  
ID : 1283-H  
ISOTOPE : U232  
NOMINAL : 4.50865 dpm  
RESULTS : 4.05034 dpmLIB FILE : ENV\_ALPHA\_UU.N  
BKG FILE : B011.CNF;1106  
BKG DATE : 17-JAN-2010  
EFF FILE : W011.CNF;311  
CAL DATE : 4-JAN-2010

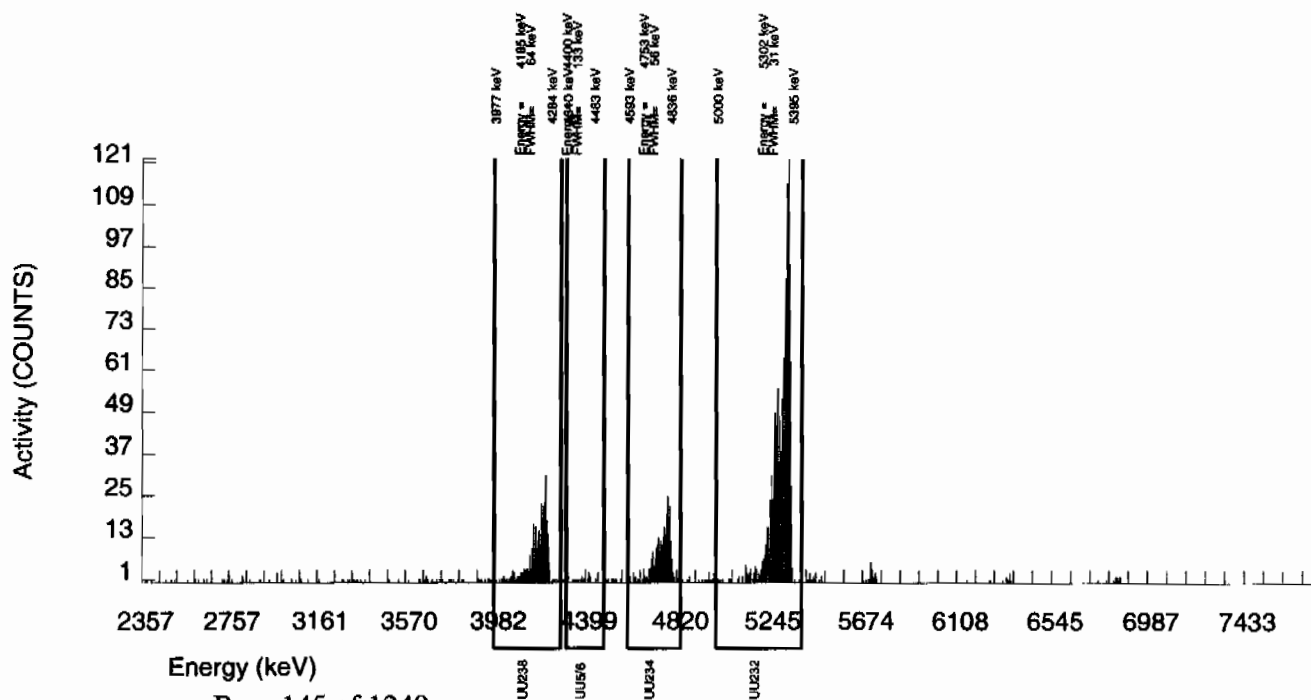
## NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| U-3/4   | 4763.020 | 283.000    | 279.788  | 2.000    | 6.0782 | 100.0000 | 9.28E-01       | 8.58E-02    | 4.69E-02  | 1.03E-01  | 5.59E-02  |
| U232    | 5302.100 | 1214.000   | 1198.000 | 16.000   | 4.0000 | 100.0000 | 3.97E+00       | 3.02E-01    | 3.09E-02  | 7.07E-02  | 1.16E-01  |
| U-235   | 4391.000 | 21.000     | 20.000   | 1.000    | 2.7628 | 80.90000 | 8.20E-02       | 2.01E-02    | 2.63E-02  | 6.38E-02  | 1.92E-02  |
| U-238   | 4184.730 | 309.000    | 301.000  | 8.000    | 3.2810 | 100.0000 | 9.98E-01       | 9.16E-02    | 2.53E-02  | 5.96E-02  | 5.90E-02  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of U232 calculated as sqrt(BKG AREA)

NOTE: Corrections made to U-3/4 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941758  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630012\_UU  
SAMPLE QTY: 0.521 G

DETECTOR NUMBER :67594  
AVERAGE %EFFICIENCY :29.8562  
% YIELD : 42.883

COUNT DATE:23-JAN-2010 11:20:46  
ELAPSED LIVE TIME(SEC): 59999.99  
ANALYST :MXA1

MS/MSD  
ID : 0244-A  
ISOTOPE : U-238  
PCI/G : 5.750E+00

LCS/LCSD  
ID : 0244-A  
ISOTOPE : U-238  
PCI/G : 5.750E+00

TRACER  
ID : 1283-H  
ISOTOPE : U232  
NOMINAL : 4.50865 dpm  
RESULTS : 1.93343 dpm

LIB FILE : ENV\_ALPHA\_UU.N  
BKG FILE : B012.CNF;1108  
BKG DATE : 17-JAN-2010  
EFF FILE : W012.CNF;312  
CAL DATE : 4-JAN-2010

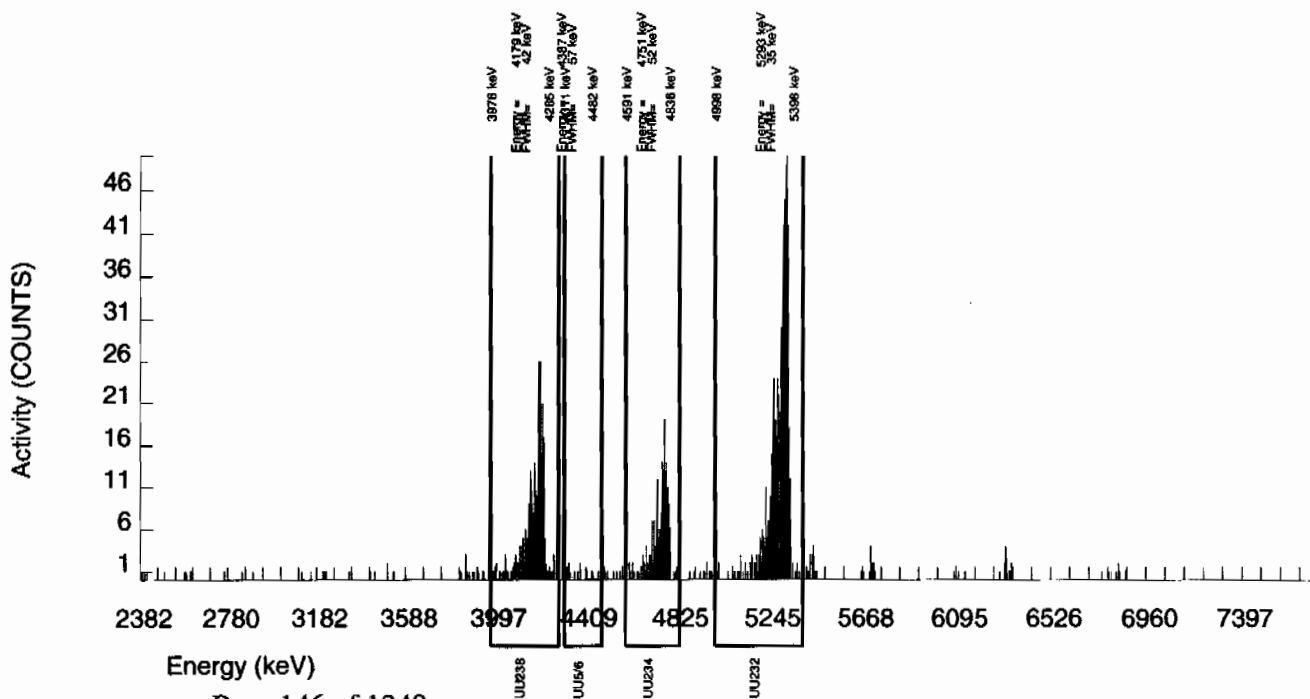
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| U-3/4   | 4763.020 | 185.000    | 180.416  | 4.000    | 6.0782 | 100.0000 | 1.22E+00       | 1.31E-01    | 9.55E-02  | 2.09E-01  | 9.27E-02  |
| U232    | 5302.100 | 585.000    | 577.000  | 8.000    | 2.8284 | 100.0000 | 3.90E+00       | 3.40E-01    | 4.44E-02  | 1.07E-01  | 1.65E-01  |
| U-235   | 4391.000 | 12.000     | 11.000   | 1.000    | 2.7628 | 80.90000 | 9.18E-02       | 3.09E-02    | 5.37E-02  | 1.30E-01  | 3.01E-02  |
| U-238   | 4184.730 | 281.000    | 278.000  | 3.000    | 3.2810 | 100.0000 | 1.88E+00       | 1.83E-01    | 5.15E-02  | 1.21E-01  | 1.14E-01  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of U232 calculated as sqrt(BKG AREA)

NOTE: Corrections made to U-3/4 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

|  |   |   |   |
|--|---|---|---|
| BATCH NUMBER: 941758<br>SAMPLE DATE : 8-JAN-2010 00:00:00.                 |   | SAMPLE ID : S0244630013_UU<br>SAMPLE QTY: 0.522 G   |   |
| DETECTOR NUMBER :33450<br>AVERAGE %EFFICIENCY :25.0873<br>% YIELD : 71.377 |   | COUNT DATE:23-JAN-2010 11:16:07<br>ELAPSED LIVE TIME(SEC): 60000.00<br>ANALYST :MXA1      |   |
| MS/MSD<br>ID : 0244-A<br>ISOTOPE : U-238<br>PCI/G : 5.750E+00              | LCS/LCSD<br>ID : 0244-A<br>ISOTOPE : U-238<br>PCI/G : 5.750E+00 | TRACER<br>ID : 1283-H<br>ISOTOPE : U232<br>NOMINAL : 4.50866 dpm<br>RESULTS : 3.21816 dpm | LIB FILE : ENV_ALPHA_UU.N<br>BKG FILE : B117.CNF;444<br>BKG DATE : 17-JAN-2010<br>EFF FILE : W117.CNF;119<br>CAL DATE : 18-JAN-2010 |

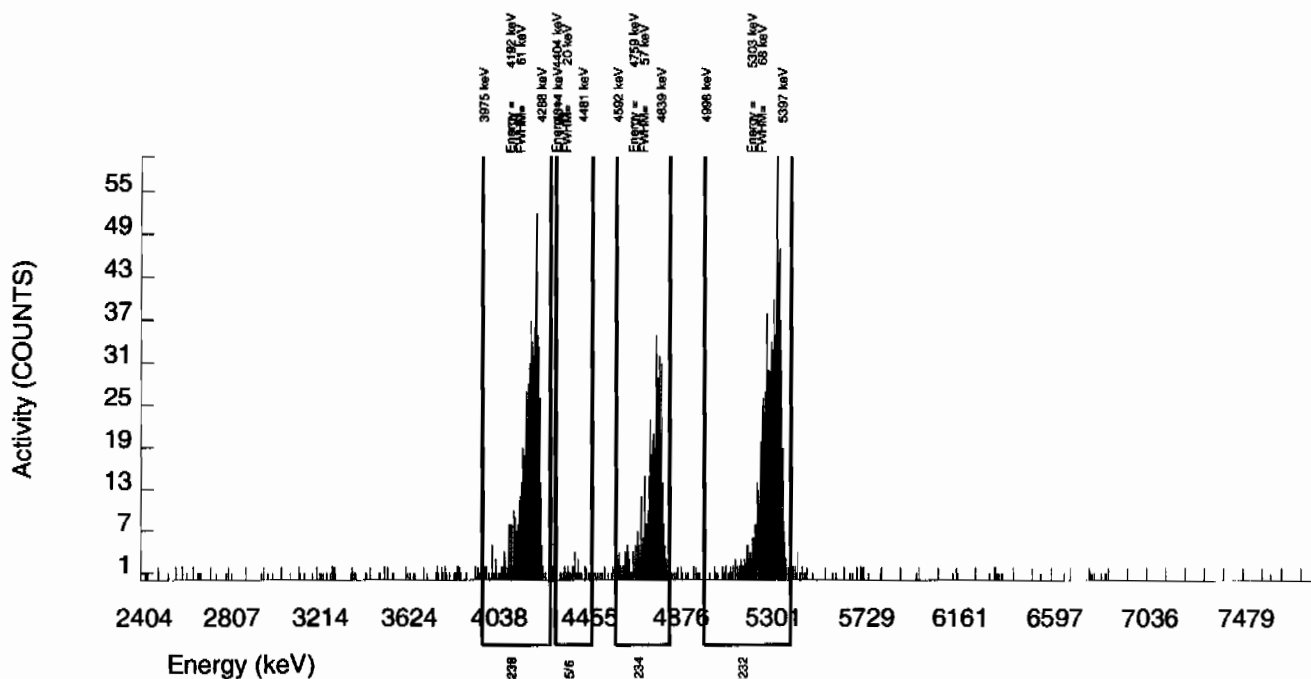
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| U-3/4   | 4763.020 | 451.000    | 448.184  | 2.000    | 6.0782 | 100.0000 | 2.16E+00       | 1.88E-01    | 6.81E-02  | 1.49E-01  | 1.02E-01  |
| U232    | 5302.100 | 819.000    | 807.000  | 12.000   | 3.4641 | 100.0000 | 3.89E+00       | 3.16E-01    | 3.88E-02  | 9.07E-02  | 1.39E-01  |
| U-235   | 4391.000 | 29.000     | 27.000   | 2.000    | 2.7628 | 80.90000 | 1.61E-01       | 3.52E-02    | 3.83E-02  | 9.27E-02  | 3.32E-02  |
| U-238   | 4184.730 | 643.000    | 643.000  | 0.000    | 3.2810 | 100.0000 | 3.10E+00       | 2.57E-01    | 3.68E-02  | 8.66E-02  | 1.22E-01  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of U232 calculated as sqrt(BKG AREA)

NOTE: Corrections made to U-3/4 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941758  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630014\_UU  
SAMPLE QTY: 0.506 G

DETECTOR NUMBER :75544  
AVERAGE %EFFICIENCY :25.4737  
% YIELD : 82.228

COUNT DATE:23-JAN-2010 11:16:10  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-A  
ISOTOPE : U-238  
PCI/G : 5.750E+00

LCS/LCSD  
ID : 0244-A  
ISOTOPE : U-238  
PCI/G : 5.750E+00

TRACER  
ID : 1283-H  
ISOTOPE : U232  
NOMINAL : 4.50866 dpm  
RESULTS : 3.70739 dpm

LIB FILE : ENV\_ALPHA\_UU.N  
BKG FILE : B118.CNF;443  
BKG DATE : 17-JAN-2010  
EFF FILE : W118.CNF;116  
CAL DATE : 18-JAN-2010

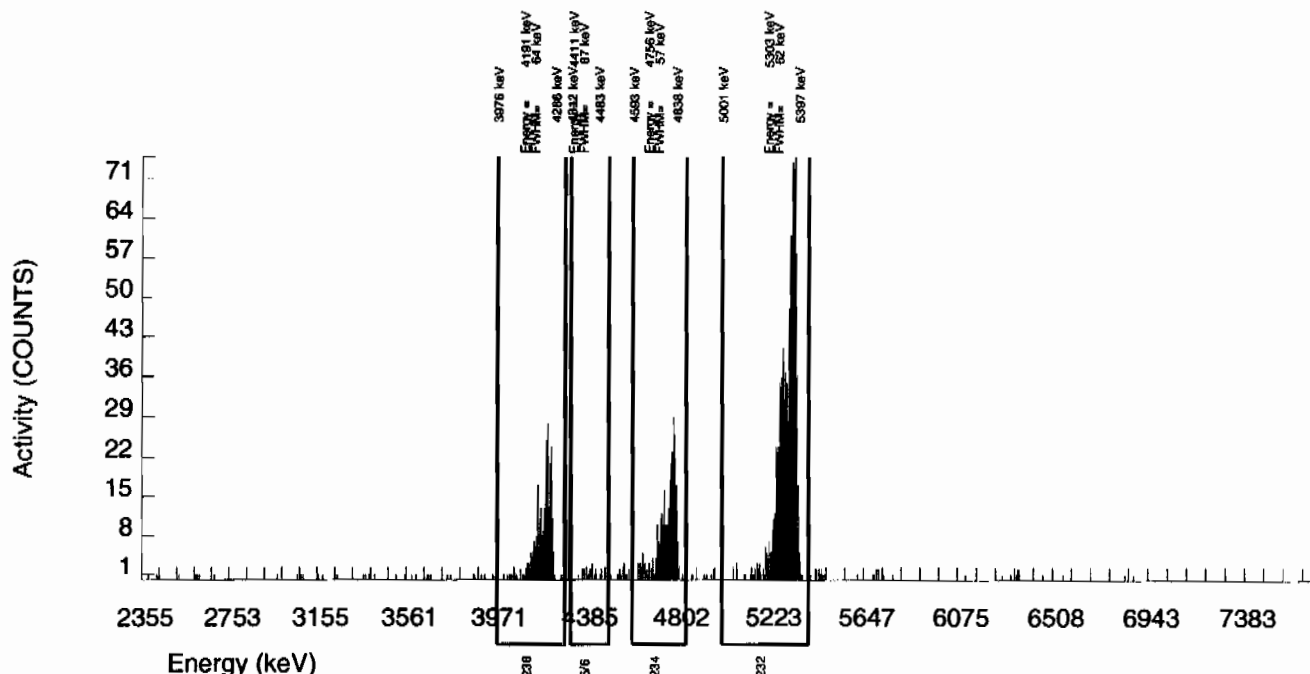
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| U-3/4   | 4763.020 | 311.000    | 310.045  | 0.000    | 6.0782 | 100.0000 | 1.32E+00       | 1.20E-01    | 6.01E-02  | 1.32E-01  | 7.48E-02  |
| U232    | 5302.100 | 951.000    | 944.000  | 7.000    | 2.6458 | 100.0000 | 4.01E+00       | 3.16E-01    | 2.62E-02  | 6.38E-02  | 1.32E-01  |
| U-235   | 4391.000 | 20.000     | 20.000   | 0.000    | 2.7628 | 80.90000 | 1.05E-01       | 2.47E-02    | 3.38E-02  | 8.18E-02  | 2.35E-02  |
| U-238   | 4184.730 | 276.000    | 274.000  | 2.000    | 3.2810 | 100.0000 | 1.16E+00       | 1.09E-01    | 3.24E-02  | 7.64E-02  | 7.09E-02  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of U232 calculated as sqrt(BKG AREA)

NOTE: Corrections made to U-3/4 net area due to tracer impurity





GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941758  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630015\_UU  
SAMPLE QTY: 0.515 G

DETECTOR NUMBER :79450  
AVERAGE %EFFICIENCY :25.6819  
% YIELD : 53.050

COUNT DATE:23-JAN-2010 11:16:13  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-A  
ISOTOPE : U-238  
PCI/G : 5.750E+00

LCS/LCSD  
ID : 0244-A  
ISOTOPE : U-238  
PCI/G : 5.750E+00

TRACER  
ID : 1283-H  
ISOTOPE : U232  
NOMINAL : 4.50866 dpm  
RESULTS : 2.39182 dpm

LIB FILE : ENV\_ALPHA\_UU.N  
BKG FILE : B119.CNF;452  
BKG DATE : 17-JAN-2010  
EFF FILE : W119.CNF;119  
CAL DATE : 18-JAN-2010

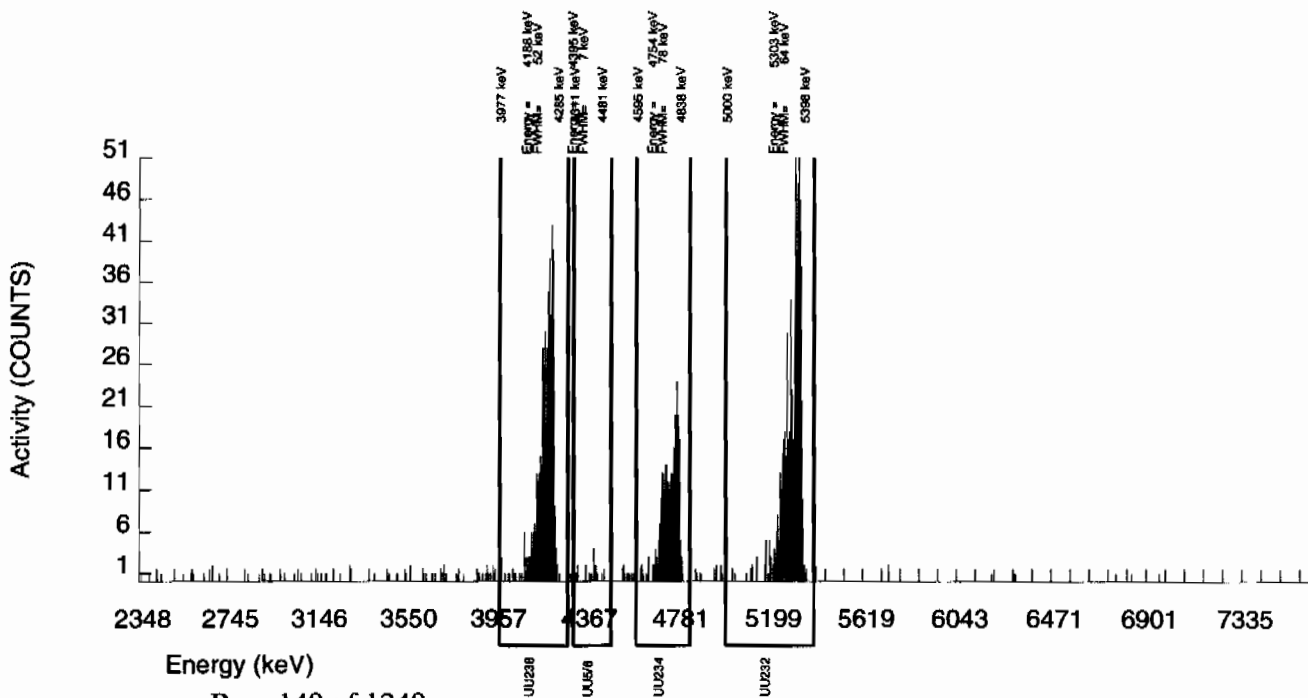
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| U-3/4   | 4763.020 | 294.000    | 293.379  | 0.000    | 6.0782 | 100.0000 | 1.88E+00       | 1.80E-01    | 9.08E-02  | 1.99E-01  | 1.10E-01  |
| U232    | 5302.100 | 615.000    | 614.000  | 1.000    | 1.0000 | 100.0000 | 3.94E+00       | 3.38E-01    | 1.49E-02  | 4.73E-02  | 1.59E-01  |
| U-235   | 4391.000 | 19.000     | 18.000   | 1.000    | 2.7628 | 80.90000 | 1.43E-01       | 3.71E-02    | 5.10E-02  | 1.24E-01  | 3.55E-02  |
| U-238   | 4184.730 | 484.000    | 484.000  | 0.000    | 3.2810 | 100.0000 | 3.11E+00       | 2.74E-01    | 4.90E-02  | 1.15E-01  | 1.41E-01  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of U232 calculated as sqrt(BKG AREA)

NOTE: Corrections made to U-3/4 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941758  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S0244630016\_UU  
SAMPLE QTY: 0.532 G

DETECTOR NUMBER :74430  
AVERAGE %EFFICIENCY :25.9820  
% YIELD : 80.449

COUNT DATE:23-JAN-2010 11:16:17  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-A  
ISOTOPE : U-238  
PCI/G : 5.750E+00

LCS/LCSD  
ID : 0244-A  
ISOTOPE : U-238  
PCI/G : 5.750E+00

TRACER  
ID : 1283-H  
ISOTOPE : U232  
NOMINAL : 4.50865 dpm  
RESULTS : 3.62716 dpm

LIB FILE : ENV\_ALPHA\_UU.N  
BKG FILE : B120.CNF;456  
BKG DATE : 17-JAN-2010  
EFF FILE : W120.CNF;126  
CAL DATE : 18-JAN-2010

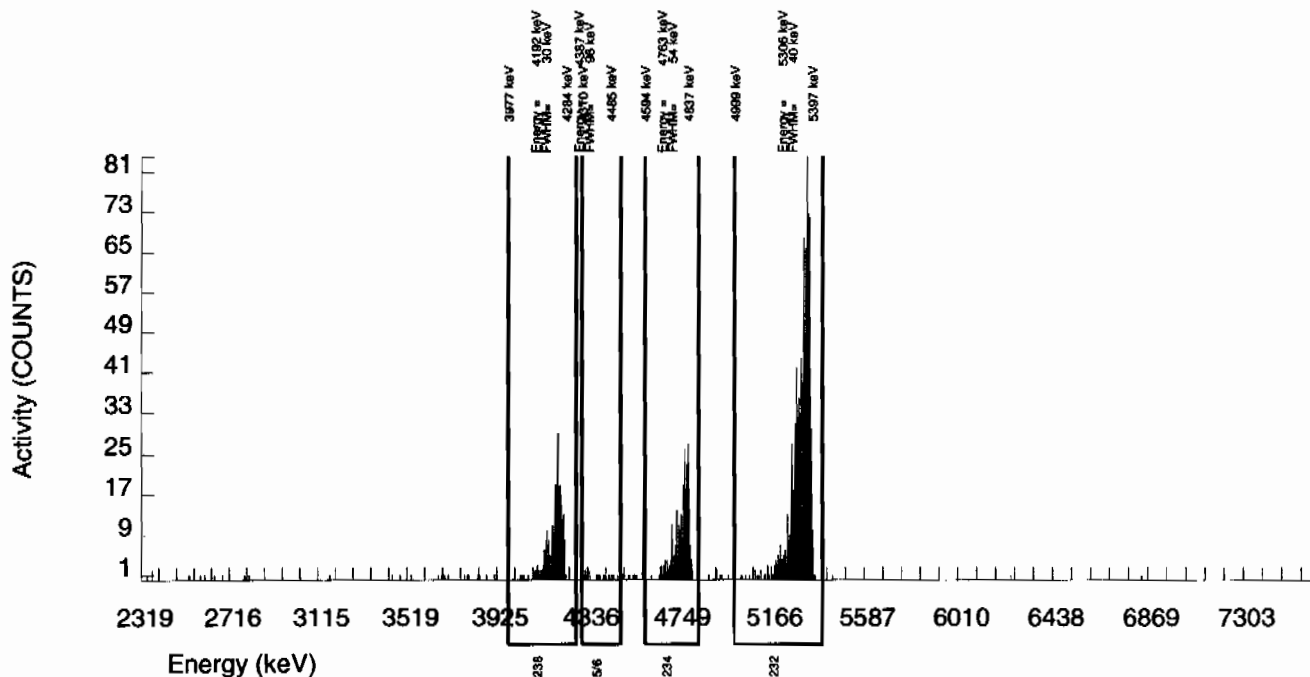
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| U-3/4   | 4763.020 | 255.000    | 251.047  | 3.000    | 6.0782 | 100.0000 | 1.02E+00       | 9.75E-02    | 5.73E-02  | 1.26E-01  | 6.49E-02  |
| U232    | 5302.100 | 942.000    | 942.000  | 0.000    | 0.0000 | 100.0000 | 3.82E+00       | 3.00E-01    | 0.00E+00  | 1.10E-02  | 1.24E-01  |
| U-235   | 4391.000 | 19.000     | 19.000   | 0.000    | 2.7628 | 80.90000 | 9.51E-02       | 2.29E-02    | 3.22E-02  | 7.79E-02  | 2.18E-02  |
| U-238   | 4184.730 | 250.000    | 250.000  | 0.000    | 3.2810 | 100.0000 | 1.01E+00       | 9.67E-02    | 3.09E-02  | 7.28E-02  | 6.40E-02  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of U232 calculated as sqrt(BKG AREA)

NOTE: Corrections made to U-3/4 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

|  |   |   |   |
|--|---|---|---|
| BATCH NUMBER: 941758<br>SAMPLE DATE : 19-JAN-2010 00:00:00                 |   | SAMPLE ID : S1202015747_UU<br>SAMPLE QTY: 1.000 G   |   |
| DETECTOR NUMBER :75552<br>AVERAGE %EFFICIENCY :24.4633<br>% YIELD : 92.254 |   | COUNT DATE:26-JAN-2010 20:27:23<br>ELAPSED LIVE TIME(SEC): 60000.00<br>ANALYST :MXA1      |   |
| MS/MSD<br>ID : 0244-A<br>ISOTOPE : U-238<br>PCI/G : 5.750E+00              | LCS/LCSD<br>ID : 0244-A<br>ISOTOPE : U-238<br>PCI/G : 5.750E+00 | TRACER<br>ID : 1283-H<br>ISOTOPE : U232<br>NOMINAL : 4.50729 dpm<br>RESULTS : 4.15817 dpm | LIB FILE : ENV_ALPHA_UU.N<br>BKG FILE : B150.CNF;396<br>BKG DATE : 24-JAN-2010<br>EFF FILE : W150.CNF;120<br>CAL DATE : 18-JAN-2010 |

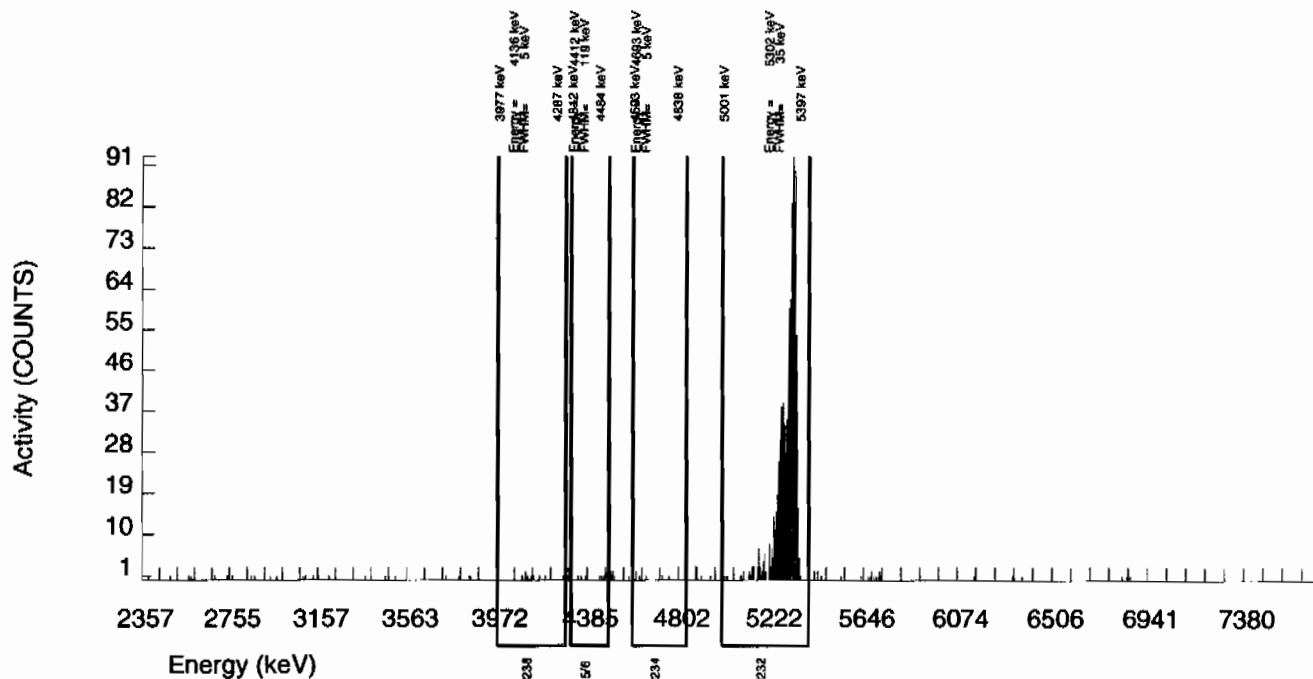
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| U-3/4   | 4763.020 | 8.000      | 5.971    | 1.000    | 6.0782 | 100.0000 | 1.19E-02       | 5.70E-03    | 2.82E-02  | 6.19E-02  | 5.64E-03  |
| U232    | 5302.100 | 1023.000   | 1017.000 | 6.000    | 2.4495 | 100.0000 | 2.03E+00       | 1.58E-01    | 1.14E-02  | 2.82E-02  | 6.40E-02  |
| U-235   | 4391.000 | 6.000      | 6.000    | 0.000    | 2.7628 | 80.90000 | 1.48E-02       | 6.13E-03    | 1.59E-02  | 3.84E-02  | 6.04E-03  |
| U-238   | 4184.730 | 10.000     | 9.000    | 1.000    | 3.2810 | 100.0000 | 1.80E-02       | 6.74E-03    | 1.52E-02  | 3.59E-02  | 6.62E-03  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of U232 calculated as sqrt(BKG AREA)

NOTE: Corrections made to U-3/4 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941758  
SAMPLE DATE : 8-JAN-2010 00:00:00.

SAMPLE ID : S1202015748\_UU  
SAMPLE QTY: 0.547 G

DETECTOR NUMBER :75545  
AVERAGE %EFFICIENCY :24.4776  
% YIELD : 81.223

COUNT DATE:23-JAN-2010 11:16:19  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-A  
ISOTOPE : U-238  
PCI/G : 5.750E+00

LCS/LCSD  
ID : 0244-A  
ISOTOPE : U-238  
PCI/G : 5.750E+00

TRACER  
ID : 1283-H  
ISOTOPE : U232  
NOMINAL : 4.50865 dpm  
RESULTS : 3.66208 dpm

LIB FILE : ENV\_ALPHA\_UU.N  
BKG FILE : B121.CNF;438  
BKG DATE : 17-JAN-2010  
EFF FILE : W121.CNF;117  
CAL DATE : 18-JAN-2010

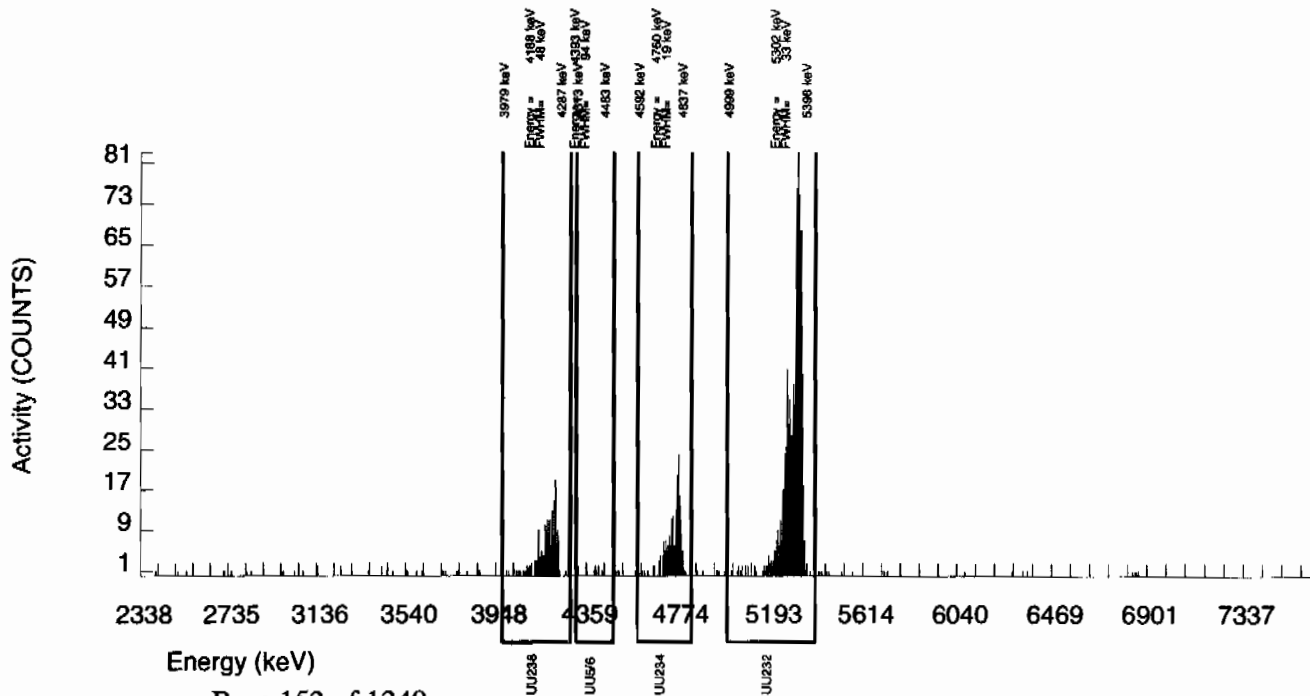
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| U-3/4   | 4763.020 | 195.000    | 191.094  | 3.000    | 6.0782 | 100.0000 | 7.92E-01       | 8.14E-02    | 5.86E-02  | 1.28E-01  | 5.81E-02  |
| U232    | 5302.100 | 898.000    | 896.000  | 2.000    | 1.4142 | 100.0000 | 3.71E+00       | 2.95E-01    | 1.36E-02  | 3.85E-02  | 1.24E-01  |
| U-235   | 4391.000 | 10.000     | 10.000   | 0.000    | 2.7628 | 80.90000 | 5.12E-02       | 1.66E-02    | 3.29E-02  | 7.97E-02  | 1.62E-02  |
| U-238   | 4184.730 | 181.000    | 180.000  | 1.000    | 3.2810 | 100.0000 | 7.46E-01       | 7.75E-02    | 3.16E-02  | 7.45E-02  | 5.59E-02  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of U232 calculated as sqrt(BKG AREA)

NOTE: Corrections made to U-3/4 net area due to tracer impurity



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER: 941758  
SAMPLE DATE : 19-JAN-2010 00:00:00

SAMPLE ID : S1202015749\_UU  
SAMPLE QTY: 0.105 G

DETECTOR NUMBER :75546  
AVERAGE %EFFICIENCY :24.9662  
% YIELD : 91.543

COUNT DATE:23-JAN-2010 11:16:21  
ELAPSED LIVE TIME(SEC): 60000.00  
ANALYST :MXA1

MS/MSD  
ID : 0244-A  
ISOTOPE : U-238  
PCI/G : 5.750E+00

LCS/LCSD  
ID : 0244-A  
ISOTOPE : U-238  
PCI/G : 5.750E+00

TRACER  
ID : 1283-H  
ISOTOPE : U232  
NOMINAL : 4.50729 dpm  
RESULTS : 4.12613 dpm

LIB FILE : ENV\_ALPHA\_UU.N  
BKG FILE : B122.CNF;440  
BKG DATE : 17-JAN-2010  
EFF FILE : W122.CNF;120  
CAL DATE : 18-JAN-2010

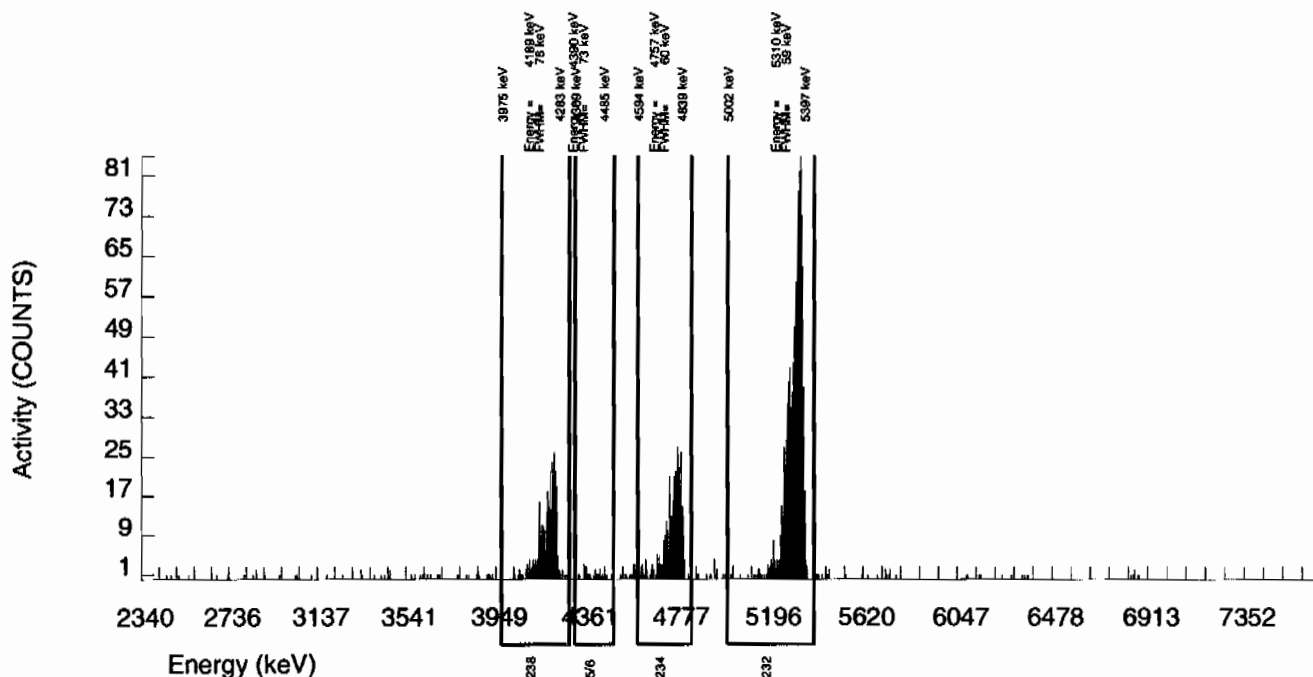
NUCLIDE ACTIVITY SUMMARY

| NUCLIDE | ENERGY   | GROSS AREA | NET AREA | BKG AREA | BKG Sg | %ABUN    | ACTIVITY pCi/G | TPU 1-SIGMA | DLC pCi/G | MDC pCi/G | UNC pCi/G |
|---------|----------|------------|----------|----------|--------|----------|----------------|-------------|-----------|-----------|-----------|
| U-3/4   | 4763.020 | 348.000    | 346.958  | 0.000    | 6.0782 | 100.0000 | 6.51E+00       | 6.12E-01    | 2.65E-01  | 5.82E-01  | 3.50E-01  |
| U232    | 5302.100 | 1035.000   | 1030.000 | 5.000    | 2.2361 | 100.0000 | 1.93E+01       | 1.61E+00    | 9.76E-02  | 2.46E-01  | 6.05E-01  |
| U-235   | 4391.000 | 22.000     | 22.000   | 0.000    | 2.7628 | 80.90000 | 5.10E-01       | 1.16E-01    | 1.49E-01  | 3.61E-01  | 1.09E-01  |
| U-238   | 4184.730 | 315.000    | 315.000  | 0.000    | 3.2810 | 100.0000 | 5.91E+00       | 5.65E-01    | 1.43E-01  | 3.37E-01  | 3.33E-01  |

NOTE: Sg calculated via blank population (updated 5-JAN-2010)

NOTE: Sg of U232 calculated as sqrt(BKG AREA)

NOTE: Corrections made to U-3/4 net area due to tracer impurity



# Radiochemistry Batch Checklist, Rev10

Batch# 941639 Product: 8-S Date: 1/25/10

| Criteria:   | Yes | No | Comments |
|---|-----|----|----------|
| Sample Solids are less than or equal to 100 mg for GAB.   |     |    | NA       |
| Samples have been blank corrected (if required)   |     |    | NA       |
| If activity less 10* MDA/ MDC, error is 150% or less of sample activity. If greater 10* MDA/ MDC, error is 40% or less. If below the MDA/ MDC, error is okay. | ✓   |    |          |
| Instrument source check is within limits.   | ✓   |    |          |
| Instrument bkg check is within limits.  | ✓   |    |          |
| Method RDL/ LLD has been met.   | ✓   |    |          |
| If duplicate activities are less 5* MDA/ MDC, then RPD is 100% or less. If greater 5* MDA/ MDC, then RPD 20% or less. If below the MDA/ MDC, the RPD is 0%.   | ✓   |    |          |
| Or meets the client's required RER acceptance criteria.   |     |    |          |
| Tracer yield is 15-125% . Carrier yield 25-125%.  |     |    | NA       |
| Or meets the client's contract acceptance criteria.   |     |    |          |
| Method blank is less than the RDL/ LLD.   | ✓   |    |          |
| (If rad samples, < 5% of lowest activity)   | ✓   |    |          |
| Sample was run within hold time.  | ✓   |    |          |
| Sample was correctly preserved if required.   |     |    | NA       |
| Smears Taken for Radioactive batches.   |     |    | NA       |
| Method Spike and LCS are within 75-125% or meets the client's contract acceptance criteria.   | ✓   |    |          |
| No blank spaces on data forms.  | ✓   |    |          |
| All line outs initialed and dated.  | ✓   |    |          |
| No transcription errors are apparent.   |     |    |          |
| Aux data is correct.  |     |    | NA       |
| Client Special requirements page has been checked.  | ✓   |    |          |
| Raw Data and/ or spectrum are included and properly statused.   | ✓   |    |          |
| QC data entered into QC database and batch is in REVW   | ✓   |    |          |
| Hit notification complete (if necessary)  |     |    | NA       |
| Batch entered into Case Narrative.  | ✓   |    |          |
| Batch Data Exception Reports (DER) completed, if applicable.  |     |    | NA       |
| Batch Data Exception Reports (DER) second reviewed and disposition verified to be completed.  |     |    | NA       |
| Aliquot Correction completed if required.   |     |    | NA       |
| Review sample historical results if available (if REMP, results above MDC have been verified by historical results, recount or re-analysis.)                  | ✓   |    |          |

GEL Laboratories, LLC

RADchecklistrev10, revised 1/13/2010

Primary Review Performed By: K. Bat 1/25/10

Secondary Review Performed By: Heather E. McCarty 1/25/10

LANL  
2/10

# Gamma Spec Que Sheet

1.6- 1/22/10

01/14/2010

Batch #: 941639

Analyst: MXR1 ✓

First Client Due Date: 02/10/2010

Internal Due Date: 01/30/2010

Gamma Spike Isotope: Mixed Gamma

Spike Code: WLA

Expiration Date: WLA

Vol: WLA Nominal Concentration: WLA Co-60 6.453

Gamma LCS Isotope: Mixed Gamma

LCS Code: 1032-A

Expiration Date: 12/2/10

Vol: 1.0mL Nominal Concentration: CS-137 5.568mCi 15.91

Initials: MS

Prep Date: 1/5/10

Library: SOLID ✓

Witness: WLA ✓

Wet/Dry

| Sample ID    | Client Description / Container ID | Type   | Hazard Code | Client | Matrix             | Collect Date | Geometry | Aliquot | Detector | Sealing Date/Time (if Applicable) |
|--------------|-----------------------------------|--------|-------------|--------|--------------------|--------------|----------|---------|----------|-----------------------------------|
| 244630001-1  | RE12-10-7262                      | SAMPLE | LANL010     | SOIL   | 08-JAN-10 12:00:00 | U            | CAN      | 136.73  | 15       | 1/15/10                           |
| 244630002-1  | RE12-10-7266                      | SAMPLE | LANL010     | SOIL   | 08-JAN-10 12:00:00 | U            |          | 140.30  | 18       |                                   |
| 244630003-1  | RE12-10-7258                      | SAMPLE | LANL010     | SOIL   | 08-JAN-10 12:00:00 | U            |          | 137.25  | 9        |                                   |
| 244630004-1  | RE12-10-7268                      | SAMPLE | LANL010     | SOIL   | 08-JAN-10 12:00:00 | U            |          | 140.65  | 6        |                                   |
| 244630005-1  | RE12-10-7265                      | SAMPLE | LANL010     | SOIL   | 08-JAN-10 12:00:00 | U            |          | 128.54  | 7        |                                   |
| 244630006-1  | RE12-10-7261                      | SAMPLE | LANL010     | SOIL   | 08-JAN-10 12:00:00 | U            |          | 123.06  | 11       |                                   |
| 244630007-1  | RE12-10-7259                      | SAMPLE | LANL010     | SOIL   | 08-JAN-10 12:00:00 | U            |          | 130.80  | 15       |                                   |
| 244630008-1  | RE12-10-7263                      | SAMPLE | LANL010     | SOIL   | 08-JAN-10 12:00:00 | U            |          | 135.22  | 16       |                                   |
| 244630009-1  | RE12-10-7271                      | SAMPLE | LANL010     | SOIL   | 08-JAN-10 12:00:00 | U            |          | 134.72  | 17       |                                   |
| 244630010-1  | RE12-10-7260                      | SAMPLE | LANL010     | SOIL   | 08-JAN-10 12:00:00 | U            |          | 116.46  | 25       |                                   |
| 244630011-1  | RE12-10-7267                      | SAMPLE | LANL010     | SOIL   | 08-JAN-10 12:00:00 | U            |          | 146.16  | 18       |                                   |
| 244630012-1  | RE12-10-7264                      | SAMPLE | LANL010     | SOIL   | 08-JAN-10 12:00:00 | U            |          | 122.66  | 14       |                                   |
| 244630013-1  | RE12-10-7270                      | SAMPLE | LANL010     | SOIL   | 08-JAN-10 12:00:00 | U            |          | 100.87  | 1        |                                   |
| 244630014-1  | RE12-10-7269                      | SAMPLE | LANL010     | SOIL   | 08-JAN-10 12:00:00 | U            |          | 129.346 | 2        |                                   |
| 244630015-1  | RE12-10-7283                      | SAMPLE | LANL010     | SOIL   | 08-JAN-10 12:00:00 | U            |          | 124.03  | 15       |                                   |
| 244630016-1  | RE12-10-7282                      | SAMPLE | LANL010     | SOIL   | 08-JAN-10 12:00:00 | U            |          | 133.28  | 18       |                                   |
| 1202015449-1 | MB                                | MB     | QC ACCOUNT  | SOIL   | 1/15/10            | ✓            |          | 146.16  | 4        |                                   |
| 1202015450-1 | DUP RE12-10-7262(244630001)       | DUP    | QC ACCOUNT  | SOIL   | 08-JAN-10 12:00:00 | U            |          | 134.73  | 6        |                                   |
| 1202015451-1 | LCS                               | LCS    | QC ACCOUNT  | SOIL   | 1/15/10            | ✓            |          | 155.44  | 7        |                                   |

GEL Laboratories LLC, Radiochemistry Division

Data Reviewed By: WLA 1/25/10

✓ desires  
✓ no history

Heath

Page 1

of 1

McCarthy 1/25/10

# Failed RDL Report

| Batch Id | Samp Id   | Sample Type | Run Date  | YIELD | Parmname      | Result   | MDA     | RDL   |
|----------|-----------|-------------|-----------|-------|---------------|----------|---------|-------|
| 941639   | 244630001 | SAMPLE      | 22-JAN-10 |       | Americium-241 | 0.09698  | 0.509   | 0.200 |
|          |           |             |           |       | Cerium-139    | -0.00332 | 0.06017 | 0.050 |
|          |           |             |           |       | Thorium-234   | 3.24     | 3.77    | 2.00  |
| 941639   | 244630002 | SAMPLE      | 22-JAN-10 |       | Americium-241 | 0.00731  | 0.2975  | 0.200 |
|          |           |             |           |       | Thorium-234   | 1.839    | 2.378   | 2.00  |
| 941639   | 244630003 | SAMPLE      | 23-JAN-10 |       | Americium-241 | 0.00372  | 0.3928  | 0.200 |
|          |           |             |           |       | Thorium-234   | 0.4841   | 3.083   | 2.00  |
| 941639   | 244630004 | SAMPLE      | 23-JAN-10 |       | Americium-241 | 0.1901   | 0.3781  | 0.200 |
|          |           |             |           |       | Cerium-139    | -0.00795 | 0.06294 | 0.050 |
|          |           |             |           |       | Europium-152  | 0.00764  | 0.2112  | 0.200 |
|          |           |             |           |       | Sodium-22     | -0.00077 | 0.08317 | 0.080 |
| 941639   | 244630005 | SAMPLE      | 23-JAN-10 |       | Americium-241 | 0.1317   | 0.2022  | 0.200 |
|          |           |             |           |       | Cerium-139    | -0.01831 | 0.05308 | 0.050 |
| 941639   | 244630006 | SAMPLE      | 23-JAN-10 |       |               |          |         |       |
| 941639   | 244630007 | SAMPLE      | 23-JAN-10 |       | Americium-241 | -0.177   | 0.5658  | 0.200 |
|          |           |             |           |       | Cerium-139    | 0.00994  | 0.0685  | 0.050 |
|          |           |             |           |       | Cesium-134    | 0.08638  | 0.1036  | 0.100 |
|          |           |             |           |       | Sodium-22     | -0.01495 | 0.08848 | 0.080 |
|          |           |             |           |       | Thorium-234   | 1.508    | 4.293   | 2.00  |
| 941639   | 244630008 | SAMPLE      | 23-JAN-10 |       | Americium-241 | -0.1041  | 0.2356  | 0.200 |
| 941639   | 244630009 | SAMPLE      | 23-JAN-10 |       | Cerium-139    | -0.02359 | 0.05499 | 0.050 |
|          |           |             |           |       | Sodium-22     | 0.01219  | 0.1077  | 0.080 |
| 941639   | 244630010 | SAMPLE      | 23-JAN-10 |       |               |          |         |       |
| 941639   | 244630011 | SAMPLE      | 23-JAN-10 |       | Americium-241 | 0.0509   | 0.2876  | 0.200 |
| 941639   | 244630012 | SAMPLE      | 23-JAN-10 |       | Americium-241 | 0.1342   | 0.2489  | 0.200 |
|          |           |             |           |       | Cerium-139    | -0.02747 | 0.05212 | 0.050 |
|          |           |             |           |       | Sodium-22     | -0.01252 | 0.08231 | 0.080 |
|          |           |             |           |       | Thorium-234   | 1.934    | 2.124   | 2.00  |
| 941639   | 244630013 | SAMPLE      | 23-JAN-10 |       | Americium-241 | 0.1019   | 0.3618  | 0.200 |
|          |           |             |           |       | Cerium-139    | -0.01214 | 0.06262 | 0.050 |
|          |           |             |           |       | Cesium-134    | 0.05439  | 0.1201  | 0.100 |
|          |           |             |           |       | Cobalt-60     | 0.00586  | 0.1012  | 0.100 |
|          |           |             |           |       | Europium-152  | -0.09979 | 0.223   | 0.200 |
|          |           |             |           |       | Mercury-203   | 0.102    | 0.1027  | 0.100 |
|          |           |             |           |       | Sodium-22     | 0.00288  | 0.1062  | 0.080 |
|          |           |             |           |       | Thorium-234   | 1.381    | 2.978   | 2.00  |
|          |           |             |           |       | Tin-113       | -0.03109 | 0.1008  | 0.100 |
| 941639   | 244630014 | SAMPLE      | 23-JAN-10 |       | Americium-241 | -0.00946 | 0.3541  | 0.200 |
|          |           |             |           |       | Cerium-139    | 0.00089  | 0.06076 | 0.050 |
|          |           |             |           |       | Sodium-22     | 0.03479  | 0.09529 | 0.080 |
|          |           |             |           |       | Thorium-234   | 1.712    | 2.932   | 2.00  |
| 941639   | 244630015 | SAMPLE      | 23-JAN-10 |       | Americium-241 | 0.1061   | 0.5704  | 0.200 |
|          |           |             |           |       | Cerium-139    | -0.01107 | 0.06652 | 0.050 |
|          |           |             |           |       | Cesium-134    | 0.08477  | 0.1131  | 0.100 |



## Failed RDL Report

| Batch Id | Samp Id    | Sample Type | Run Date  | YIELD | Parmname      | Result   | MDA     | RDL   |
|----------|------------|-------------|-----------|-------|---------------|----------|---------|-------|
| 941639   | 244630015  | SAMPLE      | 23-JAN-10 |       | Europium-152  | -0.00858 | 0.2199  | 0.200 |
|          |            |             |           |       | Sodium-22     | -0.00857 | 0.09135 | 0.080 |
| 941639   | 244630016  | SAMPLE      | 23-JAN-10 |       | Americium-241 | -0.01816 | 0.3208  | 0.200 |
|          |            |             |           |       | Thorium-234   | 1.41     | 2.584   | 2.00  |
| 941639   | 1202015449 | MB          | 23-JAN-10 |       |               |          |         |       |
| 941639   | 1202015450 | DUP         | 23-JAN-10 |       | Americium-241 | -0.168   | 0.347   | 0.200 |
|          |            |             |           |       | Cerium-139    | 0.02584  | 0.06106 | 0.050 |
|          |            |             |           |       | Sodium-22     | 0.01234  | 0.08625 | 0.080 |
|          |            |             |           |       | Thorium-234   | 1.106    | 3.023   | 2.00  |
| 941639   | 1202015451 | LCS         | 23-JAN-10 |       | Cerium-139    | 0.03874  | 0.07659 | 0.050 |
|          |            |             |           |       | Cesium-134    | -0.01999 | 0.1541  | 0.100 |
|          |            |             |           |       | Europium-152  | -0.1129  | 0.3097  | 0.200 |
|          |            |             |           |       | Mercury-203   | -0.0055  | 0.1108  | 0.100 |
|          |            |             |           |       | Ruthenium-106 | 0.1649   | 1.007   | 0.800 |
|          |            |             |           |       | Thorium-234   | -1.192   | 2.361   | 2.00  |
|          |            |             |           |       | Tin-113       | 0.02508  | 0.1443  | 0.100 |
|          |            |             |           |       | Uranium-235   | -0.175   | 0.5129  | 0.500 |

## Gamma Review Report based on Result &gt; MDA for Batch:941639

| Sample ID         | Collect Date    | Run Date        | Days Past | Sample Type   | Status | Instance   | Client       | Project Quals       | Zero? | queue        |
|-------------------|-----------------|-----------------|-----------|---------------|--------|------------|--------------|---------------------|-------|--------------|
| 244630001         | 08-JAN-10 12:00 | 22-JAN-10 20:49 | 14.4      | SAMPLE        | LOAD   | 1          | LANL         | LANL01004GEL        | N     | RGSP         |
| Name              | Result          | Uncert.         | Units     | MDA           | RDL    | Energy *** | FWHM         | Comb Act Rpt Err(%) | Qual  | Qual Comment |
| Actinium-228      | ✓               | 1.664           | 0.2021    | pCi/g 0.2503  | N      | 910.7 3    | 1.728        | IDENTIFIED 10.8     | ☐     |              |
| Americium-243     | INT             | 0.5289          | 0.07071   | pCi/g 0.1303  | N      | 74.19 1    | 1.671        | IDENTIFIED 12.16    | ☐     |              |
| Annihilation Rad. | —               | 0.1374          | 0.04202   | pCi/g 0.05246 | N      | 510.4 1    | 1.961        | IDENTIFIED 30.45    | ☐     |              |
| Bismuth-211       | INT             | 3.734           | 0.2861    | pCi/g 0.4309  | Y      | 351.3 4    | 1.459        | IDENTIFIED 6.85     | ☐     | u I          |
| Bismuth-212       | HE              | 0.8129          | 0.3025    | pCi/g 0.7458  | N      | 0 8 0      | FAIL_ABUND 0 | ☐                   |       |              |
| Bismuth-214       | ✓               | 1.208           | 0.1009    | pCi/g 0.14    | 0.200  | 608.7 4    | 1.926        | IDENTIFIED 7.48     | ☐     |              |
| Cerium-143        | —               | 956.1           | 138.1     | pCi/g 0       | N      | 0 8 0      | SHORT_HLIF 0 | ☐                   |       |              |
| Gross Gamma       | —               | 9.352           | 1.617     | pCi/g 3.695   | N      | 0          |              | ☐                   |       |              |
| Iodine-123        | HE              | 9.72E+05        | 1.38E+06  | pCi/g 0       | N      | 0 8 0      | SHORT_HLIF 0 | ☐                   |       |              |
| Iodine-135        | HE              | 3.14E+14        | 4.61E+14  | pCi/g 0       | N      | 0 8 0      | SHORT_HLIF 0 | ☐                   |       |              |
| Lead-212          | ✓               | 1.775           | 0.101     | pCi/g 0.1079  | 0.100  | 238.1 4    | 1.424        | IDENTIFIED 3.909    | ☐     |              |
| Lead-214          | ✓               | 1.299           | 0.1051    | pCi/g 0.1504  | 0.100  | 351.3 4    | 1.459        | IDENTIFIED 6.85     | ☐     |              |
| Lutetium-177      | HE              | 3.189           | 0.761     | pCi/g 2.331   | N      | 0 8 0      | FAIL_ABUND 0 | ☐                   |       |              |
| Niobium-95m       | —               | 1.707           | 0.1309    | pCi/g 0.4279  | N      | 0 8 0      | NOT_IDENTI 0 | ☐                   |       |              |
| Polonium-212      | NR              | 1.775           | 0.101     | pCi/g 0.1079  | N      | 238.1 4    | 1.424        | IDENTIFIED 3.909    | ☐     |              |
| Polonium-214      | NR              | 1.299           | 0.1051    | pCi/g 0.1504  | N      | 351.3 4    | 1.459        | IDENTIFIED 6.85     | ☐     |              |
| Polonium-216      | NR              | 1.775           | 0.101     | pCi/g 0.1079  | N      | 238.1 4    | 1.424        | IDENTIFIED 3.909    | ☐     |              |
| Polonium-218      | NR              | 1.299           | 0.1051    | pCi/g 0.1504  | N      | 351.3 4    | 1.459        | IDENTIFIED 6.85     | ☐     |              |
| Potassium-40      | ✓               | 28.11           | 1.423     | pCi/g 0.6282  | 1.00   | 1460 1     | 1.941        | IDENTIFIED 3.318    | ☐     |              |
| Radium-224        | INT             | 4.28            | 0.7643    | pCi/g 1.228   | Y      | 241.1 1    | 1.835        | IDENTIFIED 17.51    | ☐     | u I          |
| Radium-226        | ✓               | 1.208           | 0.1009    | pCi/g 0.14    | Y      | 608.7 4    | 1.926        | IDENTIFIED 7.48     | ☐     |              |
| Radium-228        | ✓               | 1.664           | 0.2021    | pCi/g 0.2503  | 0.500  | 910.7 3    | 1.728        | IDENTIFIED 10.8     | ☐     |              |
| Thallium-208      | ✓               | 0.5541          | 0.05471   | pCi/g 0.06082 | 0.080  | 582.8 1    | 1.507        | IDENTIFIED 9.346    | ☐     |              |
| Thorium-228       | NR              | 1.8             | 0.1025    | pCi/g 0.1095  | N      | 238.1 4    | 1.424        | IDENTIFIED 3.909    | ☐     |              |
| Thorium-230       | NR              | 1.208           | 0.1009    | pCi/g 0.14    | N      | 608.7 4    | 1.926        | IDENTIFIED 7.48     | ☐     |              |
| Thorium-232       | NR              | 1.664           | 0.2021    | pCi/g 0.2503  | N      | 910.7 3    | 1.728        | IDENTIFIED 10.8     | ☐     |              |
| Titanium-44       | —               | 0.1855          | 0.03081   | pCi/g 0.09953 | N      | 0 8 0      | NOT_IDENTI 0 | ☐                   |       |              |
| Total Uranium     | —               | 9.7126          | 3.58E-06  | ug/g 5.6125   | N      | 0          |              | ☐                   |       |              |
| Uranium-234       | NR              | 1.208           | 0.1009    | pCi/g 0.14    | N      | 608.7 4    | 1.926        | IDENTIFIED 7.48     | ☐     |              |
| Zirconium-97      | —               | 4.12E+06        | 6.77E+05  | pCi/g 0       | N      | 0 8 0      | SHORT_HLIF 0 | ☐                   |       |              |

\*\*\* = Number of isotopes identified with a keyline at this energy.

| Sample ID         | Collect Date    | Run Date        | Days Past | Sample Type   | Status | Instance   | Client       | Project Quals       | Zero? | queue                               |
|-------------------|-----------------|-----------------|-----------|---------------|--------|------------|--------------|---------------------|-------|-------------------------------------|
| 244630002         | 08-JAN-10 12:00 | 22-JAN-10 20:50 | 14.4      | SAMPLE        | LOAD   | 1          | LANL         | LANL01004GEL        | N     | RGSP                                |
| Name              | Result          | Uncert.         | Units     | MDA           | RDL    | Energy *** | FWHM         | Comb Act Rpt Err(%) | Qual  | Qual Comment                        |
| Actinium-228      | ✓               | 1.761           | 0.1626    | pCi/g 0.1623  | N      | 910.8 3    | 1.647        | IDENTIFIED 6.432    | ☐     |                                     |
| Americium-243     | INT             | 0.3875          | 0.03816   | pCi/g 0.0942  | N      | 74.96 1    | 1.077        | IDENTIFIED 8.916    | ☐     |                                     |
| Annihilation Rad. | —               | 0.111           | 0.02738   | pCi/g 0.03598 | N      | 511.1 1    | 1.69         | IDENTIFIED 24.44    | ☐     |                                     |
| Barium-137m       | NR              | 0.4121          | 0.03459   | pCi/g 0.04734 | N      | 661.5 2    | 1.622        | IDENTIFIED 7.477    | ☐     |                                     |
| Beryllium-7       | ✓               | 0.8563          | 0.1754    | pCi/g 0.4034  | N      | 477.6 1    | 1.507        | IDENTIFIED 20.16    | ☐     |                                     |
| Bismuth-211       | INT             | 3.901           | 0.2246    | pCi/g 0.2538  | Y      | 351.9 4    | 1.35         | IDENTIFIED 4.778    | ☐     | u I                                 |
| Bismuth-212       | —               | 1.297           | 0.2222    | pCi/g 0.5634  | N      | 0 11 0     | FAIL_ABUND 0 | ☐                   |       |                                     |
| Bismuth-214       | ✓               | 1.198           | 0.08849   | pCi/g 0.08834 | 0.200  | 609.1 4    | 1.725        | IDENTIFIED 5.884    | ☐     |                                     |
| Cadmium-109       | INT             | 3.155           | 0.5461    | pCi/g 1.215   | Y      | 87.45 3    | 1.343        | IDENTIFIED 16.69    | ☐     | u I                                 |
| Cerium-143        | —               | 383.7           | 65.72     | pCi/g 0       | N      | 0 11 0     | SHORT_HLIF 0 | ☐                   |       |                                     |
| Cesium-134        | LA              | 0.1175          | 0.03301   | pCi/g 0.07155 | 0.100  | 0 11 0     | FAIL_ABUND 0 | ☐                   | UI    | Data rejected due to low abundance. |
| Cesium-137        | ✓               | 0.4357          | 0.03658   | pCi/g 0.05004 | 0.100  | 661.5 2    | 1.622        | IDENTIFIED 7.477    | ☐     |                                     |
| Gross Gamma       | —               | 10.82           | 1.389     | pCi/g 2.77    | N      | 0          |              | ☐                   |       |                                     |
| Iodine-135        | HE              | 2.52E+14        | 3.44E+14  | pCi/g 0       | N      | 0 11 0     | SHORT_HLIF 0 | ☐                   |       |                                     |
| Krypton-85        | —               | 18.22           | 3.369     | pCi/g 11.43   | N      | 0 11 0     | NOT_IDENTI 0 | ☐                   |       |                                     |
| Lead-212          | ✓               | 1.808           | 0.08045   | pCi/g 0.07868 | 0.100  | 238.8 4    | 1.155        | IDENTIFIED 2.653    | ☐     |                                     |
| Lead-214          | ✓               | 1.357           | 0.08576   | pCi/g 0.08844 | 0.100  | 351.9 4    | 1.35         | IDENTIFIED 4.778    | ☐     |                                     |



| Zirconium-97   |                 | 1.93E+06 7.87E+05 pCi/g | 0         | N           | 0       | 8        | 0      | SHORT_HLIF          | 0     |  |
|--|-----------------|-------------------------|-----------|-------------|---------|----------|--------|---------------------|-------|--|
| *** = Number of isotopes identified with a keyline at this energy. |                 |                         |           |             |         |          |        |                     |       |  |
| Sample ID  | Collect Date    | Run Date                | Days Past | Sample Type | Status  | Instance | Client | Project Quals       | Zero? | queue                                    |
| 244630004  | 08-JAN-10 12:00 | 23-JAN-10 11:46         | 15        | SAMPLE      | LOAD    | 1        | LANL   | LANL01004GEL        | N     | RGSP                                     |
| Name   | Result          | Uncert.                 | Units     | MDA         | RDL     | Energy   | FWHM   | Comb Act Rpt Err(%) | Qual  | Qual Comment                             |
| Actinium-228   | ✓               | 1.84                    | 0.1807    | pCi/g       | 0.2503  | N        | 911.3  | 1.957 IDENTIFIED    | 8.389 |  |
| Americium-243  | INT             | 0.4877                  | 0.05262   | pCi/g       | 0.1139  | N        | 74.53  | 1.385 IDENTIFIED    | 9.802 |  |
| Annihilation Rad.  | HE              | 0.1308                  | 0.04136   | pCi/g       | 0.05522 | N        | 510.7  | 1.928 IDENTIFIED    | 31.48 |  |
| Barium-137m  | NK              | 0.4565                  | 0.04671   | pCi/g       | 0.06829 | N        | 661.4  | 1.622 IDENTIFIED    | 9.929 |  |
| Bismuth-211  | INT             | 4.351                   | 0.2898    | pCi/g       | 0.4287  | Y        | 351.8  | 1.244 IDENTIFIED    | 5.827 | ✓ UI                                     |
| Bismuth-212  | HE              | 1.234                   | 0.2529    | pCi/g       | 0.7866  | N        | 0      | 11 0 FAIL_ABUND     | 0     |  |
| Bismuth-214  | ✓               | 1.409                   | 0.1128    | pCi/g       | 0.1299  | 0.200    | 609.4  | 1.332 IDENTIFIED    | 7.11  |  |
| Cadmium-109  | INT             | 3.83                    | 0.6192    | pCi/g       | 2.084   | Y        | 87.3   | 1.32 IDENTIFIED     | 15.41 | ✓ UI                                     |
| Cerium-143   | —               | 1172                    | 160.4     | pCi/g       | 0       | N        | 0      | 11 0 SHORT_HLIF     | 0     |  |
| Cesium-134   | LA              | 0.1155                  | 0.04604   | pCi/g       | 0.1086  | 0.100    | 0      | 11 0 FAIL_ABUND     | 0     | ✓ UI Data rejected due to low abundance. |
| Cesium-135   | INT             | 0.6691                  | 0.1504    | pCi/g       | 0.3193  | N        | 269.7  | 1.07804 IDENTIFIED  | 22.15 |  |
| Cesium-137   | ✓               | 0.4826                  | 0.0494    | pCi/g       | 0.07219 | 0.100    | 661.4  | 1.622 IDENTIFIED    | 9.929 |  |
| Gross Gamma  | —               | 10.89                   | 1.569     | pCi/g       | 4.202   | N        | 0      |                     |       |  |
| Iodine-135   | HE              | 7.37E+14                | 2.37E+15  | pCi/g       | 0       | N        | 0      | 11 0 SHORT_HLIF     | 0     |  |
| Krypton-85   | HE              | 16.4                    | 4.759     | pCi/g       | 15.84   | N        | 0      | 11 0 NOT_IDENTI     | 0     |  |
| Lead-212   | ✓               | 2.013                   | 0.09728   | pCi/g       | 0.1094  | 0.100    | 238.4  | 1.185 IDENTIFIED    | 3.127 |  |
| Lead-214   | ✓               | 1.514                   | 0.1083    | pCi/g       | 0.1391  | 0.100    | 351.8  | 1.244 IDENTIFIED    | 5.827 |  |
| Lutetium-177   | HE              | 2.708                   | 0.9926    | pCi/g       | 2.453   | N        | 0      | 11 0 FAIL_ABUND     | 0     |  |
| Neptunium-237  | INT             | 1.106                   | 0.212     | pCi/g       | 0.5649  | N        | 87.3   | 1.32 IDENTIFIED     | 15.41 |  |
| Niobium-95m  | —               | 0.7446                  | 0.09672   | pCi/g       | 0.3239  | N        | 0      | 11 0 NOT_IDENTI     | 0     |  |
| Niobium-97   | HE              | 16160                   | 62740     | pCi/g       | 0       | N        | 0      | 11 0 SHORT_HLIF     | 0     |  |
| Polonium-212   | NK              | 2.013                   | 0.09728   | pCi/g       | 0.1094  | N        | 238.4  | 1.185 IDENTIFIED    | 3.127 |  |
| Polonium-214   | NK              | 1.514                   | 0.1083    | pCi/g       | 0.1391  | N        | 351.8  | 1.244 IDENTIFIED    | 5.827 |  |
| Polonium-216   | NK              | 2.013                   | 0.09728   | pCi/g       | 0.1094  | N        | 238.4  | 1.185 IDENTIFIED    | 3.127 |  |
| Polonium-218   | NK              | 1.514                   | 0.1083    | pCi/g       | 0.1391  | N        | 351.8  | 1.244 IDENTIFIED    | 5.827 |  |
| Potassium-40   | ✓               | 29.71                   | 1.354     | pCi/g       | 0.677   | 1.00     | 1461.1 | 2.009 IDENTIFIED    | 3.137 |  |
| Radium-224   | INT             | 4.739                   | 0.7003    | pCi/g       | 1.245   | Y        | 241.4  | 1.774 IDENTIFIED    | 14.48 | ✓ UI                                     |
| Radium-226   | ✓               | 1.409                   | 0.1128    | pCi/g       | 0.1299  | Y        | 609.4  | 1.332 IDENTIFIED    | 7.11  |  |
| Radium-228   | ✓               | 1.84                    | 0.1807    | pCi/g       | 0.2503  | 0.500    | 911.3  | 1.957 IDENTIFIED    | 8.389 |  |
| Strontium-85   | LA              | 0.08398                 | 0.02437   | pCi/g       | 0.08112 | Y        | 0      | 11 0 NOT_IDENTI     | 0     | ✓ UI Data rejected due to low abundance. |
| Thallium-208   | ✓               | 0.6229                  | 0.05131   | pCi/g       | 0.07185 | 0.000    | 582.8  | 1.131 IDENTIFIED    | 7.608 |  |
| Thorium-228  | NK              | 2.043                   | 0.09874   | pCi/g       | 0.1111  | N        | 238.4  | 1.185 IDENTIFIED    | 3.127 |  |
| Thorium-230  | NK              | 1.408                   | 0.1128    | pCi/g       | 0.1299  | N        | 609.4  | 1.332 IDENTIFIED    | 7.11  |  |
| Thorium-232  | NK              | 1.84                    | 0.1807    | pCi/g       | 0.2503  | N        | 911.3  | 1.957 IDENTIFIED    | 8.389 |  |
| Thorium-234  | ✓               | 3.438                   | 1.29      | pCi/g       | 3.02    | 2.00     | 62.81  | 2.09849 IDENTIFIED  | 36.39 |  |
| Tin-126  | NK              | 0.3765                  | 0.06087   | pCi/g       | 0.192   | N        | 87.3   | 1.32 IDENTIFIED     | 15.41 |  |
| Titanium-44  | —               | 0.4548                  | 0.03673   | pCi/g       | 0.1012  | N        | 0      | 11 0 FAIL_ABUND     | 0     |  |
| Total Uranium  | —               | 10.34                   | 3.84E-06  | ug/g        | 4.4956  | N        | 0      |                     |       |  |
| Uranium-234  | NK              | 1.408                   | 0.1128    | pCi/g       | 0.1299  | N        | 609.4  | 1.332 IDENTIFIED    | 7.11  |  |
| Uranium-238  | HE              | 3.438                   | 1.29      | pCi/g       | 3.02    | N        | 62.81  | 2.09849 IDENTIFIED  | 36.39 |  |
| Zirconium-97   | —               | 4.88E+06                | 1.07E+06  | pCi/g       | 0       | N        | 0      | 11 0 SHORT_HLIF     | 0     |  |
| *** = Number of isotopes identified with a keyline at this energy. |                 |                         |           |             |         |          |        |                     |       |  |
| Sample ID  | Collect Date    | Run Date                | Days Past | Sample Type | Status  | Instance | Client | Project Quals       | Zero? | queue                                    |
| 244630005  | 08-JAN-10 12:00 | 23-JAN-10 11:46         | 15        | SAMPLE      | LOAD    | 1        | LANL   | LANL01004GEL        | N     | RGSP                                     |
| Name   | Result          | Uncert.                 | Units     | MDA         | RDL     | Energy   | FWHM   | Comb Act Rpt Err(%) | Qual  | Qual Comment                             |
| Actinium-228   | ✓               | 2.582                   | 0.2242    | pCi/g       | 0.236   | N        | 911.2  | 1.632 IDENTIFIED    | 6.437 |  |
| Americium-243  | INT             | 0.4806                  | 0.04194   | pCi/g       | 0.08978 | N        | 74.85  | 1.217 IDENTIFIED    | 7.743 |  |
| Annihilation Rad.  | —               | 0.1389                  | 0.03584   | pCi/g       | 0.04955 | N        | 511.3  | 1.212 IDENTIFIED    | 25.41 |  |
| Bismuth-211  | INT             | 5.316                   | 0.3494    | pCi/g       | 0.3879  | Y        | 352.4  | 1.313 IDENTIFIED    | 4.807 | ✓ UI                                     |
| Bismuth-212  | —               | 1.657                   | 0.3284    | pCi/g       | 0.8126  | N        | 0      | 11 0 FAIL_ABUND     | 0     |  |
| Bismuth-214  | ✓               | 1.632                   | 0.1222    | pCi/g       | 0.1279  | 0.200    | 609.4  | 1.355 IDENTIFIED    | 5.416 |  |
| Cadmium-109  | INT             | 4.009                   | 0.541     | pCi/g       | 1.165   | Y        | 87.27  | 1.123 IDENTIFIED    | 12.66 | ✓ UI                                     |



|               |     |         |          |       |         |       |       |    |        |            |       |   |  |
|---------------|-----|---------|----------|-------|---------|-------|-------|----|--------|------------|-------|---|--|
| Potassium-40  | ✓   | 28.62   | 1.549    | pCi/g | 0.4395  | 1.00  | 1462  | 1  | 1.783  | IDENTIFIED | 3.256 | ☐ |  |
| Radium-224    | INT | 4.516   | 0.6553   | pCi/g | 0.9559  | Y     | 241.7 | 1  | 1.623  | IDENTIFIED | 12.86 | ☐ | ✓                                      |
| Radium-226    | ✓   | 1.069   | 0.09015  | pCi/g | 0.09477 | Y     | 609.6 | 4  | 1.067  | IDENTIFIED | 6.26  | ☐ |  |
| Radium-228    | ✓   | 1.699   | 0.1737   | pCi/g | 0.1911  | 0.500 | 911.6 | 3  | 1.576  | IDENTIFIED | 8.214 | ☐ |  |
| Strontium-85  | LA  | 0.06086 | 0.01774  | pCi/g | 0.0605  | Y     | 0     | 10 | 0      | NOT_IDENTI | 0     | ☐ | UI Data rejected due to low abundance. |
| Thallium-200  | HE  | 41.8    | 192.8    | pCi/g | 0       | N     | 0     | 10 | 0      | SHORT_HLIF | 0     | ☐ |  |
| Thallium-208  | ✓   | 0.5009  | 0.04524  | pCi/g | 0.0576  | 0.080 | 583.4 | 1  | 1.265  | IDENTIFIED | 7.239 | ☐ |  |
| Thorium-228   | NR  | 1.67    | 0.1298   | pCi/g | 0.08524 | N     | 238.7 | 4  | 0.9334 | IDENTIFIED | 3.374 | ☐ |  |
| Thorium-230   | NR  | 1.069   | 0.09015  | pCi/g | 0.09476 | N     | 609.6 | 4  | 1.067  | IDENTIFIED | 6.26  | ☐ |  |
| Thorium-232   | NR  | 1.699   | 0.1737   | pCi/g | 0.1911  | N     | 911.6 | 3  | 1.576  | IDENTIFIED | 8.214 | ☐ |  |
| Tin-126       | NR  | 0.2975  | 0.04606  | pCi/g | 0.09248 | N     | 87.1  | 3  | 1.171  | IDENTIFIED | 14.76 | ☐ |  |
| Titanium-44   | —   | 0.3509  | 0.02486  | pCi/g | 0.06011 | N     | 0     | 10 | 0      | FAIL_ABUND | 0     | ☐ |  |
| Total Uranium | —   | 4.0509  | 2.32E-06 | ug/g  | 2.3178  | N     | 0     |    |        |            |       | ☐ |  |
| Uranium-234   | NR  | 1.069   | 0.09015  | pCi/g | 0.09476 | N     | 609.6 | 4  | 1.067  | IDENTIFIED | 6.26  | ☐ |  |

\*\*\* = Number of isotopes identified with a keyline at this energy.

| Sample ID            | Collect Date    | Run Date        | Days Past | Sample Type | Status  | Instance   | Client | Project Quals       | Zero? | queue            |   |
|----------------------|-----------------|-----------------|-----------|-------------|---------|------------|--------|---------------------|-------|------------------|---|
| 244630007            | 08-JAN-10 12:00 | 23-JAN-10 11:47 | 15        | SAMPLE      | LOAD    | 1          | LANL   | LANL01004GEL        | N     | RGSP             |   |
| Name                 | Result          | Uncert.         | Units     | MDA         | RDL     | Energy *** | FWHM   | Comb Act Rpt Err(%) | Qual  | Qual Comment     |   |
| Actinium-228         | ✓               | 2.21            | 0.2059    | pCi/g       | 0.2501  | N          | 910.4  | 3                   | 1.762 | IDENTIFIED 7.479 | ☐ |
| Americium-243        | INT             | 0.5199          | 0.07919   | pCi/g       | 0.1354  | N          | 74.36  | 1                   | 1.913 | IDENTIFIED 14.18 | ☐ |
| Annihilation Rad. HE |                 | 0.1279          | 0.04215   | pCi/g       | 0.05796 | N          | 510.2  | 1                   | 1.602 | IDENTIFIED 32.83 | ☐ |
| Bismuth-211          | INT             | 4.109           | 0.3213    | pCi/g       | 0.4048  | Y          | 351.3  | 4                   | 1.438 | IDENTIFIED 7.025 | ☐ |
| Bismuth-212          | —               | 1.483           | 0.2785    | pCi/g       | 0.8294  | N          | 0      | 10                  | 0     | FAIL_ABUND 0.    | ☐ |
| Bismuth-214          | ✓               | 1.264           | 0.106     | pCi/g       | 0.1366  | 0.200      | 609    | 4                   | 1.674 | IDENTIFIED 7.518 | ☐ |
| Cerium-143           | —               | 1386            | 213       | pCi/g       | 0       | N          | 0      | 10                  | 0     | SHORT_HLIF 0     | ☐ |
| Cesium-135           | HE              | 0.558           | 0.1949    | pCi/g       | 0.3318  | N          | 269.3  | 1                   | 1.689 | IDENTIFIED 34.67 | ☐ |
| Gross Gamma          | —               | 10.23           | 2.367     | pCi/g       | 3.247   | N          | 0      |                     |       |                  | ☐ |
| Iodine-133           | HE              | 910.1           | 3543      | pCi/g       | 0       | N          | 0      | 10                  | 0     | SHORT_HLIF 0     | ☐ |
| Iodine-135           | HE              | 3.46E+15        | 2.64E+15  | pCi/g       | 0       | N          | 0      | 10                  | 0     | SHORT_HLIF 0     | ☐ |
| Lead-212             | ✓               | 1.915           | 0.1069    | pCi/g       | 0.1203  | 0.100      | 238    | 4                   | 1.253 | IDENTIFIED 3.744 | ☐ |
| Lead-214             | ✓               | 1.429           | 0.1178    | pCi/g       | 0.1411  | 0.100      | 351.3  | 4                   | 1.438 | IDENTIFIED 7.025 | ☐ |
| Lutetium-177         | HE              | 3.916           | 1.18      | pCi/g       | 2.62    | N          | 0      | 10                  | 0     | FAIL_ABUND 0     | ☐ |
| Neptunium-237        | HE              | 0.685           | 0.1996    | pCi/g       | 0.6543  | N          | 86.36  | 2                   | 1.216 | IDENTIFIED 26.65 | ☐ |
| Niobium-95m          | —               | 1.761           | 0.1426    | pCi/g       | 0.4616  | N          | 0      | 10                  | 0     | NOT_IDENTI 0     | ☐ |
| Niobium-97           | HE              | 36580           | 50840     | pCi/g       | 0       | N          | 0      | 10                  | 0     | SHORT_HLIF 0     | ☐ |
| Polonium-212         | NR              | 1.915           | 0.1069    | pCi/g       | 0.1203  | N          | 238    | 4                   | 1.253 | IDENTIFIED 3.744 | ☐ |
| Polonium-214         | NR              | 1.429           | 0.1178    | pCi/g       | 0.1411  | N          | 351.3  | 4                   | 1.438 | IDENTIFIED 7.025 | ☐ |
| Polonium-216         | NR              | 1.915           | 0.1069    | pCi/g       | 0.1203  | N          | 238    | 4                   | 1.253 | IDENTIFIED 3.744 | ☐ |
| Polonium-218         | NR              | 1.429           | 0.1178    | pCi/g       | 0.1411  | N          | 351.3  | 4                   | 1.438 | IDENTIFIED 7.025 | ☐ |
| Potassium-40         | ✓               | 35.32           | 1.739     | pCi/g       | 0.6992  | 1.00       | 1460   | 1                   | 2.186 | IDENTIFIED 3.102 | ☐ |
| Radium-224           | INT             | 6.785           | 0.9574    | pCi/g       | 1.368   | Y          | 240.9  | 1                   | 1.985 | IDENTIFIED 13.67 | ☐ |
| Radium-226           | ✓               | 1.264           | 0.106     | pCi/g       | 0.1366  | Y          | 609    | 4                   | 1.674 | IDENTIFIED 7.518 | ☐ |
| Radium-228           | ✓               | 2.21            | 0.2059    | pCi/g       | 0.2501  | 0.500      | 910.4  | 3                   | 1.762 | IDENTIFIED 7.479 | ☐ |
| Thallium-200         | HE              | 59.26           | 267       | pCi/g       | 0       | N          | 0      | 10                  | 0     | SHORT_HLIF 0     | ☐ |
| Thallium-208         | ✓               | 0.5618          | 0.04603   | pCi/g       | 0.07706 | 0.080      | 582.6  | 1                   | 1.691 | IDENTIFIED 7.55  | ☐ |
| Thorium-228          | NR              | 1.944           | 0.1085    | pCi/g       | 0.1221  | N          | 238    | 4                   | 1.253 | IDENTIFIED 3.744 | ☐ |
| Thorium-230          | NR              | 1.264           | 0.106     | pCi/g       | 0.1366  | N          | 609    | 4                   | 1.674 | IDENTIFIED 7.518 | ☐ |
| Thorium-232          | NR              | 2.21            | 0.2059    | pCi/g       | 0.2501  | N          | 910.4  | 3                   | 1.762 | IDENTIFIED 7.479 | ☐ |
| Tin-126              | HE              | 0.2333          | 0.06358   | pCi/g       | 0.2028  | N          | 86.36  | 2                   | 1.216 | IDENTIFIED 26.65 | ☐ |
| Titanium-44          | HE              | 0.1535          | 0.04352   | pCi/g       | 0.1055  | N          | 0      | 10                  | 0     | NOT_IDENTI 0     | ☐ |
| Uranium-234          | NR              | 1.264           | 0.106     | pCi/g       | 0.1366  | N          | 609    | 4                   | 1.674 | IDENTIFIED 7.518 | ☐ |
| Zirconium-97         | —               | 1.08E+07        | 1.31E+06  | pCi/g       | 0       | N          | 0      | 10                  | 0     | SHORT_HLIF 0     | ☐ |

\*\*\* = Number of isotopes identified with a keyline at this energy.

| Sample ID | Collect Date    | Run Date        | Days Past | Sample Type | Status | Instance | Client | Project Quals | Zero? | queue |
|-----------|-----------------|-----------------|-----------|-------------|--------|----------|--------|---------------|-------|-------|
| 244630008 | 08-JAN-10 12:00 | 23-JAN-10 11:47 | 15        | SAMPLE      | LOAD   | 1        | LANL   | LANL01004GEL  | N     | RGSP  |

| Name                | Result   | Uncert.  | Units | MDA     | RDL   | Energy *** | FWHM   | Comb Act   | Rpt Err(%) | Qual | Qual Comment                           |
|---------------------|----------|----------|-------|---------|-------|------------|--------|------------|------------|------|--|
| Actinium-228 ✓      | 2.034    | 0.1829   | pCi/g | 0.1775  | N     | 910.9 3    | 1.472  | IDENTIFIED | 6.753      | ☐    |  |
| Americium-243 INT   | 0.4141   | 0.03715  | pCi/g | 0.07756 | N     | 74.85 1    | 1.023  | IDENTIFIED | 7.954      | ☐    |  |
| Annihilation Rad. — | 0.1465   | 0.03282  | pCi/g | 0.03858 | N     | 510.8 1    | 1.872  | IDENTIFIED | 21.89      | ☐    |  |
| Bismuth-211 INT     | 4.115    | 0.3004   | pCi/g | 0.2873  | Y     | 351.7 4    | 1.058  | IDENTIFIED | 4.849      | ☐    | u1                                     |
| Bismuth-212 ✓       | 1.251    | 0.2209   | pCi/g | 0.4291  | N     | 727.1 1    | 1.313  | IDENTIFIED | 16.87      | ☐    |  |
| Bismuth-214 ✓       | 1.311    | 0.1053   | pCi/g | 0.09878 | 0.200 | 609.2 4    | 1.369  | IDENTIFIED | 6.052      | ☐    |  |
| Cadmium-109 INT     | 3.093    | 0.4782   | pCi/g | 1.134   | Y     | 87.25 3    | 0.9152 | IDENTIFIED | 14.7       | ☐    | u1                                     |
| Cerium-143 —        | 394.6    | 83.86    | pCi/g | 0       | N     | 0 8 0      |        | SHORT_HLIF | 0          | ☐    |  |
| Cesium-134 LA       | 0.1504   | 0.03218  | pCi/g | 0.09531 | 0.100 | 0 8 0      |        | FAIL_ABUND | 0          | ☐    | UI Data rejected due to low abundance. |
| Gross Gamma —       | 10.99    | 1.549    | pCi/g | 3.898   | N     | 0          |        |            |            | ☐    |  |
| Iodine-123 HE       | 2.56E+06 | 2.09E+06 | pCi/g | 0       | N     | 0 8 0      |        | SHORT_HLIF | 0          | ☐    |  |
| Lead-212 ✓          | 1.921    | 0.1262   | pCi/g | 0.07718 | 0.100 | 238.5 4    | 1.056  | IDENTIFIED | 2.845      | ☐    |  |
| Lead-214 ✓          | 1.431    | 0.111    | pCi/g | 0.1109  | 0.100 | 351.7 4    | 1.058  | IDENTIFIED | 4.849      | ☐    |  |
| Lutetium-177 HE     | 2.834    | 0.6855   | pCi/g | 1.929   | N     | 0 8 0      |        | FAIL_ABUND | 0          | ☐    |  |
| Neptunium-237 INT   | 0.893    | 0.166    | pCi/g | 0.361   | N     | 87.25 3    | 0.9152 | IDENTIFIED | 14.7       | ☐    |  |
| Polonium-212 NR     | 1.921    | 0.1262   | pCi/g | 0.07718 | N     | 238.5 4    | 1.056  | IDENTIFIED | 2.845      | ☐    |  |
| Polonium-214 NR     | 1.431    | 0.111    | pCi/g | 0.1109  | N     | 351.7 4    | 1.058  | IDENTIFIED | 4.849      | ☐    |  |
| Polonium-216 NR     | 1.921    | 0.1262   | pCi/g | 0.07718 | N     | 238.5 4    | 1.056  | IDENTIFIED | 2.845      | ☐    |  |
| Polonium-218 NR     | 1.431    | 0.111    | pCi/g | 0.1109  | N     | 351.7 4    | 1.058  | IDENTIFIED | 4.849      | ☐    |  |
| Potassium-40 ✓      | 32.78    | 1.691    | pCi/g | 0.4821  | 1.00  | 1461 1     | 1.785  | IDENTIFIED | 2.703      | ☐    |  |
| Radium-224 INT      | 5.344    | 0.6716   | pCi/g | 0.8783  | Y     | 241.6 1    | 1.737  | IDENTIFIED | 11.29      | ☐    | u1                                     |
| Radium-226 ✓        | 1.311    | 0.1053   | pCi/g | 0.09878 | Y     | 609.2 4    | 1.369  | IDENTIFIED | 6.052      | ☐    |  |
| Radium-228 ✓        | 2.034    | 0.1829   | pCi/g | 0.1775  | 0.500 | 910.9 3    | 1.472  | IDENTIFIED | 6.753      | ☐    |  |
| Technetium-99m —    | 2.18E+15 | 0        | pCi/g | 0       | N     | 0 8 0      |        | SHORT_HLIF | 0          | ☐    |  |
| Thallium-200 HE     | 278.9    | 185.9    | pCi/g | 0       | N     | 0 8 0      |        | SHORT_HLIF | 0          | ☐    |  |
| Thallium-208 ✓      | 0.6132   | 0.05006  | pCi/g | 0.05378 | 0.080 | 583.1 1    | 1.261  | IDENTIFIED | 6.487      | ☐    |  |
| Thorium-228 NR      | 1.95     | 0.1281   | pCi/g | 0.07834 | N     | 238.5 4    | 1.056  | IDENTIFIED | 2.845      | ☐    |  |
| Thorium-230 NR      | 1.311    | 0.1053   | pCi/g | 0.09878 | N     | 609.2 4    | 1.369  | IDENTIFIED | 6.052      | ☐    |  |
| Thorium-232 NR      | 2.034    | 0.1829   | pCi/g | 0.1775  | N     | 910.9 3    | 1.472  | IDENTIFIED | 6.753      | ☐    |  |
| Tin-126 NR          | 0.3041   | 0.04701  | pCi/g | 0.112   | N     | 87.25 3    | 0.9152 | IDENTIFIED | 14.7       | ☐    |  |
| Titanium-44 —       | 0.4079   | 0.02733  | pCi/g | 0.07054 | N     | 0 8 0      |        | FAIL_ABUND | 0          | ☐    |  |
| Total Uranium —     | 4.7809   | 2.48E-06 | ug/g  | 2.6092  | N     | 0          |        |            |            | ☐    |  |
| Uranium-234 NR      | 1.311    | 0.1053   | pCi/g | 0.09878 | N     | 609.2 4    | 1.369  | IDENTIFIED | 6.052      | ☐    |  |
| Zirconium-97 HE     | 1.33E+06 | 7.30E+05 | pCi/g | 0       | N     | 0 8 0      |        | SHORT_HLIF | 0          | ☐    |  |

\*\*\* = Number of isotopes identified with a keyline at this energy.

| Sample ID           | Collect Date    | Run Date        | Days Past | Sample Type | Status | Instance   | Client | Project      | Quals      | Zero? | Queue                                  |
|---------------------|-----------------|-----------------|-----------|-------------|--------|------------|--------|--------------|------------|-------|--|
| 244630009           | 08-JAN-10 12:00 | 23-JAN-10 11:48 | 15        | SAMPLE      | LOAD   | 1          | LANL   | LANL01004GEL |            | N     | RGSP                                   |
| Name                | Result          | Uncert.         | Units     | MDA         | RDL    | Energy *** | FWHM   | Comb Act     | Rpt Err(%) | Qual  | Qual Comment                           |
| Actinium-228 ✓      | 2.544           | 0.2274          | pCi/g     | 0.3071      | N      | 910.3 3    | 1.945  | IDENTIFIED   | 6.908      | ☐     |  |
| Americium-243 INT   | 0.585           | 0.04312         | pCi/g     | 0.06636     | N      | 74.84 1    | 1.086  | IDENTIFIED   | 5.524      | ☐     |  |
| Annihilation Rad. — | 0.1925          | 0.04251         | pCi/g     | 0.05847     | N      | 510.6 1    | 1.471  | IDENTIFIED   | 21.63      | ☐     |  |
| Bismuth-210 HE      | 1.655           | 0.4534          | pCi/g     | 0.9437      | N      | 46.55 3    | 0.8905 | IDENTIFIED   | 26.86      | ☐     |  |
| Bismuth-211 INT     | 5.699           | 0.4042          | pCi/g     | 0.4051      | Y      | 351.6 4    | 1.176  | IDENTIFIED   | 5.344      | ☐     | u1                                     |
| Bismuth-212 ✓       | 2.128           | 0.3792          | pCi/g     | 0.6513      | N      | 726.3 1    | 1.769  | IDENTIFIED   | 17.1       | ☐     |  |
| Bismuth-214 ✓       | 1.832           | 0.1418          | pCi/g     | 0.1378      | 0.200  | 608.9 4    | 1.417  | IDENTIFIED   | 5.837      | ☐     |  |
| Cadmium-109 INT     | 4.922           | 0.5398          | pCi/g     | 1.109       | Y      | 87.23 3    | 1.163  | IDENTIFIED   | 9.823      | ☐     | u1                                     |
| Cerium-143 —        | 835.8           | 130.6           | pCi/g     | 0           | N      | 0 10 0     |        | SHORT_HLIF   | 0          | ☐     |  |
| Cesium-134 LA       | 0.1646          | 0.05856         | pCi/g     | 0.1381      | 0.100  | 0 10 0     |        | FAIL_ABUND   | 0          | ☐     | UI Data rejected due to low abundance. |
| Europium-155 HE     | 0.2014          | 0.05397         | pCi/g     | 0.198       | N      | 0 10 0     |        | FAIL_ABUND   | 0          | ☐     |  |
| Gross Gamma —       | 13.26           | 1.739           | pCi/g     | 6.318       | N      | 0          |        |              |            | ☐     |  |
| Iodine-133 HE       | 4695            | 3596            | pCi/g     | 0           | N      | 0 10 0     |        | SHORT_HLIF   | 0          | ☐     |  |
| Krypton-85 HE       | 15.41           | 4.482           | pCi/g     | 15.34       | N      | 0 10 0     |        | NOT_IDENTI   | 0          | ☐     |  |
| Lead-210 HE         | 1.655           | 0.4534          | pCi/g     | 0.9437      | N      | 46.55 3    | 0.8905 | IDENTIFIED   | 26.86      | ☐     |  |
| Lead-212 ✓          | 2.203           | 0.1303          | pCi/g     | 0.1046      | 0.100  | 238.5 4    | 1.039  | IDENTIFIED   | 3.091      | ☐     |  |
| Lead-214 ✓          | 1.982           | 0.1498          | pCi/g     | 0.1413      | 0.100  | 351.6 4    | 1.176  | IDENTIFIED   | 5.344      | ☐     |  |
| Lutetium-177 HE     | 4.095           | 1.195           | pCi/g     | 2.394       | N      | 0 10 0     |        | FAIL_ABUND   | 0          | ☐     |  |
| Neptunium-237 INT   | 1.421           | 0.2139          | pCi/g     | 0.3187      | N      | 87.23 3    | 1.163  | IDENTIFIED   | 9.823      | ☐     |  |

|               |     |          |          |       |         |       |       |    |        |            |       |  |
|---------------|-----|----------|----------|-------|---------|-------|-------|----|--------|------------|-------|--|
| Polonium-210  | HE  | 1.655    | 0.4522   | pCi/g | 0.9437  | N     | 46.55 | 3  | 0.8905 | IDENTIFIED | 26.86 | <input type="checkbox"/>   |
| Polonium-212  | NR  | 2.283    | 0.1303   | pCi/g | 0.1046  | N     | 238.5 | 4  | 1.039  | IDENTIFIED | 3.091 | <input type="checkbox"/>   |
| Polonium-214  | NR  | 1.982    | 0.1498   | pCi/g | 0.1413  | N     | 351.6 | 4  | 1.176  | IDENTIFIED | 5.344 | <input type="checkbox"/>   |
| Polonium-216  | NR  | 2.203    | 0.1303   | pCi/g | 0.1046  | N     | 238.5 | 4  | 1.039  | IDENTIFIED | 3.091 | <input type="checkbox"/>   |
| Polonium-218  | NR  | 1.982    | 0.1498   | pCi/g | 0.1413  | N     | 351.6 | 4  | 1.176  | IDENTIFIED | 5.344 | <input type="checkbox"/>   |
| Potassium-40  | ✓   | 33.28    | 1.848    | pCi/g | 0.6331  | 1.00  | 1459  | 1  | 1.876  | IDENTIFIED | 3.336 | <input checked="" type="checkbox"/>  |
| Radium-224    | INT | 7.32     | 0.7493   | pCi/g | 1.191   | Y     | 241.5 | 1  | 1.805  | IDENTIFIED | 9.183 | <input checked="" type="checkbox"/> uI                                     |
| Radium-226    | ✓   | 1.832    | 0.1418   | pCi/g | 0.1378  | Y     | 608.9 | 4  | 1.417  | IDENTIFIED | 5.837 | <input type="checkbox"/>   |
| Radium-228    | ✓   | 2.544    | 0.2274   | pCi/g | 0.3071  | 0.500 | 910.3 | 3  | 1.945  | IDENTIFIED | 6.908 | <input type="checkbox"/>   |
| Strontium-85  | LA  | 0.07892  | 0.02295  | pCi/g | 0.07853 | Y     | 0     | 10 | 0      | NOT_IDENTI | 0     | <input checked="" type="checkbox"/> UI Data rejected due to low abundance. |
| Thallium-200  | HE  | 207.5    | 230.8    | pCi/g | 0       | N     | 0     | 10 | 0      | SHORT_HLIF | 0     | <input type="checkbox"/>   |
| Thallium-208  | ✓   | 0.7555   | 0.06797  | pCi/g | 0.07443 | 0.080 | 582.8 | 1  | 1.247  | IDENTIFIED | 7.653 | <input type="checkbox"/>   |
| Thorium-228   | NR  | 2.237    | 0.1323   | pCi/g | 0.1061  | N     | 238.5 | 4  | 1.039  | IDENTIFIED | 3.091 | <input type="checkbox"/>   |
| Thorium-230   | NR  | 1.832    | 0.1418   | pCi/g | 0.1378  | N     | 608.9 | 4  | 1.417  | IDENTIFIED | 5.837 | <input type="checkbox"/>   |
| Thorium-232   | NR  | 2.544    | 0.2274   | pCi/g | 0.3071  | N     | 910.3 | 3  | 1.945  | IDENTIFIED | 6.908 | <input type="checkbox"/>   |
| Thorium-234   | ✓   | 2.359    | 0.5854   | pCi/g | 1.191   | 2.00  | 63.33 | 2  | 0.885  | IDENTIFIED | 23    | <input type="checkbox"/>   |
| Tin-126       | NR  | 0.4838   | 0.05307  | pCi/g | 0.1089  | N     | 87.23 | 3  | 1.163  | IDENTIFIED | 9.823 | <input type="checkbox"/>   |
| Titanium-44   | —   | 0.5336   | 0.03376  | pCi/g | 0.07063 | N     | 0     | 10 | 0      | FAIL_ABUND | 0     | <input type="checkbox"/>   |
| Total Uranium | —   | 7.037    | 1.74E-06 | ug/g  | 1.7744  | N     | 0     | 0  | 0      |            |       | <input type="checkbox"/>   |
| Uranium-234   | NR  | 1.832    | 0.1418   | pCi/g | 0.1378  | N     | 608.9 | 4  | 1.417  | IDENTIFIED | 5.837 | <input type="checkbox"/>   |
| Uranium-238   | HE  | 2.359    | 0.5854   | pCi/g | 1.191   | N     | 63.33 | 2  | 0.885  | IDENTIFIED | 23    | <input type="checkbox"/>   |
| Zirconium-97  | —   | 2.78E+06 | 1.10E+06 | pCi/g | 0       | N     | 0     | 10 | 0      | SHORT_HLIF | 0     | <input type="checkbox"/>   |

\*\*\* = Number of isotopes identified with a keyline at this energy.

| Sample ID         | Collect Date    | Run Date        | Days Past | Sample Type | Status  | Instance   | Client | Project Quals       | Zero?  | queue   |
|-------------------|-----------------|-----------------|-----------|-------------|---------|------------|--------|---------------------|--------|---|
| 244630010         | 08-JAN-10 12:00 | 23-JAN-10 11:48 | 15        | SAMPLE      | LOAD    | 1          | LANL   | LANL01004GEL        | N      | RGSP  |
| Name              | Result          | Uncert.         | Units     | MDA         | RDL     | Energy *** | FWHM   | Comb Act Rpt Err(%) | Qual   | Qual Comment  |
| Actinium-228      | ✓               | 1.962           | 0.2241    | pCi/g       | 0.2121  | N          | 911.1  | 3                   | 1.777  | IDENTIFIED 9.752 <input type="checkbox"/>   |
| Americium-243     | INT             | 0.3859          | 0.02934   | pCi/g       | 0.05171 | N          | 74.84  | 1                   | 0.8726 | IDENTIFIED 5.654 <input type="checkbox"/>   |
| Annihilation Rad. | —               | 0.182           | 0.04231   | pCi/g       | 0.05256 | N          | 510.6  | 1                   | 1.8    | IDENTIFIED 22.67 <input type="checkbox"/>   |
| Barium-137m       | ✓               | 0.918           | 0.06912   | pCi/g       | 0.06215 | N          | 661.5  | 2                   | 1.404  | IDENTIFIED 5.1 <input type="checkbox"/>   |
| Bismuth-210       | NR              | 3.274           | 0.3837    | pCi/g       | 0.6681  | N          | 46.52  | 3                   | 0.9356 | IDENTIFIED 10.53 <input type="checkbox"/>   |
| Bismuth-211       | INT             | 4.304           | 0.3432    | pCi/g       | 0.3484  | Y          | 351.9  | 4                   | 1.132  | IDENTIFIED 5.994 <input checked="" type="checkbox"/> uI                                 |
| Bismuth-212       | —               | 1.752           | 0.3489    | pCi/g       | 0.7489  | N          | 0      | 12                  | 0      | FAIL_ABUND 0 <input type="checkbox"/>   |
| Bismuth-214       | ✓               | 1.325           | 0.1181    | pCi/g       | 0.1244  | 0.200      | 609.3  | 4                   | 1.365  | IDENTIFIED 6.565 <input type="checkbox"/>   |
| Cadmium-109       | INT             | 4.271           | 0.4003    | pCi/g       | 0.8179  | Y          | 87.17  | 3                   | 0.8575 | IDENTIFIED 7.696 <input checked="" type="checkbox"/> uI                                 |
| Cerium-143        | —               | 445.6           | 91.99     | pCi/g       | 0       | N          | 0      | 12                  | 0      | SHORT_HLIF 0 <input type="checkbox"/>   |
| Cesium-134        | LA              | 0.1306          | 0.0292    | pCi/g       | 0.1005  | 0.100      | 0      | 12                  | 0      | FAIL_ABUND 0 <input checked="" type="checkbox"/> UI Data rejected due to low abundance. |
| Cesium-137        | ✓               | 0.9705          | 0.07311   | pCi/g       | 0.08684 | 0.100      | 661.5  | 2                   | 1.404  | IDENTIFIED 5.1 <input type="checkbox"/>   |
| Gold-195          | HE              | 0.339           | 0.08695   | pCi/g       | 0.3069  | N          | 0      | 12                  | 0      | FAIL_ABUND 0 <input type="checkbox"/>   |
| Gross Gamma       | —               | 11.72           | 1.481     | pCi/g       | 4.287   | N          | 0      | 0                   | 0      | <input type="checkbox"/>  |
| Iodine-123        | HE              | 3.31E+05        | 2.21E+06  | pCi/g       | 0       | N          | 0      | 12                  | 0      | SHORT_HLIF 0 <input type="checkbox"/>   |
| Lead-210          | NR              | 3.274           | 0.3837    | pCi/g       | 0.6681  | N          | 46.52  | 3                   | 0.9356 | IDENTIFIED 10.53 <input type="checkbox"/>   |
| Lead-212          | ✓               | 2.054           | 0.132     | pCi/g       | 0.08973 | 0.100      | 238.6  | 4                   | 0.9848 | IDENTIFIED 2.982 <input type="checkbox"/>   |
| Lead-214          | ✓               | 1.497           | 0.1256    | pCi/g       | 0.1215  | 0.100      | 351.9  | 4                   | 1.132  | IDENTIFIED 5.994 <input type="checkbox"/>   |
| Lutetium-177      | —               | 4.43            | 0.8572    | pCi/g       | 2.075   | N          | 0      | 12                  | 0      | FAIL_ABUND 0 <input type="checkbox"/>   |
| Neptunium-237     | INT             | 1.233           | 0.1719    | pCi/g       | 0.2601  | N          | 87.17  | 3                   | 0.8575 | IDENTIFIED 7.696 <input type="checkbox"/>   |
| Niobium-97        | HE              | 77200           | 55790     | pCi/g       | 0       | N          | 0      | 12                  | 0      | SHORT_HLIF 0 <input type="checkbox"/>   |
| Polonium-210      | NR              | 3.274           | 0.3782    | pCi/g       | 0.6681  | N          | 46.52  | 3                   | 0.9356 | IDENTIFIED 10.53 <input type="checkbox"/>   |
| Polonium-212      | NR              | 2.054           | 0.132     | pCi/g       | 0.08973 | N          | 238.6  | 4                   | 0.9848 | IDENTIFIED 2.982 <input type="checkbox"/>   |
| Polonium-214      | NR              | 1.497           | 0.1256    | pCi/g       | 0.1215  | N          | 351.9  | 4                   | 1.132  | IDENTIFIED 5.994 <input type="checkbox"/>   |
| Polonium-216      | NR              | 2.054           | 0.132     | pCi/g       | 0.08973 | N          | 238.6  | 4                   | 0.9848 | IDENTIFIED 2.982 <input type="checkbox"/>   |
| Polonium-218      | NR              | 1.497           | 0.1256    | pCi/g       | 0.1215  | N          | 351.9  | 4                   | 1.132  | IDENTIFIED 5.994 <input type="checkbox"/>   |
| Potassium-40      | ✓               | 27.2            | 1.504     | pCi/g       | 0.6358  | 1.00       | 1461   | 1                   | 1.729  | IDENTIFIED 3.526 <input type="checkbox"/>   |
| Radium-224        | INT             | 2.746           | 0.5371    | pCi/g       | 1.022   | Y          | 241    | 1                   | 1.195  | IDENTIFIED 18.84 <input checked="" type="checkbox"/> uI                                 |
| Radium-226        | ✓               | 1.325           | 0.1181    | pCi/g       | 0.1244  | Y          | 609.3  | 4                   | 1.365  | IDENTIFIED 6.565 <input type="checkbox"/>   |
| Radium-228        | ✓               | 1.962           | 0.2241    | pCi/g       | 0.2121  | 0.500      | 911.1  | 3                   | 1.777  | IDENTIFIED 9.752 <input type="checkbox"/>   |
| Sodium-24         | HE              | 35770           | 3.93E+05  | pCi/g       | 0       | N          | 0      | 12                  | 0      | SHORT_HLIF 0 <input type="checkbox"/>   |
| Technetium-99m    | —               | 2.34E+16        | 0         | pCi/g       | 0       | N          | 0      | 12                  | 0      | SHORT_HLIF 0 <input type="checkbox"/>   |



|               |    |          |          |       |         |       |       |    |        |            |       |                          |
|---------------|----|----------|----------|-------|---------|-------|-------|----|--------|------------|-------|--------------------------|
| Thallium-200  | HE | 79.04    | 218.2    | pCi/g | 0       | N     | 0     | 12 | 0      | SHORT_HLIF | 0     | <input type="checkbox"/> |
| Thallium-208  | ✓  | 0.6775   | 0.06008  | pCi/g | 0.06421 | 0.080 | 583.3 | 1  | 1.394  | IDENTIFIED | 6.846 | <input type="checkbox"/> |
| Thorium-228   | NR | 2.085    | 0.134    | pCi/g | 0.09108 | N     | 238.6 | 4  | 0.9848 | IDENTIFIED | 2.982 | <input type="checkbox"/> |
| Thorium-230   | NR | 1.325    | 0.1181   | pCi/g | 0.1244  | N     | 609.3 | 4  | 1.365  | IDENTIFIED | 6.565 | <input type="checkbox"/> |
| Thorium-232   | NR | 1.962    | 0.2241   | pCi/g | 0.2121  | N     | 911.1 | 3  | 1.777  | IDENTIFIED | 9.752 | <input type="checkbox"/> |
| Thorium-234   | ✓  | 4.402    | 0.6244   | pCi/g | 0.8233  | 2.00  | 63.29 | 2  | 0.7951 | IDENTIFIED | 10.7  | <input type="checkbox"/> |
| Tin-126       | NR | 0.4199   | 0.03936  | pCi/g | 0.08024 | N     | 87.17 | 3  | 0.8575 | IDENTIFIED | 7.696 | <input type="checkbox"/> |
| Titanium-44   | —  | 0.4271   | 0.02737  | pCi/g | 0.0483  | N     | 0     | 12 | 0      | FAIL_ABUND | 0     | <input type="checkbox"/> |
| Total Uranium | —  | 13.248   | 1.86E-06 | ug/g  | 1.2275  | N     | 0     |    |        |            |       | <input type="checkbox"/> |
| Uranium-234   | NR | 1.325    | 0.1181   | pCi/g | 0.1244  | N     | 609.3 | 4  | 1.365  | IDENTIFIED | 6.565 | <input type="checkbox"/> |
| Uranium-235   | ✓  | 0.3273   | 0.1121   | pCi/g | 0.3096  | 0.500 | 143.8 | 1  | 1.183  | IDENTIFIED | 32.93 | <input type="checkbox"/> |
| Uranium-238   | NR | 4.402    | 0.6244   | pCi/g | 0.8233  | N     | 63.29 | 2  | 0.7951 | IDENTIFIED | 10.7  | <input type="checkbox"/> |
| Zirconium-97  | —  | 2.16E+06 | 9.99E+05 | pCi/g | 0       | N     | 0     | 12 | 0      | SHORT_HLIF | 0     | <input type="checkbox"/> |

\*\*\* = Number of isotopes identified with a keyline at this energy.

| Sample ID         | Collect Date    | Run Date        | Days Past | Sample Type | Status  | Instance   | Client | Project Quals       | Zero? | queue   |
|-------------------|-----------------|-----------------|-----------|-------------|---------|------------|--------|---------------------|-------|---|
| 244630011         | 08-JAN-10 12:00 | 23-JAN-10 11:49 | 15        | SAMPLE      | LOAD    | 1          | LANL   | LANL01004GEL        | N     | RGSP  |
| Name              | Result          | Uncert.         | Units     | MDA         | RDL     | Energy *** | FWHM   | Comb Act Rpt Err(%) | Qual  | Qual Comment  |
| Actinium-228      | ✓               | 2.116           | 0.1864    | pCi/g       | 0.1742  | N          | 910.9  | 3                   | 1.926 | IDENTIFIED 5.808 <input type="checkbox"/>   |
| Americium-243     | INT             | 0.4435          | 0.04027   | pCi/g       | 0.09505 | N          | 74.98  | 1                   | 1.058 | IDENTIFIED 8.014 <input type="checkbox"/>   |
| Annihilation Rad. | —               | 0.1119          | 0.02676   | pCi/g       | 0.03744 | N          | 510.7  | 1                   | 1.956 | IDENTIFIED 23.68 <input type="checkbox"/>   |
| Bismuth-211       | INT             | 5.197           | 0.244     | pCi/g       | 0.2896  | Y          | 351.9  | 4                   | 1.293 | IDENTIFIED 3.428 <input checked="" type="checkbox"/> UI                                 |
| Bismuth-212       | ✓               | 1.693           | 0.2004    | pCi/g       | 0.3592  | N          | 727    | 1                   | 1.738 | IDENTIFIED 10.74 <input type="checkbox"/>   |
| Bismuth-214       | ✓               | 1.469           | 0.09603   | pCi/g       | 0.08605 | 0.200      | 609.2  | 4                   | 1.713 | IDENTIFIED 4.771 <input type="checkbox"/>   |
| Cadmium-109       | INT             | 4.812           | 0.5649    | pCi/g       | 1.184   | Y          | 87.27  | 3                   | 1.293 | IDENTIFIED 10.8 <input checked="" type="checkbox"/> UI                                  |
| Cerium-143        | —               | 675.5           | 100.8     | pCi/g       | 0       | N          | 0      | 11                  | 0     | SHORT_HLIF 0 <input type="checkbox"/>   |
| Cesium-134        | LA              | 0.1236          | 0.02705   | pCi/g       | 0.0742  | 0.100      | 0      | 11                  | 0     | FAIL_ABUND 0 <input checked="" type="checkbox"/> UI Data rejected due to low abundance. |
| Cesium-135        | HE              | 0.3142          | 0.07452   | pCi/g       | 0.2451  | N          | 0      | 11                  | 0     | NOT_IDENTI 0 <input type="checkbox"/>   |
| Europium-155      | HE              | 0.1837          | 0.05034   | pCi/g       | 0.1832  | N          | 0      | 11                  | 0     | FAIL_ABUND 0 <input type="checkbox"/>   |
| Gross Gamma       | —               | 11.87           | 1.449     | pCi/g       | 2.796   | N          | 0      |                     |       | <input type="checkbox"/>  |
| Krypton-85        | HE              | 15.63           | 3.277     | pCi/g       | 10.99   | N          | 0      | 11                  | 0     | NOT_IDENTI 0 <input type="checkbox"/>   |
| Lead-212          | ✓               | 2.146           | 0.09125   | pCi/g       | 0.07622 | 0.100      | 238.7  | 4                   | 1.237 | IDENTIFIED 2.305 <input type="checkbox"/>   |
| Lead-214          | ✓               | 1.808           | 0.09712   | pCi/g       | 0.09575 | 0.100      | 351.9  | 4                   | 1.293 | IDENTIFIED 3.428 <input type="checkbox"/>   |
| Lutetium-177      | —               | 3.269           | 0.636     | pCi/g       | 1.819   | N          | 0      | 11                  | 0     | FAIL_ABUND 0 <input type="checkbox"/>   |
| Neptunium-237     | INT             | 1.389           | 0.2171    | pCi/g       | 0.3495  | N          | 87.27  | 3                   | 1.293 | IDENTIFIED 10.8 <input type="checkbox"/>  |
| Niobium-95        | HE              | 0.07718         | 0.02119   | pCi/g       | 0.06874 | N          | 0      | 11                  | 0     | NOT_IDENTI 0 <input type="checkbox"/>   |
| Polonium-212      | NR              | 2.146           | 0.09125   | pCi/g       | 0.07622 | N          | 238.7  | 4                   | 1.237 | IDENTIFIED 2.305 <input type="checkbox"/>   |
| Polonium-214      | NR              | 1.808           | 0.09712   | pCi/g       | 0.09575 | N          | 351.9  | 4                   | 1.293 | IDENTIFIED 3.428 <input type="checkbox"/>   |
| Polonium-216      | NR              | 2.146           | 0.09125   | pCi/g       | 0.07622 | N          | 238.7  | 4                   | 1.237 | IDENTIFIED 2.305 <input type="checkbox"/>   |
| Polonium-218      | NR              | 1.808           | 0.09712   | pCi/g       | 0.09575 | N          | 351.9  | 4                   | 1.293 | IDENTIFIED 3.428 <input type="checkbox"/>   |
| Potassium-40      | ✓               | 33.6            | 1.46      | pCi/g       | 0.4371  | 1.00       | 1460   | 1                   | 2.152 | IDENTIFIED 2.118 <input type="checkbox"/>   |
| Radium-224        | INT             | 5.474           | 0.4925    | pCi/g       | 0.8661  | Y          | 241.7  | 1                   | 1.607 | IDENTIFIED 8.554 <input checked="" type="checkbox"/> UI                                 |
| Radium-226        | ✓               | 1.469           | 0.09603   | pCi/g       | 0.08605 | Y          | 609.2  | 4                   | 1.713 | IDENTIFIED 4.771 <input type="checkbox"/>   |
| Radium-228        | ✓               | 2.116           | 0.1864    | pCi/g       | 0.1742  | 0.500      | 910.9  | 3                   | 1.926 | IDENTIFIED 5.808 <input type="checkbox"/>   |
| Strontium-85      | LA              | 0.00004         | 0.01678   | pCi/g       | 0.05626 | Y          | 0      | 11                  | 0     | NOT_IDENTI 0 <input checked="" type="checkbox"/> UI Data rejected due to low abundance. |
| Thallium-200      | HE              | 13.56           | 162.7     | pCi/g       | 0       | N          | 0      | 11                  | 0     | SHORT_HLIF 0 <input type="checkbox"/>   |
| Thallium-208      | ✓               | 0.6375          | 0.04047   | pCi/g       | 0.04426 | 0.080      | 582.9  | 1                   | 1.739 | IDENTIFIED 4.994 <input type="checkbox"/>   |
| Thorium-228       | NR              | 2.179           | 0.09262   | pCi/g       | 0.07736 | N          | 238.7  | 4                   | 1.237 | IDENTIFIED 2.305 <input type="checkbox"/>   |
| Thorium-230       | NR              | 1.469           | 0.09603   | pCi/g       | 0.08605 | N          | 609.2  | 4                   | 1.713 | IDENTIFIED 4.771 <input type="checkbox"/>   |
| Thorium-232       | NR              | 2.116           | 0.1864    | pCi/g       | 0.1742  | N          | 910.9  | 3                   | 1.926 | IDENTIFIED 5.808 <input type="checkbox"/>   |
| Thorium-234       | ✓               | 2.565           | 1.236     | pCi/g       | 2.333   | 2.00       | 62.93  | 2                   | 1.397 | IDENTIFIED 47.37 <input type="checkbox"/>   |
| Tin-126           | NR              | 0.4731          | 0.05553   | pCi/g       | 0.1172  | N          | 87.27  | 3                   | 1.293 | IDENTIFIED 10.8 <input type="checkbox"/>  |
| Titanium-44       | —               | 0.4628          | 0.03146   | pCi/g       | 0.08699 | N          | 0      | 11                  | 0     | FAIL_ABUND 0 <input type="checkbox"/>   |
| Total Uranium     | —               | 7.619           | 3.68E-06  | ug/g        | 3.4732  | N          | 0      |                     |       | <input type="checkbox"/>  |
| Uranium-234       | NR              | 1.469           | 0.09603   | pCi/g       | 0.08605 | N          | 609.2  | 4                   | 1.713 | IDENTIFIED 4.771 <input type="checkbox"/>   |
| Uranium-238       | HE              | 2.565           | 1.236     | pCi/g       | 2.333   | N          | 62.93  | 2                   | 1.397 | IDENTIFIED 47.37 <input type="checkbox"/>   |
| Zirconium-97      | —               | 2.67E+06        | 7.53E+05  | pCi/g       | 0       | N          | 0      | 11                  | 0     | SHORT_HLIF 0 <input type="checkbox"/>   |

\*\*\* = Number of isotopes identified with a keyline at this energy.

| Sample ID         | Collect Date    | Run Date        | Days Past | Sample Type   | Status | Instance   | Client | Project Quals       | Zero? | queue                                  |
|-------------------|-----------------|-----------------|-----------|---------------|--------|------------|--------|---------------------|-------|--|
| 244630012         | 08-JAN-10 12:00 | 23-JAN-10 12:29 | 15        | SAMPLE        | LOAD   | 1          | LANL   | LANL01004GEL        | N     | RGSP                                   |
| Name              | Result          | Uncert.         | Units     | MDA           | RDL    | Energy *** | FWHM   | Comb Act Rpt Err(%) | Qual  | Qual Comment                           |
| Actinium-228      | ✓               | 2.092           | 0.2051    | pCi/g 0.239   | N      | 911.8 3    | 1.85   | IDENTIFIED 7.856    | ☑     |  |
| Americium-243     | INT             | 0.538           | 0.04787   | pCi/g 0.09463 | N      | 74.87 1    | 1.536  | IDENTIFIED 8.065    | ☑     |  |
| Annihilation Rad. | —               | 0.1826          | 0.03597   | pCi/g 0.04809 | N      | 510.6 1    | 1.986  | IDENTIFIED 19.47    | ☑     |  |
| Barium-137m       | NR              | 0.2231          | 0.0472    | pCi/g 0.06003 | N      | 662.4 2    | 1.547  | IDENTIFIED 20.95    | ☑     |  |
| Bismuth-210       | HE              | 4.546           | 2         | pCi/g 4.171   | N      | 46.29 3    | 2.195  | IDENTIFIED 43.83    | ☑     |  |
| Bismuth-211       | INT             | 4.792           | 0.2644    | pCi/g 0.3549  | Y      | 351.9 4    | 1.459  | IDENTIFIED 4.521    | ☑     | UI                                     |
| Bismuth-212       | —               | 1.961           | 0.3153    | pCi/g 0.7803  | N      | 0 10 0     |        | FAIL_ABUND 0        | ☑     |  |
| Bismuth-214       | ✓               | 1.285           | 0.1044    | pCi/g 0.1216  | 0.200  | 609.4 4    | 1.431  | IDENTIFIED 7.1      | ☑     |  |
| Cadmium-109       | INT             | 3.909           | 0.8095    | pCi/g 1.541   | Y      | 88.06 2    | 1.193  | IDENTIFIED 20.24    | ☑     | UI                                     |
| Cerium-143        | —               | 1046            | 146.3     | pCi/g 0       | N      | 0 10 0     |        | SHORT_HLIF 0        | ☑     |  |
| Cesium-137        | ✓               | 0.2358          | 0.0499    | pCi/g 0.06346 | 0.100  | 662.4 2    | 1.547  | IDENTIFIED 20.95    | ☑     |  |
| Gross Gamma       | —               | 11.41           | 1.673     | pCi/g 4.279   | N      | 0          |        |                     | ☑     |  |
| Krypton-85        | HE              | 21.6            | 4.335     | pCi/g 14.83   | N      | 0 10 0     |        | NOT_IDENTI 0        | ☑     |  |
| Lead-210          | HE              | 4.546           | 2         | pCi/g 4.171   | N      | 46.29 3    | 2.195  | IDENTIFIED 43.83    | ☑     |  |
| Lead-212          | ✓               | 2.147           | 0.1006    | pCi/g 0.1012  | 0.100  | 238.6 4    | 1.436  | IDENTIFIED 2.948    | ☑     |  |
| Lead-214          | ✓               | 1.667           | 0.1018    | pCi/g 0.1259  | 0.100  | 351.9 4    | 1.459  | IDENTIFIED 4.521    | ☑     |  |
| Lutetium-177      | —               | 4.364           | 0.8542    | pCi/g 2.279   | N      | 0 10 0     |        | FAIL_ABUND 0        | ☑     |  |
| Neptunium-237     | —               | 1.228           | 0.2084    | pCi/g 0.5232  | N      | 0 10 0     |        | NOT_IDENTI 0        | ☑     |  |
| Niobium-95m       | —               | 0.7594          | 0.09087   | pCi/g 0.3049  | N      | 0 10 0     |        | NOT_IDENTI 0        | ☑     |  |
| Niobium-97        | HE              | 68380           | 54690     | pCi/g 0       | N      | 0 10 0     |        | SHORT_HLIF 0        | ☑     |  |
| Polonium-210      | HE              | 4.546           | 1.998     | pCi/g 4.171   | N      | 46.29 3    | 2.195  | IDENTIFIED 43.83    | ☑     |  |
| Polonium-212      | NR              | 2.147           | 0.1006    | pCi/g 0.1012  | N      | 238.6 4    | 1.436  | IDENTIFIED 2.948    | ☑     |  |
| Polonium-214      | NR              | 1.667           | 0.1018    | pCi/g 0.1259  | N      | 351.9 4    | 1.459  | IDENTIFIED 4.521    | ☑     |  |
| Polonium-216      | NR              | 2.147           | 0.1006    | pCi/g 0.1012  | N      | 238.6 4    | 1.436  | IDENTIFIED 2.948    | ☑     |  |
| Polonium-218      | NR              | 1.667           | 0.1018    | pCi/g 0.1259  | N      | 351.9 4    | 1.459  | IDENTIFIED 4.521    | ☑     |  |
| Potassium-40      | ✓               | 32.11           | 1.484     | pCi/g 0.5672  | 1.00   | 1462 1     | 2.012  | IDENTIFIED 2.863    | ☑     |  |
| Radium-224        | INT             | 5.031           | 0.5493    | pCi/g 1.151   | Y      | 241.6 1    | 1.544  | IDENTIFIED 10.53    | ☑     | UI                                     |
| Radium-226        | ✓               | 1.285           | 0.1044    | pCi/g 0.1216  | Y      | 609.4 4    | 1.431  | IDENTIFIED 7.1      | ☑     |  |
| Radium-228        | ✓               | 2.092           | 0.2051    | pCi/g 0.239   | 0.500  | 911.8 3    | 1.85   | IDENTIFIED 7.856    | ☑     |  |
| Strontium-85      | LA              | 0.1106          | 0.02221   | pCi/g 0.07598 | Y      | 0 10 0     |        | NOT_IDENTI 0        | ☑     | UI Data rejected due to low abundance. |
| Thallium-208      | ✓               | 0.5704          | 0.04562   | pCi/g 0.06257 | 0.080  | 583.4 1    | 1.662  | IDENTIFIED 7.23     | ☑     |  |
| Thorium-228       | NR              | 2.18            | 0.1021    | pCi/g 0.1027  | N      | 238.6 4    | 1.436  | IDENTIFIED 2.948    | ☑     |  |
| Thorium-230       | NR              | 1.285           | 0.1044    | pCi/g 0.1216  | N      | 609.4 4    | 1.431  | IDENTIFIED 7.1      | ☑     |  |
| Thorium-232       | NR              | 2.092           | 0.2051    | pCi/g 0.239   | N      | 911.8 3    | 1.85   | IDENTIFIED 7.856    | ☑     |  |
| Tin-126           | NR              | 0.3842          | 0.07957   | pCi/g 0.152   | N      | 88.06 2    | 1.193  | IDENTIFIED 20.24    | ☑     |  |
| Titanium-44       | —               | 0.5159          | 0.03414   | pCi/g 0.09348 | N      | 0 10 0     |        | FAIL_ABUND 0        | ☑     |  |
| Total Uranium     | —               | 5.8103          | 2.52E-06  | ug/g 3.1621   | N      | 0          |        |                     | ☑     |  |
| Uranium-234       | NR              | 1.285           | 0.1044    | pCi/g 0.1216  | N      | 609.4 4    | 1.431  | IDENTIFIED 7.1      | ☑     |  |
| Zirconium-97      | ✓               | 3.34E+06        | 1.04E+06  | pCi/g 0       | N      | 0 10 0     |        | SHORT_HLIF 0        | ☑     |  |

\*\*\* = Number of isotopes identified with a keyline at this energy.

| Sample ID         | Collect Date    | Run Date        | Days Past | Sample Type   | Status | Instance   | Client | Project Quals       | Zero? | queue        |
|-------------------|-----------------|-----------------|-----------|---------------|--------|------------|--------|---------------------|-------|--------------|
| 244630013         | 08-JAN-10 12:00 | 23-JAN-10 14:05 | 15.1      | SAMPLE        | LOAD   | 1          | LANL   | LANL01004GEL        | N     | RGSP         |
| Name              | Result          | Uncert.         | Units     | MDA           | RDL    | Energy *** | FWHM   | Comb Act Rpt Err(%) | Qual  | Qual Comment |
| Actinium-228      | ✓               | 1.595           | 0.1957    | pCi/g 0.3031  | N      | 911.6 3    | 1.758  | IDENTIFIED 10.82    | ☑     |              |
| Americium-243     | INT             | 0.4399          | 0.05478   | pCi/g 0.1204  | N      | 74.83 1    | 1.169  | IDENTIFIED 11.74    | ☑     |              |
| Annihilation Rad. | —               | 0.1549          | 0.04388   | pCi/g 0.05944 | N      | 511.3 1    | 1.57   | IDENTIFIED 28.01    | ☑     |              |
| Barium-137m       | NR              | 0.5652          | 0.05622   | pCi/g 0.08728 | N      | 662 2      | 1.629  | IDENTIFIED 9.064    | ☑     |              |
| Bismuth-211       | INT             | 4.758           | 0.3976    | pCi/g 0.4524  | Y      | 352.2 4    | 1.454  | IDENTIFIED 7.015    | ☑     | UI           |
| Bismuth-212       | HE              | 1.024           | 0.2711    | pCi/g 0.9091  | N      | 0 9 0      |        | FAIL_ABUND 0        | ☑     |              |
| Bismuth-214       | ✓               | 1.423           | 0.1422    | pCi/g 0.1639  | 0.200  | 609.6 4    | 1.568  | IDENTIFIED 8.692    | ☑     |              |
| Cadmium-109       | INT             | 4.634           | 0.7765    | pCi/g 1.647   | Y      | 87.33 3    | 1.293  | IDENTIFIED 16.08    | ☑     | UI           |
| Cerium-143        | —               | 386.1           | 119.7     | pCi/g 0       | N      | 0 9 0      |        | SHORT_HLIF 0        | ☑     |              |
| Cesium-137        | ✓               | 0.5975          | 0.05945   | pCi/g 0.09226 | 0.100  | 662 2      | 1.629  | IDENTIFIED 9.064    | ☑     |              |
| Gross Gamma       | —               | 11.36           | 1.893     | pCi/g 5.074   | N      | 0          |        |                     | ☑     |              |





| Name              | Result   | Uncert.  | Units | MDA     | RDL   | Energy | *** | FWHM  | Comb Act   | Rpt Err(%) | Qual                                | Qual Comment                           |
|-------------------|----------|----------|-------|---------|-------|--------|-----|-------|------------|------------|-------------------------------------|--|
| Actinium-228      | 1.886    | 0.1855   | pCi/g | 0.1929  | N     | 911.1  | 3   | 1.991 | IDENTIFIED | 7.271      | <input type="checkbox"/>            |  |
| Americium-243     | 0.471    | 0.04235  | pCi/g | 0.09428 | N     | 75.03  | 1   | 1.077 | IDENTIFIED | 7.959      | <input type="checkbox"/>            |  |
| Annihilation Rad. | 0.1661   | 0.03043  | pCi/g | 0.0424  | N     | 510.9  | 1   | 1.878 | IDENTIFIED | 18.03      | <input type="checkbox"/>            |  |
| Bismuth-211       | 5.252    | 0.2621   | pCi/g | 0.2669  | Y     | 351.9  | 4   | 1.402 | IDENTIFIED | 3.823      | <input checked="" type="checkbox"/> | UI                                     |
| Bismuth-212       | 1.337    | 0.2241   | pCi/g | 0.5893  | N     | 0      | 11  | 0     | FAIL_ABUND | 0          | <input type="checkbox"/>            |  |
| Bismuth-214       | 1.441    | 0.09397  | pCi/g | 0.09831 | 0.200 | 609.2  | 4   | 1.501 | IDENTIFIED | 4.755      | <input type="checkbox"/>            |  |
| Cadmium-109       | 3.097    | 0.5635   | pCi/g | 1.25    | Y     | 87.05  | 3   | 1.369 | IDENTIFIED | 17.61      | <input checked="" type="checkbox"/> | UI                                     |
| Cerium-143        | 796      | 116.3    | pCi/g | 0       | N     | 0      | 11  | 0     | SHORT_HLIF | 0          | <input type="checkbox"/>            |  |
| Cesium-134        | 0.1207   | 0.03128  | pCi/g | 0.07634 | 0.100 | 0      | 11  | 0     | FAIL_ABUND | 0          | <input checked="" type="checkbox"/> | UI Data rejected due to low abundance. |
| Gross Gamma       | 12.23    | 1.525    | pCi/g | 2.929   | N     | 0      | 0   | 0     |            |            | <input type="checkbox"/>            |  |
| Iodine-133        | 2056     | 2496     | pCi/g | 0       | N     | 0      | 11  | 0     | SHORT_HLIF | 0          | <input type="checkbox"/>            |  |
| Iodine-135        | 1.17E+15 | 2.33E+15 | pCi/g | 0       | N     | 0      | 11  | 0     | SHORT_HLIF | 0          | <input type="checkbox"/>            |  |
| Krypton-85        | 18.74    | 3.679    | pCi/g | 12.26   | N     | 0      | 11  | 0     | NOT_IDENTI | 0          | <input type="checkbox"/>            |  |
| Lead-212          | 2.19     | 0.09398  | pCi/g | 0.08024 | 0.100 | 238.8  | 4   | 1.204 | IDENTIFIED | 2.377      | <input type="checkbox"/>            |  |
| Lead-214          | 1.827    | 0.1029   | pCi/g | 0.09302 | 0.100 | 351.9  | 4   | 1.402 | IDENTIFIED | 3.823      | <input type="checkbox"/>            |  |
| Lutetium-177      | 4.122    | 0.7435   | pCi/g | 1.974   | N     | 0      | 11  | 0     | FAIL_ABUND | 0          | <input type="checkbox"/>            |  |
| Neptunium-237     | 0.8938   | 0.187    | pCi/g | 0.4194  | N     | 87.05  | 3   | 1.369 | IDENTIFIED | 17.61      | <input type="checkbox"/>            |  |
| Polonium-212      | 2.19     | 0.09398  | pCi/g | 0.08024 | N     | 238.8  | 4   | 1.204 | IDENTIFIED | 2.377      | <input type="checkbox"/>            |  |
| Polonium-214      | 1.827    | 0.1029   | pCi/g | 0.09302 | N     | 351.9  | 4   | 1.402 | IDENTIFIED | 3.823      | <input type="checkbox"/>            |  |
| Polonium-216      | 2.19     | 0.09398  | pCi/g | 0.08024 | N     | 238.8  | 4   | 1.204 | IDENTIFIED | 2.377      | <input type="checkbox"/>            |  |
| Polonium-218      | 1.827    | 0.1029   | pCi/g | 0.09302 | N     | 351.9  | 4   | 1.402 | IDENTIFIED | 3.823      | <input type="checkbox"/>            |  |
| Potassium-40      | 37.6     | 1.632    | pCi/g | 0.4583  | 1.00  | 1460   | 1   | 2.289 | IDENTIFIED | 2.104      | <input type="checkbox"/>            |  |
| Radium-224        | 6.44     | 0.6317   | pCi/g | 0.9119  | Y     | 241.7  | 1   | 1.767 | IDENTIFIED | 9.405      | <input checked="" type="checkbox"/> | UI                                     |
| Radium-226        | 1.441    | 0.09397  | pCi/g | 0.09831 | Y     | 609.2  | 4   | 1.501 | IDENTIFIED | 4.755      | <input type="checkbox"/>            |  |
| Radium-228        | 1.886    | 0.1855   | pCi/g | 0.1929  | 0.500 | 911.1  | 3   | 1.991 | IDENTIFIED | 7.271      | <input type="checkbox"/>            |  |
| Strontium-85      | 0.09603  | 0.01886  | pCi/g | 0.06286 | Y     | 0      | 11  | 0     | NOT_IDENTI | 0          | <input checked="" type="checkbox"/> | UI Data rejected due to low abundance. |
| Thallium-200      | 298.2    | 183.9    | pCi/g | 0       | N     | 0      | 11  | 0     | SHORT_HLIF | 0          | <input type="checkbox"/>            |  |
| Thallium-208      | 0.6972   | 0.0445   | pCi/g | 0.04791 | 0.080 | 583.1  | 1   | 1.474 | IDENTIFIED | 5.039      | <input type="checkbox"/>            |  |
| Thorium-228       | 2.223    | 0.0954   | pCi/g | 0.08146 | N     | 238.8  | 4   | 1.204 | IDENTIFIED | 2.377      | <input type="checkbox"/>            |  |
| Thorium-230       | 1.441    | 0.09397  | pCi/g | 0.09831 | N     | 609.2  | 4   | 1.501 | IDENTIFIED | 4.755      | <input type="checkbox"/>            |  |
| Thorium-232       | 1.886    | 0.1855   | pCi/g | 0.1929  | N     | 911.1  | 3   | 1.991 | IDENTIFIED | 7.271      | <input type="checkbox"/>            |  |
| Tin-126           | 0.3044   | 0.05539  | pCi/g | 0.1491  | N     | 87.05  | 3   | 1.369 | IDENTIFIED | 17.61      | <input type="checkbox"/>            |  |
| Titanium-44       | 0.4859   | 0.03298  | pCi/g | 0.09059 | N     | 0      | 11  | 0     | FAIL_ABUND | 0          | <input type="checkbox"/>            |  |
| Total Uranium     | 4.2069   | 2.88E-06 | ug/g  | 3.8464  | N     | 0      | 0   | 0     |            |            | <input type="checkbox"/>            |  |
| Uranium-234       | 1.441    | 0.09397  | pCi/g | 0.09831 | N     | 609.2  | 4   | 1.501 | IDENTIFIED | 4.755      | <input type="checkbox"/>            |  |
| Zirconium-97      | 4.80E+06 | 9.04E+05 | pCi/g | 0       | N     | 0      | 11  | 0     | SHORT_HLIF | 0          | <input type="checkbox"/>            |  |

\*\*\* = Number of isotopes identified with a keyline at this energy.

| Sample ID  | Collect Date | Run Date        | Days Past | Sample Type | Status | Instance | Client | Project Quals | Zero? | queue |
|------------|--------------|-----------------|-----------|-------------|--------|----------|--------|---------------|-------|-------|
| 1202015449 |              | 23-JAN-10 14:07 | 0         | MB          | LOAD   | 1        |        | GEL           | N     | RGSP  |

| Name                 | Result   | Uncert.  | Units | MDA     | RDL | Energy | *** | FWHM  | Comb Act   | Rpt Err(%) | Qual                     | Qual Comment |
|----------------------|----------|----------|-------|---------|-----|--------|-----|-------|------------|------------|--------------------------|--------------|
| Annihilation Rad. HE | 0.02294  | 0.01892  | pCi/g | 0.02121 | N   | 510.9  | 1   | 3.116 | IDENTIFIED | 82.42      | <input type="checkbox"/> |              |
| Iodine-135           | 1.74E+08 | 7.04E+07 | pCi/g | 0       | N   | 0      | 4   | 0     | SHORT_HLIF | 0          | <input type="checkbox"/> |              |
| Niobium-97           | 4.97     | 39.29    | pCi/g | 0       | N   | 0      | 4   | 0     | SHORT_HLIF | 0          | <input type="checkbox"/> |              |
| Sodium-24            | 79.28    | 111.5    | pCi/g | 0       | N   | 0      | 4   | 0     | SHORT_HLIF | 0          | <input type="checkbox"/> |              |
| Zirconium-97         | 1256     | 825.5    | pCi/g | 0       | N   | 0      | 4   | 0     | SHORT_HLIF | 0          | <input type="checkbox"/> |              |

\*\*\* = Number of isotopes identified with a keyline at this energy.

| Sample ID  | Collect Date    | Run Date        | Days Past | Sample Type | Status | Instance | Client | Project Quals | Zero? | queue |
|------------|-----------------|-----------------|-----------|-------------|--------|----------|--------|---------------|-------|-------|
| 1202015450 | 08-JAN-10 12:00 | 23-JAN-10 14:07 | 15.1      | DUP         | LOAD   | 1        |        | LANL01004 GEL | N     | RGSP  |

| Name              | Result | Uncert. | Units | MDA     | RDL   | Energy | *** | FWHM  | Comb Act   | Rpt Err(%) | Qual                                | Qual Comment |
|-------------------|--------|---------|-------|---------|-------|--------|-----|-------|------------|------------|-------------------------------------|--------------|
| Actinium-228      | 1.777  | 0.1845  | pCi/g | 0.2225  | N     | 911.1  | 3   | 1.884 | IDENTIFIED | 9.043      | <input type="checkbox"/>            |              |
| Americium-243     | 0.4334 | 0.05058 | pCi/g | 0.1134  | N     | 74.63  | 1   | 1.257 | IDENTIFIED | 10.76      | <input type="checkbox"/>            |              |
| Annihilation Rad. | 0.1407 | 0.03566 | pCi/g | 0.05227 | N     | 510.7  | 1   | 1.838 | IDENTIFIED | 25.19      | <input type="checkbox"/>            |              |
| Bismuth-211       | 4.453  | 0.2981  | pCi/g | 0.3664  | Y     | 351.6  | 4   | 1.305 | IDENTIFIED | 5.866      | <input checked="" type="checkbox"/> | UI           |
| Bismuth-212       | 1.196  | 0.3034  | pCi/g | 0.8092  | N     | 0      | 12  | 0     | FAIL_ABUND | 0          | <input type="checkbox"/>            |              |
| Bismuth-214       | 1.142  | 0.09477 | pCi/g | 0.121   | 0.200 | 609.2  | 4   | 1.606 | IDENTIFIED | 7.431      | <input type="checkbox"/>            |              |
| Cadmium-109       | 3.477  | 0.501   | pCi/g | 1.47    | Y     | 86.98  | 3   | 1.324 | IDENTIFIED | 13.55      | <input checked="" type="checkbox"/> | UI           |

|               |     |          |          |               |       |       |    |       |            |       |                                     |
|---------------|-----|----------|----------|---------------|-------|-------|----|-------|------------|-------|-------------------------------------|
| Cerium-143    | —   | 949.5    | 145.4    | pCi/g 0       | N     | 0     | 12 | 0     | SHORT_HLIF | 0     | <input type="checkbox"/>            |
| Cesium-135    | HE  | 0.361    | 0.1101   | pCi/g 0.3498  | N     | 0     | 12 | 0     | NOT_IDENTI | 0     | <input type="checkbox"/>            |
| Gold-195      | HE  | 0.5859   | 0.1436   | pCi/g 0.4781  | N     | 0     | 12 | 0     | FAIL_ABUND | 0     | <input type="checkbox"/>            |
| Gross Gamma   | —   | 9.363    | 1.491    | pCi/g 4.116   | N     |       | 0  |       |            |       | <input type="checkbox"/>            |
| Iodine-123    | HE  | 2.82E+06 | 3.08E+06 | pCi/g 0       | N     | 0     | 12 | 0     | SHORT_HLIF | 0     | <input type="checkbox"/>            |
| Iodine-133    | HE  | 844.1    | 3357     | pCi/g 0       | N     | 0     | 12 | 0     | SHORT_HLIF | 0     | <input type="checkbox"/>            |
| Iodine-135    | HE  | 9.59E+14 | 2.93E+15 | pCi/g 0       | N     | 0     | 12 | 0     | SHORT_HLIF | 0     | <input type="checkbox"/>            |
| Lead-212      | ✓   | 1.737    | 0.0884   | pCi/g 0.107   | 0.100 | 238.4 | 4  | 1.095 | IDENTIFIED | 3.508 | <input type="checkbox"/>            |
| Lead-214      | ✓   | 1.549    | 0.1113   | pCi/g 0.1277  | 0.100 | 351.6 | 4  | 1.305 | IDENTIFIED | 5.866 | <input type="checkbox"/>            |
| Lutetium-177  | HE  | 2.667    | 0.8084   | pCi/g 2.361   | N     | 0     | 12 | 0     | FAIL_ABUND | 0     | <input type="checkbox"/>            |
| Neptunium-237 | INT | 1.004    | 0.1779   | pCi/g 0.4106  | N     | 86.98 | 3  | 1.324 | IDENTIFIED | 13.55 | <input type="checkbox"/>            |
| Niobium-95m   | —   | 0.5521   | 0.09247  | pCi/g 0.3047  | N     | 0     | 12 | 0     | NOT_IDENTI | 0     | <input type="checkbox"/>            |
| Polonium-212  | NR  | 1.737    | 0.0884   | pCi/g 0.107   | N     | 238.4 | 4  | 1.095 | IDENTIFIED | 3.508 | <input type="checkbox"/>            |
| Polonium-214  | NR  | 1.549    | 0.1113   | pCi/g 0.1277  | N     | 351.6 | 4  | 1.305 | IDENTIFIED | 5.866 | <input type="checkbox"/>            |
| Polonium-216  | NR  | 1.737    | 0.0884   | pCi/g 0.107   | N     | 238.4 | 4  | 1.095 | IDENTIFIED | 3.508 | <input type="checkbox"/>            |
| Polonium-218  | NR  | 1.549    | 0.1113   | pCi/g 0.1277  | N     | 351.6 | 4  | 1.305 | IDENTIFIED | 5.866 | <input type="checkbox"/>            |
| Potassium-40  | ✓   | 28.37    | 1.307    | pCi/g 0.5325  | 1.00  | 1461  | 1  | 2.242 | IDENTIFIED | 3.208 | <input type="checkbox"/>            |
| Radium-224    | INT | 5.002    | 0.8051   | pCi/g 1.218   | Y     | 241.4 | 1  | 1.952 | IDENTIFIED | 15.83 | <input checked="" type="checkbox"/> |
| Radium-226    | ✓   | 1.142    | 0.09477  | pCi/g 0.121   | Y     | 609.2 | 4  | 1.606 | IDENTIFIED | 7.431 | <input type="checkbox"/>            |
| Radium-228    | ✓   | 1.777    | 0.1845   | pCi/g 0.2225  | 0.500 | 911.1 | 3  | 1.884 | IDENTIFIED | 9.043 | <input type="checkbox"/>            |
| Sodium-24     | HE  | 5.77E+05 | 3.74E+05 | pCi/g 0       | N     | 0     | 12 | 0     | SHORT_HLIF | 0     | <input type="checkbox"/>            |
| Thallium-208  | ✓   | 0.4254   | 0.04416  | pCi/g 0.06767 | 0.000 | 583   | 1  | 1.341 | IDENTIFIED | 9.889 | <input type="checkbox"/>            |
| Thorium-228   | NR  | 1.764    | 0.08974  | pCi/g 0.1086  | N     | 238.4 | 4  | 1.095 | IDENTIFIED | 3.508 | <input type="checkbox"/>            |
| Thorium-230   | NR  | 1.142    | 0.09477  | pCi/g 0.121   | N     | 609.2 | 4  | 1.606 | IDENTIFIED | 7.431 | <input type="checkbox"/>            |
| Thorium-232   | NR  | 1.777    | 0.1845   | pCi/g 0.2225  | N     | 911.1 | 3  | 1.884 | IDENTIFIED | 9.043 | <input type="checkbox"/>            |
| Tin-126       | NR  | 0.3418   | 0.04924  | pCi/g 0.1453  | N     | 86.98 | 3  | 1.324 | IDENTIFIED | 13.55 | <input type="checkbox"/>            |
| Titanium-44   | —   | 0.3884   | 0.03205  | pCi/g 0.09699 | N     | 0     | 12 | 0     | FAIL_ABUND | 0     | <input type="checkbox"/>            |
| Uranium-234   | NR  | 1.142    | 0.09477  | pCi/g 0.121   | N     | 609.2 | 4  | 1.606 | IDENTIFIED | 7.431 | <input type="checkbox"/>            |
| Zirconium-97  | —   | 4.51E+06 | 1.18E+06 | pCi/g 0       | N     | 0     | 12 | 0     | SHORT_HLIF | 0     | <input type="checkbox"/>            |

\*\*\* = Number of isotopes identified with a keyline at this energy.

| Sample ID       | Collect Date | Run Date        | Days Past | Sample Type | Status | Instance   | Client | Project Quals       | Zero?      | queue        |
|-----------------|--------------|-----------------|-----------|-------------|--------|------------|--------|---------------------|------------|--------------|
| 1202015451      |              | 23-JAN-10 14:08 | 0         | LCS         | LOAD   | 1          |        | GEL                 | N          | RGSP         |
| Name            | Result       | Uncert.         | Units     | MDA         | RDL    | Energy *** | FWHM   | Comb Act Rpt Err(%) | Qual       | Qual Comment |
| Actinium-228    | 1.359        | 0.317           | pCi/g     | 0.7168      | N      | 0          | 14     | 0                   | FAIL_ABUND | 0            |
| Americium-241 ✓ | 14.25        | 0.6437          | pCi/g     | 0.3978      | 0.200  | 59.51      | 1      | 0.9768              | IDENTIFIED | 2.169        |
| Americium-243   | 0.228        | 0.04906         | pCi/g     | 0.1133      | N      | 74.84      | 1      | 1.339               | IDENTIFIED | 21.14        |
| Barium-137m     | 5.44         | 0.2753          | pCi/g     | 0.1225      | N      | 661.8      | 2      | 1.478               | IDENTIFIED | 2.455        |
| Bismuth-211     | 2.048        | 0.3141          | pCi/g     | 0.6937      | Y      | 352.1      | 4      | 1.246               | IDENTIFIED | 14.67        |
| Bismuth-214     | 0.5264       | 0.1059          | pCi/g     | 0.323       | 0.200  | 0          | 14     | 0                   | FAIL_ABUND | 0            |
| Cadmium-109     | 33.6         | 1.87            | pCi/g     | 1.781       | Y      | 88.03      | 2      | 1.113               | IDENTIFIED | 2.968        |
| Cesium-137 ✓    | 5.751        | 0.2914          | pCi/g     | 0.1295      | 0.100  | 661.8      | 2      | 1.478               | IDENTIFIED | 2.455        |
| Cobalt-57       | 0.2042       | 0.03492         | pCi/g     | 0.05961     | N      | 122.3      | 1      | 0.9963              | IDENTIFIED | 16.55        |
| Cobalt-60 ✓     | 6.512        | 0.3153          | pCi/g     | 0.1021      | 0.100  | 1333       | 1      | 1.997               | IDENTIFIED | 2.583        |
| Gross Gamma     | 27.27        | 2.843           | pCi/g     | 4.464       | N      |            | 0      |                     |            |              |
| Iodine-123 HE   | 699          | 1062            | pCi/g     | 0           | N      | 0          | 14     | 0                   | SHORT_HLIF | 0            |
| Lead-212        | 1.072        | 0.08634         | pCi/g     | 0.1514      | 0.100  | 238.7      | 4      | 1.199               | IDENTIFIED | 6.481        |
| Lead-214        | 0.7122       | 0.1108          | pCi/g     | 0.2357      | 0.100  | 352.1      | 4      | 1.246               | IDENTIFIED | 14.67        |
| Neptunium-237   | 4.241        | 0.5415          | pCi/g     | 1.003       | N      | 0          | 14     | 0                   | NOT_IDENTI | 0            |
| Niobium-97      | 561.2        | 181.5           | pCi/g     | 0           | N      | 0          | 14     | 0                   | SHORT_HLIF | 0            |
| Polonium-212    | 1.072        | 0.08634         | pCi/g     | 0.1514      | N      | 238.7      | 4      | 1.199               | IDENTIFIED | 6.481        |
| Polonium-214    | 0.7122       | 0.1108          | pCi/g     | 0.2357      | N      | 352.1      | 4      | 1.246               | IDENTIFIED | 14.67        |
| Polonium-216    | 1.072        | 0.08634         | pCi/g     | 0.1514      | N      | 238.7      | 4      | 1.199               | IDENTIFIED | 6.481        |
| Polonium-218    | 0.7122       | 0.1108          | pCi/g     | 0.2357      | N      | 352.1      | 4      | 1.246               | IDENTIFIED | 14.67        |
| Potassium-40    | 0.633        | 0.3412          | pCi/g     | 0.5032      | 1.00   | 1462       | 1      | 1.61                | IDENTIFIED | 53.74        |
| Radium-224      | 3.323        | 0.8588          | pCi/g     | 1.723       | Y      | 241.8      | 1      | 1.694               | IDENTIFIED | 25.5         |
| Radium-226      | 0.5264       | 0.1059          | pCi/g     | 0.323       | Y      | 0          | 14     | 0                   | FAIL_ABUND | 0            |
| Radium-228      | 1.359        | 0.317           | pCi/g     | 0.7168      | 0.500  | 0          | 14     | 0                   | FAIL_ABUND | 0            |
| Sodium-24 HE    | 397.7        | 356.2           | pCi/g     | 0           | N      | 0          | 14     | 0                   | SHORT_HLIF | 0            |

|                   |          |          |       |         |       |       |    |       |            |       |                          |
|-------------------|----------|----------|-------|---------|-------|-------|----|-------|------------|-------|--------------------------|
| Technetium-99m HE | 8.86E+06 | 3.86E+08 | pCi/g | 0       | N     | 0     | 14 | 0     | SHORT_HLIF | 0     | <input type="checkbox"/> |
| Thallium-208      | 0.4319   | 0.07093  | pCi/g | 0.1158  | 0.680 | 583.7 | 1  | 1.283 | IDENTIFIED | 15.71 | <input type="checkbox"/> |
| Thorium-228       | 1.081    | 0.08708  | pCi/g | 0.1527  | N     | 238.7 | 4  | 1.199 | IDENTIFIED | 6.481 | <input type="checkbox"/> |
| Thorium-230 HE    | 0.5264   | 0.1059   | pCi/g | 0.323   | N     | 0     | 14 | 0     | FAIL_ABUND | 0     | <input type="checkbox"/> |
| Thorium-232       | 1.359    | 0.317    | pCi/g | 0.7168  | N     | 0     | 14 | 0     | FAIL_ABUND | 0     | <input type="checkbox"/> |
| Tin-126           | 3.335    | 0.1856   | pCi/g | 0.1772  | N     | 88.03 | 2  | 1.113 | IDENTIFIED | 2.968 | <input type="checkbox"/> |
| Titanium-44       | 0.1961   | 0.02819  | pCi/g | 0.09449 | N     | 0     | 14 | 0     | FAIL_ABUND | 0     | <input type="checkbox"/> |
| Uranium-234 HE    | 0.5264   | 0.1059   | pCi/g | 0.323   | N     | 0     | 14 | 0     | FAIL_ABUND | 0     | <input type="checkbox"/> |
| Zirconium-97 HE   | 651.5    | 2973     | pCi/g | 0       | N     | 0     | 14 | 0     | SHORT_HLIF | 0     | <input type="checkbox"/> |

\*\*\* = Number of isotopes identified with a keyline at this energy.

# Result Greater Than DL

| Batch Id | Sample Id  | Sample Type | Run Date  | Parname       | Result   | Uncertainty | Units | DL      | RDL   |
|----------|------------|-------------|-----------|---------------|----------|-------------|-------|---------|-------|
| 941639   | 244630016  | SAMPLE      | 23-JAN-10 | Cerium-143    | 796      | 116.3       | pCi/g | 0       | N     |
|          |            |             |           | Cesium-134    | 0.1207   | 0.03128     | pCi/g | 0.03819 | 0.100 |
|          |            |             |           | Gross Gamma   | 12.23    | 1.525       | pCi/g | 1.425   | N     |
|          |            |             |           | Iodine-133    | 2056     | 2496        | pCi/g | 0       | N     |
|          |            |             |           | Iodine-135    | 1.17E+15 | 2.33E+15    | pCi/g | 0       | N     |
|          |            |             |           | Krypton-85    | 18.74    | 3.679       | pCi/g | 6.136   | N     |
|          |            |             |           | Lanthanum-140 | 0.06145  | 0.03305     | pCi/g | 0.05667 | Y     |
|          |            |             |           | Lead-212      | 2.19     | 0.08398     | pCi/g | 0.04014 | 0.100 |
|          |            |             |           | Lead-214      | 1.827    | 0.1029      | pCi/g | 0.04854 | 0.100 |
|          |            |             |           | Potassium-40  | 37.6     | 1.632       | pCi/g | 0.2293  | 1.00  |
|          |            |             |           | Radium-224    | 6.44     | 0.6317      | pCi/g | 0.4562  | Y     |
|          |            |             |           | Radium-226    | 1.441    | 0.08397     | pCi/g | 0.04919 | Y     |
|          |            |             |           | Radium-228    | 1.886    | 0.1855      | pCi/g | 0.09652 | 0.500 |
|          |            |             |           | Strontium-85  | 0.09603  | 0.01886     | pCi/g | 0.03145 | Y     |
|          |            |             |           | Thallium-200  | 288.2    | 183.9       | pCi/g | 0       | N     |
|          |            |             |           | Thallium-208  | 0.6972   | 0.0445      | pCi/g | 0.02387 | 0.080 |
|          |            |             |           | Thorium-234   | 1.41     | 0.9686      | pCi/g | 1.293   | 2.00  |
|          |            |             |           | Zirconium-97  | 4.80E+08 | 9.04E+05    | pCi/g | 0       | N     |
| 941639   | 1202015449 | MB          | 23-JAN-10 | Bismuth-211   | 0.1709   | 0.05729     | pCi/g | 0.1097  | Y     |
|          |            |             |           | Iodine-135    | 1.74E+08 | 7.04E+07    | pCi/g | 0       | N     |
|          |            |             |           | Krypton-85    | 8.047    | 2.197       | pCi/g | 4.069   | N     |
|          |            |             |           | Sodium-24     | 79.28    | 111.5       | pCi/g | 0       | N     |
|          |            |             |           | Strontium-85  | 0.03852  | 0.01052     | pCi/g | 0.01948 | Y     |
|          |            |             |           | Zirconium-97  | 1256     | 825.5       | pCi/g | 0       | N     |
| 941639   | 1202015450 | DUP         | 23-JAN-10 | Bismuth-211   | 4.453    | 0.2961      | pCi/g | 0.1833  | Y     |
|          |            |             |           | Bismuth-214   | 1.142    | 0.09477     | pCi/g | 0.08055 | 0.200 |
|          |            |             |           | Cadmium-109   | 3.477    | 0.501       | pCi/g | 0.7354  | Y     |
|          |            |             |           | Cerium-143    | 949.5    | 145.4       | pCi/g | 0       | N     |
|          |            |             |           | Cesium-134    | 0.08042  | 0.02655     | pCi/g | 0.04996 | 0.100 |
|          |            |             |           | Gross Gamma   | 9.363    | 1.491       | pCi/g | 2.003   | N     |
|          |            |             |           | Iodine-123    | 2.82E+08 | 3.08E+08    | pCi/g | 0       | N     |
|          |            |             |           | Iodine-133    | 844.1    | 3357        | pCi/g | 0       | N     |
|          |            |             |           | Iodine-135    | 9.59E+14 | 2.93E+15    | pCi/g | 0       | N     |
|          |            |             |           | Krypton-85    | 13.36    | 4.62        | pCi/g | 7.448   | N     |
|          |            |             |           | Lead-212      | 1.737    | 0.0884      | pCi/g | 0.05253 | 0.100 |
|          |            |             |           | Lead-214      | 1.549    | 0.1113      | pCi/g | 0.06389 | 0.100 |
|          |            |             |           | Potassium-40  | 28.37    | 1.307       | pCi/g | 0.2664  | 1.00  |

no, h/h/r

Y

no, h/h/r



# GEL QUALS

Batch ID: 941639

Report run on: January 25, 2010 2:46 PM

| Samp Id                          | Parname      | Cofa | Edd | Qual Comments                       | Auto | Result | MDA | Uncert | SQL |
|----------------------------------|--------------|------|-----|-------------------------------------|------|--------|-----|--------|-----|
| 244630001-1<br>22-JAN-2010 20:49 | Bismuth-211  | UI   | UI  | Data rejected due to interference.  |      | 3.734  |     |        |     |
|                                  | Radium-224   | UI   | UI  | Data rejected due to interference.  |      | 4.28   |     |        |     |
| 244630002-1<br>22-JAN-2010 20:50 | Bismuth-211  | UI   | UI  | Data rejected due to interference.  |      | 3.901  |     |        |     |
|                                  | Cadmium-109  | UI   | UI  | Data rejected due to interference.  |      | 3.155  |     |        |     |
|                                  | Cesium-134   | UI   | UI  | Data rejected due to low abundance. |      | .1175  |     | .1     | .1  |
|                                  | Strontium-85 | UI   | UI  | Data rejected due to low abundance. |      | .09268 |     |        |     |
|                                  | Radium-224   | UI   | UI  | Data rejected due to interference.  |      | 5.186  |     |        |     |
| 244630003-1<br>23-JAN-2010 11:45 | Bismuth-211  | UI   | UI  | Data rejected due to interference.  |      | 4.083  |     |        |     |
|                                  | Cadmium-109  | UI   | UI  | Data rejected due to interference.  |      | 3.137  |     |        |     |
|                                  | Cesium-134   | UI   | UI  | Data rejected due to low abundance. |      | .1287  |     | .1     | .1  |
|                                  | Radium-224   | UI   | UI  | Data rejected due to interference.  |      | 4.827  |     |        |     |
| 244630004-1<br>23-JAN-2010 11:46 | Bismuth-211  | UI   | UI  | Data rejected due to interference.  |      | 4.351  |     |        |     |
|                                  | Cadmium-109  | UI   | UI  | Data rejected due to interference.  |      | 3.83   |     |        |     |
|                                  | Cesium-134   | UI   | UI  | Data rejected due to low abundance. |      | .1155  |     | .1     | .1  |
|                                  | Radium-224   | UI   | UI  | Data rejected due to interference.  |      | 4.739  |     |        |     |
|                                  | Strontium-85 | UI   | UI  | Data rejected due to low abundance. |      | .08398 |     |        |     |
| 244630005-1<br>23-JAN-2010 11:46 | Bismuth-211  | UI   | UI  | Data rejected due to interference.  |      | 5.316  |     |        |     |
|                                  | Cadmium-109  | UI   | UI  | Data rejected due to interference.  |      | 4.009  |     |        |     |
|                                  | Cesium-134   | UI   | UI  | Data rejected due to low abundance. |      | .2579  |     | .1     | .1  |
|                                  | Radium-224   | UI   | UI  | Data rejected due to interference.  |      | 4.903  |     |        |     |
|                                  | Strontium-85 | UI   | UI  | Data rejected due to low abundance. |      | .1024  |     |        |     |

# GEL QUALS

Batch ID: 941639

Report run on: January 25, 2010 2:46 PM

| Samp Id                          | Parname      | Cofa | Edd | Qual Comments                       | Auto | Result | MDA | Uncert | SQL |
|----------------------------------|--------------|------|-----|-------------------------------------|------|--------|-----|--------|-----|
| 244630006-1<br>23-JAN-2010 11:47 | Bismuth-211  | UI   | UI  | Data rejected due to interference.  |      | 3.474  |     |        |     |
|                                  | Cadmium-109  | UI   | UI  | Data rejected due to interference.  |      | 3.026  |     |        |     |
|                                  | Cesium-134   | UI   | UI  | Data rejected due to low abundance. |      | .1119  |     | .1     | .1  |
|                                  | Radium-224   | UI   | UI  | Data rejected due to interference.  |      | 4.516  |     |        |     |
|                                  | Strontium-85 | UI   | UI  | Data rejected due to low abundance. |      | .06086 |     |        |     |
| 244630007-1<br>23-JAN-2010 11:47 | Bismuth-211  | UI   | UI  | Data rejected due to interference.  |      | 4.109  |     |        |     |
|                                  | Radium-224   | UI   | UI  | Data rejected due to interference.  |      | 6.785  |     |        |     |
| 244630008-1<br>23-JAN-2010 11:47 | Bismuth-211  | UI   | UI  | Data rejected due to interference.  |      | 4.115  |     |        |     |
|                                  | Cadmium-109  | UI   | UI  | Data rejected due to interference.  |      | 3.093  |     |        |     |
|                                  | Cesium-134   | UI   | UI  | Data rejected due to low abundance. |      | .1504  |     | .1     | .1  |
|                                  | Radium-224   | UI   | UI  | Data rejected due to interference.  |      | 5.344  |     |        |     |
| 244630009-1<br>23-JAN-2010 11:48 | Bismuth-211  | UI   | UI  | Data rejected due to interference.  |      | 5.699  |     |        |     |
|                                  | Cadmium-109  | UI   | UI  | Data rejected due to interference.  |      | 4.922  |     |        |     |
|                                  | Cesium-134   | UI   | UI  | Data rejected due to low abundance. |      | .1646  |     | .1     | .1  |
|                                  | Radium-224   | UI   | UI  | Data rejected due to interference.  |      | 7.32   |     |        |     |
|                                  | Strontium-85 | UI   | UI  | Data rejected due to low abundance. |      | .07892 |     |        |     |
| 244630010-1<br>23-JAN-2010 11:48 | Bismuth-211  | UI   | UI  | Data rejected due to interference.  |      | 4.304  |     |        |     |
|                                  | Cadmium-109  | UI   | UI  | Data rejected due to interference.  |      | 4.271  |     |        |     |
|                                  | Cesium-134   | UI   | UI  | Data rejected due to low abundance. |      | .1306  |     | .1     | .1  |
|                                  | Radium-224   | UI   | UI  | Data rejected due to interference.  |      | 2.746  |     |        |     |

# GEL QUALS

Batch ID: 941639

Report run on: January 25, 2010 2:46 PM

| Samp Id                          | Parname      | Cofa | Edd | Qual Comments                       | Auto | Result | MDA | Uncert | SQL |
|----------------------------------|--------------|------|-----|-------------------------------------|------|--------|-----|--------|-----|
| 244630011-1<br>23-JAN-2010 11:49 | Bismuth-211  | UI   | UI  | Data rejected due to interference.  |      | 5.197  |     |        |     |
|                                  | Cadmium-109  | UI   | UI  | Data rejected due to interference.  |      | 4.812  |     |        |     |
|                                  | Cesium-134   | UI   | UI  | Data rejected due to low abundance. |      | .1236  |     | .1     | .1  |
|                                  | Radium-224   | UI   | UI  | Data rejected due to interference.  |      | 5.474  |     |        |     |
|                                  | Strontium-85 | UI   | UI  | Data rejected due to low abundance. |      | .08004 |     |        |     |
| 244630012-1<br>23-JAN-2010 12:28 | Bismuth-211  | UI   | UI  | Data rejected due to interference.  |      | 4.792  |     |        |     |
|                                  | Cadmium-109  | UI   | UI  | Data rejected due to interference.  |      | 3.909  |     |        |     |
|                                  | Radium-224   | UI   | UI  | Data rejected due to interference.  |      | 5.031  |     |        |     |
|                                  | Strontium-85 | UI   | UI  | Data rejected due to low abundance. |      | .1106  |     |        |     |
| 244630013-1<br>23-JAN-2010 14:05 | Bismuth-211  | UI   | UI  | Data rejected due to interference.  |      | 4.758  |     |        |     |
|                                  | Cadmium-109  | UI   | UI  | Data rejected due to interference.  |      | 4.634  |     |        |     |
|                                  | Radium-224   | UI   | UI  | Data rejected due to interference.  |      | 4.348  |     |        |     |
|                                  | Strontium-85 | UI   | UI  | Data rejected due to low abundance. |      | .08861 |     |        |     |
| 244630014-1<br>23-JAN-2010 14:05 | Bismuth-211  | UI   | UI  | Data rejected due to interference.  |      | 5.89   |     |        |     |
|                                  | Cadmium-109  | UI   | UI  | Data rejected due to interference.  |      | 5.809  |     |        |     |
|                                  | Cesium-134   | UI   | UI  | Data rejected due to low abundance. |      | .1669  |     | .1     | .1  |
|                                  | Radium-224   | UI   | UI  | Data rejected due to interference.  |      | 6.54   |     |        |     |
| 244630015-1<br>23-JAN-2010 14:06 | Bismuth-211  | UI   | UI  | Data rejected due to interference.  |      | 4.136  |     |        |     |
|                                  | Cadmium-109  | UI   | UI  | Data rejected due to interference.  |      | 2.83   |     |        |     |
|                                  | Radium-224   | UI   | UI  | Data rejected due to interference.  |      | 5.968  |     |        |     |

# GEL QUALS

Batch ID: 941639

Report run on: January 25, 2010 2:46 PM

| Samp Id                               | Parname      | Cofa | Edd | Qual Comments                          | Auto | Result | MDA | Uncert | SQL |
|---------------------------------------|--------------|------|-----|--|------|--------|-----|--------|-----|
| 244630015-1<br>23-JAN-2010 14:06      | Strontium-85 | UI   | UI  | UI Data rejected due to low abundance. |      | .1052  |     |        |     |
| 244630016-1<br>23-JAN-2010 14:06      | Bismuth-211  | UI   | UI  | UI Data rejected due to interference.  |      | 5.252  |     |        |     |
|                                       | Cadmium-109  | UI   | UI  | UI Data rejected due to interference.  |      | 3.097  |     |        |     |
|                                       | Cesium-134   | UI   | UI  | UI Data rejected due to low abundance. |      | .1207  |     | .1     | .1  |
|                                       | Radium-224   | UI   | UI  | UI Data rejected due to interference.  |      | 6.44   |     |        |     |
|                                       | Strontium-85 | UI   | UI  | UI Data rejected due to low abundance. |      | .09603 |     |        |     |
| 1202015450-1 DUP<br>23-JAN-2010 14:07 | Bismuth-211  | UI   | UI  | UI Data rejected due to interference.  |      | 4.453  |     |        |     |
|                                       | Cadmium-109  | UI   | UI  | UI Data rejected due to interference.  |      | 3.477  |     |        |     |
|                                       | Radium-224   | UI   | UI  | UI Data rejected due to interference.  |      | 5.002  |     |        |     |

## VAX/VMS Nuclide Identification Report Generated 22-JAN-2010 22:50:17.06

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630001.CNF;1
Sample date        : 8-JAN-2010 12:00:00. Acquisition date : 22-JAN-2010 20:49:47
Sample ID         : G244630001          Sample quantity  : 1.36730E+02 GRAM
Detector name     : GAM15              Detector geometry: CAN
Elapsed live time : 0 02:00:00.00      Elapsed real time: 0 02:00:01.38  0.0%
Energy tolerance  : 1.50000 keV        Analyst Initials : MXR1
Abundance limit   : 75.00000           Sensitivity      : 5.00000
Batch ID          : 941639             Detector SN#     :
Matrix Spike ID   :                    LCS ID          : 1032-A
*****

```

| Pk | It | Energy   | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | Fit      |
|----|----|----------|------|-------|------|---------|------|----|----------|------|----------|
| 1  | 0  | 62.63*   | 77   | 248   | 0.82 | 125.77  | 123  | 6  | 1.08E-02 | 35.8 |          |
| 2  | 3  | 74.19    | 400  | 511   | 1.67 | 148.86  | 142  | 17 | 5.56E-02 | 12.2 | 2.41E+00 |
| 3  | 3  | 76.51*   | 592  | 367   | 1.41 | 153.50  | 142  | 17 | 8.23E-02 | 7.5  |          |
| 4  | 0  | 86.72*   | 113  | 558   | 1.03 | 173.92  | 170  | 8  | 1.57E-02 | 37.8 |          |
| 5  | 0  | 92.60*   | 116  | 569   | 1.58 | 185.66  | 181  | 10 | 1.61E-02 | 42.3 |          |
| 6  | 0  | 127.96   | 96   | 489   | 1.74 | 256.36  | 253  | 12 | 1.33E-02 | 47.4 |          |
| 7  | 0  | 185.60*  | 103  | 468   | 1.14 | 371.59  | 365  | 12 | 1.42E-02 | 44.9 |          |
| 8  | 0  | 208.96   | 133  | 258   | 1.25 | 418.28  | 414  | 9  | 1.85E-02 | 23.6 |          |
| 9  | 2  | 238.06*  | 1217 | 260   | 1.42 | 476.46  | 470  | 19 | 1.69E-01 | 3.9  | 6.05E-01 |
| 10 | 2  | 241.09   | 258  | 282   | 1.84 | 482.52  | 470  | 19 | 3.58E-02 | 17.5 |          |
| 11 | 0  | 269.76   | 76   | 212   | 1.61 | 539.83  | 536  | 9  | 1.06E-02 | 36.6 |          |
| 12 | 0  | 294.74*  | 372  | 208   | 1.66 | 589.78  | 584  | 11 | 5.16E-02 | 9.3  |          |
| 13 | 0  | 300.06   | 50   | 193   | 1.16 | 600.41  | 596  | 9  | 6.94E-03 | 52.1 |          |
| 14 | 0  | 337.58   | 245  | 190   | 1.59 | 675.42  | 670  | 12 | 3.40E-02 | 12.9 |          |
| 15 | 0  | 351.28*  | 564  | 214   | 1.46 | 702.81  | 697  | 12 | 7.84E-02 | 6.8  |          |
| 16 | 0  | 462.53   | 111  | 90    | 1.88 | 925.23  | 919  | 11 | 1.55E-02 | 19.1 |          |
| 17 | 0  | 510.44*  | 123  | 173   | 1.96 | 1021.01 | 1013 | 19 | 1.71E-02 | 30.5 |          |
| 18 | 0  | 582.80*  | 379  | 145   | 1.51 | 1165.69 | 1157 | 18 | 5.26E-02 | 9.3  |          |
| 19 | 0  | 608.74*  | 439  | 127   | 1.93 | 1217.56 | 1212 | 14 | 6.10E-02 | 7.5  |          |
| 20 | 0  | 727.04*  | 65   | 113   | 1.26 | 1454.08 | 1447 | 14 | 9.06E-03 | 37.0 |          |
| 21 | 0  | 768.51   | 37   | 107   | 1.65 | 1536.99 | 1530 | 14 | 5.11E-03 | 61.4 |          |
| 22 | 0  | 860.44*  | 74   | 42    | 0.99 | 1720.82 | 1714 | 14 | 1.03E-02 | 22.2 |          |
| 23 | 0  | 910.70*  | 257  | 100   | 1.73 | 1821.30 | 1813 | 16 | 3.57E-02 | 10.8 |          |
| 24 | 1  | 964.26   | 48   | 53    | 2.09 | 1928.40 | 1924 | 31 | 6.69E-03 | 28.9 | 2.02E+00 |
| 25 | 1  | 968.36*  | 121  | 56    | 2.19 | 1936.60 | 1924 | 31 | 1.68E-02 | 17.2 |          |
| 26 | 0  | 1119.93* | 92   | 60    | 1.77 | 2239.68 | 2234 | 12 | 1.28E-02 | 20.6 |          |
| 27 | 0  | 1460.31* | 1091 | 41    | 1.94 | 2920.35 | 2913 | 16 | 1.52E-01 | 3.3  |          |
| 28 | 0  | 1589.89  | 69   | 12    | 4.98 | 3179.49 | 3169 | 24 | 9.58E-03 | 17.9 |          |
| 29 | 0  | 1630.56  | 34   | 0     | 2.54 | 3260.82 | 3252 | 15 | 4.72E-03 | 17.1 |          |
| 30 | 0  | 1730.21  | 17   | 13    | 0.96 | 3460.12 | 3451 | 13 | 2.36E-03 | 50.0 |          |
| 31 | 0  | 1764.19* | 54   | 11    | 2.08 | 3528.08 | 3519 | 13 | 7.55E-03 | 19.5 |          |

Flag: "\*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 22-JAN-2010 22:50:21

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630001.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 8-JAN-2010 12:00:00   Acquisition date : 22-JAN-2010 20:49:47
Sample ID         : G244630001           Sample quantity  : 136.73 GRAM
Sample type       : SOLID                 Sample geometry   :
Detector name     : GAMMA15              Detector geometry: CAN
Elapsed live time : 0 02:00:00.00         Elapsed real time: 0 02:00:01.38   0.0%
Peak Width (FWHM): 3.00                   Confidence level  : 5.00 %
Energy tolerance  : 1.50 keV              Half life ratio   : 8.00
Errors propagated: Yes                    Systematic Error  : 0.00 %
Efficiency type   : Empirical              Efficiencies at   : Peak Energy
Abundance limit   : 75.00                 WTM error limit   : 3.00
  
```

Full Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| K-40    | +         | 1460.81      | *   | 2.811E+01           | 2.846E+00 | 6.264E-01      | 4.789E-02 | 44.873  |
| CD-109  | +         | 88.03        | *   | 1.928E+00           | 1.474E+00 | 1.948E+00      | 2.253E-01 | 0.990   |
| SN-126  |           | 64.28        |     | 8.824E-01           | 9.623E-01 | 1.439E+00      | 2.467E-01 | 0.613   |
|         | +         | 86.94        |     | 7.887E-01           | 6.821E-01 | 7.664E-01      | 3.223E-01 | 1.029   |
|         | +         | 87.57        | *   | 1.897E-01           | 1.450E-01 | 1.832E-01      | 2.114E-02 | 1.036   |
| TL-208  |           | 277.35       |     | 4.997E-01           | 4.708E-01 | 8.171E-01      | 9.156E-02 | 0.612   |
|         | +         | 510.84       |     | 6.360E-01           | 3.926E-01 | 2.372E-01      | 2.388E-02 | 2.681   |
|         | +         | 583.14       | *   | 5.541E-01           | 1.094E-01 | 5.958E-02      | 3.794E-03 | 9.300   |
|         | +         | 860.37       |     | 1.016E+00           | 4.594E-01 | 5.148E-01      | 4.425E-02 | 1.974   |
| BI-211  | +         | 72.87        |     | 2.749E+01           | 7.350E+00 | 6.834E+00      | 7.620E-01 | 4.022   |
|         | +         | 351.07       | *   | 3.734E+00           | 5.723E-01 | 4.180E-01      | 2.872E-02 | 8.933   |
| PB-212  | +         | 74.81        |     | 3.262E+00           | 9.241E-01 | 7.546E-01      | 1.096E-01 | 4.323   |
|         | +         | 77.11        |     | 2.646E+00           | 4.948E-01 | 4.090E-01      | 4.541E-02 | 6.471   |
|         | +         | 87.30        |     | 8.775E-01           | 6.765E-01 | 8.978E-01      | 1.370E-01 | 0.977   |
|         | +         | 238.63       | *   | 1.775E+00           | 2.021E-01 | 1.040E-01      | 8.607E-03 | 17.067  |
|         | +         | 300.09       |     | 1.122E+00           | 1.175E+00 | 1.428E+00      | 1.281E-01 | 0.786   |
| PO-212  | +         | 74.81        |     | 3.262E+00           | 9.241E-01 | 7.546E-01      | 1.096E-01 | 4.323   |
|         | +         | 77.11        |     | 2.646E+00           | 4.948E-01 | 4.090E-01      | 4.541E-02 | 6.471   |
|         | +         | 87.30        |     | 8.775E-01           | 6.765E-01 | 8.978E-01      | 1.370E-01 | 0.977   |
|         |           | 115.19       |     | 4.318E+00           | 4.241E+00 | 7.173E+00      | 5.488E-01 | 0.602   |
|         | +         | 238.63       | *   | 1.775E+00           | 2.021E-01 | 1.040E-01      | 8.607E-03 | 17.067  |
|         | +         | 300.09       |     | 1.122E+00           | 1.175E+00 | 1.428E+00      | 1.281E-01 | 0.786   |
| BI-214  | +         | 609.31       | *   | 1.208E+00           | 2.018E-01 | 1.373E-01      | 1.019E-02 | 8.803   |
|         | +         | 1120.29      |     | 1.324E+00           | 5.581E-01 | 5.473E-01      | 5.049E-02 | 2.419   |
|         | +         | 1764.49      |     | 1.072E+00           | 4.226E-01 | 3.195E-01      | 1.988E-02 | 3.355   |
| PB-214  | +         | 74.81        |     | 5.621E+00           | 1.560E+00 | 1.300E+00      | 1.736E-01 | 4.323   |
|         | +         | 77.11        |     | 4.537E+00           | 9.159E-01 | 7.011E-01      | 9.442E-02 | 6.471   |
|         | +         | 87.30        |     | 1.503E+00           | 1.155E+00 | 1.538E+00      | 2.132E-01 | 0.977   |
|         | +         | 241.98       |     | 2.257E+00           | 8.160E-01 | 5.974E-01      | 5.339E-02 | 3.779   |
|         | +         | 295.21       |     | 1.465E+00           | 3.050E-01 | 2.637E-01      | 2.439E-02 | 5.555   |
|         | +         | 351.92       | *   | 1.299E+00           | 2.103E-01 | 1.459E-01      | 1.258E-02 | 8.900   |
| PO-214  | +         | 74.81        |     | 5.621E+00           | 1.560E+00 | 1.300E+00      | 1.736E-01 | 4.323   |
|         | +         | 77.11        |     | 4.537E+00           | 9.159E-01 | 7.011E-01      | 9.442E-02 | 6.471   |
|         | +         | 87.30        |     | 1.503E+00           | 1.155E+00 | 1.538E+00      | 2.132E-01 | 0.977   |

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PO-216  | +         | 241.98       |     | 2.257E+00           | 8.160E-01 | 5.974E-01      | 5.339E-02 | 3.779   |
|         | +         | 295.21       |     | 1.465E+00           | 3.050E-01 | 2.637E-01      | 2.439E-02 | 5.555   |
|         | +         | 351.92       | *   | 1.299E+00           | 2.103E-01 | 1.459E-01      | 1.258E-02 | 8.900   |
|         | +         | 74.81        |     | 3.262E+00           | 9.241E-01 | 7.546E-01      | 1.096E-01 | 4.323   |
|         | +         | 77.11        |     | 2.646E+00           | 4.948E-01 | 4.090E-01      | 4.541E-02 | 6.471   |
|         | +         | 87.30        |     | 8.775E-01           | 6.765E-01 | 8.978E-01      | 1.370E-01 | 0.977   |
| PO-218  | +         | 238.63       | *   | 1.775E+00           | 2.021E-01 | 1.040E-01      | 8.607E-03 | 17.067  |
|         | +         | 300.09       |     | 1.122E+00           | 1.175E+00 | 1.428E+00      | 1.281E-01 | 0.786   |
|         | +         | 74.81        |     | 5.621E+00           | 1.560E+00 | 1.300E+00      | 1.736E-01 | 4.323   |
|         | +         | 77.11        |     | 4.537E+00           | 9.159E-01 | 7.011E-01      | 9.442E-02 | 6.471   |
|         | +         | 87.30        |     | 1.503E+00           | 1.155E+00 | 1.538E+00      | 2.132E-01 | 0.977   |
|         | +         | 241.98       |     | 2.257E+00           | 8.160E-01 | 5.974E-01      | 5.339E-02 | 3.779   |
| RA-224  | +         | 295.21       |     | 1.465E+00           | 3.050E-01 | 2.637E-01      | 2.439E-02 | 5.555   |
|         | +         | 351.92       | *   | 1.299E+00           | 2.103E-01 | 1.459E-01      | 1.258E-02 | 8.900   |
|         | +         | 240.98       | *   | 4.280E+00           | 1.529E+00 | 1.183E+00      | 8.233E-02 | 3.618   |
| RA-226  | +         | 609.31       | *   | 1.208E+00           | 2.018E-01 | 1.373E-01      | 1.019E-02 | 8.803   |
|         | +         | 1120.29      |     | 1.324E+00           | 5.581E-01 | 5.473E-01      | 5.049E-02 | 2.419   |
|         | +         | 1764.49      |     | 1.072E+00           | 4.226E-01 | 3.195E-01      | 1.988E-02 | 3.355   |
| AC-228  | +         | 338.32       |     | 1.788E+00           | 8.647E-01 | 4.390E-01      | 1.794E-01 | 4.073   |
|         | +         | 911.07       | *   | 1.664E+00           | 4.042E-01 | 2.473E-01      | 2.750E-02 | 6.729   |
|         | +         | 969.11       |     | 1.384E+00           | 5.745E-01 | 4.369E-01      | 1.010E-01 | 3.168   |
| RA-228  | +         | 338.32       |     | 1.788E+00           | 8.647E-01 | 4.390E-01      | 1.794E-01 | 4.073   |
|         | +         | 911.07       | *   | 1.664E+00           | 4.042E-01 | 2.473E-01      | 2.750E-02 | 6.729   |
|         | +         | 969.11       |     | 1.384E+00           | 5.745E-01 | 4.369E-01      | 1.010E-01 | 3.168   |
| TH-228  | +         | 74.81        |     | 3.309E+00           | 8.857E-01 | 7.654E-01      | 8.548E-02 | 4.323   |
|         | +         | 77.11        |     | 2.684E+00           | 5.019E-01 | 4.149E-01      | 4.607E-02 | 6.471   |
|         | +         | 87.30        |     | 8.901E-01           | 6.804E-01 | 9.108E-01      | 1.049E-01 | 0.977   |
| TH-230  | +         | 238.63       | *   | 1.800E+00           | 2.050E-01 | 1.055E-01      | 8.731E-03 | 17.067  |
|         | +         | 300.09       |     | 1.139E+00           | 1.364E+00 | 1.449E+00      | 8.554E-01 | 0.786   |
|         | +         | 609.31       | *   | 1.208E+00           | 2.018E-01 | 1.373E-01      | 1.019E-02 | 8.803   |
|         | +         | 1120.29      |     | 1.324E+00           | 5.581E-01 | 5.473E-01      | 5.049E-02 | 2.419   |
|         | +         | 1764.49      |     | 1.072E+00           | 4.226E-01 | 3.195E-01      | 1.988E-02 | 3.355   |
|         | +         | 338.32       |     | 1.788E+00           | 4.765E-01 | 4.390E-01      | 2.826E-02 | 4.073   |
| TH-232  | +         | 911.07       | *   | 1.664E+00           | 4.042E-01 | 2.473E-01      | 2.750E-02 | 6.729   |
|         | +         | 969.11       |     | 1.384E+00           | 5.745E-01 | 4.369E-01      | 1.010E-01 | 3.168   |
| TH-234  | +         | 63.29        | *   | 3.240E+00           | 2.405E+00 | 3.546E+00      | 6.998E-01 | 0.914   |
|         | +         | 92.38        |     | 1.217E+00           | 1.056E+00 | 1.054E+00      | 2.008E-01 | 1.155   |
| U-234   | +         | 609.31       | *   | 1.208E+00           | 2.018E-01 | 1.373E-01      | 1.019E-02 | 8.803   |
|         | +         | 1120.29      |     | 1.324E+00           | 5.581E-01 | 5.473E-01      | 5.049E-02 | 2.419   |
|         | +         | 1764.49      |     | 1.072E+00           | 4.226E-01 | 3.195E-01      | 1.988E-02 | 3.355   |
| NP-237  | +         | 86.50        | *   | 5.571E-01           | 4.411E-01 | 5.455E-01      | 1.288E-01 | 1.021   |
|         | +         | 95.87        |     | -2.757E-01          | 1.310E+00 | 1.862E+00      | 4.672E-01 | -0.148  |
| U-238   | +         | 63.29        | *   | 3.240E+00           | 2.405E+00 | 3.546E+00      | 6.998E-01 | 0.914   |
|         | +         | 92.38        |     | 1.217E+00           | 1.038E+00 | 1.054E+00      | 1.108E-01 | 1.155   |
| AM-243  | +         | 74.67        | *   | 5.289E-01           | 1.414E-01 | 1.229E-01      | 1.366E-02 | 4.302   |
|         | +         | 86.72        |     | 2.089E+01           | 1.597E+01 | 2.038E+01      | 2.339E+00 | 1.025   |
|         | +         | 117.66       |     | -6.713E+00          | 4.637E+00 | 7.083E+00      | 5.291E-01 | -0.948  |
| ANH-511 | +         | 142.18       |     | -4.695E+00          | 2.292E+01 | 3.640E+01      | 2.480E+00 | -0.129  |
|         | +         | 511.00       | *   | 1.374E-01           | 8.403E-02 | 5.126E-02      | 2.894E-03 | 2.680   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| BE-7    |           | 477.59       | *   | -1.617E-01          | 3.986E-01 | 6.342E-01      | 4.226E-02 | -0.255  |
| NA-22   |           | 1274.54      | *   | -5.444E-02          | 5.033E-02 | 7.144E-02      | 4.903E-03 | -0.762  |
| NA-24   |           | 1368.53      | *   | -8.874E-02          | 5.033E-02 | Half-Life      | too short |         |
| AL-26   |           | 1129.67      |     | -1.994E+00          | 1.986E+00 | 2.922E+00      | 1.841E-01 | -0.682  |
|         |           | 1808.65      | *   | -2.363E-02          | 3.251E-02 | 4.525E-02      | 2.708E-03 | -0.522  |
| TI-44   |           | 67.85        |     | -6.472E-02          | 8.753E-02 | 1.132E-01      | 1.291E-02 | -0.572  |
|         |           | 78.38        | *   | 1.855E-01           | 6.161E-02 | 9.396E-02      | 1.045E-02 | 1.974   |
| SC-46   |           | 889.25       | *   | -1.228E-02          | 4.673E-02 | 7.563E-02      | 6.344E-03 | -0.162  |
|         | +         | 1120.51      |     | 2.253E-01           | 9.377E-02 | 1.431E-01      | 9.187E-03 | 1.574   |
| V-48    |           | 944.10       |     | 1.041E-02           | 1.016E+00 | 1.678E+00      | 1.379E-01 | 0.006   |
|         |           | 983.50       | *   | -1.572E-02          | 7.374E-02 | 1.188E-01      | 9.383E-03 | -0.132  |
|         |           | 1312.09      |     | -1.304E-03          | 9.273E-02 | 1.496E-01      | 1.092E-02 | -0.009  |
| CR-51   |           | 320.08       | *   | 1.583E-01           | 4.177E-01 | 7.087E-01      | 5.111E-02 | 0.223   |
| MN-52   |           | 744.21       |     | -2.451E-01          | 2.505E-01 | 3.862E-01      | 2.369E-02 | -0.635  |
|         |           | 848.13       |     | 4.023E+00           | 6.858E+00 | 1.192E+01      | 9.190E-01 | 0.337   |
|         |           | 935.52       |     | 2.841E-01           | 2.617E-01 | 4.694E-01      | 3.888E-02 | 0.605   |
|         |           | 1246.25      |     | -5.148E-01          | 8.035E+00 | 1.295E+01      | 8.446E-01 | -0.040  |
|         |           | 1333.61      |     | 6.299E+00           | 5.198E+00 | 9.539E+00      | 7.199E-01 | 0.660   |
|         |           | 1434.06      | *   | 1.217E-01           | 2.099E-01 | 3.785E-01      | 2.806E-02 | 0.321   |
| MN-54   |           | 834.83       | *   | -7.375E-03          | 4.662E-02 | 7.656E-02      | 5.738E-03 | -0.096  |
| CO-56   |           | 846.75       | *   | 5.403E-03           | 4.304E-02 | 7.218E-02      | 5.548E-03 | 0.075   |
|         |           | 977.42       |     | 5.062E-01           | 3.701E+00 | 5.331E+00      | 4.239E-01 | 0.095   |
|         |           | 1037.82      |     | 1.125E-01           | 3.534E-01 | 5.964E-01      | 4.720E-02 | 0.189   |
|         |           | 1175.09      |     | -1.124E+00          | 2.683E+00 | 4.174E+00      | 2.386E-01 | -0.269  |
|         |           | 1238.25      |     | 1.345E-01           | 1.096E-01 | 1.934E-01      | 1.307E-02 | 0.695   |
|         |           | 1360.21      |     | 1.921E-01           | 1.092E+00 | 1.803E+00      | 1.356E-01 | 0.107   |
|         |           | 1771.40      |     | -4.979E-01          | 3.226E-01 | 3.966E-01      | 2.454E-02 | -1.255  |
| CO-57   |           | 122.06       | *   | 3.007E-02           | 3.126E-02 | 5.111E-02      | 3.675E-03 | 0.588   |
|         |           | 136.48       |     | 9.700E-02           | 2.739E-01 | 4.503E-01      | 3.456E-02 | 0.215   |
| CO-58   |           | 810.76       | *   | 1.370E-02           | 4.814E-02 | 8.174E-02      | 5.839E-03 | 0.168   |
| FE-59   |           | 142.65       |     | 8.161E-01           | 3.465E+00 | 5.593E+00      | 3.808E-01 | 0.146   |
|         |           | 192.34       |     | -4.365E-01          | 1.188E+00 | 1.847E+00      | 2.278E-01 | -0.236  |
|         |           | 1099.22      | *   | -9.056E-02          | 1.122E-01 | 1.698E-01      | 1.285E-02 | -0.533  |
|         |           | 1291.56      |     | 5.442E-02           | 1.303E-01 | 2.207E-01      | 1.862E-02 | 0.247   |
| CO-60   |           | 1173.22      |     | -5.216E-03          | 5.389E-02 | 8.643E-02      | 4.923E-03 | -0.060  |
|         |           | 1332.49      | *   | 6.325E-02           | 4.420E-02 | 8.274E-02      | 6.245E-03 | 0.764   |
| ZN-65   |           | 1115.52      | *   | 1.520E-02           | 1.354E-01 | 1.918E-01      | 1.246E-02 | 0.079   |
| GE-68   |           | 1077.35      | *   | 8.001E-03           | 1.338E+00 | 2.191E+00      | 1.522E-01 | 0.004   |
| AS-73   |           | 53.44        | *   | 4.607E-01           | 2.029E+00 | 3.405E+00      | 4.653E-01 | 0.135   |
| AS-74   |           | 595.88       | *   | 4.099E-02           | 1.165E-01 | 1.893E-01      | 1.018E-02 | 0.217   |
|         |           | 634.78       |     | -1.095E-01          | 3.949E-01 | 6.213E-01      | 3.222E-02 | -0.176  |
| SE-75   |           | 66.05        |     | -3.183E-01          | 8.545E+00 | 1.235E+01      | 1.602E+00 | -0.026  |
|         |           | 96.73        |     | 5.628E-01           | 1.045E+00 | 1.541E+00      | 2.211E-01 | 0.365   |
|         |           | 121.11       |     | 9.317E-02           | 1.622E-01 | 2.699E-01      | 2.753E-02 | 0.345   |
|         |           | 136.00       |     | 1.338E-02           | 5.293E-02 | 8.380E-02      | 5.835E-03 | 0.160   |
|         |           | 198.60       |     | 7.010E-01           | 2.355E+00 | 3.763E+00      | 3.003E-01 | 0.186   |
|         |           | 264.65       | *   | -3.649E-02          | 6.206E-02 | 8.706E-02      | 6.089E-03 | -0.419  |
|         |           | 279.53       |     | -1.213E-01          | 1.356E-01 | 2.174E-01      | 1.586E-02 | -0.558  |
|         |           | 303.91       |     | -1.849E-01          | 2.727E+00 | 3.932E+00      | 3.992E-01 | -0.047  |



## ---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|---------------------|-----------|---------------------|-----------|---------|
| BR-77   | +         | 400.65       |              | 1.142E-01           | 3.148E-01 | 5.134E-01           | 4.637E-02 | 0.222   |
|         |           | 87.88        |              | 3.352E+02           | 2.562E+02 | 3.629E+02           | 4.196E+01 | 0.924   |
|         |           | 200.40       |              | -9.730E+01          | 1.760E+02 | 2.754E+02           | 1.882E+01 | -0.353  |
|         | +         | 239.00       |              | 2.290E+02           | 2.397E+01 | 3.618E+01           | 2.518E+00 | 6.330   |
|         |           | 249.79       |              | 5.381E+01           | 6.542E+01 | 1.135E+02           | 7.903E+00 | 0.474   |
|         |           | 281.68       |              | -4.701E+01          | 8.933E+01 | 1.458E+02           | 1.004E+01 | -0.322  |
|         |           | 297.23       |              | 1.877E+02           | 9.023E+01 | 1.080E+02           | 7.346E+00 | 1.739   |
|         |           | 303.76       |              | -1.010E+01          | 1.876E+02 | 2.709E+02           | 1.831E+01 | -0.037  |
|         |           | 439.47       |              | -8.490E+01          | 1.373E+02 | 2.162E+02           | 1.235E+01 | -0.393  |
|         |           | 484.57       |              | -1.507E+02          | 2.270E+02 | 3.541E+02           | 2.015E+01 | -0.425  |
|         |           | 520.65       | *            | -6.057E-01          | 8.882E+00 | 1.398E+01           | 7.863E-01 | -0.043  |
|         |           | 574.64       |              | -2.809E+02          | 2.423E+02 | 2.958E+02           | 1.616E+01 | -0.950  |
|         |           | 578.91       |              | 7.774E+01           | 9.411E+01 | 1.421E+02           | 7.741E+00 | 0.547   |
|         |           | 585.48       |              | 8.593E+02           | 2.079E+02 | 3.774E+02           | 2.046E+01 | 2.277   |
|         |           | 755.35       |              | 3.514E+01           | 1.477E+02 | 2.511E+02           | 1.580E+01 | 0.140   |
| SR-82   |           | 817.79       |              | -7.721E+00          | 1.180E+02 | 1.951E+02           | 1.410E+01 | -0.040  |
|         |           | 698.33       |              | 5.129E+00           | 3.929E+01 | 6.645E+01           | 3.658E+00 | 0.077   |
|         |           | 776.49       | *            | -4.780E-01          | 4.467E-01 | 6.134E-01           | 4.049E-02 | -0.779  |
| RB-83   |           | 1395.20      |              | 1.202E-01           | 1.248E+01 | 2.090E+01           | 1.563E+00 | 0.006   |
|         |           | 520.41       | *            | -1.085E-02          | 7.164E-02 | 1.119E-01           | 6.294E-03 | -0.097  |
|         |           | 529.64       |              | -6.996E-02          | 1.231E-01 | 1.917E-01           | 1.075E-02 | -0.365  |
| RB-84   |           | 552.65       |              | -2.512E-01          | 2.298E-01 | 3.404E-01           | 1.886E-02 | -0.738  |
|         |           | 881.50       | *            | -2.705E-02          | 7.708E-02 | 1.236E-01           | 1.020E-02 | -0.219  |
| KR-85   |           | 513.99       | *            | 1.376E+01           | 8.330E+00 | 1.360E+01           | 7.671E-01 | 1.012   |
| SR-85   |           | 513.99       | *            | 6.999E-02           | 4.237E-02 | 6.918E-02           | 3.903E-03 | 1.012   |
| RB-86   |           | 1076.63      | *            | 6.934E-02           | 8.490E-01 | 1.400E+00           | 9.743E-02 | 0.050   |
| Y-88    |           | 898.02       |              | -3.780E-02          | 4.724E-02 | 7.238E-02           | 6.210E-03 | -0.522  |
|         |           | 1836.01      | *            | -3.475E-03          | 3.219E-02 | 5.162E-02           | 3.015E-03 | -0.067  |
| ZR-88   |           | 392.90       | *            | 2.121E-02           | 3.719E-02 | 6.327E-02           | 3.588E-03 | 0.335   |
| Y-91    |           | 1204.90      | *            | -1.088E+01          | 2.229E+01 | 3.464E+01           | 2.095E+00 | -0.314  |
| NB-94   |           | 702.63       | *            | 1.810E-02           | 3.812E-02 | 6.595E-02           | 3.668E-03 | 0.275   |
|         |           | 871.10       |              | 5.228E-02           | 3.941E-02 | 7.192E-02           | 5.814E-03 | 0.727   |
| NB-95   |           | 765.79       | *            | 6.368E-02           | 5.612E-02 | 8.949E-02           | 5.767E-03 | 0.712   |
| NB-95M  |           | 235.69       | *            | 1.707E+00           | 2.618E-01 | 4.121E-01           | 3.482E-02 | 4.142   |
| ZR-95   |           | 724.18       |              | 1.276E-01           | 1.335E-01 | 2.088E-01           | 1.442E-02 | 0.611   |
|         |           | 756.15       | *            | -2.579E-02          | 7.876E-02 | 1.281E-01           | 9.553E-03 | -0.201  |
| NB-97   |           | 657.90       | *            | -6.266E-02          | 7.876E-02 | Half-Life too short |           |         |
|         |           | 1024.50      |              | -6.686E-01          | 7.876E-02 | Half-Life too short |           |         |
| ZR-97   |           | 254.15       |              | -2.077E+00          | 7.876E-02 | Half-Life too short |           |         |
|         |           | 355.39       |              | -2.633E-01          | 7.876E-02 | Half-Life too short |           |         |
|         |           | 507.63       | *            | 4.123E+00           | 7.876E-02 | Half-Life too short |           |         |
|         |           | 602.52       |              | -4.800E+00          | 7.876E-02 | Half-Life too short |           |         |
|         |           | 1021.30      |              | 2.838E+00           | 7.876E-02 | Half-Life too short |           |         |
|         |           | 1147.95      |              | 1.497E+00           | 7.876E-02 | Half-Life too short |           |         |
|         |           | 1362.66      |              | 3.289E+00           | 7.876E-02 | Half-Life too short |           |         |
|         |           | 1750.46      |              | -6.888E-01          | 7.876E-02 | Half-Life too short |           |         |
| MO-99   |           | 140.51       |              | -1.989E+01          | 2.861E+01 | 4.439E+01           | 1.207E+01 | -0.448  |
|         |           | 181.06       |              | -1.550E+01          | 1.998E+01 | 2.649E+01           | 4.629E+00 | -0.585  |
|         |           | 366.43       |              | 1.787E+01           | 8.170E+01 | 1.369E+02           | 8.311E+00 | 0.131   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
|         |           | 739.58       | *   | 2.537E+00           | 1.025E+01 | 1.747E+01           | 2.428E+00 | 0.145   |
|         |           | 778.00       |     | -4.452E+01          | 3.169E+01 | 4.645E+01           | 3.077E+00 | -0.958  |
| TC-99M  |           | 140.51       | *   | -4.406E+09          | 3.169E+01 | Half-Life too short |           |         |
| RH-101  | +         | 127.23       |     | 6.787E-02           | 6.451E-02 | 6.844E-02           | 4.822E-03 | 0.992   |
|         |           | 198.01       | *   | 1.643E-02           | 4.330E-02 | 6.941E-02           | 4.735E-03 | 0.237   |
|         |           | 325.23       |     | 2.068E-01           | 2.681E-01 | 4.620E-01           | 3.038E-02 | 0.448   |
| RH-102  |           | 418.52       |     | 3.594E-02           | 3.509E-01 | 5.805E-01           | 3.312E-02 | 0.062   |
|         |           | 475.06       | *   | 4.572E-03           | 3.545E-02 | 5.844E-02           | 3.331E-03 | 0.078   |
|         |           | 631.29       |     | -6.414E-03          | 6.377E-02 | 1.019E-01           | 5.304E-03 | -0.063  |
|         |           | 697.49       |     | 2.434E-02           | 8.898E-02 | 1.519E-01           | 8.347E-03 | 0.160   |
|         |           | 766.84       |     | 1.023E-01           | 1.517E-01 | 2.318E-01           | 1.498E-02 | 0.441   |
|         |           | 1046.59      |     | -3.291E-02          | 1.364E-01 | 2.187E-01           | 1.594E-02 | -0.150  |
|         |           | 1112.84      |     | 4.452E-02           | 3.151E-01 | 4.489E-01           | 2.926E-02 | 0.099   |
| RU-103  |           | 497.08       | *   | 4.629E-03           | 4.843E-02 | 7.950E-02           | 1.001E-02 | 0.058   |
|         |           | 610.33       |     | 1.261E+01           | 2.499E+00 | 3.174E+00           | 4.838E-01 | 3.971   |
| RH-106  | +         | 511.85       |     | 6.852E-01           | 4.191E-01 | 4.901E-01           | 2.767E-02 | 1.398   |
|         |           | 621.84       | *   | -2.152E-01          | 3.554E-01 | 5.421E-01           | 6.222E-02 | -0.397  |
|         |           | 1050.47      |     | -4.147E-01          | 2.717E+00 | 4.391E+00           | 3.183E-01 | -0.094  |
| RU-106  | +         | 511.85       |     | 6.852E-01           | 4.191E-01 | 4.901E-01           | 2.767E-02 | 1.398   |
|         |           | 621.84       | *   | -2.152E-01          | 3.547E-01 | 5.421E-01           | 2.848E-02 | -0.397  |
|         |           | 1050.47      |     | -4.147E-01          | 2.717E+00 | 4.391E+00           | 3.183E-01 | -0.094  |
| AG-108M |           | 433.93       | *   | 1.232E-02           | 3.790E-02 | 6.350E-02           | 3.948E-03 | 0.194   |
|         |           | 614.37       |     | 1.396E-02           | 5.092E-02 | 7.292E-02           | 4.249E-03 | 0.191   |
|         |           | 722.95       |     | 3.160E-02           | 5.293E-02 | 8.113E-02           | 5.132E-03 | 0.390   |
| AG-110M |           | 657.75       | *   | -4.687E-02          | 4.571E-02 | 6.776E-02           | 3.714E-03 | -0.692  |
|         |           | 677.61       |     | 6.428E-02           | 3.486E-01 | 5.681E-01           | 3.195E-02 | 0.113   |
|         |           | 706.67       |     | -2.144E-01          | 2.302E-01 | 3.584E-01           | 2.142E-02 | -0.598  |
|         |           | 763.93       |     | 2.265E-01           | 1.830E-01 | 3.008E-01           | 2.028E-02 | 0.753   |
|         |           | 884.67       |     | -3.823E-03          | 5.553E-02 | 9.137E-02           | 7.856E-03 | -0.042  |
|         |           | 937.48       |     | -6.465E-02          | 1.265E-01 | 1.991E-01           | 1.711E-02 | -0.325  |
|         |           | 1384.27      |     | -1.284E-01          | 1.731E-01 | 2.617E-01           | 2.034E-02 | -0.491  |
| IN-111  |           | 171.28       |     | 9.550E-03           | 1.012E+00 | 1.632E+00           | 1.089E-01 | 0.006   |
|         |           | 245.39       | *   | -1.056E+00          | 1.213E+00 | 1.676E+00           | 1.167E-01 | -0.630  |
| IN-113M |           | 391.69       | *   | 4.317E-02           | 5.369E-02 | 9.245E-02           | 5.608E-03 | 0.467   |
| SN-113  |           | 391.69       | *   | 4.317E-02           | 5.369E-02 | 9.245E-02           | 5.608E-03 | 0.467   |
| IN-114M |           | 190.27       | *   | -2.936E-02          | 2.526E-01 | 3.512E-01           | 2.381E-02 | -0.084  |
| CD-115  |           | 260.90       |     | 1.204E+01           | 1.238E+02 | 2.086E+02           | 1.450E+01 | 0.058   |
|         |           | 492.35       |     | 6.346E+00           | 3.366E+01 | 5.564E+01           | 3.160E+00 | 0.114   |
|         |           | 527.90       | *   | -8.255E+00          | 9.967E+00 | 1.518E+01           | 8.514E-01 | -0.544  |
| SN-117M |           | 156.02       |     | -2.096E-01          | 2.745E+00 | 4.425E+00           | 2.965E-01 | -0.047  |
|         |           | 158.56       | *   | 3.644E-03           | 6.686E-02 | 1.083E-01           | 7.238E-03 | 0.034   |
| SB-122  |           | 563.90       | *   | 4.196E-01           | 1.965E+00 | 3.235E+00           | 1.780E-01 | 0.130   |
|         |           | 692.80       |     | -1.102E+01          | 3.913E+01 | 6.428E+01           | 3.492E+00 | -0.171  |
| I-123   |           | 159.00       | *   | 9.716E-01           | 3.913E+01 | Half-Life too short |           |         |
|         |           | 528.96       |     | -8.448E+01          | 3.913E+01 | Half-Life too short |           |         |
| TE-123M |           | 159.00       | *   | 1.235E-02           | 3.503E-02 | 5.738E-02           | 3.874E-03 | 0.215   |
| I-124   |           | 602.71       | *   | -6.502E-01          | 8.697E-01 | 1.120E+00           | 5.985E-02 | -0.581  |
|         |           | 722.78       |     | 2.859E+00           | 4.879E+00 | 7.471E+00           | 4.360E-01 | 0.383   |
|         |           | 1325.50      |     | -1.109E+01          | 3.356E+01 | 5.187E+01           | 3.871E+00 | -0.214  |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| SB-124  |           | 1376.25      |     | 6.078E+01           | 3.222E+01 | 6.200E+01      | 4.652E+00 | 0.980   |
|         |           | 1509.49      |     | 7.697E+00           | 1.522E+01 | 2.583E+01      | 1.871E+00 | 0.298   |
|         |           | 1691.02      |     | -3.016E+00          | 3.854E+00 | 5.705E+00      | 3.755E-01 | -0.529  |
|         |           | 602.71       |     | -4.242E-02          | 5.674E-02 | 7.305E-02      | 3.907E-03 | -0.581  |
|         |           | 645.85       |     | 1.029E-02           | 5.821E-01 | 9.378E-01      | 5.584E-02 | 0.011   |
|         |           | 709.31       |     | -9.927E-01          | 3.071E+00 | 5.024E+00      | 2.839E-01 | -0.198  |
|         |           | 713.82       |     | 1.519E+00           | 1.904E+00 | 3.353E+00      | 3.407E-01 | 0.453   |
|         |           | 722.78       |     | 2.704E-01           | 4.615E-01 | 7.066E-01      | 4.315E-02 | 0.383   |
|         | +         | 968.20       |     | 1.412E+01           | 4.999E+00 | 8.234E+00      | 6.612E-01 | 1.715   |
|         |           | 1045.16      |     | -5.859E-01          | 2.914E+00 | 4.646E+00      | 3.394E-01 | -0.126  |
| SB-125  |           | 1325.50      |     | -1.120E+00          | 3.390E+00 | 5.240E+00      | 3.910E-01 | -0.214  |
|         |           | 1368.21      |     | -1.654E-01          | 2.060E+00 | 3.285E+00      | 4.203E-01 | -0.050  |
|         |           | 1436.60      |     | -1.743E+00          | 3.683E+00 | 5.714E+00      | 4.234E-01 | -0.305  |
|         |           | 1691.02      | *   | -6.727E-02          | 8.600E-02 | 1.273E-01      | 8.938E-03 | -0.529  |
|         |           | 427.89       | *   | -2.830E-02          | 1.072E-01 | 1.731E-01      | 1.032E-02 | -0.163  |
|         | +         | 463.38       |     | 1.129E+00           | 4.369E-01 | 6.374E-01      | 4.261E-02 | 1.771   |
| TE-125M |           | 600.56       |     | -1.290E-01          | 2.335E-01 | 3.514E-01      | 2.224E-02 | -0.367  |
|         |           | 635.90       |     | -2.376E-01          | 3.107E-01 | 4.673E-01      | 2.930E-02 | -0.508  |
|         |           | 109.28       | *   | -8.779E-01          | 1.133E+01 | 1.847E+01      | 1.835E+00 | -0.048  |
| I-126   |           | 388.63       |     | -1.036E-01          | 2.421E-01 | 3.898E-01      | 2.230E-02 | -0.266  |
|         |           | 666.33       | *   | -3.098E-01          | 2.354E-01 | 3.413E-01      | 1.737E-02 | -0.908  |
| SB-126  |           | 753.82       |     | -2.088E-01          | 1.648E+00 | 2.726E+00      | 1.710E-01 | -0.077  |
|         |           | 223.80       |     | 6.813E-01           | 4.929E+00 | 7.913E+00      | 5.482E-01 | 0.086   |
|         |           | 278.60       |     | 2.665E+00           | 2.935E+00 | 5.090E+00      | 3.512E-01 | 0.524   |
|         |           | 296.50       |     | 1.081E+01           | 2.985E+00 | 3.901E+00      | 2.656E-01 | 2.772   |
|         |           | 414.70       |     | 4.490E-02           | 8.466E-02 | 1.436E-01      | 8.189E-03 | 0.313   |
|         |           | 415.30       |     | 4.464E+00           | 7.080E+00 | 1.208E+01      | 6.886E-01 | 0.370   |
|         |           | 555.20       |     | 3.598E+00           | 4.260E+00 | 7.342E+00      | 4.061E-01 | 0.490   |
|         |           | 573.80       |     | -1.041E+00          | 1.293E+00 | 1.831E+00      | 1.001E-01 | -0.569  |
|         |           | 593.00       |     | -3.478E-01          | 1.090E+00 | 1.719E+00      | 9.265E-02 | -0.202  |
|         |           | 656.30       |     | -5.220E+00          | 4.192E+00 | 6.090E+00      | 3.084E-01 | -0.857  |
| SB-127  |           | 666.33       |     | -1.292E-01          | 9.820E-02 | 1.424E-01      | 7.247E-03 | -0.908  |
|         |           | 675.00       |     | -6.599E-01          | 2.193E+00 | 3.429E+00      | 1.783E-01 | -0.192  |
|         |           | 695.00       |     | 3.105E-02           | 8.445E-02 | 1.452E-01      | 7.929E-03 | 0.214   |
|         |           | 697.00       |     | 4.973E-02           | 2.967E-01 | 5.032E-01      | 2.761E-02 | 0.099   |
|         |           | 720.50       | *   | -3.059E-02          | 1.922E-01 | 2.730E-01      | 1.585E-02 | -0.112  |
|         |           | 856.80       |     | 5.601E-01           | 5.203E-01 | 8.427E-01      | 6.614E-02 | 0.665   |
|         |           | 989.30       |     | 2.661E-01           | 1.335E+00 | 2.237E+00      | 1.755E-01 | 0.119   |
|         |           | 1034.80      |     | 4.561E+00           | 9.363E+00 | 1.606E+01      | 1.191E+00 | 0.284   |
|         |           | 1213.00      |     | -1.815E+00          | 5.752E+00 | 9.037E+00      | 5.548E-01 | -0.201  |
|         |           | 61.10        |     | 2.052E+02           | 1.044E+02 | 1.612E+02      | 2.232E+01 | 1.273   |
| SB-127  |           | 252.40       |     | 9.073E-01           | 4.730E+00 | 7.984E+00      | 3.327E+00 | 0.114   |
|         |           | 290.80       |     | -2.470E+00          | 2.494E+01 | 3.597E+01      | 3.455E+00 | -0.069  |
|         |           | 411.60       |     | -1.268E+01          | 1.301E+01 | 1.997E+01      | 2.828E+00 | -0.635  |
|         |           | 444.90       |     | 1.843E+00           | 1.056E+01 | 1.749E+01      | 1.839E+00 | 0.105   |
|         |           | 473.00       |     | 1.449E-01           | 1.745E+00 | 2.868E+00      | 3.127E-01 | 0.051   |
|         |           | 543.00       |     | -6.264E+00          | 1.757E+01 | 2.777E+01      | 3.502E+00 | -0.226  |
|         |           | 603.60       |     | 2.585E+00           | 1.382E+01 | 1.961E+01      | 2.017E+00 | 0.132   |
|         |           | 685.20       | *   | 6.480E-01           | 1.293E+00 | 2.248E+00      | 1.997E-01 | 0.288   |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Activity Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|---------------------|-----------|---------------------|-----------|---------|
| XE-127  |           | 698.50       |              | 5.936E+00           | 1.548E+01 | 2.659E+01           | 3.773E+00 | 0.223   |
|         |           | 722.20       |              | -2.000E+00          | 3.477E+01 | 4.992E+01           | 4.447E+00 | -0.040  |
|         |           | 783.80       |              | 5.416E+00           | 3.694E+00 | 6.712E+00           | 7.354E-01 | 0.807   |
|         |           | 57.60        |              | -8.905E+00          | 1.325E+01 | 1.970E+01           | 2.509E+00 | -0.452  |
|         |           | 145.22       |              | 3.987E-01           | 8.591E-01 | 1.416E+00           | 9.602E-02 | 0.282   |
|         |           | 172.10       |              | -2.998E-02          | 1.441E-01 | 2.301E-01           | 1.537E-02 | -0.130  |
| I-131   |           | 202.84       | *            | -6.450E-03          | 6.611E-02 | 9.964E-02           | 6.821E-03 | -0.065  |
|         |           | 374.96       |              | 1.979E-01           | 2.251E-01 | 3.904E-01           | 2.320E-02 | 0.507   |
|         |           | 80.18        |              | -8.497E+00          | 6.524E+00 | 8.749E+00           | 9.795E-01 | -0.971  |
|         |           | 284.30       |              | 2.679E-01           | 1.685E+00 | 2.838E+00           | 2.107E-01 | 0.094   |
|         |           | 364.48       | *            | -3.468E-02          | 1.307E-01 | 2.130E-01           | 1.436E-02 | -0.163  |
|         |           | 636.97       |              | -4.618E-01          | 1.648E+00 | 2.592E+00           | 1.538E-01 | -0.178  |
| TE-132  |           | 722.89       |              | 4.956E+00           | 8.355E+00 | 1.280E+01           | 7.566E-01 | 0.387   |
|         |           | 49.72        |              | 2.186E+00           | 4.884E+01 | 8.156E+01           | 1.212E+01 | 0.027   |
|         |           | 111.76       |              | -3.610E+01          | 3.170E+01 | 4.885E+01           | 4.938E+00 | -0.739  |
|         |           | 116.30       |              | 3.833E+00           | 2.803E+01 | 4.599E+01           | 4.521E+00 | 0.083   |
| BA-133  |           | 228.16       | *            | -1.269E-01          | 7.089E-01 | 1.186E+00           | 1.746E-01 | -0.107  |
|         |           | 53.15        |              | 1.272E+00           | 8.945E+00 | 1.497E+01           | 2.052E+00 | 0.085   |
|         |           | 79.62        |              | -2.272E+00          | 1.987E+00 | 2.665E+00           | 4.472E-01 | -0.853  |
|         |           | 81.00        |              | -1.170E-02          | 1.547E-01 | 2.076E-01           | 3.612E-02 | -0.056  |
|         |           | 276.40       |              | 5.744E-01           | 4.917E-01 | 8.123E-01           | 1.096E-01 | 0.707   |
|         |           | 302.84       |              | 1.416E-02           | 1.913E-01 | 2.787E-01           | 3.391E-02 | 0.051   |
| I-133   |           | 356.01       | *            | -4.193E-02          | 6.447E-02 | 8.791E-02           | 1.035E-02 | -0.477  |
|         |           | 383.85       |              | 3.278E-01           | 3.596E-01 | 6.212E-01           | 6.755E-02 | 0.528   |
|         | +         | 510.53       |              | 7.677E-01           | 3.596E-01 | Half-Life too short |           |         |
|         |           | 529.87       | *            | -3.047E-03          | 3.596E-01 | Half-Life too short |           |         |
|         |           | 706.58       |              | -2.402E-01          | 3.596E-01 | Half-Life too short |           |         |
|         |           | 856.28       |              | 3.747E-01           | 3.596E-01 | Half-Life too short |           |         |
|         |           | 875.33       |              | 2.613E-02           | 3.596E-01 | Half-Life too short |           |         |
|         |           | 1236.41      |              | 3.980E-01           | 3.596E-01 | Half-Life too short |           |         |
|         |           | 1298.22      |              | -1.232E-01          | 3.596E-01 | Half-Life too short |           |         |
|         |           | 475.35       |              | 4.896E-02           | 2.301E+00 | 3.767E+00           | 2.147E-01 | 0.013   |
| CS-134  |           | 563.23       |              | 2.025E-01           | 4.095E-01 | 6.876E-01           | 3.872E-02 | 0.294   |
|         |           | 569.32       |              | 3.324E-01           | 2.262E-01 | 4.034E-01           | 2.285E-02 | 0.824   |
|         |           | 604.70       |              | 2.637E-02           | 4.629E-02 | 6.805E-02           | 3.656E-03 | 0.388   |
|         |           | 795.84       | *            | 5.647E-02           | 5.346E-02 | 9.554E-02           | 6.657E-03 | 0.591   |
|         |           | 801.93       |              | -1.312E-01          | 4.364E-01 | 7.091E-01           | 4.994E-02 | -0.185  |
|         |           | 1038.57      |              | 1.693E+00           | 4.379E+00 | 7.436E+00           | 5.484E-01 | 0.228   |
|         |           | 1167.94      |              | 2.498E+00           | 2.995E+00 | 5.218E+00           | 3.012E-01 | 0.479   |
|         |           | 1365.15      |              | -1.453E-01          | 1.453E+00 | 2.312E+00           | 1.841E-01 | -0.063  |
|         |           | 268.24       | *            | 3.441E-01           | 2.301E-01 | 3.616E-01           | 3.091E-02 | 0.952   |
|         |           | 288.45       |              | -2.424E+09          | 2.301E-01 | Half-Life too short |           |         |
| CS-135  |           | 417.63       |              | 1.765E+08           | 2.301E-01 | Half-Life too short |           |         |
|         |           | 546.56       |              | 2.473E+09           | 2.301E-01 | Half-Life too short |           |         |
|         |           | 836.80       |              | 1.195E+09           | 2.301E-01 | Half-Life too short |           |         |
|         |           | 1038.76      |              | 1.350E+09           | 2.301E-01 | Half-Life too short |           |         |
|         |           | 1124.00      |              | 5.784E+09           | 2.301E-01 | Half-Life too short |           |         |
|         |           | 1131.51      |              | -1.131E+09          | 2.301E-01 | Half-Life too short |           |         |
|         |           | 1260.41      | *            | 3.140E+08           | 2.301E-01 | Half-Life too short |           |         |
|         |           |              |              |                     |           |                     |           |         |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| CS-136  |           | 1457.56      |     | 1.483E+11           | 2.301E-01 | Half-Life      | too short |         |
|         |           | 1678.03      |     | -1.463E+09          | 2.301E-01 | Half-Life      | too short |         |
|         |           | 1706.46      |     | 9.027E+08           | 2.301E-01 | Half-Life      | too short |         |
|         |           | 1791.20      |     | -1.600E+09          | 2.301E-01 | Half-Life      | too short |         |
|         |           | 66.91        |     | -6.605E-01          | 1.443E+00 | 1.894E+00      | 3.257E-01 | -0.349  |
|         | +         | 86.29        |     | 2.380E+00           | 1.833E+00 | 2.566E+00      | 3.823E-01 | 0.927   |
|         |           | 153.22       |     | 7.168E-01           | 7.923E-01 | 1.322E+00      | 1.055E-01 | 0.542   |
|         |           | 163.89       |     | 3.437E-01           | 1.241E+00 | 2.026E+00      | 1.611E-01 | 0.170   |
|         |           | 176.55       |     | 2.119E-01           | 4.198E-01 | 6.901E-01      | 5.060E-02 | 0.307   |
|         |           | 273.65       |     | -8.901E-01          | 6.346E-01 | 8.388E-01      | 6.387E-02 | -1.061  |
|         |           | 340.57       |     | 2.746E-01           | 1.562E-01 | 2.519E-01      | 1.699E-02 | 1.090   |
|         |           | 818.51       |     | -4.113E-02          | 7.849E-02 | 1.245E-01      | 9.019E-03 | -0.330  |
|         |           | 1048.07      | *   | 7.639E-02           | 1.211E-01 | 2.095E-01      | 1.614E-02 | 0.365   |
|         |           | 1235.34      |     | 3.923E-01           | 7.092E-01 | 1.197E+00      | 1.238E-01 | 0.328   |
| BA-137M |           | 661.65       | *   | 7.816E-02           | 4.744E-02 | 8.429E-02      | 4.241E-03 | 0.927   |
| CS-137  |           | 661.65       | *   | 8.262E-02           | 5.015E-02 | 8.910E-02      | 4.508E-03 | 0.927   |
| CE-139  |           | 165.85       | *   | -3.317E-03          | 3.583E-02 | 5.757E-02      | 3.829E-03 | -0.058  |
| BA-140  |           | 162.64       |     | -2.053E-01          | 8.805E-01 | 1.408E+00      | 1.028E-01 | -0.146  |
|         |           | 304.84       |     | -2.982E-01          | 1.639E+00 | 2.341E+00      | 6.441E-01 | -0.127  |
|         |           | 423.70       |     | -7.539E-01          | 2.198E+00 | 3.516E+00      | 1.117E+00 | -0.214  |
| LA-140  |           | 537.32       | *   | -1.981E-01          | 3.060E-01 | 4.626E-01      | 1.503E-01 | -0.428  |
|         |           | 328.77       |     | 5.111E-01           | 3.506E-01 | 6.189E-01      | 4.434E-02 | 0.826   |
|         |           | 432.53       |     | -8.888E-02          | 2.282E+00 | 3.738E+00      | 2.365E-01 | -0.024  |
|         |           | 487.03       |     | -5.288E-02          | 1.517E-01 | 2.415E-01      | 1.561E-02 | -0.219  |
|         |           | 751.79       |     | 2.223E-02           | 1.973E+00 | 3.298E+00      | 2.461E-01 | 0.007   |
|         |           | 815.85       |     | -1.350E-01          | 3.454E-01 | 5.551E-01      | 4.641E-02 | -0.243  |
|         |           | 867.82       |     | -1.517E+00          | 1.790E+00 | 2.395E+00      | 2.040E-01 | -0.634  |
|         |           | 919.63       |     | -1.953E+00          | 2.833E+00 | 4.086E+00      | 4.277E-01 | -0.478  |
|         |           | 925.24       |     | 7.753E-01           | 1.224E+00 | 2.130E+00      | 1.899E-01 | 0.364   |
|         |           | 1596.49      | *   | 7.943E-02           | 8.885E-02 | 1.518E-01      | 1.058E-02 | 0.523   |
| CE-141  |           | 145.44       | *   | 2.545E-02           | 7.796E-02 | 1.278E-01      | 8.924E-03 | 0.199   |
| CE-143  |           | 57.37        |     | -8.469E-04          | 7.796E-02 | Half-Life      | too short |         |
|         |           | 231.56       |     | -1.004E-04          | 7.796E-02 | Half-Life      | too short |         |
|         | +         | 293.26       | *   | 9.561E-04           | 7.796E-02 | Half-Life      | too short |         |
|         | +         | 350.59       |     | 2.029E-02           | 7.796E-02 | Half-Life      | too short |         |
|         |           | 490.36       |     | -1.664E-03          | 7.796E-02 | Half-Life      | too short |         |
|         |           | 664.57       |     | -5.816E-04          | 7.796E-02 | Half-Life      | too short |         |
|         |           | 721.93       |     | -1.728E-04          | 7.796E-02 | Half-Life      | too short |         |
| CE-144  |           | 80.11        |     | -4.273E+00          | 3.199E+00 | 4.280E+00      | 4.774E-01 | -0.999  |
|         |           | 133.54       | *   | -2.961E-01          | 3.096E-01 | 4.140E-01      | 6.085E-02 | -0.715  |
| PM-144  |           | 476.78       |     | -5.929E-02          | 8.370E-02 | 1.303E-01      | 8.938E-03 | -0.455  |
|         |           | 618.01       |     | -1.424E-02          | 3.670E-02 | 5.734E-02      | 3.242E-03 | -0.248  |
|         |           | 696.49       | *   | 2.052E-02           | 3.977E-02 | 6.898E-02      | 3.783E-03 | 0.297   |
|         |           | 778.57       |     | -2.534E+00          | 2.512E+00 | 3.826E+00      | 2.539E-01 | -0.662  |
| PR-144  |           | 696.49       | *   | 1.390E+00           | 2.694E+00 | 4.672E+00      | 2.561E-01 | 0.297   |
|         |           | 1489.15      |     | -8.054E+00          | 1.242E+01 | 1.859E+01      | 1.357E+00 | -0.433  |
| PM-146  |           | 453.90       | *   | 4.544E-02           | 5.480E-02 | 9.398E-02      | 8.049E-03 | 0.483   |
|         |           | 633.02       |     | 9.153E-01           | 1.605E+00 | 2.646E+00      | 9.721E-01 | 0.346   |
|         |           | 735.90       |     | 2.801E-02           | 1.640E-01 | 2.720E-01      | 7.596E-02 | 0.103   |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| ND-147  | +         | 747.13       |     | 9.205E-02           | 1.077E-01 | 1.898E-01      | 2.407E-02 | 0.485   |
|         |           | 91.11        |     | 5.838E-01           | 4.986E-01 | 6.491E-01      | 7.383E-02 | 0.899   |
|         |           | 319.41       |     | 3.461E-01           | 3.657E+00 | 6.117E+00      | 4.058E-01 | 0.057   |
|         |           | 439.89       |     | -1.961E+00          | 6.662E+00 | 1.072E+01      | 6.132E-01 | -0.183  |
| PM-149  | *         | 531.02       |     | 1.036E-01           | 6.438E-01 | 1.058E+00      | 1.422E-01 | 0.098   |
|         |           | 285.90       |     | -3.649E+01          | 8.646E+01 | 1.413E+02      | 2.069E+01 | -0.258  |
| EU-152  |           | 121.78       |     | 7.576E-02           | 8.829E-02 | 1.483E-01      | 1.294E-02 | 0.511   |
|         |           | 244.69       |     | -2.095E-01          | 4.404E-01 | 6.258E-01      | 4.357E-02 | -0.335  |
|         |           | 344.27       | *   | -1.031E-01          | 1.534E-01 | 1.794E-01      | 1.264E-02 | -0.575  |
|         |           | 443.98       |     | 4.046E-01           | 1.180E+00 | 1.976E+00      | 1.129E-01 | 0.205   |
|         |           | 778.89       |     | -2.677E-01          | 2.886E-01 | 4.429E-01      | 2.939E-02 | -0.604  |
|         |           | 867.32       |     | -8.399E-01          | 1.145E+00 | 1.479E+00      | 1.186E-01 | -0.568  |
|         |           | 964.01       |     | 6.330E-01           | 3.689E-01 | 6.827E-01      | 5.505E-02 | 0.927   |
|         |           | 1085.78      |     | 1.260E-02           | 4.517E-01 | 7.407E-01      | 5.074E-02 | 0.017   |
| GD-153  |           | 1112.02      |     | 7.559E-02           | 4.159E-01 | 6.404E-01      | 4.181E-02 | 0.118   |
|         |           | 1407.95      |     | 4.041E-02           | 2.269E-01 | 3.865E-01      | 2.883E-02 | 0.105   |
|         |           | 69.67        |     | 7.270E-01           | 2.753E+00 | 4.050E+00      | 4.572E-01 | 0.179   |
|         |           | 83.37        |     | 9.514E+00           | 2.209E+01 | 3.229E+01      | 3.643E+00 | 0.295   |
| EU-154  |           | 97.43        | *   | 7.772E-02           | 1.083E-01 | 1.612E-01      | 1.547E-02 | 0.482   |
|         |           | 103.18       |     | 3.148E-02           | 1.308E-01 | 2.161E-01      | 1.901E-02 | 0.146   |
|         |           | 123.07       |     | 3.855E-02           | 7.066E-02 | 1.036E-01      | 1.067E-02 | 0.372   |
|         |           | 247.94       |     | -2.113E-01          | 4.687E-01 | 7.269E-01      | 7.479E-02 | -0.291  |
|         |           | 591.81       |     | -5.043E-01          | 7.812E-01 | 1.116E+00      | 1.065E-01 | -0.452  |
|         |           | 723.30       |     | 8.346E-02           | 2.322E-01 | 3.472E-01      | 2.471E-02 | 0.240   |
|         |           | 756.87       |     | -2.321E-01          | 8.631E-01 | 1.411E+00      | 1.473E-01 | -0.165  |
|         |           | 873.19       |     | 2.796E-01           | 3.413E-01 | 6.012E-01      | 7.152E-02 | 0.465   |
| EU-155  |           | 996.32       |     | -5.870E-01          | 4.680E-01 | 6.660E-01      | 1.157E-01 | -0.881  |
|         |           | 1004.76      |     | -2.849E-01          | 2.700E-01 | 4.003E-01      | 4.396E-02 | -0.712  |
|         |           | 1274.45      | *   | -1.496E-01          | 1.413E-01 | 2.006E-01      | 2.011E-02 | -0.746  |
|         |           | 48.70        |     | 1.273E-02           | 7.786E+00 | 1.299E+01      | 1.671E+00 | 0.001   |
|         |           | 60.01        |     | 5.850E+00           | 1.012E+01 | 1.518E+01      | 1.856E+00 | 0.385   |
|         |           | 86.54        |     | 2.284E-01           | 1.746E-01 | 2.456E-01      | 2.832E-02 | 0.930   |
|         |           | 105.31       | *   | 3.023E-02           | 1.364E-01 | 2.251E-01      | 1.949E-02 | 0.134   |
| TB-160  | +         | 86.79        |     | 6.060E-01           | 4.632E-01 | 6.505E-01      | 7.470E-02 | 0.932   |
|         |           | 197.04       |     | 3.075E-01           | 7.261E-01 | 1.166E+00      | 7.949E-02 | 0.264   |
|         |           | 215.65       |     | -3.594E-01          | 9.312E-01 | 1.461E+00      | 1.008E-01 | -0.246  |
|         |           | 298.57       |     | 1.621E-01           | 1.695E-01 | 2.331E-01      | 1.584E-02 | 0.695   |
|         |           | 879.36       | *   | 5.962E-02           | 1.530E-01 | 2.618E-01      | 2.153E-02 | 0.228   |
|         |           | 962.29       |     | 1.208E+00           | 7.202E-01 | 1.190E+00      | 9.609E-02 | 1.015   |
|         |           | 966.15       |     | 1.607E+00           | 3.432E-01 | 6.554E-01      | 5.274E-02 | 2.451   |
|         |           | 1177.93      |     | 1.966E-01           | 4.140E-01 | 7.021E-01      | 4.035E-02 | 0.280   |
| HO-166M |           | 1271.85      |     | -2.176E-01          | 7.547E-01 | 1.182E+00      | 8.057E-02 | -0.184  |
|         |           | 80.57        |     | -3.759E-01          | 4.370E-01 | 5.581E-01      | 6.233E-02 | -0.674  |
|         |           | 184.41       |     | 7.849E-02           | 7.061E-02 | 8.178E-02      | 5.518E-03 | 0.960   |
|         |           | 280.46       |     | -7.865E-02          | 1.058E-01 | 1.708E-01      | 1.177E-02 | -0.460  |
|         |           | 410.95       |     | -1.453E-01          | 2.950E-01 | 4.715E-01      | 2.686E-02 | -0.308  |
|         |           | 711.68       | *   | 2.648E-02           | 6.970E-02 | 1.199E-01      | 6.813E-03 | 0.221   |
|         |           | 752.31       |     | -5.825E-02          | 3.258E-01 | 5.371E-01      | 3.357E-02 | -0.108  |
|         |           | 810.29       |     | 2.126E-02           | 7.261E-02 | 1.234E-01      | 8.774E-03 | 0.172   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| TM-171  |           | 51.35        |     | -3.716E+01          | 8.449E+01 | 1.381E+02      | 1.908E+01 | -0.269  |
|         |           | 52.39        |     | -7.330E+00          | 4.044E+01 | 6.686E+01      | 9.222E+00 | -0.110  |
|         |           | 59.40        |     | 1.981E+01           | 5.538E+01 | 8.233E+01      | 1.013E+01 | 0.241   |
|         |           | 66.72        | *   | -2.205E+01          | 5.475E+01 | 7.226E+01      | 8.309E+00 | -0.305  |
| LU-176  |           | 88.36        |     | 1.963E-01           | 4.387E-01 | 4.700E-01      | 5.393E-02 | 0.418   |
|         |           | 201.83       |     | -2.641E-02          | 3.851E-02 | 5.989E-02      | 4.097E-03 | -0.441  |
|         |           | 306.84       | *   | -2.321E-02          | 3.002E-02 | 4.658E-02      | 3.138E-03 | -0.498  |
|         |           | 401.10       |     | 1.290E+00           | 8.212E+00 | 1.324E+01      | 7.525E-01 | 0.097   |
| LU-177  |           | 112.95       |     | -1.246E-01          | 1.842E+00 | 2.979E+00      | 2.332E-01 | -0.042  |
| LU-177M | +         | 208.36       | *   | 3.189E+00           | 1.522E+00 | 2.240E+00      | 1.539E-01 | 1.424   |
|         |           | 52.97        |     | 7.859E-01           | 4.057E+00 | 6.802E+00      | 9.342E-01 | 0.116   |
|         |           | 54.07        |     | 5.830E-01           | 2.018E+00 | 3.393E+00      | 4.599E-01 | 0.172   |
|         | +         | 61.30        |     | 3.449E+00           | 2.501E+00 | 4.752E+00      | 5.737E-01 | 0.726   |
| HF-181  |           | 121.62       |     | 3.735E-01           | 4.504E-01 | 7.567E-01      | 5.452E-02 | 0.494   |
|         |           | 147.16       |     | -2.374E-01          | 8.144E-01 | 1.304E+00      | 8.825E-02 | -0.182  |
|         |           | 171.86       |     | -5.875E-02          | 5.814E-01 | 9.327E-01      | 6.228E-02 | -0.063  |
|         |           | 218.09       |     | -1.648E-01          | 1.070E+00 | 1.697E+00      | 1.173E-01 | -0.097  |
|         | +         | 268.79       |     | 1.695E+00           | 1.247E+00 | 1.840E+00      | 1.276E-01 | 0.922   |
|         |           | 319.02       |     | -1.064E-01          | 3.000E-01 | 4.897E-01      | 3.249E-02 | -0.217  |
|         |           | 367.43       |     | -6.574E-02          | 1.029E+00 | 1.696E+00      | 1.027E-01 | -0.039  |
|         |           | 413.65       | *   | -1.170E-01          | 2.085E-01 | 3.312E-01      | 1.888E-02 | -0.353  |
|         |           | 56.28        |     | -2.529E-01          | 2.002E+00 | 3.313E+00      | 4.327E-01 | -0.076  |
|         |           | 57.53        |     | -7.795E-01          | 1.073E+00 | 1.664E+00      | 2.122E-01 | -0.468  |
|         |           | 65.20        |     | 2.675E-01           | 1.676E+00 | 2.448E+00      | 2.849E-01 | 0.109   |
|         |           | 133.02       |     | -6.838E-02          | 9.543E-02 | 1.304E-01      | 9.046E-03 | -0.524  |
| W-181   |           | 136.25       |     | 3.166E-01           | 5.902E-01 | 9.764E-01      | 6.723E-02 | 0.324   |
|         |           | 345.85       |     | -1.548E-01          | 2.606E-01 | 3.573E-01      | 2.268E-02 | -0.433  |
|         |           | 482.03       | *   | 6.514E-02           | 5.182E-02 | 9.108E-02      | 5.185E-03 | 0.715   |
|         |           | 56.28        |     | -1.012E-01          | 7.899E-01 | 1.307E+00      | 1.707E-01 | -0.077  |
| TA-182  |           | 57.53        |     | -3.079E-01          | 4.238E-01 | 6.570E-01      | 8.380E-02 | -0.469  |
|         |           | 65.20        | *   | 1.048E-01           | 6.567E-01 | 9.590E-01      | 1.116E-01 | 0.109   |
|         |           | 67.75        |     | -1.554E-01          | 2.085E-01 | 2.694E-01      | 3.076E-02 | -0.577  |
|         |           | 100.10       |     | -6.547E-02          | 2.221E-01 | 3.600E-01      | 3.311E-02 | -0.182  |
| RE-183  |           | 152.43       |     | 1.589E-01           | 4.266E-01 | 6.997E-01      | 4.706E-02 | 0.227   |
|         |           | 222.10       |     | 1.938E-01           | 4.312E-01 | 7.020E-01      | 4.860E-02 | 0.276   |
|         |           | 1001.68      |     | 3.511E+00           | 2.536E+00 | 4.614E+00      | 3.570E-01 | 0.761   |
|         | +         | 1121.28      |     | 6.232E-01           | 2.594E-01 | 3.870E-01      | 2.481E-02 | 1.610   |
|         |           | 1189.05      |     | -1.103E-01          | 3.667E-01 | 5.803E-01      | 3.407E-02 | -0.190  |
|         |           | 1221.42      | *   | 1.005E-01           | 2.361E-01 | 3.967E-01      | 2.473E-02 | 0.253   |
|         |           | 1230.97      |     | -2.661E-01          | 6.011E-01 | 9.330E-01      | 5.919E-02 | -0.285  |
|         |           | 57.98        |     | -2.759E-01          | 4.317E-01 | 6.430E-01      | 8.130E-02 | -0.429  |
| RE-184  |           | 59.32        |     | 7.923E-02           | 2.269E-01 | 3.371E-01      | 4.155E-02 | 0.235   |
|         |           | 67.20        |     | -2.074E-01          | 3.763E-01 | 4.929E-01      | 5.649E-02 | -0.421  |
|         |           | 162.32       | *   | -2.703E-02          | 1.338E-01 | 2.142E-01      | 1.428E-02 | -0.126  |
|         | +         | 208.81       |     | 3.075E+00           | 1.467E+00 | 2.116E+00      | 1.454E-01 | 1.453   |
| RE-184  |           | 291.72       |     | 1.867E+00           | 1.291E+00 | 2.039E+00      | 1.394E-01 | 0.916   |
|         |           | 57.98        |     | -1.021E+00          | 1.598E+00 | 2.380E+00      | 3.009E-01 | -0.429  |
|         |           | 59.32        |     | 2.930E-01           | 8.390E-01 | 1.247E+00      | 1.537E-01 | 0.235   |
|         |           | 67.20        |     | -7.674E-01          | 1.392E+00 | 1.824E+00      | 2.090E-01 | -0.421  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| OS-185  |           | 161.27       |     | -1.882E-01          | 4.373E-01 | 6.935E-01      | 4.627E-02 | -0.271  |
|         |           | 216.55       |     | -1.810E-01          | 3.355E-01 | 5.224E-01      | 3.607E-02 | -0.346  |
|         |           | 252.85       | *   | 4.792E-02           | 2.840E-01 | 4.803E-01      | 3.344E-02 | 0.100   |
|         |           | 318.01       |     | -8.157E-02          | 5.188E-01 | 8.563E-01      | 5.689E-02 | -0.095  |
|         |           | 792.07       |     | 1.788E+00           | 1.120E+00 | 2.069E+00      | 1.414E-01 | 0.864   |
|         |           | 903.28       |     | 4.508E-01           | 1.324E+00 | 1.960E+00      | 1.666E-01 | 0.230   |
|         |           | 920.93       |     | -4.276E-01          | 4.778E-01 | 7.165E-01      | 6.009E-02 | -0.597  |
|         |           | 59.72        |     | 2.242E-01           | 6.062E-01 | 9.014E-01      | 1.105E-01 | 0.249   |
|         | +         | 61.14        |     | 3.764E-01           | 2.729E-01 | 5.218E-01      | 6.309E-02 | 0.721   |
|         |           | 69.30        |     | -1.388E-01          | 5.037E-01 | 7.222E-01      | 8.168E-02 | -0.192  |
|         |           | 592.07       |     | -1.894E+00          | 3.069E+00 | 4.573E+00      | 2.466E-01 | -0.414  |
|         |           | 646.12       | *   | -1.766E-02          | 5.081E-02 | 7.944E-02      | 4.070E-03 | -0.222  |
|         |           | 717.42       |     | -2.541E-01          | 1.073E+00 | 1.767E+00      | 1.018E-01 | -0.144  |
|         |           | 874.81       |     | 5.623E-02           | 6.846E-01 | 1.142E+00      | 9.301E-02 | 0.049   |
| RE-188  |           | 880.27       |     | 6.726E-02           | 8.503E-01 | 1.418E+00      | 1.168E-01 | 0.047   |
|         |           | 155.03       | *   | 1.155E-01           | 2.163E-01 | 3.566E-01      | 2.392E-02 | 0.324   |
|         |           | 477.96       |     | -6.589E-01          | 3.761E+00 | 6.076E+00      | 3.461E-01 | -0.108  |
| W-188   |           | 633.10       |     | 1.856E+00           | 3.151E+00 | 5.315E+00      | 2.761E-01 | 0.349   |
|         | +         | 63.58        |     | 1.293E+02           | 9.373E+01 | 1.534E+02      | 1.811E+01 | 0.843   |
| IR-192  |           | 227.08       |     | -2.546E+00          | 1.529E+01 | 2.561E+01      | 1.777E+00 | -0.099  |
|         |           | 290.67       | *   | -9.463E-01          | 9.809E+00 | 1.415E+01      | 9.686E-01 | -0.067  |
|         | +         | 295.96       |     | 1.109E+00           | 2.206E-01 | 3.298E-01      | 2.272E-02 | 3.363   |
|         |           | 308.46       |     | 6.860E-03           | 1.140E-01 | 1.905E-01      | 1.292E-02 | 0.036   |
| AU-195  |           | 316.51       | *   | -2.347E-03          | 3.969E-02 | 6.586E-02      | 4.402E-03 | -0.036  |
|         |           | 468.07       |     | 2.021E-02           | 8.530E-02 | 1.235E-01      | 8.157E-03 | 0.164   |
|         |           | 604.41       |     | 2.517E-01           | 6.165E-01 | 8.927E-01      | 9.928E-02 | 0.282   |
|         |           | 612.46       |     | 1.277E+00           | 9.498E-01 | 1.488E+00      | 1.071E-01 | 0.858   |
|         |           | 65.12        |     | 6.285E-02           | 3.058E-01 | 4.476E-01      | 5.213E-02 | 0.140   |
|         |           | 66.83        |     | -7.835E-02          | 1.800E-01 | 2.370E-01      | 2.723E-02 | -0.331  |
|         | +         | 75.70        |     | 2.329E+00           | 4.354E-01 | 6.487E-01      | 7.202E-02 | 3.590   |
| TL-200  |           | 98.88        | *   | 2.001E-01           | 2.853E-01 | 4.639E-01      | 4.349E-02 | 0.431   |
|         |           | 129.76       |     | 4.668E+00           | 3.548E+00 | 6.021E+00      | 4.211E-01 | 0.775   |
|         |           | 367.94       | *   | -1.992E-04          | 3.548E+00 | Half-Life      | too short |         |
|         |           | 579.30       |     | 5.969E-03           | 3.548E+00 | Half-Life      | too short |         |
| TL-201  |           | 828.27       |     | -1.883E-03          | 3.548E+00 | Half-Life      | too short |         |
|         |           | 1205.75      |     | 2.705E-04           | 3.548E+00 | Half-Life      | too short |         |
|         |           | 68.90        |     | -2.460E+00          | 6.904E+00 | 9.857E+00      | 1.117E+00 | -0.250  |
| TL-202  |           | 70.82        |     | 1.324E+00           | 3.763E+00 | 5.553E+00      | 6.235E-01 | 0.238   |
|         |           | 80.30        |     | -7.956E+00          | 6.389E+00 | 8.603E+00      | 9.603E-01 | -0.925  |
|         |           | 135.34       |     | -1.774E+01          | 3.065E+01 | 4.479E+01      | 3.090E+00 | -0.396  |
|         |           | 167.43       | *   | -4.487E-01          | 7.231E+00 | 1.163E+01      | 7.741E-01 | -0.039  |
| HG-203  |           | 68.90        |     | -2.515E-01          | 7.058E-01 | 1.008E+00      | 1.142E-01 | -0.250  |
|         |           | 70.82        |     | 1.349E-01           | 3.837E-01 | 5.662E-01      | 6.357E-02 | 0.238   |
|         |           | 80.30        |     | -8.114E-01          | 6.516E-01 | 8.774E-01      | 9.793E-02 | -0.925  |
|         |           | 439.56       | *   | -4.455E-02          | 7.952E-02 | 1.257E-01      | 7.186E-03 | -0.354  |
| TL-203  |           | 70.83        |     | 6.111E-01           | 1.717E+00 | 2.532E+00      | 3.897E-01 | 0.241   |
|         | +         | 72.87        |     | 5.406E+00           | 1.543E+00 | 1.785E+00      | 2.673E-01 | 3.029   |
|         |           | 82.60        |     | 5.953E-01           | 1.760E+00 | 2.399E+00      | 3.725E-01 | 0.248   |
|         |           | 279.20       | *   | -3.489E-03          | 4.981E-02 | 8.308E-02      | 5.984E-03 | -0.042  |



---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| BI-207  | +         | 72.80        |     | 1.603E+00           | 4.285E-01 | 5.260E-01      | 5.866E-02 | 3.046   |
|         | +         | 74.97        |     | 9.493E-01           | 2.539E-01 | 3.695E-01      | 4.105E-02 | 2.569   |
|         |           | 84.90        |     | 6.271E-01           | 3.007E-01 | 4.593E-01      | 5.220E-02 | 1.365   |
|         |           | 569.67       |     | 3.837E-02           | 3.618E-02 | 6.286E-02      | 3.445E-03 | 0.610   |
|         |           | 1063.62      | *   | 3.142E-02           | 6.461E-02 | 1.101E-01      | 7.825E-03 | 0.285   |
| TL-207  |           | 1770.23      |     | -2.856E+00          | 8.543E-01 | 7.006E-01      | 4.339E-02 | -4.076  |
|         |           | 81.07        |     | 5.282E-02           | 3.729E-01 | 4.588E-01      | 5.132E-02 | 0.115   |
|         |           | 83.78        |     | 1.154E-01           | 1.887E-01 | 2.776E-01      | 3.138E-02 | 0.416   |
|         |           | 94.90        |     | 8.262E-02           | 3.199E-01 | 4.662E-01      | 4.674E-02 | 0.177   |
|         |           | 122.32       |     | 1.470E+00           | 2.198E+00 | 3.552E+00      | 2.813E-01 | 0.414   |
|         |           | 144.24       |     | 3.379E-01           | 8.756E-01 | 1.420E+00      | 1.143E-01 | 0.238   |
|         |           | 154.21       |     | 8.516E-02           | 5.065E-01 | 8.244E-01      | 6.418E-02 | 0.103   |
|         | +         | 269.46       |     | 3.982E-01           | 2.931E-01 | 4.232E-01      | 3.027E-02 | 0.941   |
|         |           | 323.87       | *   | -1.051E+00          | 8.318E-01 | 1.264E+00      | 2.124E-01 | -0.831  |
|         | +         | 338.28       |     | 7.467E+00           | 2.095E+00 | 2.812E+00      | 3.064E-01 | 2.655   |
|         |           | 445.03       |     | 6.484E-01           | 2.824E+00 | 4.694E+00      | 4.798E-01 | 0.138   |
|         | PO-209    | 260.50       |     | 3.881E+00           | 1.157E+01 | 1.969E+01      | 1.369E+00 | 0.197   |
|         |           | 262.80       |     | -2.104E+01          | 3.351E+01 | 5.305E+01      | 3.686E+00 | -0.397  |
|         |           | 896.60       | *   | -4.160E+00          | 8.439E+00 | 1.334E+01      | 1.135E+00 | -0.312  |
| BI-210  |           | 46.50        | *   | -3.846E+00          | 1.340E+01 | 2.157E+01      | 2.241E+00 | -0.178  |
| PB-210  |           | 46.50        | *   | -3.846E+00          | 1.340E+01 | 2.157E+01      | 2.241E+00 | -0.178  |
| PO-210  |           | 46.50        | *   | -3.846E+00          | 1.340E+01 | 2.157E+01      | 2.072E+00 | -0.178  |
| PB-211  |           | 404.84       | *   | -5.526E-01          | 1.205E+00 | 1.849E+00      | 1.153E+00 | -0.299  |
|         |           | 427.08       |     | 2.177E-01           | 2.381E+00 | 3.929E+00      | 2.428E+00 | 0.055   |
|         |           | 831.96       |     | 1.790E+00           | 1.808E+00 | 2.577E+00      | 1.611E+00 | 0.695   |
| BI-212  | +         | 727.18       | *   | 8.129E-01           | 6.049E-01 | 7.336E-01      | 5.712E-02 | 1.108   |
|         |           | 785.46       |     | 1.168E+00           | 2.065E+00 | 3.578E+00      | 2.410E-01 | 0.326   |
|         |           | 1620.62      |     | 4.760E-01           | 1.357E+00 | 2.205E+00      | 1.517E-01 | 0.216   |
| PO-215  |           | 81.07        |     | 5.282E-02           | 3.729E-01 | 4.588E-01      | 5.132E-02 | 0.115   |
|         |           | 83.78        |     | 1.154E-01           | 1.887E-01 | 2.776E-01      | 3.138E-02 | 0.416   |
|         |           | 94.90        |     | 8.262E-02           | 3.199E-01 | 4.662E-01      | 4.674E-02 | 0.177   |
|         |           | 122.32       |     | 1.470E+00           | 2.198E+00 | 3.552E+00      | 2.813E-01 | 0.414   |
|         |           | 144.24       |     | 3.379E-01           | 8.756E-01 | 1.420E+00      | 1.143E-01 | 0.238   |
|         |           | 154.21       |     | 8.516E-02           | 5.065E-01 | 8.244E-01      | 6.418E-02 | 0.103   |
|         | +         | 269.46       |     | 3.982E-01           | 2.931E-01 | 4.232E-01      | 3.027E-02 | 0.941   |
|         |           | 323.87       | *   | -1.051E+00          | 8.318E-01 | 1.264E+00      | 2.124E-01 | -0.831  |
|         | +         | 338.28       |     | 7.467E+00           | 2.095E+00 | 2.812E+00      | 3.064E-01 | 2.655   |
|         |           | 445.03       |     | 6.484E-01           | 2.824E+00 | 4.694E+00      | 4.798E-01 | 0.138   |
|         | +         | 271.23       |     | 5.109E-01           | 3.770E-01 | 5.264E-01      | 4.708E-02 | 0.971   |
| RN-219  |           | 401.81       | *   | -3.596E-01          | 4.993E-01 | 7.839E-01      | 1.063E-01 | -0.459  |
| RN-220  |           | 549.76       | *   | -1.106E+01          | 3.169E+01 | 5.012E+01      | 2.780E+00 | -0.221  |
| RA-223  |           | 81.07        |     | 5.282E-02           | 3.729E-01 | 4.588E-01      | 5.132E-02 | 0.115   |
|         |           | 83.78        |     | 1.154E-01           | 1.887E-01 | 2.776E-01      | 3.138E-02 | 0.416   |
|         |           | 94.90        |     | 8.262E-02           | 3.199E-01 | 4.662E-01      | 4.674E-02 | 0.177   |
|         |           | 122.32       |     | 1.470E+00           | 2.198E+00 | 3.552E+00      | 2.813E-01 | 0.414   |
|         |           | 144.24       |     | 3.379E-01           | 8.756E-01 | 1.420E+00      | 1.143E-01 | 0.238   |
|         |           | 154.21       |     | 8.516E-02           | 5.065E-01 | 8.244E-01      | 6.418E-02 | 0.103   |
|         | +         | 269.46       |     | 3.982E-01           | 2.931E-01 | 4.232E-01      | 3.027E-02 | 0.941   |
|         |           | 323.87       | *   | -1.051E+00          | 8.318E-01 | 1.264E+00      | 2.124E-01 | -0.831  |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| AC-227  | +         | 338.28       |     | 7.467E+00           | 2.095E+00 | 2.812E+00      | 3.064E-01 | 2.655   |
|         |           | 445.03       |     | 6.484E-01           | 2.824E+00 | 4.694E+00      | 4.798E-01 | 0.138   |
|         |           | 79.80        |     | -3.085E+00          | 2.559E+00 | 3.348E+00      | 7.578E-01 | -0.921  |
|         |           | 236.00       |     | 4.659E+00           | 6.794E-01 | 8.691E-01      | 9.677E-02 | 5.361   |
|         |           | 256.20       | *   | -2.267E-01          | 4.576E-01 | 7.494E-01      | 1.085E-01 | -0.303  |
| TH-227  |           | 286.10       |     | -4.120E-01          | 1.814E+00 | 2.998E+00      | 3.637E-01 | -0.137  |
|         | +         | 299.80       |     | 2.080E+00           | 2.197E+00 | 3.071E+00      | 5.117E-01 | 0.677   |
|         |           | 304.40       |     | -1.669E-01          | 2.445E+00 | 3.526E+00      | 6.220E-01 | -0.047  |
|         |           | 334.20       |     | 5.405E-01           | 3.073E+00 | 4.487E+00      | 8.328E-01 | 0.120   |
|         |           | 79.80        |     | -3.085E+00          | 2.561E+00 | 3.348E+00      | 7.666E-01 | -0.921  |
| TH-229  | +         | 94.00        |     | 4.702E+00           | 4.120E+00 | 4.333E+00      | 9.727E-01 | 1.085   |
|         |           | 236.00       |     | 4.659E+00           | 6.344E-01 | 8.691E-01      | 8.548E-02 | 5.361   |
|         |           | 256.20       | *   | -2.267E-01          | 4.581E-01 | 7.494E-01      | 1.299E-01 | -0.303  |
|         |           | 286.10       |     | -4.120E-01          | 1.860E+00 | 2.998E+00      | 3.005E+00 | -0.137  |
|         | +         | 299.80       |     | 2.080E+00           | 2.197E+00 | 3.071E+00      | 5.117E-01 | 0.677   |
| PA-231  |           | 304.40       |     | -1.669E-01          | 2.445E+00 | 3.526E+00      | 6.220E-01 | -0.047  |
|         |           | 334.20       |     | 5.405E-01           | 3.073E+00 | 4.487E+00      | 8.328E-01 | 0.120   |
|         | +         | 85.43        |     | 4.254E-01           | 3.252E-01 | 4.605E-01      | 5.248E-02 | 0.924   |
|         |           | 88.47        |     | 8.395E-02           | 2.514E-01 | 2.675E-01      | 3.062E-02 | 0.314   |
|         |           | 100.00       |     | 1.326E-02           | 2.293E-01 | 3.766E-01      | 3.469E-02 | 0.035   |
| TH-231  |           | 193.63       | *   | -3.694E-01          | 6.547E-01 | 1.010E+00      | 6.863E-02 | -0.366  |
|         |           | 210.97       |     | 1.312E+00           | 1.054E+00 | 1.574E+00      | 1.083E-01 | 0.834   |
|         |           | 283.67       | *   | 2.845E-01           | 1.819E+00 | 3.064E+00      | 4.371E-01 | 0.093   |
|         | +         | 301.29       |     | 8.320E-01           | 8.725E-01 | 1.240E+00      | 1.367E-01 | 0.671   |
|         |           | 81.07        |     | 5.282E-02           | 3.729E-01 | 4.588E-01      | 5.132E-02 | 0.115   |
| U-231   |           | 83.78        |     | 1.154E-01           | 1.887E-01 | 2.776E-01      | 3.138E-02 | 0.416   |
|         |           | 94.90        |     | 8.262E-02           | 3.199E-01 | 4.662E-01      | 4.674E-02 | 0.177   |
|         |           | 122.32       |     | 1.470E+00           | 2.198E+00 | 3.552E+00      | 2.813E-01 | 0.414   |
|         |           | 144.24       |     | 3.379E-01           | 8.756E-01 | 1.420E+00      | 1.143E-01 | 0.238   |
|         |           | 154.21       |     | 8.516E-02           | 5.065E-01 | 8.244E-01      | 6.418E-02 | 0.103   |
| PA-233  | +         | 269.46       |     | 3.982E-01           | 2.931E-01 | 4.232E-01      | 3.027E-02 | 0.941   |
|         |           | 323.87       | *   | -1.051E+00          | 8.318E-01 | 1.264E+00      | 2.124E-01 | -0.831  |
|         | +         | 338.28       |     | 7.467E+00           | 2.095E+00 | 2.812E+00      | 3.064E-01 | 2.655   |
|         |           | 445.03       |     | 6.484E-01           | 2.824E+00 | 4.694E+00      | 4.798E-01 | 0.138   |
|         |           | 84.21        |     | 6.465E+00           | 7.299E+00 | 1.083E+01      | 1.227E+00 | 0.597   |
| PA-234  | +         | 92.29        |     | 4.103E+00           | 3.501E+00 | 4.369E+00      | 4.605E-01 | 0.939   |
|         |           | 95.87        | *   | -2.761E-01          | 1.310E+00 | 1.864E+00      | 1.837E-01 | -0.148  |
|         |           | 108.00       |     | -3.677E-01          | 2.244E+00 | 3.647E+00      | 3.017E-01 | -0.101  |
|         | +         | 75.28        |     | 2.770E+01           | 8.201E+00 | 1.079E+01      | 1.821E+00 | 2.567   |
|         | +         | 86.59        |     | 3.714E+00           | 2.992E+00 | 3.992E+00      | 1.112E+00 | 0.930   |
| PA-234  | +         | 300.12       |     | 5.799E-01           | 6.101E-01 | 8.524E-01      | 1.184E-01 | 0.680   |
|         |           | 311.98       | *   | 4.186E-02           | 7.510E-02 | 1.286E-01      | 9.011E-03 | 0.326   |
|         |           | 340.50       |     | 1.512E+00           | 8.627E-01 | 1.291E+00      | 2.985E-01 | 1.172   |
|         |           | 398.62       |     | -6.823E-01          | 2.649E+00 | 4.165E+00      | 1.076E+00 | -0.164  |
|         |           | 415.76       |     | 8.494E-01           | 1.967E+00 | 3.306E+00      | 6.797E-01 | 0.257   |
| PA-234  | +         | 63.00        |     | 3.777E+00           | 2.782E+00 | 4.595E+00      | 8.051E-01 | 0.822   |
|         |           | 94.67        |     | 1.510E-01           | 2.324E-01 | 3.437E-01      | 4.623E-02 | 0.439   |
|         |           | 98.44        |     | 1.017E-01           | 1.335E-01 | 1.903E-01      | 1.064E-01 | 0.534   |
|         |           | 99.86        |     | 1.125E-01           | 5.782E-01 | 9.545E-01      | 8.812E-02 | 0.118   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 111.00       |     | -2.212E-01          | 2.290E-01 | 3.581E-01      | 4.172E-02 | -0.618  |
|         |           | 131.20       |     | -2.080E-02          | 1.497E-01 | 2.114E-01      | 1.473E-02 | -0.098  |
|         |           | 152.70       |     | 1.277E-01           | 4.127E-01 | 6.747E-01      | 1.091E-01 | 0.189   |
|         | +         | 186.00       |     | 2.826E+00           | 2.679E+00 | 2.979E+00      | 9.162E-01 | 0.948   |
|         |           | 226.40       |     | -1.647E-01          | 4.880E-01 | 8.115E-01      | 9.875E-02 | -0.203  |
|         |           | 227.20       |     | -7.867E-02          | 5.207E-01 | 8.728E-01      | 6.055E-02 | -0.090  |
|         |           | 248.90       |     | 5.336E-01           | 1.015E+00 | 1.731E+00      | 3.780E-01 | 0.308   |
|         | +         | 293.70       |     | 7.031E+00           | 1.750E+00 | 2.101E+00      | 3.463E-01 | 3.346   |
|         |           | 369.80       |     | -7.168E-01          | 1.016E+00 | 1.592E+00      | 3.325E-01 | -0.450  |
|         |           | 568.70       |     | 1.338E+00           | 1.152E+00 | 2.017E+00      | 1.106E-01 | 0.663   |
|         |           | 569.50       |     | 4.604E-01           | 3.148E-01 | 5.610E-01      | 3.075E-02 | 0.821   |
|         |           | 574.00       |     | -1.218E+00          | 1.909E+00 | 2.746E+00      | 1.501E-01 | -0.443  |
|         |           | 699.00       |     | 2.300E-01           | 8.437E-01 | 1.438E+00      | 2.574E-01 | 0.160   |
|         |           | 706.10       |     | -1.281E+00          | 1.300E+00 | 1.805E+00      | 7.961E-01 | -0.710  |
|         |           | 733.00       |     | -1.046E-01          | 4.778E-01 | 6.712E-01      | 1.430E-01 | -0.156  |
|         |           | 742.81       |     | -1.412E+00          | 1.801E+00 | 2.375E+00      | 1.590E+00 | -0.594  |
|         |           | 796.30       |     | 9.272E-01           | 1.065E+00 | 1.837E+00      | 4.876E-01 | 0.505   |
|         |           | 805.60       |     | -8.987E-02          | 1.173E+00 | 1.940E+00      | 5.866E-01 | -0.046  |
|         |           | 819.60       |     | -3.368E-01          | 1.347E+00 | 2.181E+00      | 8.230E-01 | -0.154  |
|         |           | 826.30       |     | -1.256E+00          | 1.030E+00 | 1.239E+00      | 5.514E-01 | -1.014  |
|         |           | 831.60       |     | 6.894E-01           | 7.528E-01 | 1.290E+00      | 3.809E-01 | 0.534   |
|         |           | 876.40       |     | -4.306E-01          | 1.051E+00 | 1.516E+00      | 1.558E+00 | -0.284  |
|         |           | 880.51       |     | 5.710E-02           | 3.097E-01 | 5.211E-01      | 4.294E-02 | 0.110   |
|         |           | 883.24       |     | -8.659E-02          | 3.364E-01 | 5.362E-01      | 3.602E-01 | -0.161  |
|         |           | 899.00       |     | -6.630E-01          | 1.000E+00 | 1.487E+00      | 6.496E-01 | -0.446  |
|         |           | 925.00       |     | 7.517E-01           | 1.316E+00 | 2.280E+00      | 1.906E-01 | 0.330   |
|         |           | 926.50       |     | 1.436E-01           | 2.048E-01 | 3.531E-01      | 8.892E-02 | 0.407   |
|         |           | 946.00       | *   | 2.411E-01           | 3.521E-01 | 6.097E-01      | 1.133E-01 | 0.395   |
|         |           | 949.00       |     | 1.795E-01           | 5.158E-01 | 8.757E-01      | 7.165E-02 | 0.205   |
|         |           | 980.50       |     | 6.708E-01           | 8.713E-01 | 1.364E+00      | 1.081E-01 | 0.492   |
|         |           | 1394.10      |     | -2.105E-01          | 1.374E+00 | 2.245E+00      | 1.458E+00 | -0.094  |
| PA-234M |           | 766.42       |     | 1.388E+01           | 1.691E+01 | 2.406E+01      | 1.213E+01 | 0.577   |
|         |           | 1001.03      | *   | 9.976E+00           | 5.754E+00 | 1.065E+01      | 9.819E-01 | 0.936   |
| U-235   |           | 89.95        |     | 1.483E-01           | 2.454E+00 | 2.562E+00      | 8.104E-01 | 0.058   |
|         | +         | 93.35        |     | 1.463E+00           | 1.308E+00 | 1.476E+00      | 4.221E-01 | 0.991   |
|         |           | 105.00       |     | 4.134E-01           | 1.344E+00 | 2.215E+00      | 6.609E-01 | 0.187   |
|         |           | 143.76       | *   | 1.568E-01           | 2.703E-01 | 4.397E-01      | 7.337E-02 | 0.357   |
|         |           | 163.35       |     | 2.078E-01           | 5.673E-01 | 9.275E-01      | 1.695E-01 | 0.224   |
|         | +         | 185.71       |     | 1.047E-01           | 9.414E-02 | 1.102E-01      | 7.442E-03 | 0.950   |
|         |           | 205.31       |     | 6.858E-03           | 7.954E-01 | 1.094E+00      | 2.008E-01 | 0.006   |
| NP-236  |           | 94.67        |     | 1.161E-01           | 1.760E-01 | 2.609E-01      | 2.627E-02 | 0.445   |
|         |           | 98.44        |     | 7.691E-02           | 9.158E-02 | 1.439E-01      | 1.358E-02 | 0.534   |
|         |           | 111.00       |     | -1.673E-01          | 1.727E-01 | 2.709E-01      | 2.165E-02 | -0.618  |
|         |           | 160.31       | *   | 3.869E-03           | 9.792E-02 | 1.584E-01      | 1.058E-02 | 0.024   |
| NP-239  |           | 99.55        |     | 3.980E-02           | 1.933E-01 | 3.192E-01      | 2.961E-02 | 0.125   |
|         |           | 117.00       | *   | -1.018E-01          | 2.282E-01 | 3.656E-01      | 2.748E-02 | -0.279  |
|         | +         | 209.75       |     | 2.444E+00           | 1.166E+00 | 1.671E+00      | 1.149E-01 | 1.462   |
|         |           | 228.18       |     | -4.819E-02          | 2.719E-01 | 4.551E-01      | 3.158E-02 | -0.106  |
|         |           | 277.60       |     | 2.331E-01           | 2.250E-01 | 3.919E-01      | 2.706E-02 | 0.595   |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 334.30       |     | 4.155E-01           | 1.745E+00 | 2.561E+00      | 1.660E-01 | 0.162   |
| AM-241  |           | 59.54        | *   | 9.698E-02           | 3.226E-01 | 4.782E-01      | 6.085E-02 | 0.203   |
| CM-243  |           | 99.55        |     | 4.095E-02           | 1.989E-01 | 3.285E-01      | 3.047E-02 | 0.125   |
|         |           | 103.76       | *   | 6.208E-02           | 1.217E-01 | 2.027E-01      | 1.770E-02 | 0.306   |
|         |           | 117.00       |     | -1.047E-01          | 2.348E-01 | 3.761E-01      | 2.827E-02 | -0.279  |
|         | +         | 209.75       |     | 2.409E+00           | 1.150E+00 | 1.647E+00      | 1.133E-01 | 1.462   |
|         |           | 228.18       |     | -4.869E-02          | 2.747E-01 | 4.599E-01      | 3.191E-02 | -0.106  |
|         |           | 277.60       |     | 2.350E-01           | 2.268E-01 | 3.950E-01      | 2.728E-02 | 0.595   |
| AM-246  |           | 798.80       |     | -3.128E-01          | 1.624E-01 | 2.251E-01      | 1.561E-02 | -1.390  |
|         |           | 1036.00      |     | 1.328E-02           | 3.372E-01 | 5.551E-01      | 4.108E-02 | 0.024   |
|         |           | 1062.04      |     | -1.679E-01          | 2.859E-01 | 4.436E-01      | 3.159E-02 | -0.378  |
|         |           | 1078.86      | *   | -3.810E-02          | 1.585E-01 | 2.531E-01      | 1.754E-02 | -0.151  |
| CM-247  |           | 278.00       |     | 8.273E-01           | 9.306E-01 | 1.613E+00      | 1.113E-01 | 0.513   |
|         |           | 287.40       |     | -5.351E-01          | 1.554E+00 | 2.405E+00      | 1.650E-01 | -0.223  |
|         |           | 402.60       | *   | -5.330E-02          | 4.494E-02 | 6.864E-02      | 3.903E-03 | -0.777  |
| CF-249  |           | 252.85       |     | 1.804E-01           | 1.069E+00 | 1.808E+00      | 1.258E-01 | 0.100   |
|         |           | 333.44       |     | 2.349E-02           | 2.328E-01 | 3.383E-01      | 2.196E-02 | 0.069   |
|         |           | 387.95       | *   | -2.281E-02          | 4.991E-02 | 8.024E-02      | 4.600E-03 | -0.284  |
| CF-251  |           | 176.60       | *   | 7.479E-02           | 1.505E-01 | 2.474E-01      | 1.658E-02 | 0.302   |
|         |           | 227.00       |     | -8.191E-02          | 4.620E-01 | 7.736E-01      | 5.366E-02 | -0.106  |
|         |           | 285.00       |     | -5.685E-01          | 2.095E+00 | 3.457E+00      | 2.376E-01 | -0.164  |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     *
*               GEL Laboratories LLC   *
*               2040 Savage Road      *
*               Charleston, SC 29414  *
*                                     *
*****
*               DETECTOR DATA        *
*                                     *
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630001 *
* Acquisition date   : 22-JAN-2010 20:49:47 Detector SN#      :      *
* Detector ID        : GAM15          Sensitivity             : 5.000  *
* Geometry           : CAN            Energy tolerance        : 1.500  *
* Elapsed live time  : 0 02:00:00.00  Abundance limit         : 75.000 *
* Elapsed real time  : 0 02:00:01.38  Half life ratio        : 8.000 *
*****
*               SAMPLE DATA          *
*                                     *
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library    : SOLID *
* Sample ID          : G244630001    Analyst initials: MXR1    *
* Batch Number       : 941639        Sample Quantity         : 1.3673E+02 GRAM *
* Recovery           : 1.00000        Carrier Weight          : 0.00000 *
*****
*               QC DATA              *
*                                     *
* Standard Weight    : 0.00000        *
* CALIB. DATE/TIME   : 16-FEB-2009 10:54:12 MS Isotope       :      *
* MSD DPM            : 0.000          MSD Isotope            :      *
* LCS DPM            : 0.000          LCS Isotope             :      *
* LCSD DPM           : 0.000          LCSD Isotope            :      *
*****

```

## Combined Activity-MDA Report

### ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act error | MDA<br>(pCi/GRAM ) |           |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 2.811E+01               | 2.789E+00 | 6.282E-01          | 0.000E+00 |
| CD-109  | 1.928E+00               | 1.444E+00 | 2.060E+00          | 0.000E+00 |
| SN-126  | 1.897E-01               | 1.421E-01 | 1.937E-01          | 0.000E+00 |
| TL-208  | 5.541E-01               | 1.072E-01 | 6.082E-02          | 0.000E+00 |
| BI-211  | 3.734E+00               | 5.608E-01 | 4.309E-01          | 0.000E+00 |
| PB-212  | 1.775E+00               | 1.980E-01 | 1.079E-01          | 0.000E+00 |
| PO-212  | 1.775E+00               | 1.980E-01 | 1.079E-01          | 0.000E+00 |
| BI-214  | 1.208E+00               | 1.978E-01 | 1.400E-01          | 0.000E+00 |
| PB-214  | 1.299E+00               | 2.061E-01 | 1.504E-01          | 0.000E+00 |
| PO-214  | 1.299E+00               | 2.061E-01 | 1.504E-01          | 0.000E+00 |
| PO-216  | 1.775E+00               | 1.980E-01 | 1.079E-01          | 0.000E+00 |
| PO-218  | 1.299E+00               | 2.061E-01 | 1.504E-01          | 0.000E+00 |
| RA-224  | 4.280E+00               | 1.498E+00 | 1.228E+00          | 0.000E+00 |
| RA-226  | 1.208E+00               | 1.978E-01 | 1.400E-01          | 0.000E+00 |
| AC-228  | 1.664E+00               | 3.962E-01 | 2.503E-01          | 0.000E+00 |
| RA-228  | 1.664E+00               | 3.962E-01 | 2.503E-01          | 0.000E+00 |
| TH-228  | 1.800E+00               | 2.009E-01 | 1.095E-01          | 0.000E+00 |
| TH-230  | 1.208E+00               | 1.978E-01 | 1.400E-01          | 0.000E+00 |
| TH-232  | 1.664E+00               | 3.962E-01 | 2.503E-01          | 0.000E+00 |
| TH-234  | 3.240E+00               | 2.356E+00 | 3.770E+00          | 0.000E+00 |
| U-234   | 1.208E+00               | 1.978E-01 | 1.400E-01          | 0.000E+00 |
| NP-237  | 5.571E-01               | 4.323E-01 | 5.768E-01          | 0.000E+00 |
| U-238   | 3.240E+00               | 2.356E+00 | 3.770E+00          | 0.000E+00 |
| AM-243  | 5.289E-01               | 1.386E-01 | 1.303E-01          | 0.000E+00 |
| ANH-511 | 1.374E-01               | 8.235E-02 | 5.246E-02          | 0.000E+00 |

### ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L. Act error<br>) Ided | MDA<br>(pCi/GRAM ) |                      |
|---------|-------------------------------------|--------------------------|--------------------|----------------------|
| BE-7    | -1.617E-01                          | 3.906E-01                | 6.499E-01          | 0.000E+00 NOT IDENT. |
| NA-22   | -5.444E-02                          | 4.932E-02                | 7.183E-02          | 0.000E+00 NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| NA-24   | 0.000E+00  | 3.674E+05 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| AL-26   | -2.363E-02 | 3.186E-02 | 4.518E-02 | 0.000E+00 | NOT IDENT. |
| TI-44   | 0.000E+00  | 6.038E-02 | 9.953E-02 | 0.000E+00 | NOT IDENT. |
| SC-46   | -1.228E-02 | 4.580E-02 | 7.658E-02 | 0.000E+00 | FAIL ABUN  |
| V-48    | -1.572E-02 | 7.226E-02 | 1.200E-01 | 0.000E+00 | NOT IDENT. |
| CR-51   | 1.583E-01  | 4.093E-01 | 7.318E-01 | 0.000E+00 | NOT IDENT. |
| MN-52   | 1.217E-01  | 2.057E-01 | 3.797E-01 | 0.000E+00 | NOT IDENT. |
| MN-54   | -7.375E-03 | 4.569E-02 | 7.762E-02 | 0.000E+00 | NOT IDENT. |
| CO-56   | 5.403E-03  | 4.217E-02 | 7.316E-02 | 0.000E+00 | NOT IDENT. |
| CO-57   | 3.007E-02  | 3.063E-02 | 5.372E-02 | 0.000E+00 | NOT IDENT. |
| CO-58   | 1.370E-02  | 4.718E-02 | 8.292E-02 | 0.000E+00 | NOT IDENT. |
| FE-59   | -9.056E-02 | 1.100E-01 | 1.712E-01 | 0.000E+00 | NOT IDENT. |
| CO-60   | 6.325E-02  | 4.332E-02 | 8.312E-02 | 0.000E+00 | NOT IDENT. |
| ZN-65   | 1.520E-02  | 1.327E-01 | 1.934E-01 | 0.000E+00 | NOT IDENT. |
| GE-68   | 8.001E-03  | 1.311E+00 | 2.210E+00 | 0.000E+00 | NOT IDENT. |
| AS-73   | 4.607E-01  | 1.988E+00 | 3.631E+00 | 0.000E+00 | NOT IDENT. |
| AS-74   | 4.099E-02  | 1.141E-01 | 1.932E-01 | 0.000E+00 | NOT IDENT. |
| SE-75   | -3.649E-02 | 6.081E-02 | 9.020E-02 | 0.000E+00 | NOT IDENT. |
| BR-77   | -6.057E-01 | 8.704E+00 | 1.430E+01 | 0.000E+00 | FAIL ABUN  |
| SR-82   | -4.780E-01 | 4.377E-01 | 6.227E-01 | 0.000E+00 | NOT IDENT. |
| RB-83   | -1.085E-02 | 7.020E-02 | 1.144E-01 | 0.000E+00 | NOT IDENT. |
| RB-84   | -2.705E-02 | 7.554E-02 | 1.252E-01 | 0.000E+00 | NOT IDENT. |
| KR-85   | 1.376E+01  | 8.163E+00 | 1.392E+01 | 0.000E+00 | NOT IDENT. |
| SR-85   | 6.999E-02  | 4.153E-02 | 7.080E-02 | 0.000E+00 | NOT IDENT. |
| RB-86   | 6.934E-02  | 8.321E-01 | 1.413E+00 | 0.000E+00 | NOT IDENT. |
| Y-88    | -3.475E-03 | 3.154E-02 | 5.153E-02 | 0.000E+00 | NOT IDENT. |
| ZR-88   | 2.121E-02  | 3.644E-02 | 6.507E-02 | 0.000E+00 | NOT IDENT. |
| Y-91    | -1.088E+01 | 2.184E+01 | 3.487E+01 | 0.000E+00 | NOT IDENT. |
| NB-94   | 1.810E-02  | 3.736E-02 | 6.708E-02 | 0.000E+00 | NOT IDENT. |
| NB-95   | 6.368E-02  | 5.500E-02 | 9.088E-02 | 0.000E+00 | NOT IDENT. |
| NB-95M  | 0.000E+00  | 2.566E-01 | 4.279E-01 | 0.000E+00 | NOT IDENT. |
| ZR-95   | -2.579E-02 | 7.718E-02 | 1.302E-01 | 0.000E+00 | NOT IDENT. |
| NB-97   | 0.000E+00  | 5.987E+04 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| ZR-97   | 0.000E+00  | 1.327E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| MO-99   | 2.537E+00  | 1.005E+01 | 1.775E+01 | 0.000E+00 | NOT IDENT. |
| TC-99M  | 0.000E+00  | 6.212E+15 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | 1.643E-02  | 4.243E-02 | 7.231E-02 | 0.000E+00 | FAIL ABUN  |
| RH-102  | 4.572E-03  | 3.474E-02 | 5.989E-02 | 0.000E+00 | NOT IDENT. |
| RU-103  | 4.629E-03  | 4.746E-02 | 8.140E-02 | 0.000E+00 | NOT IDENT. |
| RH-106  | -2.152E-01 | 3.483E-01 | 5.527E-01 | 0.000E+00 | FAIL ABUN  |
| RU-106  | -2.152E-01 | 3.476E-01 | 5.527E-01 | 0.000E+00 | FAIL ABUN  |
| AG-108M | 1.232E-02  | 3.714E-02 | 6.519E-02 | 0.000E+00 | NOT IDENT. |
| AG-110M | -4.687E-02 | 4.480E-02 | 6.901E-02 | 0.000E+00 | NOT IDENT. |
| IN-111  | -1.056E+00 | 1.188E+00 | 1.739E+00 | 0.000E+00 | NOT IDENT. |
| IN-113M | 4.317E-02  | 5.262E-02 | 9.509E-02 | 0.000E+00 | NOT IDENT. |
| SN-113  | 4.317E-02  | 5.262E-02 | 9.509E-02 | 0.000E+00 | NOT IDENT. |
| IN-114M | -2.936E-02 | 2.475E-01 | 3.662E-01 | 0.000E+00 | NOT IDENT. |
| CD-115  | -8.255E+00 | 9.768E+00 | 1.553E+01 | 0.000E+00 | NOT IDENT. |
| SN-117M | 3.644E-03  | 6.552E-02 | 1.132E-01 | 0.000E+00 | NOT IDENT. |
| SB-122  | 4.196E-01  | 1.926E+00 | 3.304E+00 | 0.000E+00 | NOT IDENT. |
| I-123   | 0.000E+00  | 2.702E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TE-123M | 1.235E-02  | 3.433E-02 | 6.001E-02 | 0.000E+00 | NOT IDENT. |
| I-124   | -6.502E-01 | 8.523E-01 | 1.142E+00 | 0.000E+00 | NOT IDENT. |
| SB-124  | -6.727E-02 | 8.428E-02 | 1.272E-01 | 0.000E+00 | FAIL ABUN  |
| SB-125  | -2.830E-02 | 1.051E-01 | 1.778E-01 | 0.000E+00 | FAIL ABUN  |
| TE-125M | -8.779E-01 | 1.110E+01 | 1.945E+01 | 0.000E+00 | NOT IDENT. |
| I-126   | -3.098E-01 | 2.307E-01 | 3.476E-01 | 0.000E+00 | NOT IDENT. |
| SB-126  | -3.059E-02 | 1.883E-01 | 2.776E-01 | 0.000E+00 | NOT IDENT. |
| SB-127  | 6.480E-01  | 1.267E+00 | 2.288E+00 | 0.000E+00 | NOT IDENT. |
| XE-127  | -6.450E-03 | 6.479E-02 | 1.037E-01 | 0.000E+00 | NOT IDENT. |
| I-131   | -3.468E-02 | 1.281E-01 | 2.194E-01 | 0.000E+00 | NOT IDENT. |
| TE-132  | -1.269E-01 | 6.947E-01 | 1.233E+00 | 0.000E+00 | NOT IDENT. |
| BA-133  | -4.193E-02 | 6.318E-02 | 9.059E-02 | 0.000E+00 | NOT IDENT. |
| I-133   | 0.000E+00  | 3.913E+03 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-134  | 5.647E-02  | 5.239E-02 | 9.695E-02 | 0.000E+00 | NOT IDENT. |
| CS-135  | 3.441E-01  | 2.255E-01 | 3.745E-01 | 0.000E+00 | NOT IDENT. |
| I-135   | 0.000E+00  | 9.031E+14 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-136  | 7.639E-02  | 1.187E-01 | 2.114E-01 | 0.000E+00 | FAIL ABUN  |
| BA-137M | 7.816E-02  | 4.649E-02 | 8.584E-02 | 0.000E+00 | NOT IDENT. |
| CS-137  | 8.262E-02  | 4.914E-02 | 9.074E-02 | 0.000E+00 | NOT IDENT. |
| CE-139  | -3.317E-03 | 3.511E-02 | 6.017E-02 | 0.000E+00 | NOT IDENT. |
| BA-140  | -1.981E-01 | 2.999E-01 | 4.730E-01 | 0.000E+00 | NOT IDENT. |
| LA-140  | 7.943E-02  | 8.707E-02 | 1.520E-01 | 0.000E+00 | NOT IDENT. |
| CE-141  | 2.545E-02  | 7.641E-02 | 1.339E-01 | 0.000E+00 | NOT IDENT. |
| CE-143  | 0.000E+00  | 2.707E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CE-144  | -2.961E-01 | 3.034E-01 | 4.344E-01 | 0.000E+00 | NOT IDENT. |
| PM-144  | 2.052E-02  | 3.898E-02 | 7.018E-02 | 0.000E+00 | NOT IDENT. |
| PR-144  | 1.390E+00  | 2.640E+00 | 4.754E+00 | 0.000E+00 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PM-146  | 4.544E-02  | 5.371E-02 | 9.640E-02 | 0.000E+00 | NOT IDENT. |
| ND-147  | 1.036E-01  | 6.309E-01 | 1.082E+00 | 0.000E+00 | FAIL ABUN  |
| PM-149  | -3.649E+01 | 8.473E+01 | 1.462E+02 | 0.000E+00 | NOT IDENT. |
| EU-152  | -1.031E-01 | 1.503E-01 | 1.849E-01 | 0.000E+00 | FAIL ABUN  |
| GD-153  | 7.772E-02  | 1.061E-01 | 1.701E-01 | 0.000E+00 | NOT IDENT. |
| EU-154  | -1.496E-01 | 1.385E-01 | 2.017E-01 | 0.000E+00 | NOT IDENT. |
| EU-155  | 3.023E-02  | 1.337E-01 | 2.372E-01 | 0.000E+00 | FAIL ABUN  |
| TB-160  | 5.962E-02  | 1.499E-01 | 2.652E-01 | 0.000E+00 | FAIL ABUN  |
| HO-166M | 2.648E-02  | 6.831E-02 | 1.219E-01 | 0.000E+00 | FAIL ABUN  |
| TM-171  | -2.205E+01 | 5.366E+01 | 7.676E+01 | 0.000E+00 | NOT IDENT. |
| LU-176  | -2.321E-02 | 2.942E-02 | 4.813E-02 | 0.000E+00 | NOT IDENT. |
| LU-177  | 0.000E+00  | 1.492E+00 | 2.331E+00 | 0.000E+00 | FAIL ABUN  |
| LU-177M | -1.170E-01 | 2.043E-01 | 3.403E-01 | 0.000E+00 | FAIL ABUN  |
| HF-181  | 6.514E-02  | 5.079E-02 | 9.332E-02 | 0.000E+00 | NOT IDENT. |
| W-181   | 1.048E-01  | 6.436E-01 | 1.019E+00 | 0.000E+00 | NOT IDENT. |
| TA-182  | 1.005E-01  | 2.314E-01 | 3.992E-01 | 0.000E+00 | FAIL ABUN  |
| RE-183  | -2.703E-02 | 1.311E-01 | 2.240E-01 | 0.000E+00 | FAIL ABUN  |
| RE-184  | 4.792E-02  | 2.783E-01 | 4.981E-01 | 0.000E+00 | NOT IDENT. |
| OS-185  | -1.766E-02 | 4.979E-02 | 8.094E-02 | 0.000E+00 | FAIL ABUN  |
| RE-188  | 1.155E-01  | 2.119E-01 | 3.731E-01 | 0.000E+00 | NOT IDENT. |
| W-188   | -9.463E-01 | 9.613E+00 | 1.464E+01 | 0.000E+00 | FAIL ABUN  |
| IR-192  | -2.347E-03 | 3.889E-02 | 6.802E-02 | 0.000E+00 | FAIL ABUN  |
| AU-195  | 2.001E-01  | 2.796E-01 | 4.894E-01 | 0.000E+00 | FAIL ABUN  |
| TL-200  | 0.000E+00  | 3.197E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TL-201  | -4.487E-01 | 7.086E+00 | 1.215E+01 | 0.000E+00 | NOT IDENT. |
| TL-202  | -4.455E-02 | 7.793E-02 | 1.291E-01 | 0.000E+00 | NOT IDENT. |
| HG-203  | -3.489E-03 | 4.881E-02 | 8.600E-02 | 0.000E+00 | FAIL ABUN  |
| BI-207  | 3.142E-02  | 6.332E-02 | 1.111E-01 | 0.000E+00 | FAIL ABUN  |
| TL-207  | -1.051E+00 | 8.152E-01 | 1.304E+00 | 0.000E+00 | FAIL ABUN  |
| PO-209  | -4.160E+00 | 8.271E+00 | 1.350E+01 | 0.000E+00 | NOT IDENT. |
| BI-210  | -3.846E+00 | 1.313E+01 | 2.306E+01 | 0.000E+00 | NOT IDENT. |
| PB-210  | -3.846E+00 | 1.313E+01 | 2.306E+01 | 0.000E+00 | NOT IDENT. |
| PO-210  | -3.846E+00 | 1.313E+01 | 2.306E+01 | 0.000E+00 | NOT IDENT. |
| PB-211  | -5.526E-01 | 1.180E+00 | 1.901E+00 | 0.000E+00 | NOT IDENT. |
| BI-212  | 0.000E+00  | 5.928E-01 | 7.458E-01 | 0.000E+00 | FAIL ABUN  |
| PO-215  | -1.051E+00 | 8.152E-01 | 1.304E+00 | 0.000E+00 | FAIL ABUN  |
| RN-219  | -3.596E-01 | 4.894E-01 | 8.059E-01 | 0.000E+00 | FAIL ABUN  |
| RN-220  | -1.106E+01 | 3.105E+01 | 5.122E+01 | 0.000E+00 | NOT IDENT. |
| RA-223  | -1.051E+00 | 8.152E-01 | 1.304E+00 | 0.000E+00 | FAIL ABUN  |
| AC-227  | -2.267E-01 | 4.485E-01 | 7.770E-01 | 0.000E+00 | FAIL ABUN  |
| TH-227  | -2.267E-01 | 4.490E-01 | 7.770E-01 | 0.000E+00 | FAIL ABUN  |
| TH-229  | -3.694E-01 | 6.416E-01 | 1.052E+00 | 0.000E+00 | FAIL ABUN  |
| PA-231  | 2.845E-01  | 1.783E+00 | 3.170E+00 | 0.000E+00 | FAIL ABUN  |
| TH-231  | -1.051E+00 | 8.152E-01 | 1.304E+00 | 0.000E+00 | FAIL ABUN  |
| U-231   | -2.761E-01 | 1.284E+00 | 1.968E+00 | 0.000E+00 | FAIL ABUN  |
| PA-233  | 4.186E-02  | 7.360E-02 | 1.328E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234  | 2.411E-01  | 3.451E-01 | 6.167E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234M | 9.976E+00  | 5.639E+00 | 1.076E+01 | 0.000E+00 | NOT IDENT. |
| U-235   | 1.568E-01  | 2.649E-01 | 4.607E-01 | 0.000E+00 | FAIL ABUN  |
| NP-236  | 3.869E-03  | 9.597E-02 | 1.657E-01 | 0.000E+00 | NOT IDENT. |
| NP-239  | -1.018E-01 | 2.236E-01 | 3.845E-01 | 0.000E+00 | FAIL ABUN  |
| AM-241  | 9.698E-02  | 3.162E-01 | 5.090E-01 | 0.000E+00 | NOT IDENT. |
| CM-243  | 6.208E-02  | 1.192E-01 | 2.137E-01 | 0.000E+00 | FAIL ABUN  |
| AM-246  | -3.810E-02 | 1.553E-01 | 2.553E-01 | 0.000E+00 | NOT IDENT. |
| CM-247  | -5.330E-02 | 4.404E-02 | 7.056E-02 | 0.000E+00 | NOT IDENT. |
| CF-249  | -2.281E-02 | 4.891E-02 | 8.255E-02 | 0.000E+00 | NOT IDENT. |
| CF-251  | 7.479E-02  | 1.475E-01 | 2.583E-01 | 0.000E+00 | NOT IDENT. |

## VAX/VMS Nuclide Identification Report Generated 22-JAN-2010 22:50:18.15

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration   : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630001.CNF;1
Sample date     : 8-JAN-2010 12:00:00. Acquisition date : 22-JAN-2010 20:49:47
Sample ID       : G244630001           Sample quantity  : 1.36730E+02 GRAM
Detector name   : GAM15                 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00        Elapsed real time: 0 02:00:01.38  0.0%
Energy tolerance: 1.50000 keV           Analyst Initials : MXR1
Abundance limit : 75.00000              Sensitivity       : 5.00000
Batch ID        : 941639                Detector SN#      :
Matrix Spike ID :                        LCS ID           : 1032-A
*****

```

## Nuclide Line Activity Report

## Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected pCi/GRAM | Decay Corr pCi/GRAM | 2-Sigma %Error |
|---------|---------|-------|--------|-----------|----------------------|---------------------|----------------|
| K-40    | 1460.81 | 1091  | 10.67* | 9.990E-01 | 2.811E+01            | 2.811E+01           | 10.12          |
| CD-109  | 88.03   | 113   | 3.72*  | 4.414E+00 | 1.887E+00            | 1.928E+00           | 76.44          |
| SN-126  | 64.28   | ----- | 9.60   | 1.930E+00 | -----                | Line Not Found      | -----          |
|         | 86.94   | 113   | 8.90   | 4.414E+00 | 7.887E-01            | 7.887E-01           | 86.48          |
|         | 87.57   | 113   | 37.00* | 4.414E+00 | 1.897E-01            | 1.897E-01           | 76.44          |
| TL-208  | 277.35  | ----- | 6.80   | 3.788E+00 | -----                | Line Not Found      | -----          |
|         | 510.84  | 123   | 21.60  | 2.462E+00 | 6.360E-01            | 6.360E-01           | 61.74          |
|         | 583.14  | 379   | 84.20* | 2.230E+00 | 5.541E-01            | 5.541E-01           | 19.75          |
|         | 860.37  | 74    | 12.46  | 1.613E+00 | 1.016E+00            | 1.016E+00           | 45.20          |
| BI-211  | 72.87   | 400   | 1.27   | 3.149E+00 | 2.749E+01            | 2.749E+01           | 26.74          |
|         | 351.07  | 564   | 12.94* | 3.207E+00 | 3.734E+00            | 3.734E+00           | 15.32          |
| PB-212  | 74.81   | 400   | 10.70  | 3.149E+00 | 3.262E+00            | 3.262E+00           | 28.33          |
|         | 77.11   | 592   | 18.00  | 3.415E+00 | 2.646E+00            | 2.646E+00           | 18.70          |
|         | 87.30   | 113   | 8.00   | 4.414E+00 | 8.775E-01            | 8.775E-01           | 77.09          |
|         | 238.63  | 1217  | 44.60* | 4.220E+00 | 1.775E+00            | 1.775E+00           | 11.39          |
|         | 300.09  | 50    | 3.41   | 3.583E+00 | 1.122E+00            | 1.122E+00           | 104.68         |
| PO-212  | 74.81   | 400   | 10.70  | 3.149E+00 | 3.262E+00            | 3.262E+00           | 28.33          |
|         | 77.11   | 592   | 18.00  | 3.415E+00 | 2.646E+00            | 2.646E+00           | 18.70          |
|         | 87.30   | 113   | 8.00   | 4.414E+00 | 8.775E-01            | 8.775E-01           | 77.09          |
|         | 115.19  | ----- | 0.60   | 5.666E+00 | -----                | Line Not Found      | -----          |
|         | 238.63  | 1217  | 44.60* | 4.220E+00 | 1.775E+00            | 1.775E+00           | 11.39          |
|         | 300.09  | 50    | 3.41   | 3.583E+00 | 1.122E+00            | 1.122E+00           | 104.68         |
| BI-214  | 609.31  | 439   | 46.30* | 2.156E+00 | 1.208E+00            | 1.208E+00           | 16.70          |
|         | 1120.29 | 92    | 15.10  | 1.263E+00 | 1.324E+00            | 1.324E+00           | 42.15          |
|         | 1764.49 | 54    | 15.80  | 8.816E-01 | 1.072E+00            | 1.072E+00           | 39.43          |
| PB-214  | 74.81   | 400   | 6.21   | 3.149E+00 | 5.621E+00            | 5.621E+00           | 27.75          |
|         | 77.11   | 592   | 10.50  | 3.415E+00 | 4.536E+00            | 4.537E+00           | 20.19          |
|         | 87.30   | 113   | 4.67   | 4.414E+00 | 1.503E+00            | 1.503E+00           | 76.83          |
|         | 241.98  | 258   | 7.49   | 4.183E+00 | 2.257E+00            | 2.257E+00           | 36.15          |
|         | 295.21  | 372   | 19.20  | 3.629E+00 | 1.465E+00            | 1.465E+00           | 20.82          |
|         | 351.92  | 564   | 37.20* | 3.207E+00 | 1.299E+00            | 1.299E+00           | 16.19          |
| PO-214  | 74.81   | 400   | 6.21   | 3.149E+00 | 5.621E+00            | 5.621E+00           | 27.75          |



Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| PO-216  | 77.11   | 592   | 10.50  | 3.415E+00 | 4.536E+00               | 4.537E+00              | 20.19             |
|         | 87.30   | 113   | 4.67   | 4.414E+00 | 1.503E+00               | 1.503E+00              | 76.83             |
|         | 241.98  | 258   | 7.49   | 4.183E+00 | 2.257E+00               | 2.257E+00              | 36.15             |
|         | 295.21  | 372   | 19.20  | 3.629E+00 | 1.465E+00               | 1.465E+00              | 20.82             |
|         | 351.92  | 564   | 37.20* | 3.207E+00 | 1.299E+00               | 1.299E+00              | 16.19             |
|         | 74.81   | 400   | 10.70  | 3.149E+00 | 3.262E+00               | 3.262E+00              | 28.33             |
|         | 77.11   | 592   | 18.00  | 3.415E+00 | 2.646E+00               | 2.646E+00              | 18.70             |
|         | 87.30   | 113   | 8.00   | 4.414E+00 | 8.775E-01               | 8.775E-01              | 77.09             |
|         | 238.63  | 1217  | 44.60* | 4.220E+00 | 1.775E+00               | 1.775E+00              | 11.39             |
|         | 300.09  | 50    | 3.41   | 3.583E+00 | 1.122E+00               | 1.122E+00              | 104.68            |
| PO-218  | 74.81   | 400   | 6.21   | 3.149E+00 | 5.621E+00               | 5.621E+00              | 27.75             |
|         | 77.11   | 592   | 10.50  | 3.415E+00 | 4.536E+00               | 4.537E+00              | 20.19             |
|         | 87.30   | 113   | 4.67   | 4.414E+00 | 1.503E+00               | 1.503E+00              | 76.83             |
|         | 241.98  | 258   | 7.49   | 4.183E+00 | 2.257E+00               | 2.257E+00              | 36.15             |
|         | 295.21  | 372   | 19.20  | 3.629E+00 | 1.465E+00               | 1.465E+00              | 20.82             |
|         | 351.92  | 564   | 37.20* | 3.207E+00 | 1.299E+00               | 1.299E+00              | 16.19             |
| RA-224  | 240.98  | 258   | 3.95*  | 4.183E+00 | 4.280E+00               | 4.280E+00              | 35.71             |
| RA-226  | 609.31  | 439   | 46.30* | 2.156E+00 | 1.208E+00               | 1.208E+00              | 16.70             |
|         | 1120.29 | 92    | 15.10  | 1.263E+00 | 1.324E+00               | 1.324E+00              | 42.15             |
|         | 1764.49 | 54    | 15.80  | 8.816E-01 | 1.072E+00               | 1.072E+00              | 39.43             |
| AC-228  | 338.32  | 245   | 11.40  | 3.297E+00 | 1.788E+00               | 1.788E+00              | 48.36             |
|         | 911.07  | 257   | 27.70* | 1.532E+00 | 1.664E+00               | 1.664E+00              | 24.29             |
|         | 969.11  | 121   | 16.60  | 1.448E+00 | 1.384E+00               | 1.384E+00              | 41.51             |
| RA-228  | 338.32  | 245   | 11.40  | 3.297E+00 | 1.788E+00               | 1.788E+00              | 48.36             |
|         | 911.07  | 257   | 27.70* | 1.532E+00 | 1.664E+00               | 1.664E+00              | 24.29             |
|         | 969.11  | 121   | 16.60  | 1.448E+00 | 1.384E+00               | 1.384E+00              | 41.51             |
| TH-228  | 74.81   | 400   | 10.70  | 3.149E+00 | 3.262E+00               | 3.309E+00              | 26.76             |
|         | 77.11   | 592   | 18.00  | 3.415E+00 | 2.646E+00               | 2.684E+00              | 18.70             |
|         | 87.30   | 113   | 8.00   | 4.414E+00 | 8.775E-01               | 8.901E-01              | 76.44             |
|         | 238.63  | 1217  | 44.60* | 4.220E+00 | 1.775E+00               | 1.800E+00              | 11.39             |
|         | 300.09  | 50    | 3.41   | 3.583E+00 | 1.122E+00               | 1.139E+00              | 119.85            |
| TH-230  | 609.31  | 439   | 46.30* | 2.156E+00 | 1.208E+00               | 1.208E+00              | 16.70             |
|         | 1120.29 | 92    | 15.10  | 1.263E+00 | 1.324E+00               | 1.324E+00              | 42.15             |
|         | 1764.49 | 54    | 15.80  | 8.816E-01 | 1.072E+00               | 1.072E+00              | 39.43             |
| TH-232  | 338.32  | 245   | 11.40  | 3.297E+00 | 1.788E+00               | 1.788E+00              | 26.65             |
|         | 911.07  | 257   | 27.70* | 1.532E+00 | 1.664E+00               | 1.664E+00              | 24.29             |
|         | 969.11  | 121   | 16.60  | 1.448E+00 | 1.384E+00               | 1.384E+00              | 41.51             |
| TH-234  | 63.29   | 77    | 3.80*  | 1.728E+00 | 3.240E+00               | 3.240E+00              | 74.21             |
|         | 92.38   | 116   | 5.41   | 4.845E+00 | 1.217E+00               | 1.217E+00              | 86.79             |
| U-234   | 609.31  | 439   | 46.30* | 2.156E+00 | 1.208E+00               | 1.208E+00              | 16.70             |
|         | 1120.29 | 92    | 15.10  | 1.263E+00 | 1.324E+00               | 1.324E+00              | 42.15             |
|         | 1764.49 | 54    | 15.80  | 8.816E-01 | 1.072E+00               | 1.072E+00              | 39.43             |
| NP-237  | 86.50   | 113   | 12.60* | 4.414E+00 | 5.571E-01               | 5.571E-01              | 79.18             |
|         | 95.87   | ----- | 2.60   | 5.041E+00 | -----                   | Line Not Found         | -----             |
| U-238   | 63.29   | 77    | 3.80*  | 1.728E+00 | 3.240E+00               | 3.240E+00              | 74.21             |
|         | 92.38   | 116   | 5.41   | 4.845E+00 | 1.217E+00               | 1.217E+00              | 85.32             |
| AM-243  | 74.67   | 400   | 66.00* | 3.149E+00 | 5.289E-01               | 5.289E-01              | 26.74             |
|         | 86.72   | 113   | 0.34   | 4.414E+00 | 2.089E+01               | 2.089E+01              | 76.44             |
|         | 117.66  | ----- | 0.55   | 5.694E+00 | -----                   | Line Not Found         | -----             |

Nuclide Type:

| Nuclide | Energy | Area  | %Abn    | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|--------|-------|---------|-----------|-------------------------|------------------------|-------------------|
|         | 142.18 | ----- | 0.13    | 5.637E+00 | -----                   | Line Not Found         | -----             |
| ANH-511 | 511.00 | 123   | 100.00* | 2.462E+00 | 1.374E-01               | 1.374E-01              | 61.17             |

Flag: "\*" = Keyline

Total number of lines in spectrum 31  
Number of unidentified lines 4  
Number of lines tentatively identified by NID 27 87.10%

Nuclide Type :

| Nuclide | Hlife     | Decay | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | Decay Corr<br>2-Sigma Error | 2-Sigma<br>%Error | Flags |
|---------|-----------|-------|-------------------------|------------------------|-----------------------------|-------------------|-------|
| K-40    | 1.28E+09Y | 1.00  | 2.811E+01               | 2.811E+01              | 0.285E+01                   | 10.12             |       |
| CD-109  | 464.00D   | 1.02  | 1.887E+00               | 1.928E+00              | 1.474E+00                   | 76.44             |       |
| SN-126  | 1.00E+05Y | 1.00  | 1.897E-01               | 1.897E-01              | 1.450E-01                   | 76.44             |       |
| TL-208  | 1.41E+10Y | 1.00  | 5.541E-01               | 5.541E-01              | 1.094E-01                   | 19.75             |       |
| BI-211  | 7.04E+08Y | 1.00  | 3.734E+00               | 3.734E+00              | 0.572E+00                   | 15.32             |       |
| PB-212  | 1.41E+10Y | 1.00  | 1.775E+00               | 1.775E+00              | 0.202E+00                   | 11.39             |       |
| PO-212  | 1.41E+10Y | 1.00  | 1.775E+00               | 1.775E+00              | 0.202E+00                   | 11.39             |       |
| BI-214  | 1600.00Y  | 1.00  | 1.208E+00               | 1.208E+00              | 0.202E+00                   | 16.70             |       |
| PB-214  | 1600.00Y  | 1.00  | 1.299E+00               | 1.299E+00              | 0.210E+00                   | 16.19             |       |
| PO-214  | 1600.00Y  | 1.00  | 1.299E+00               | 1.299E+00              | 0.210E+00                   | 16.19             |       |
| PO-216  | 1.41E+10Y | 1.00  | 1.775E+00               | 1.775E+00              | 0.202E+00                   | 11.39             |       |
| PO-218  | 1600.00Y  | 1.00  | 1.299E+00               | 1.299E+00              | 0.210E+00                   | 16.19             |       |
| RA-224  | 1.41E+10Y | 1.00  | 4.280E+00               | 4.280E+00              | 1.529E+00                   | 35.71             |       |
| RA-226  | 1600.00Y  | 1.00  | 1.208E+00               | 1.208E+00              | 0.202E+00                   | 16.70             |       |
| AC-228  | 1.41E+10Y | 1.00  | 1.664E+00               | 1.664E+00              | 0.404E+00                   | 24.29             |       |
| RA-228  | 1.41E+10Y | 1.00  | 1.664E+00               | 1.664E+00              | 0.404E+00                   | 24.29             |       |
| TH-228  | 1.91Y     | 1.01  | 1.775E+00               | 1.800E+00              | 0.205E+00                   | 11.39             |       |
| TH-230  | 4.47E+09Y | 1.00  | 1.208E+00               | 1.208E+00              | 0.202E+00                   | 16.70             |       |
| TH-232  | 1.41E+10Y | 1.00  | 1.664E+00               | 1.664E+00              | 0.404E+00                   | 24.29             |       |
| TH-234  | 4.47E+09Y | 1.00  | 3.240E+00               | 3.240E+00              | 2.405E+00                   | 74.21             |       |
| U-234   | 4.47E+09Y | 1.00  | 1.208E+00               | 1.208E+00              | 0.202E+00                   | 16.70             |       |
| NP-237  | 2.14E+06Y | 1.00  | 5.571E-01               | 5.571E-01              | 4.411E-01                   | 79.18             |       |
| U-238   | 4.47E+09Y | 1.00  | 3.240E+00               | 3.240E+00              | 2.405E+00                   | 74.21             |       |
| AM-243  | 7380.00Y  | 1.00  | 5.289E-01               | 5.289E-01              | 1.414E-01                   | 26.74             |       |
| ANH-511 | 1.00E+09Y | 1.00  | 1.374E-01               | 1.374E-01              | 0.840E-01                   | 61.17             |       |

Total Activity : 6.728E+01 6.735E+01

Grand Total Activity : 6.728E+01 6.735E+01

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

Unidentified Energy Lines  
Sample ID : G244630001

Page : 5  
Acquisition date : 22-JAN-2010 20:49:47

| It | Energy  | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | %Eff     | Flags |
|----|---------|------|-------|------|---------|------|----|----------|------|----------|-------|
| 0  | 127.96  | 96   | 489   | 1.74 | 256.36  | 253  | 12 | 1.33E-02 | 94.8 | 5.73E+00 | T     |
| 0  | 185.60  | 103  | 468   | 1.14 | 371.59  | 365  | 12 | 1.42E-02 | 89.7 | 4.98E+00 | T     |
| 0  | 208.96  | 133  | 258   | 1.25 | 418.28  | 414  | 9  | 1.85E-02 | 47.2 | 4.62E+00 | T     |
| 0  | 269.76  | 76   | 212   | 1.61 | 539.83  | 536  | 9  | 1.06E-02 | 73.2 | 3.86E+00 | T     |
| 0  | 462.53  | 111  | 90    | 1.88 | 925.23  | 919  | 11 | 1.55E-02 | 38.1 | 2.64E+00 | T     |
| 0  | 727.04  | 65   | 113   | 1.26 | 1454.08 | 1447 | 14 | 9.06E-03 | 74.0 | 1.87E+00 | T     |
| 0  | 768.51  | 37   | 107   | 1.65 | 1536.99 | 1530 | 14 | 5.11E-03 | **** | 1.78E+00 |       |
| 1  | 964.26  | 48   | 53    | 2.09 | 1928.40 | 1924 | 31 | 6.69E-03 | 57.7 | 1.45E+00 | T     |
| 0  | 1589.89 | 69   | 12    | 4.98 | 3179.49 | 3169 | 24 | 9.58E-03 | 35.9 | 9.38E-01 |       |
| 0  | 1630.56 | 34   | 0     | 2.54 | 3260.82 | 3252 | 15 | 4.72E-03 | 34.3 | 9.22E-01 |       |
| 0  | 1730.21 | 17   | 13    | 0.96 | 3460.12 | 3451 | 13 | 2.36E-03 | **** | 8.90E-01 |       |

Flags: "T" = Tentatively associated

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
*                               DETECTOR DATA                               *
*                               *                                              *
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630001.CNF;1  *
* Acquisition date   : 22-JAN-2010 20:49:47   Detector SN#      :             *
* Detector ID        : GAM15                   Sensitivity       : 5.00000      *
* Geometry           : CAN                     Energy tolerance  : 1.50000      *
* Elapsed live time  : 0 02:00:00.00           Abundance limit     : 75.00000      *
* Elapsed real time  : 0 02:00:01.38           Half life ratio    : 8.00000      *
*****
*                               SAMPLE DATA                               *
*                               *                                              *
* Sample date        : 8-JAN-2010 12:00:00.   Nuclide Library   : SOLID        *
* Sample ID          : G244630001             Analyst initials  : MXR1          *
* Batch Number       : 941639                 Sample Quantity   : 1.36730E+02 GRAM *
*****
*                               QC DATA                               *
*                               *                                              *
* CALIB. DATE/TIME   : 16-FEB-2009 10:54:12.9MS Isotope        :             *
* MSD ID              :                       MSD Isotope       :             *
* LCS ID              : 1032-A                 LCS Isotope      :             *
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| K-40    | 2.811E+01              | 2.846E+00 | 6.264E-01         | 4.789E-02 | 44.873  |
| CD-109  | 1.928E+00              | 1.474E+00 | 1.948E+00         | 2.253E-01 | 0.990   |
| SN-126  | 1.897E-01              | 1.450E-01 | 1.832E-01         | 2.114E-02 | 1.036   |
| TL-208  | 5.541E-01              | 1.094E-01 | 5.958E-02         | 3.794E-03 | 9.300   |
| BI-211  | 3.734E+00              | 5.723E-01 | 4.180E-01         | 2.872E-02 | 8.933   |
| PB-212  | 1.775E+00              | 2.021E-01 | 1.040E-01         | 8.607E-03 | 17.067  |
| PO-212  | 1.775E+00              | 2.021E-01 | 1.040E-01         | 8.607E-03 | 17.067  |
| BI-214  | 1.208E+00              | 2.018E-01 | 1.373E-01         | 1.019E-02 | 8.803   |
| PB-214  | 1.299E+00              | 2.103E-01 | 1.459E-01         | 1.258E-02 | 8.900   |
| PO-214  | 1.299E+00              | 2.103E-01 | 1.459E-01         | 1.258E-02 | 8.900   |
| PO-216  | 1.775E+00              | 2.021E-01 | 1.040E-01         | 8.607E-03 | 17.067  |
| PO-218  | 1.299E+00              | 2.103E-01 | 1.459E-01         | 1.258E-02 | 8.900   |
| RA-224  | 4.280E+00              | 1.529E+00 | 1.183E+00         | 8.233E-02 | 3.618   |
| RA-226  | 1.208E+00              | 2.018E-01 | 1.373E-01         | 1.019E-02 | 8.803   |
| AC-228  | 1.664E+00              | 4.042E-01 | 2.473E-01         | 2.750E-02 | 6.729   |
| RA-228  | 1.664E+00              | 4.042E-01 | 2.473E-01         | 2.750E-02 | 6.729   |
| TH-228  | 1.800E+00              | 2.050E-01 | 1.055E-01         | 8.731E-03 | 17.067  |
| TH-230  | 1.208E+00              | 2.018E-01 | 1.373E-01         | 1.019E-02 | 8.803   |

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| TH-232  | 1.664E+00              | 4.042E-01 | 2.473E-01         | 2.750E-02 | 6.729   |
| TH-234  | 3.240E+00              | 2.405E+00 | 3.546E+00         | 6.998E-01 | 0.914   |
| U-234   | 1.208E+00              | 2.018E-01 | 1.373E-01         | 1.019E-02 | 8.803   |
| NP-237  | 5.571E-01              | 4.411E-01 | 5.455E-01         | 1.288E-01 | 1.021   |
| U-238   | 3.240E+00              | 2.405E+00 | 3.546E+00         | 6.998E-01 | 0.914   |
| AM-243  | 5.289E-01              | 1.414E-01 | 1.229E-01         | 1.366E-02 | 4.302   |
| ANH-511 | 1.374E-01              | 8.403E-02 | 5.126E-02         | 2.894E-03 | 2.680   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| BE-7    | -1.617E-01                         |              | 3.986E-01 | 6.342E-01           | 4.226E-02 | -0.255  |
| NA-22   | -5.444E-02                         |              | 5.033E-02 | 7.144E-02           | 4.903E-03 | -0.762  |
| NA-24   | -8.874E-02                         |              | 1.874E-01 | Half-Life too short |           |         |
| AL-26   | -2.363E-02                         |              | 3.251E-02 | 4.525E-02           | 2.708E-03 | -0.522  |
| TI-44   | 1.855E-01                          |              | 6.161E-02 | 9.396E-02           | 1.045E-02 | 1.974   |
| SC-46   | -1.228E-02                         |              | 4.673E-02 | 7.563E-02           | 6.344E-03 | -0.162  |
| V-48    | -1.572E-02                         |              | 7.374E-02 | 1.188E-01           | 9.383E-03 | -0.132  |
| CR-51   | 1.583E-01                          |              | 4.177E-01 | 7.087E-01           | 5.111E-02 | 0.223   |
| MN-52   | 1.217E-01                          |              | 2.099E-01 | 3.785E-01           | 2.806E-02 | 0.321   |
| MN-54   | -7.375E-03                         |              | 4.662E-02 | 7.656E-02           | 5.738E-03 | -0.096  |
| CO-56   | 5.403E-03                          |              | 4.304E-02 | 7.218E-02           | 5.548E-03 | 0.075   |
| CO-57   | 3.007E-02                          |              | 3.126E-02 | 5.111E-02           | 3.675E-03 | 0.588   |
| CO-58   | 1.370E-02                          |              | 4.814E-02 | 8.174E-02           | 5.839E-03 | 0.168   |
| FE-59   | -9.056E-02                         |              | 1.122E-01 | 1.698E-01           | 1.285E-02 | -0.533  |
| CO-60   | 6.325E-02                          |              | 4.420E-02 | 8.274E-02           | 6.245E-03 | 0.764   |
| ZN-65   | 1.520E-02                          |              | 1.354E-01 | 1.918E-01           | 1.246E-02 | 0.079   |
| GE-68   | 8.001E-03                          |              | 1.338E+00 | 2.191E+00           | 1.522E-01 | 0.004   |
| AS-73   | 4.607E-01                          |              | 2.029E+00 | 3.405E+00           | 4.653E-01 | 0.135   |
| AS-74   | 4.099E-02                          |              | 1.165E-01 | 1.893E-01           | 1.018E-02 | 0.217   |
| SE-75   | -3.649E-02                         |              | 6.206E-02 | 8.706E-02           | 6.089E-03 | -0.419  |
| BR-77   | -6.057E-01                         |              | 8.882E+00 | 1.398E+01           | 7.863E-01 | -0.043  |
| SR-82   | -4.780E-01                         |              | 4.467E-01 | 6.134E-01           | 4.049E-02 | -0.779  |
| RB-83   | -1.085E-02                         |              | 7.164E-02 | 1.119E-01           | 6.294E-03 | -0.097  |
| RB-84   | -2.705E-02                         |              | 7.708E-02 | 1.236E-01           | 1.020E-02 | -0.219  |
| KR-85   | 1.376E+01                          |              | 8.330E+00 | 1.360E+01           | 7.671E-01 | 1.012   |
| SR-85   | 6.999E-02                          |              | 4.237E-02 | 6.918E-02           | 3.903E-03 | 1.012   |
| RB-86   | 6.934E-02                          |              | 8.490E-01 | 1.400E+00           | 9.743E-02 | 0.050   |
| Y-88    | -3.475E-03                         |              | 3.219E-02 | 5.162E-02           | 3.015E-03 | -0.067  |
| ZR-88   | 2.121E-02                          |              | 3.719E-02 | 6.327E-02           | 3.588E-03 | 0.335   |
| Y-91    | -1.088E+01                         |              | 2.229E+01 | 3.464E+01           | 2.095E+00 | -0.314  |
| NB-94   | 1.810E-02                          |              | 3.812E-02 | 6.595E-02           | 3.668E-03 | 0.275   |
| NB-95   | 6.368E-02                          |              | 5.612E-02 | 8.949E-02           | 5.767E-03 | 0.712   |
| NB-95M  | 1.707E+00                          |              | 2.618E-01 | 4.121E-01           | 3.482E-02 | 4.142   |
| ZR-95   | -2.579E-02                         |              | 7.876E-02 | 1.281E-01           | 9.553E-03 | -0.201  |
| NB-97   | -6.266E-02                         |              | 3.055E-02 | Half-Life too short |           |         |
| ZR-97   | 4.123E+00                          |              | 6.769E-01 | Half-Life too short |           |         |

----- Non-Identified Nuclides -----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| MO-99   | 2.537E+00                          |              | 1.025E+01 | 1.747E+01           | 2.428E+00 | 0.145   |
| TC-99M  | -4.406E+09                         |              | 3.169E+09 | Half-Life too short |           |         |
| RH-101  | 1.643E-02                          |              | 4.330E-02 | 6.941E-02           | 4.735E-03 | 0.237   |
| RH-102  | 4.572E-03                          |              | 3.545E-02 | 5.844E-02           | 3.331E-03 | 0.078   |
| RU-103  | 4.629E-03                          |              | 4.843E-02 | 7.950E-02           | 1.001E-02 | 0.058   |
| RH-106  | -2.152E-01                         |              | 3.554E-01 | 5.421E-01           | 6.222E-02 | -0.397  |
| RU-106  | -2.152E-01                         |              | 3.547E-01 | 5.421E-01           | 2.848E-02 | -0.397  |
| AG-108M | 1.232E-02                          |              | 3.790E-02 | 6.350E-02           | 3.948E-03 | 0.194   |
| AG-110M | -4.687E-02                         |              | 4.571E-02 | 6.776E-02           | 3.714E-03 | -0.692  |
| IN-111  | -1.056E+00                         |              | 1.213E+00 | 1.676E+00           | 1.167E-01 | -0.630  |
| IN-113M | 4.317E-02                          |              | 5.369E-02 | 9.245E-02           | 5.608E-03 | 0.467   |
| SN-113  | 4.317E-02                          |              | 5.369E-02 | 9.245E-02           | 5.608E-03 | 0.467   |
| IN-114M | -2.936E-02                         |              | 2.526E-01 | 3.512E-01           | 2.381E-02 | -0.084  |
| CD-115  | -8.255E+00                         |              | 9.967E+00 | 1.518E+01           | 8.514E-01 | -0.544  |
| SN-117M | 3.644E-03                          |              | 6.686E-02 | 1.083E-01           | 7.238E-03 | 0.034   |
| SB-122  | 4.196E-01                          |              | 1.965E+00 | 3.235E+00           | 1.780E-01 | 0.130   |
| I-123   | 9.716E-01                          |              | 1.379E+00 | Half-Life too short |           |         |
| TE-123M | 1.235E-02                          |              | 3.503E-02 | 5.738E-02           | 3.874E-03 | 0.215   |
| I-124   | -6.502E-01                         |              | 8.697E-01 | 1.120E+00           | 5.985E-02 | -0.581  |
| SB-124  | -6.727E-02                         |              | 8.600E-02 | 1.273E-01           | 8.938E-03 | -0.529  |
| SB-125  | -2.830E-02                         |              | 1.072E-01 | 1.731E-01           | 1.032E-02 | -0.163  |
| TE-125M | -8.779E-01                         |              | 1.133E+01 | 1.847E+01           | 1.835E+00 | -0.048  |
| I-126   | -3.098E-01                         |              | 2.354E-01 | 3.413E-01           | 1.737E-02 | -0.908  |
| SB-126  | -3.059E-02                         |              | 1.922E-01 | 2.730E-01           | 1.585E-02 | -0.112  |
| SB-127  | 6.480E-01                          |              | 1.293E+00 | 2.248E+00           | 1.997E-01 | 0.288   |
| XE-127  | -6.450E-03                         |              | 6.611E-02 | 9.964E-02           | 6.821E-03 | -0.065  |
| I-131   | -3.468E-02                         |              | 1.307E-01 | 2.130E-01           | 1.436E-02 | -0.163  |
| TE-132  | -1.269E-01                         |              | 7.089E-01 | 1.186E+00           | 1.746E-01 | -0.107  |
| BA-133  | -4.193E-02                         |              | 6.447E-02 | 8.791E-02           | 1.035E-02 | -0.477  |
| I-133   | -3.047E-03                         |              | 1.996E-03 | Half-Life too short |           |         |
| CS-134  | 5.647E-02                          |              | 5.346E-02 | 9.554E-02           | 6.657E-03 | 0.591   |
| CS-135  | 3.441E-01                          |              | 2.301E-01 | 3.616E-01           | 3.091E-02 | 0.952   |
| I-135   | 3.140E+08                          |              | 4.608E+08 | Half-Life too short |           |         |
| CS-136  | 7.639E-02                          |              | 1.211E-01 | 2.095E-01           | 1.614E-02 | 0.365   |
| BA-137M | 7.816E-02                          |              | 4.744E-02 | 8.429E-02           | 4.241E-03 | 0.927   |
| CS-137  | 8.262E-02                          |              | 5.015E-02 | 8.910E-02           | 4.508E-03 | 0.927   |
| CE-139  | -3.317E-03                         |              | 3.583E-02 | 5.757E-02           | 3.829E-03 | -0.058  |
| BA-140  | -1.981E-01                         |              | 3.060E-01 | 4.626E-01           | 1.503E-01 | -0.428  |
| LA-140  | 7.943E-02                          |              | 8.885E-02 | 1.518E-01           | 1.058E-02 | 0.523   |
| CE-141  | 2.545E-02                          |              | 7.796E-02 | 1.278E-01           | 8.924E-03 | 0.199   |
| CE-143  | 9.561E-04                          | +            | 1.381E-04 | Half-Life too short |           |         |
| CE-144  | -2.961E-01                         |              | 3.096E-01 | 4.140E-01           | 6.085E-02 | -0.715  |
| PM-144  | 2.052E-02                          |              | 3.977E-02 | 6.898E-02           | 3.783E-03 | 0.297   |
| PR-144  | 1.390E+00                          |              | 2.694E+00 | 4.672E+00           | 2.561E-01 | 0.297   |
| PM-146  | 4.544E-02                          |              | 5.480E-02 | 9.398E-02           | 8.049E-03 | 0.483   |
| ND-147  | 1.036E-01                          |              | 6.438E-01 | 1.058E+00           | 1.422E-01 | 0.098   |
| PM-149  | -3.649E+01                         |              | 8.646E+01 | 1.413E+02           | 2.069E+01 | -0.258  |
| EU-152  | -1.031E-01                         |              | 1.534E-01 | 1.794E-01           | 1.264E-02 | -0.575  |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| GD-153  | 7.772E-02                          |              | 1.083E-01 | 1.612E-01           | 1.547E-02 | 0.482   |
| EU-154  | -1.496E-01                         |              | 1.413E-01 | 2.006E-01           | 2.011E-02 | -0.746  |
| EU-155  | 3.023E-02                          |              | 1.364E-01 | 2.251E-01           | 1.949E-02 | 0.134   |
| TB-160  | 5.962E-02                          |              | 1.530E-01 | 2.618E-01           | 2.153E-02 | 0.228   |
| HO-166M | 2.648E-02                          |              | 6.970E-02 | 1.199E-01           | 6.813E-03 | 0.221   |
| TM-171  | -2.205E+01                         |              | 5.475E+01 | 7.226E+01           | 8.309E+00 | -0.305  |
| LU-176  | -2.321E-02                         |              | 3.002E-02 | 4.658E-02           | 3.138E-03 | -0.498  |
| LU-177  | 3.189E+00                          | +            | 1.522E+00 | 2.240E+00           | 1.539E-01 | 1.424   |
| LU-177M | -1.170E-01                         |              | 2.085E-01 | 3.312E-01           | 1.888E-02 | -0.353  |
| HF-181  | 6.514E-02                          |              | 5.182E-02 | 9.108E-02           | 5.185E-03 | 0.715   |
| W-181   | 1.048E-01                          |              | 6.567E-01 | 9.590E-01           | 1.116E-01 | 0.109   |
| TA-182  | 1.005E-01                          |              | 2.361E-01 | 3.967E-01           | 2.473E-02 | 0.253   |
| RE-183  | -2.703E-02                         |              | 1.338E-01 | 2.142E-01           | 1.428E-02 | -0.126  |
| RE-184  | 4.792E-02                          |              | 2.840E-01 | 4.803E-01           | 3.344E-02 | 0.100   |
| OS-185  | -1.766E-02                         |              | 5.081E-02 | 7.944E-02           | 4.070E-03 | -0.222  |
| RE-188  | 1.155E-01                          |              | 2.163E-01 | 3.566E-01           | 2.392E-02 | 0.324   |
| W-188   | -9.463E-01                         |              | 9.809E+00 | 1.415E+01           | 9.686E-01 | -0.067  |
| IR-192  | -2.347E-03                         |              | 3.969E-02 | 6.586E-02           | 4.402E-03 | -0.036  |
| AU-195  | 2.001E-01                          |              | 2.853E-01 | 4.639E-01           | 4.349E-02 | 0.431   |
| TL-200  | -1.992E-04                         |              | 1.631E-04 | Half-Life too short |           |         |
| TL-201  | -4.487E-01                         |              | 7.231E+00 | 1.163E+01           | 7.741E-01 | -0.039  |
| TL-202  | -4.455E-02                         |              | 7.952E-02 | 1.257E-01           | 7.186E-03 | -0.354  |
| HG-203  | -3.489E-03                         |              | 4.981E-02 | 8.308E-02           | 5.984E-03 | -0.042  |
| BI-207  | 3.142E-02                          |              | 6.461E-02 | 1.101E-01           | 7.825E-03 | 0.285   |
| TL-207  | -1.051E+00                         |              | 8.318E-01 | 1.264E+00           | 2.124E-01 | -0.831  |
| PO-209  | -4.160E+00                         |              | 8.439E+00 | 1.334E+01           | 1.135E+00 | -0.312  |
| BI-210  | -3.846E+00                         |              | 1.340E+01 | 2.157E+01           | 2.241E+00 | -0.178  |
| PB-210  | -3.846E+00                         |              | 1.340E+01 | 2.157E+01           | 2.241E+00 | -0.178  |
| PO-210  | -3.846E+00                         |              | 1.340E+01 | 2.157E+01           | 2.072E+00 | -0.178  |
| PB-211  | -5.526E-01                         |              | 1.205E+00 | 1.849E+00           | 1.153E+00 | -0.299  |
| BI-212  | 8.129E-01                          | +            | 6.049E-01 | 7.336E-01           | 5.712E-02 | 1.108   |
| PO-215  | -1.051E+00                         |              | 8.318E-01 | 1.264E+00           | 2.124E-01 | -0.831  |
| RN-219  | -3.596E-01                         |              | 4.993E-01 | 7.839E-01           | 1.063E-01 | -0.459  |
| RN-220  | -1.106E+01                         |              | 3.169E+01 | 5.012E+01           | 2.780E+00 | -0.221  |
| RA-223  | -1.051E+00                         |              | 8.318E-01 | 1.264E+00           | 2.124E-01 | -0.831  |
| AC-227  | -2.267E-01                         |              | 4.576E-01 | 7.494E-01           | 1.085E-01 | -0.303  |
| TH-227  | -2.267E-01                         |              | 4.581E-01 | 7.494E-01           | 1.299E-01 | -0.303  |
| TH-229  | -3.694E-01                         |              | 6.547E-01 | 1.010E+00           | 6.863E-02 | -0.366  |
| PA-231  | 2.845E-01                          |              | 1.819E+00 | 3.064E+00           | 4.371E-01 | 0.093   |
| TH-231  | -1.051E+00                         |              | 8.318E-01 | 1.264E+00           | 2.124E-01 | -0.831  |
| U-231   | -2.761E-01                         |              | 1.310E+00 | 1.864E+00           | 1.837E-01 | -0.148  |
| PA-233  | 4.186E-02                          |              | 7.510E-02 | 1.286E-01           | 9.011E-03 | 0.326   |
| PA-234  | 2.411E-01                          |              | 3.521E-01 | 6.097E-01           | 1.133E-01 | 0.395   |
| PA-234M | 9.976E+00                          |              | 5.754E+00 | 1.065E+01           | 9.819E-01 | 0.936   |
| U-235   | 1.568E-01                          |              | 2.703E-01 | 4.397E-01           | 7.337E-02 | 0.357   |
| NP-236  | 3.869E-03                          |              | 9.792E-02 | 1.584E-01           | 1.058E-02 | 0.024   |
| NP-239  | -1.018E-01                         |              | 2.282E-01 | 3.656E-01           | 2.748E-02 | -0.279  |
| AM-241  | 9.698E-02                          |              | 3.226E-01 | 4.782E-01           | 6.085E-02 | 0.203   |



---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| CM-243  | 6.208E-02                          |              | 1.217E-01 | 2.027E-01         | 1.770E-02 | 0.306   |
| AM-246  | -3.810E-02                         |              | 1.585E-01 | 2.531E-01         | 1.754E-02 | -0.151  |
| CM-247  | -5.330E-02                         |              | 4.494E-02 | 6.864E-02         | 3.903E-03 | -0.777  |
| CF-249  | -2.281E-02                         |              | 4.991E-02 | 8.024E-02         | 4.600E-03 | -0.284  |
| CF-251  | 7.479E-02                          |              | 1.505E-01 | 2.474E-01         | 1.658E-02 | 0.302   |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC
*                                     2040 Savage Road
*                                     Charleston, SC 29414
*****
*
*                                     DETECTOR DATA
*
* Configuration      : SYSSYSROOT:[ALPHA.ARCHIVE.GAMMA]G244630001
* Acquisition date   : 22-JAN-2010 20:49:47 Detector SN#    :
* Detector ID        : GAM15                      Sensitivity    : 5.000
* Geometry           : CAN                        Energy tolerance: 1.500
* Elapsed live time   : 0 02:00:00.00             Abundance limit : 75.000
* Elapsed real time   : 0 02:00:01.38             Half life ratio : 8.000
*****
*
*                                     SAMPLE DATA
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID
* Sample ID          : G244630001                 Analyst initials: MXR1
* Batch Number       : 941639                     Sample Quantity : 1.3673E+02 GRAM
* Recovery           : 1.00000                     Carrier Weight  : 0.00000
*****
*
*                                     QC DATA
*
* CALIB. DATE/TIME   : 16-FEB-2009 10:54:12 MS Isotope      :
* MSD DPM             : 0.000                      MSD Isotope      :
* LCS DPM             : 0.000                      LCS Isotope      :
* LCSD DPM            : 0.000                      LCSD Isotope     :
*****

```

## Combined Activity-MDA Report

### ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act Error | DLC<br>(pCi/GRAM ) | TPU       |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 2.811E+01               | 2.789E+00 | 3.143E-01          | 1.423E+00 |
| CD-109  | 1.928E+00               | 1.444E+00 | 1.030E+00          | 7.369E-01 |
| SN-126  | 1.897E-01               | 1.421E-01 | 9.689E-02          | 7.251E-02 |
| TL-208  | 5.541E-01               | 1.072E-01 | 3.043E-02          | 5.471E-02 |
| BI-211  | 3.734E+00               | 5.608E-01 | 2.156E-01          | 2.861E-01 |
| PB-212  | 1.775E+00               | 1.980E-01 | 5.400E-02          | 1.010E-01 |
| PO-212  | 1.775E+00               | 1.980E-01 | 5.400E-02          | 1.010E-01 |
| BI-214  | 1.208E+00               | 1.978E-01 | 7.004E-02          | 1.009E-01 |
| PB-214  | 1.299E+00               | 2.061E-01 | 7.526E-02          | 1.051E-01 |
| PO-214  | 1.299E+00               | 2.061E-01 | 7.526E-02          | 1.051E-01 |
| PO-216  | 1.775E+00               | 1.980E-01 | 5.400E-02          | 1.010E-01 |
| PO-218  | 1.299E+00               | 2.061E-01 | 7.526E-02          | 1.051E-01 |
| RA-224  | 4.280E+00               | 1.498E+00 | 6.143E-01          | 7.643E-01 |
| RA-226  | 1.208E+00               | 1.978E-01 | 7.004E-02          | 1.009E-01 |
| AC-228  | 1.664E+00               | 3.962E-01 | 1.252E-01          | 2.021E-01 |
| RA-228  | 1.664E+00               | 3.962E-01 | 1.252E-01          | 2.021E-01 |
| TH-228  | 1.800E+00               | 2.009E-01 | 5.478E-02          | 1.025E-01 |
| TH-230  | 1.208E+00               | 1.978E-01 | 7.004E-02          | 1.009E-01 |
| TH-232  | 1.664E+00               | 3.962E-01 | 1.252E-01          | 2.021E-01 |
| TH-234  | 3.240E+00               | 2.356E+00 | 1.886E+00          | 1.202E+00 |
| U-234   | 1.208E+00               | 1.978E-01 | 7.004E-02          | 1.009E-01 |
| NP-237  | 5.571E-01               | 4.323E-01 | 2.886E-01          | 2.206E-01 |
| U-238   | 3.240E+00               | 2.356E+00 | 1.886E+00          | 1.202E+00 |
| AM-243  | 5.289E-01               | 1.386E-01 | 6.521E-02          | 7.071E-02 |
| ANH-511 | 1.374E-01               | 8.235E-02 | 2.624E-02          | 4.202E-02 |

### ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L Act error | DLC<br>(pCi/GRAM ) | TPU                  |
|---------|-------------------------------------|---------------|--------------------|----------------------|
| BE-7    | -1.617E-01                          | 3.906E-01     | 3.251E-01          | 1.993E-01 NOT IDENT. |
| NA-22   | -5.444E-02                          | 4.932E-02     | 3.594E-02          | 2.517E-02 NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| NA-24   | -8.874E+04 | 3.674E+05 | 0.000E+00 | 1.874E+05 | SHORT HLIF |
| AL-26   | -2.363E-02 | 3.186E-02 | 2.261E-02 | 1.626E-02 | NOT IDENT. |
| TI-44   | 1.855E-01  | 6.038E-02 | 4.980E-02 | 3.081E-02 | NOT IDENT. |
| SC-46   | -1.228E-02 | 4.580E-02 | 3.832E-02 | 2.337E-02 | FAIL ABUN  |
| V-48    | -1.572E-02 | 7.226E-02 | 6.005E-02 | 3.687E-02 | NOT IDENT. |
| CR-51   | 1.583E-01  | 4.093E-01 | 3.661E-01 | 2.088E-01 | NOT IDENT. |
| MN-52   | 1.217E-01  | 2.057E-01 | 1.899E-01 | 1.050E-01 | NOT IDENT. |
| MN-54   | -7.375E-03 | 4.569E-02 | 3.883E-02 | 2.331E-02 | NOT IDENT. |
| CO-56   | 5.403E-03  | 4.217E-02 | 3.660E-02 | 2.152E-02 | NOT IDENT. |
| CO-57   | 3.007E-02  | 3.063E-02 | 2.688E-02 | 1.563E-02 | NOT IDENT. |
| CO-58   | 1.370E-02  | 4.718E-02 | 4.148E-02 | 2.407E-02 | NOT IDENT. |
| FE-59   | -9.056E-02 | 1.100E-01 | 8.566E-02 | 5.611E-02 | NOT IDENT. |
| CO-60   | 6.325E-02  | 4.332E-02 | 4.158E-02 | 2.210E-02 | NOT IDENT. |
| ZN-65   | 1.520E-02  | 1.327E-01 | 9.675E-02 | 6.768E-02 | NOT IDENT. |
| GE-68   | 8.001E-03  | 1.311E+00 | 1.106E+00 | 6.690E-01 | NOT IDENT. |
| AS-73   | 4.607E-01  | 1.988E+00 | 1.817E+00 | 1.014E+00 | NOT IDENT. |
| AS-74   | 4.099E-02  | 1.141E-01 | 9.664E-02 | 5.824E-02 | NOT IDENT. |
| SE-75   | -3.649E-02 | 6.081E-02 | 4.513E-02 | 3.103E-02 | NOT IDENT. |
| BR-77   | -6.057E-01 | 8.704E+00 | 7.153E+00 | 4.441E+00 | FAIL ABUN  |
| SR-82   | -4.780E-01 | 4.377E-01 | 3.115E-01 | 2.233E-01 | NOT IDENT. |
| RB-83   | -1.085E-02 | 7.020E-02 | 5.725E-02 | 3.582E-02 | NOT IDENT. |
| RB-84   | -2.705E-02 | 7.554E-02 | 6.262E-02 | 3.854E-02 | NOT IDENT. |
| KR-85   | 1.376E+01  | 8.163E+00 | 6.963E+00 | 4.165E+00 | NOT IDENT. |
| SR-85   | 6.999E-02  | 4.153E-02 | 3.542E-02 | 2.119E-02 | NOT IDENT. |
| RB-86   | 6.934E-02  | 8.321E-01 | 7.068E-01 | 4.245E-01 | NOT IDENT. |
| Y-88    | -3.475E-03 | 3.154E-02 | 2.578E-02 | 1.609E-02 | NOT IDENT. |
| ZR-88   | 2.121E-02  | 3.644E-02 | 3.255E-02 | 1.859E-02 | NOT IDENT. |
| Y-91    | -1.088E+01 | 2.184E+01 | 1.745E+01 | 1.115E+01 | NOT IDENT. |
| NB-94   | 1.810E-02  | 3.736E-02 | 3.356E-02 | 1.906E-02 | NOT IDENT. |
| NB-95   | 6.368E-02  | 5.500E-02 | 4.547E-02 | 2.806E-02 | NOT IDENT. |
| NB-95M  | 1.707E+00  | 2.566E-01 | 2.141E-01 | 1.309E-01 | NOT IDENT. |
| ZR-95   | -2.579E-02 | 7.718E-02 | 6.512E-02 | 3.938E-02 | NOT IDENT. |
| NB-97   | -6.266E+04 | 5.987E+04 | 0.000E+00 | 3.055E+04 | SHORT HLIF |
| ZR-97   | 4.123E+06  | 1.327E+06 | 0.000E+00 | 6.769E+05 | SHORT HLIF |
| MO-99   | 2.537E+00  | 1.005E+01 | 8.883E+00 | 5.127E+00 | NOT IDENT. |
| TC-99M  | -4.406E+15 | 6.212E+15 | 0.000E+00 | 3.169E+15 | SHORT HLIF |
| RH-101  | 1.643E-02  | 4.243E-02 | 3.617E-02 | 2.165E-02 | FAIL ABUN  |
| RH-102  | 4.572E-03  | 3.474E-02 | 2.996E-02 | 1.773E-02 | NOT IDENT. |
| RU-103  | 4.629E-03  | 4.746E-02 | 4.072E-02 | 2.422E-02 | NOT IDENT. |
| RH-106  | -2.152E-01 | 3.483E-01 | 2.765E-01 | 1.777E-01 | FAIL ABUN  |
| RU-106  | -2.152E-01 | 3.476E-01 | 2.765E-01 | 1.773E-01 | FAIL ABUN  |
| AG-108M | 1.232E-02  | 3.714E-02 | 3.261E-02 | 1.895E-02 | NOT IDENT. |
| AG-110M | -4.687E-02 | 4.480E-02 | 3.453E-02 | 2.286E-02 | NOT IDENT. |
| IN-111  | -1.056E+00 | 1.188E+00 | 8.703E-01 | 6.063E-01 | NOT IDENT. |
| IN-113M | 4.317E-02  | 5.262E-02 | 4.757E-02 | 2.685E-02 | NOT IDENT. |
| SN-113  | 4.317E-02  | 5.262E-02 | 4.757E-02 | 2.685E-02 | NOT IDENT. |
| IN-114M | -2.936E-02 | 2.475E-01 | 1.832E-01 | 1.263E-01 | NOT IDENT. |
| CD-115  | -8.255E+00 | 9.768E+00 | 7.767E+00 | 4.984E+00 | NOT IDENT. |
| SN-117M | 3.644E-03  | 6.552E-02 | 5.665E-02 | 3.343E-02 | NOT IDENT. |
| SB-122  | 4.196E-01  | 1.926E+00 | 1.653E+00 | 9.826E-01 | NOT IDENT. |
| I-123   | 9.716E+05  | 2.702E+06 | 0.000E+00 | 1.379E+06 | SHORT HLIF |
| TE-123M | 1.235E-02  | 3.433E-02 | 3.003E-02 | 1.752E-02 | NOT IDENT. |
| I-124   | -6.502E-01 | 8.523E-01 | 5.715E-01 | 4.348E-01 | NOT IDENT. |
| SB-124  | -6.727E-02 | 8.428E-02 | 6.366E-02 | 4.300E-02 | FAIL ABUN  |
| SB-125  | -2.830E-02 | 1.051E-01 | 8.895E-02 | 5.360E-02 | FAIL ABUN  |
| TE-125M | -8.779E-01 | 1.110E+01 | 9.729E+00 | 5.664E+00 | NOT IDENT. |
| I-126   | -3.098E-01 | 2.307E-01 | 1.739E-01 | 1.177E-01 | NOT IDENT. |
| SB-126  | -3.059E-02 | 1.883E-01 | 1.389E-01 | 9.608E-02 | NOT IDENT. |
| SB-127  | 6.480E-01  | 1.267E+00 | 1.145E+00 | 6.466E-01 | NOT IDENT. |
| XE-127  | -6.450E-03 | 6.479E-02 | 5.190E-02 | 3.306E-02 | NOT IDENT. |
| I-131   | -3.468E-02 | 1.281E-01 | 1.098E-01 | 6.536E-02 | NOT IDENT. |
| TE-132  | -1.269E-01 | 6.947E-01 | 6.167E-01 | 3.544E-01 | NOT IDENT. |
| BA-133  | -4.193E-02 | 6.318E-02 | 4.532E-02 | 3.224E-02 | NOT IDENT. |
| I-133   | -3.047E+03 | 3.913E+03 | 0.000E+00 | 1.996E+03 | SHORT HLIF |
| CS-134  | 5.647E-02  | 5.239E-02 | 4.850E-02 | 2.673E-02 | NOT IDENT. |
| CS-135  | 3.441E-01  | 2.255E-01 | 1.874E-01 | 1.150E-01 | NOT IDENT. |
| I-135   | 3.140E+14  | 9.031E+14 | 0.000E+00 | 4.608E+14 | SHORT HLIF |
| CS-136  | 7.639E-02  | 1.187E-01 | 1.058E-01 | 6.056E-02 | FAIL ABUN  |
| BA-137M | 7.816E-02  | 4.649E-02 | 4.295E-02 | 2.372E-02 | NOT IDENT. |
| CS-137  | 8.262E-02  | 4.914E-02 | 4.540E-02 | 2.507E-02 | NOT IDENT. |
| CE-139  | -3.317E-03 | 3.511E-02 | 3.010E-02 | 1.791E-02 | NOT IDENT. |
| BA-140  | -1.981E-01 | 2.999E-01 | 2.367E-01 | 1.530E-01 | NOT IDENT. |
| LA-140  | 7.943E-02  | 8.707E-02 | 7.603E-02 | 4.442E-02 | NOT IDENT. |
| CE-141  | 2.545E-02  | 7.641E-02 | 6.701E-02 | 3.898E-02 | NOT IDENT. |
| CE-143  | 9.561E+02  | 2.707E+02 | 0.000E+00 | 1.381E+02 | SHORT HLIF |
| CE-144  | -2.961E-01 | 3.034E-01 | 2.173E-01 | 1.548E-01 | NOT IDENT. |
| PM-144  | 2.052E-02  | 3.898E-02 | 3.511E-02 | 1.989E-02 | NOT IDENT. |
| PR-144  | 1.390E+00  | 2.640E+00 | 2.378E+00 | 1.347E+00 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PM-146  | 4.544E-02  | 5.371E-02 | 4.823E-02 | 2.740E-02 | NOT IDENT. |
| ND-147  | 1.036E-01  | 6.309E-01 | 5.414E-01 | 3.219E-01 | FAIL ABUN  |
| PM-149  | -3.649E+01 | 8.473E+01 | 7.316E+01 | 4.323E+01 | NOT IDENT. |
| EU-152  | -1.031E-01 | 1.503E-01 | 9.253E-02 | 7.669E-02 | FAIL ABUN  |
| GD-153  | 7.772E-02  | 1.061E-01 | 8.511E-02 | 5.415E-02 | NOT IDENT. |
| EU-154  | -1.496E-01 | 1.385E-01 | 1.009E-01 | 7.065E-02 | NOT IDENT. |
| EU-155  | 3.023E-02  | 1.337E-01 | 1.187E-01 | 6.822E-02 | FAIL ABUN  |
| TB-160  | 5.962E-02  | 1.499E-01 | 1.327E-01 | 7.649E-02 | FAIL ABUN  |
| HO-166M | 2.648E-02  | 6.831E-02 | 6.098E-02 | 3.485E-02 | FAIL ABUN  |
| TM-171  | -2.205E+01 | 5.366E+01 | 3.840E+01 | 2.738E+01 | NOT IDENT. |
| LU-176  | -2.321E-02 | 2.942E-02 | 2.408E-02 | 1.501E-02 | NOT IDENT. |
| LU-177  | 3.189E+00  | 1.492E+00 | 1.166E+00 | 7.610E-01 | FAIL ABUN  |
| LU-177M | -1.170E-01 | 2.043E-01 | 1.702E-01 | 1.042E-01 | FAIL ABUN  |
| HF-181  | 6.514E-02  | 5.079E-02 | 4.669E-02 | 2.591E-02 | NOT IDENT. |
| W-181   | 1.048E-01  | 6.436E-01 | 5.099E-01 | 3.284E-01 | NOT IDENT. |
| TA-182  | 1.005E-01  | 2.314E-01 | 1.997E-01 | 1.181E-01 | FAIL ABUN  |
| RE-183  | -2.703E-02 | 1.311E-01 | 1.121E-01 | 6.690E-02 | FAIL ABUN  |
| RE-184  | 4.792E-02  | 2.783E-01 | 2.492E-01 | 1.420E-01 | NOT IDENT. |
| OS-185  | -1.766E-02 | 4.979E-02 | 4.049E-02 | 2.540E-02 | FAIL ABUN  |
| RE-188  | 1.155E-01  | 2.119E-01 | 1.867E-01 | 1.081E-01 | NOT IDENT. |
| W-188   | -9.463E-01 | 9.613E+00 | 7.325E+00 | 4.905E+00 | FAIL ABUN  |
| IR-192  | -2.347E-03 | 3.889E-02 | 3.403E-02 | 1.984E-02 | FAIL ABUN  |
| AU-195  | 2.001E-01  | 2.796E-01 | 2.449E-01 | 1.427E-01 | FAIL ABUN  |
| TL-200  | -1.992E+02 | 3.197E+02 | 0.000E+00 | 1.631E+02 | SHORT HLIF |
| TL-201  | -4.487E-01 | 7.086E+00 | 6.081E+00 | 3.616E+00 | NOT IDENT. |
| TL-202  | -4.455E-02 | 7.793E-02 | 6.456E-02 | 3.976E-02 | NOT IDENT. |
| HG-203  | -3.489E-03 | 4.881E-02 | 4.302E-02 | 2.490E-02 | FAIL ABUN  |
| BI-207  | 3.142E-02  | 6.332E-02 | 5.560E-02 | 3.231E-02 | FAIL ABUN  |
| TL-207  | -1.051E+00 | 8.152E-01 | 6.525E-01 | 4.159E-01 | FAIL ABUN  |
| PO-209  | -4.160E+00 | 8.271E+00 | 6.755E+00 | 4.220E+00 | NOT IDENT. |
| BI-210  | -3.846E+00 | 1.313E+01 | 1.154E+01 | 6.699E+00 | NOT IDENT. |
| PB-210  | -3.846E+00 | 1.313E+01 | 1.154E+01 | 6.699E+00 | NOT IDENT. |
| PO-210  | -3.846E+00 | 1.313E+01 | 1.154E+01 | 6.699E+00 | NOT IDENT. |
| PB-211  | -5.526E-01 | 1.180E+00 | 9.511E-01 | 6.023E-01 | NOT IDENT. |
| BI-212  | 8.129E-01  | 5.928E-01 | 3.731E-01 | 3.025E-01 | FAIL ABUN  |
| PO-215  | -1.051E+00 | 8.152E-01 | 6.525E-01 | 4.159E-01 | FAIL ABUN  |
| RN-219  | -3.596E-01 | 4.894E-01 | 4.032E-01 | 2.497E-01 | FAIL ABUN  |
| RN-220  | -1.106E+01 | 3.105E+01 | 2.562E+01 | 1.584E+01 | NOT IDENT. |
| RA-223  | -1.051E+00 | 8.152E-01 | 6.525E-01 | 4.159E-01 | FAIL ABUN  |
| AC-227  | -2.267E-01 | 4.485E-01 | 3.887E-01 | 2.288E-01 | FAIL ABUN  |
| TH-227  | -2.267E-01 | 4.490E-01 | 3.887E-01 | 2.291E-01 | FAIL ABUN  |
| TH-229  | -3.694E-01 | 6.416E-01 | 5.263E-01 | 3.274E-01 | FAIL ABUN  |
| PA-231  | 2.845E-01  | 1.783E+00 | 1.586E+00 | 9.096E-01 | FAIL ABUN  |
| TH-231  | -1.051E+00 | 8.152E-01 | 6.525E-01 | 4.159E-01 | FAIL ABUN  |
| U-231   | -2.761E-01 | 1.284E+00 | 9.845E-01 | 6.552E-01 | FAIL ABUN  |
| PA-233  | 4.186E-02  | 7.360E-02 | 6.644E-02 | 3.755E-02 | FAIL ABUN  |
| PA-234  | 2.411E-01  | 3.451E-01 | 3.085E-01 | 1.760E-01 | FAIL ABUN  |
| PA-234M | 9.976E+00  | 5.639E+00 | 5.384E+00 | 2.877E+00 | NOT IDENT. |
| U-235   | 1.568E-01  | 2.649E-01 | 2.305E-01 | 1.352E-01 | FAIL ABUN  |
| NP-236  | 3.869E-03  | 9.597E-02 | 8.289E-02 | 4.896E-02 | NOT IDENT. |
| NP-239  | -1.018E-01 | 2.236E-01 | 1.924E-01 | 1.141E-01 | FAIL ABUN  |
| AM-241  | 9.698E-02  | 3.162E-01 | 2.547E-01 | 1.613E-01 | NOT IDENT. |
| CM-243  | 6.208E-02  | 1.192E-01 | 1.069E-01 | 6.083E-02 | FAIL ABUN  |
| AM-246  | -3.810E-02 | 1.553E-01 | 1.277E-01 | 7.923E-02 | NOT IDENT. |
| CM-247  | -5.330E-02 | 4.404E-02 | 3.530E-02 | 2.247E-02 | NOT IDENT. |
| CF-249  | -2.281E-02 | 4.891E-02 | 4.130E-02 | 2.495E-02 | NOT IDENT. |
| CF-251  | 7.479E-02  | 1.475E-01 | 1.292E-01 | 7.527E-02 | NOT IDENT. |

\*\*\*\*\*  
 \* GEL Laboratories LLC \*  
 \* 2040 SAVAGE ROAD \*  
 \* CHARLESTON, SC 29417 \*  
 \* GAMMA SPECTROSCOPY BACKGROUND REPORT \*  
 \*\*\*\*\*

ENERGY MDA COUNTS

|       |          |
|-------|----------|
| 46.50 | 320.4413 |
| 46.50 | 320.4413 |
| 46.50 | 320.4413 |
| 48.70 | 314.1253 |
| 49.72 | 301.4433 |
| 51.35 | 325.9598 |
| 52.39 | 310.3852 |
| 52.97 | 305.9303 |
| 53.15 | 309.8221 |
| 53.44 | 308.0666 |
| 54.07 | 303.6228 |
| 56.28 | 321.8877 |
| 56.28 | 321.8890 |
| 57.37 | 0.0000   |
| 57.53 | 347.8139 |
| 57.53 | 347.8152 |
| 57.60 | 347.1227 |
| 57.98 | 349.8814 |
| 57.98 | 349.8814 |
| 59.32 | 311.7055 |
| 59.32 | 311.7055 |
| 59.40 | 311.7439 |
| 59.54 | 317.9542 |
| 59.72 | 318.0421 |
| 60.01 | 312.0338 |
| 61.10 | 304.8504 |
| 61.14 | 304.8685 |
| 61.30 | 304.9416 |
| 63.00 | 380.2134 |
| 63.29 | 363.9633 |
| 63.29 | 363.9633 |
| 63.58 | 344.6091 |
| 64.28 | 368.1664 |
| 65.12 | 362.4211 |
| 65.20 | 362.4629 |
| 65.20 | 362.4629 |
| 66.05 | 375.3142 |
| 66.72 | 407.4966 |
| 66.83 | 407.5623 |
| 66.91 | 407.6088 |
| 67.20 | 415.5442 |
| 67.20 | 415.5442 |
| 67.75 | 425.5840 |
| 67.85 | 425.6442 |
| 68.90 | 420.4347 |
| 68.90 | 420.4347 |
| 69.30 | 423.7864 |
| 69.67 | 397.5052 |
| 70.82 | 412.1890 |
| 70.82 | 412.1890 |
| 70.83 | 412.1955 |
| 72.80 | 413.8928 |
| 72.87 | 413.9315 |
| 72.87 | 413.9315 |
| 74.67 | 414.9352 |
| 74.81 | 415.0126 |
| 74.81 | 415.0126 |
| 74.81 | 415.0126 |
| 74.81 | 415.0126 |
| 74.81 | 415.0126 |
| 74.81 | 415.0126 |
| 74.97 | 415.1013 |
| 75.28 | 415.2724 |
| 75.70 | 415.5031 |
| 77.11 | 403.0875 |
| 77.11 | 403.0875 |

|        |          |
|--------|----------|
| 77.11  | 403.0875 |
| 77.11  | 403.0875 |
| 77.11  | 403.0875 |
| 77.11  | 403.0875 |
| 77.11  | 403.0875 |
| 78.38  | 427.4122 |
| 79.62  | 475.4878 |
| 79.80  | 475.5980 |
| 79.80  | 475.5980 |
| 80.11  | 478.9486 |
| 80.18  | 478.9911 |
| 80.30  | 479.0651 |
| 80.30  | 479.0651 |
| 80.57  | 468.5538 |
| 81.00  | 439.1390 |
| 81.07  | 424.6706 |
| 81.07  | 424.6706 |
| 81.07  | 424.6706 |
| 81.07  | 424.6706 |
| 82.60  | 434.0802 |
| 83.37  | 438.0692 |
| 83.78  | 439.8829 |
| 83.78  | 439.8829 |
| 83.78  | 439.8829 |
| 83.78  | 439.8829 |
| 84.21  | 454.4178 |
| 84.90  | 464.3484 |
| 85.43  | 478.9729 |
| 86.29  | 559.8083 |
| 86.50  | 559.9520 |
| 86.54  | 560.3593 |
| 86.59  | 560.3936 |
| 86.72  | 560.4816 |
| 86.79  | 560.5289 |
| 86.94  | 560.6319 |
| 87.30  | 629.9918 |
| 87.30  | 629.9918 |
| 87.30  | 629.9918 |
| 87.30  | 629.9918 |
| 87.30  | 629.9918 |
| 87.30  | 629.9918 |
| 87.30  | 629.9918 |
| 87.57  | 566.3793 |
| 87.88  | 566.5916 |
| 88.03  | 630.5486 |
| 88.36  | 630.7994 |
| 88.47  | 630.8838 |
| 89.95  | 632.0024 |
| 91.11  | 632.8752 |
| 92.29  | 465.2886 |
| 92.38  | 465.3381 |
| 92.38  | 465.3381 |
| 93.35  | 348.5960 |
| 94.00  | 376.1910 |
| 94.67  | 399.0054 |
| 94.67  | 399.0069 |
| 94.90  | 399.1129 |
| 94.90  | 399.1129 |
| 94.90  | 399.1129 |
| 94.90  | 399.1129 |
| 95.87  | 378.6148 |
| 95.87  | 378.6148 |
| 96.73  | 338.6705 |
| 97.43  | 334.0970 |
| 98.44  | 335.2878 |
| 98.44  | 335.2878 |
| 98.88  | 340.6501 |
| 99.55  | 357.9526 |
| 99.55  | 357.9526 |
| 99.86  | 358.0769 |
| 100.00 | 365.2140 |
| 100.10 | 382.4571 |
| 103.18 | 362.4420 |
| 103.76 | 359.6244 |
| 105.00 | 375.3695 |
| 105.31 | 378.5476 |
| 108.00 | 376.5829 |
| 109.28 | 370.9636 |

|        |          |
|--------|----------|
| 111.00 | 396.2076 |
| 111.00 | 396.2076 |
| 111.76 | 397.5482 |
| 112.95 | 354.9528 |
| 115.19 | 313.6156 |
| 116.30 | 335.5893 |
| 117.00 | 350.2508 |
| 117.00 | 350.2508 |
| 117.66 | 383.4717 |
| 121.11 | 315.4946 |
| 121.62 | 310.4805 |
| 121.78 | 310.5297 |
| 122.06 | 305.2907 |
| 122.32 | 323.1223 |
| 122.32 | 323.1223 |
| 122.32 | 323.1223 |
| 122.32 | 323.1223 |
| 123.07 | 320.0450 |
| 127.23 | 337.9942 |
| 129.76 | 354.6710 |
| 131.20 | 382.7308 |
| 133.02 | 416.8713 |
| 133.54 | 437.1750 |
| 135.34 | 433.4337 |
| 136.00 | 399.3224 |
| 136.25 | 389.3700 |
| 136.48 | 399.9494 |
| 140.51 | 433.0344 |
| 140.51 | 0.0000   |
| 142.18 | 396.7547 |
| 142.65 | 380.0322 |
| 143.76 | 360.3327 |
| 144.24 | 367.8862 |
| 144.24 | 367.8862 |
| 144.24 | 367.8862 |
| 144.24 | 367.8862 |
| 145.22 | 374.5558 |
| 145.44 | 379.9201 |
| 147.16 | 387.9172 |
| 152.43 | 372.6628 |
| 152.70 | 373.8159 |
| 153.22 | 345.2141 |
| 154.21 | 380.6961 |
| 154.21 | 380.6961 |
| 154.21 | 380.6961 |
| 154.21 | 380.6961 |
| 155.03 | 363.8891 |
| 156.02 | 370.6042 |
| 158.56 | 359.6276 |
| 159.00 | 0.0000   |
| 159.00 | 335.1320 |
| 160.31 | 338.7154 |
| 161.27 | 352.9310 |
| 162.32 | 343.5742 |
| 162.64 | 340.4451 |
| 163.35 | 313.7788 |
| 163.89 | 319.2945 |
| 165.85 | 324.1137 |
| 167.43 | 329.9214 |
| 171.28 | 310.3963 |
| 171.86 | 311.6228 |
| 172.10 | 320.3400 |
| 176.55 | 284.5436 |
| 176.60 | 284.5536 |
| 181.06 | 343.5236 |
| 184.41 | 298.2959 |
| 185.71 | 298.5917 |
| 186.00 | 313.3156 |
| 190.27 | 314.3250 |
| 192.34 | 322.0648 |
| 193.63 | 335.5752 |
| 197.04 | 312.1503 |
| 198.01 | 318.9954 |
| 198.60 | 321.3384 |
| 200.40 | 373.7284 |
| 201.83 | 378.5400 |
| 202.84 | 358.2434 |
| 205.31 | 344.4211 |

|        |          |
|--------|----------|
| 208.36 | 343.6078 |
| 208.81 | 337.0422 |
| 209.75 | 302.7606 |
| 209.75 | 302.7606 |
| 210.97 | 269.1512 |
| 215.65 | 298.4174 |
| 216.55 | 305.3109 |
| 218.09 | 289.9602 |
| 222.10 | 266.0554 |
| 223.80 | 280.9715 |
| 226.40 | 293.6208 |
| 227.00 | 285.6289 |
| 227.08 | 285.6444 |
| 227.20 | 285.6657 |
| 228.16 | 283.1443 |
| 228.18 | 283.1481 |
| 228.18 | 283.1481 |
| 231.56 | 0.0000   |
| 235.69 | 296.0277 |
| 236.00 | 276.4491 |
| 236.00 | 276.4491 |
| 238.63 | 234.2471 |
| 238.63 | 234.2471 |
| 238.63 | 234.2471 |
| 238.63 | 234.2471 |
| 239.00 | 234.3022 |
| 240.98 | 234.6014 |
| 241.98 | 213.8236 |
| 241.98 | 213.8236 |
| 241.98 | 213.8236 |
| 244.69 | 253.6904 |
| 245.39 | 267.4805 |
| 247.94 | 256.8758 |
| 248.90 | 235.7825 |
| 249.79 | 225.8564 |
| 252.40 | 243.6261 |
| 252.85 | 237.2812 |
| 252.85 | 237.2812 |
| 254.15 | 0.0000   |
| 256.20 | 240.5270 |
| 256.20 | 240.5270 |
| 260.50 | 219.0707 |
| 260.90 | 221.8865 |
| 262.80 | 243.7524 |
| 264.65 | 244.5363 |
| 268.24 | 231.1920 |
| 268.79 | 222.0176 |
| 269.46 | 222.1084 |
| 269.46 | 222.1084 |
| 269.46 | 222.1084 |
| 269.46 | 222.1084 |
| 271.23 | 234.6921 |
| 273.65 | 295.3327 |
| 276.40 | 221.8580 |
| 277.35 | 225.0021 |
| 277.60 | 223.1748 |
| 277.60 | 223.1748 |
| 278.00 | 225.0878 |
| 278.60 | 221.4457 |
| 279.20 | 237.3474 |
| 279.53 | 259.7336 |
| 280.46 | 249.6273 |
| 281.68 | 236.7545 |
| 283.67 | 198.7671 |
| 284.30 | 202.5740 |
| 285.00 | 209.1934 |
| 285.90 | 210.2344 |
| 286.10 | 202.7832 |
| 286.10 | 202.7832 |
| 287.40 | 208.0777 |
| 288.45 | 0.0000   |
| 290.67 | 201.4365 |
| 290.80 | 201.4523 |
| 291.72 | 189.0576 |
| 293.26 | 0.0000   |
| 293.70 | 206.4756 |
| 295.21 | 206.6501 |
| 295.21 | 206.6501 |



|        |          |
|--------|----------|
| 295.21 | 206.6501 |
| 295.96 | 206.7361 |
| 296.50 | 206.8005 |
| 297.23 | 206.8838 |
| 298.57 | 207.0396 |
| 299.80 | 169.5103 |
| 299.80 | 169.5103 |
| 300.09 | 186.8067 |
| 300.09 | 186.8067 |
| 300.09 | 186.8067 |
| 300.09 | 186.8067 |
| 300.12 | 186.8091 |
| 301.29 | 147.6591 |
| 302.84 | 187.0899 |
| 303.76 | 179.3195 |
| 303.91 | 179.3357 |
| 304.40 | 177.8086 |
| 304.40 | 177.8086 |
| 304.84 | 187.2957 |
| 306.84 | 195.3797 |
| 308.46 | 182.6196 |
| 311.98 | 163.0599 |
| 316.51 | 168.2105 |
| 318.01 | 170.2467 |
| 319.02 | 175.0965 |
| 319.41 | 164.6625 |
| 320.08 | 156.1523 |
| 323.87 | 220.3890 |
| 323.87 | 220.3890 |
| 323.87 | 220.3890 |
| 323.87 | 220.3890 |
| 325.23 | 175.6737 |
| 328.77 | 175.0429 |
| 333.44 | 182.1792 |
| 334.20 | 172.6589 |
| 334.20 | 172.6589 |
| 334.30 | 172.6677 |
| 338.28 | 166.6133 |
| 338.28 | 166.6133 |
| 338.28 | 166.6133 |
| 338.28 | 166.6133 |
| 338.32 | 166.6175 |
| 338.32 | 166.6175 |
| 338.32 | 166.6175 |
| 340.50 | 141.1398 |
| 340.57 | 141.1452 |
| 344.27 | 178.3696 |
| 345.85 | 176.9037 |
| 350.59 | 0.0000   |
| 351.07 | 184.7864 |
| 351.92 | 185.5086 |
| 351.92 | 185.5086 |
| 351.92 | 185.5086 |
| 355.39 | 0.0000   |
| 356.01 | 200.4329 |
| 364.48 | 158.7419 |
| 366.43 | 139.3971 |
| 367.43 | 137.5146 |
| 367.94 | 0.0000   |
| 369.80 | 158.1754 |
| 374.96 | 124.3087 |
| 383.85 | 130.7319 |
| 387.95 | 170.3750 |
| 388.63 | 165.5042 |
| 391.69 | 136.1436 |
| 391.69 | 136.1436 |
| 392.90 | 141.1549 |
| 398.62 | 148.4546 |
| 400.65 | 130.7609 |
| 401.10 | 132.7699 |
| 401.81 | 160.5643 |
| 402.60 | 170.5387 |
| 404.84 | 165.7483 |
| 410.95 | 158.2450 |
| 411.60 | 166.2539 |
| 413.65 | 149.4672 |
| 414.70 | 125.6109 |
| 415.30 | 124.6475 |

|        |          |
|--------|----------|
| 415.76 | 128.6630 |
| 417.63 | 0.0000   |
| 418.52 | 140.8038 |
| 423.70 | 140.1248 |
| 427.08 | 122.2904 |
| 427.89 | 129.3527 |
| 432.53 | 120.5713 |
| 433.93 | 115.6163 |
| 439.47 | 137.0559 |
| 439.56 | 137.0608 |
| 439.89 | 133.0490 |
| 443.98 | 128.2325 |
| 444.90 | 131.3124 |
| 445.03 | 131.3203 |
| 445.03 | 131.3203 |
| 445.03 | 131.3203 |
| 445.03 | 131.3203 |
| 453.90 | 123.7007 |
| 463.38 | 93.3116  |
| 468.07 | 105.3907 |
| 473.00 | 116.5049 |
| 475.06 | 120.6936 |
| 475.35 | 120.7080 |
| 476.78 | 139.2024 |
| 477.59 | 136.1756 |
| 477.96 | 128.0045 |
| 482.03 | 103.5965 |
| 484.57 | 133.4785 |
| 487.03 | 110.9993 |
| 490.36 | 0.0000   |
| 492.35 | 106.0842 |
| 497.08 | 113.5060 |
| 507.63 | 0.0000   |
| 510.53 | 0.0000   |
| 510.84 | 97.5170  |
| 511.00 | 97.5233  |
| 511.85 | 97.5554  |
| 511.85 | 97.5554  |
| 513.99 | 74.4381  |
| 513.99 | 74.4381  |
| 520.41 | 79.8280  |
| 520.65 | 80.9926  |
| 527.90 | 111.7283 |
| 528.96 | 0.0000   |
| 529.64 | 110.7565 |
| 529.87 | 0.0000   |
| 531.02 | 104.5410 |
| 537.32 | 116.3142 |
| 543.00 | 112.3605 |
| 546.56 | 0.0000   |
| 549.76 | 111.5873 |
| 552.65 | 112.7601 |
| 555.20 | 78.0559  |
| 563.23 | 89.9203  |
| 563.90 | 96.2898  |
| 568.70 | 82.6770  |
| 569.32 | 77.3950  |
| 569.50 | 78.4588  |
| 569.67 | 88.0072  |
| 573.80 | 119.4626 |
| 574.00 | 114.1610 |
| 574.64 | 127.4648 |
| 578.91 | 93.9706  |
| 579.30 | 0.0000   |
| 583.14 | 76.7092  |
| 585.48 | 74.6399  |
| 591.81 | 105.5294 |
| 592.07 | 105.6851 |
| 593.00 | 107.9783 |
| 595.88 | 107.0142 |
| 600.56 | 129.8160 |
| 602.52 | 0.0000   |
| 602.71 | 134.0851 |
| 602.71 | 134.0851 |
| 603.60 | 105.5115 |
| 604.41 | 103.7526 |
| 604.70 | 103.7633 |
| 609.31 | 115.0354 |

|        |          |
|--------|----------|
| 609.31 | 115.0354 |
| 609.31 | 115.0354 |
| 609.31 | 115.0354 |
| 610.33 | 111.1338 |
| 612.46 | 89.6871  |
| 614.37 | 91.5410  |
| 618.01 | 94.8879  |
| 621.84 | 89.6120  |
| 621.84 | 89.6120  |
| 631.29 | 88.8126  |
| 633.02 | 74.7764  |
| 633.10 | 74.7781  |
| 634.78 | 86.7480  |
| 635.90 | 93.2878  |
| 636.97 | 85.7254  |
| 645.85 | 85.9762  |
| 646.12 | 94.6911  |
| 656.30 | 127.7659 |
| 657.75 | 126.7334 |
| 657.90 | 0.0000   |
| 661.65 | 91.8873  |
| 661.65 | 91.8873  |
| 664.57 | 0.0000   |
| 666.33 | 141.3237 |
| 666.33 | 141.3237 |
| 675.00 | 85.6876  |
| 677.61 | 76.9641  |
| 685.20 | 72.5549  |
| 692.80 | 87.4583  |
| 695.00 | 86.5970  |
| 696.49 | 88.4805  |
| 696.49 | 88.4805  |
| 697.00 | 93.1032  |
| 697.49 | 93.1176  |
| 698.33 | 98.6733  |
| 698.50 | 93.1464  |
| 699.00 | 96.8503  |
| 702.63 | 85.8782  |
| 706.10 | 103.5325 |
| 706.58 | 0.0000   |
| 706.67 | 98.0034  |
| 709.31 | 89.7554  |
| 711.68 | 83.3386  |
| 713.82 | 79.6854  |
| 717.42 | 98.3247  |
| 720.50 | 98.6828  |
| 721.93 | 0.0000   |
| 722.20 | 93.9551  |
| 722.78 | 78.0442  |
| 722.78 | 78.0442  |
| 722.89 | 78.0476  |
| 722.95 | 78.0493  |
| 723.30 | 89.2090  |
| 724.18 | 98.7930  |
| 727.18 | 82.8001  |
| 733.00 | 79.8828  |
| 735.90 | 70.2114  |
| 739.58 | 67.2334  |
| 742.81 | 89.7305  |
| 744.21 | 94.4430  |
| 747.13 | 72.9980  |
| 751.79 | 89.0296  |
| 752.31 | 89.9805  |
| 753.82 | 86.2706  |
| 755.35 | 73.1742  |
| 756.15 | 81.6368  |
| 756.87 | 80.7160  |
| 763.93 | 49.9804  |
| 765.79 | 79.0439  |
| 766.42 | 87.1247  |
| 766.84 | 96.8178  |
| 776.49 | 86.8396  |
| 778.00 | 92.5429  |
| 778.57 | 84.0568  |
| 778.89 | 82.1767  |
| 783.80 | 64.3200  |
| 785.46 | 78.5454  |
| 792.07 | 59.7303  |

|         |          |
|---------|----------|
| 795.84  | 69.2841  |
| 796.30  | 71.1914  |
| 798.80  | 105.4378 |
| 801.93  | 65.6000  |
| 805.60  | 79.9429  |
| 810.29  | 80.0471  |
| 810.76  | 81.0122  |
| 815.85  | 71.5820  |
| 817.79  | 65.8906  |
| 818.51  | 70.6788  |
| 819.60  | 65.9229  |
| 826.30  | 75.6167  |
| 828.27  | 0.0000   |
| 831.60  | 65.1819  |
| 831.96  | 63.2715  |
| 834.83  | 96.9006  |
| 836.80  | 0.0000   |
| 846.75  | 63.5253  |
| 848.13  | 58.7351  |
| 856.28  | 0.0000   |
| 856.80  | 44.6707  |
| 860.37  | 65.6896  |
| 867.32  | 79.6356  |
| 867.82  | 82.7585  |
| 871.10  | 50.3761  |
| 873.19  | 55.2501  |
| 874.81  | 67.8794  |
| 875.33  | 0.0000   |
| 876.40  | 69.8481  |
| 879.36  | 56.3102  |
| 880.27  | 59.2377  |
| 880.51  | 58.2703  |
| 881.50  | 66.0562  |
| 883.24  | 69.0023  |
| 884.67  | 63.1949  |
| 889.25  | 73.9775  |
| 896.60  | 69.2420  |
| 898.02  | 74.1445  |
| 899.00  | 73.1888  |
| 903.28  | 63.6386  |
| 911.07  | 67.5414  |
| 911.07  | 67.5414  |
| 911.07  | 67.5414  |
| 919.63  | 55.3283  |
| 920.93  | 62.8047  |
| 925.00  | 53.0464  |
| 925.24  | 53.0497  |
| 926.50  | 55.0316  |
| 935.52  | 51.2171  |
| 937.48  | 69.9643  |
| 944.10  | 65.1447  |
| 946.00  | 56.2880  |
| 949.00  | 60.2827  |
| 962.29  | 62.8892  |
| 964.01  | 57.8138  |
| 966.15  | 67.4854  |
| 968.20  | 67.5186  |
| 969.11  | 67.5338  |
| 969.11  | 67.5338  |
| 969.11  | 67.5338  |
| 977.42  | 52.8855  |
| 980.50  | 40.9738  |
| 983.50  | 54.8143  |
| 989.30  | 52.8943  |
| 996.32  | 87.9731  |
| 1001.03 | 46.0374  |
| 1001.68 | 52.0508  |
| 1004.76 | 87.1487  |
| 1021.30 | 0.0000   |
| 1024.50 | 0.0000   |
| 1034.80 | 48.4219  |
| 1036.00 | 55.4991  |
| 1037.82 | 54.5142  |
| 1038.57 | 52.5036  |
| 1038.76 | 0.0000   |
| 1045.16 | 62.6963  |
| 1046.59 | 65.7511  |
| 1048.07 | 53.6297  |

|         |         |
|---------|---------|
| 1050.47 | 63.7844 |
| 1050.47 | 63.7844 |
| 1062.04 | 76.1353 |
| 1063.62 | 61.9457 |
| 1076.63 | 52.9627 |
| 1077.35 | 50.9338 |
| 1078.86 | 57.0641 |
| 1085.78 | 56.1324 |
| 1099.22 | 78.8235 |
| 1112.02 | 67.0693 |
| 1112.84 | 66.8870 |
| 1115.52 | 82.7746 |
| 1120.29 | 66.8488 |
| 1120.29 | 66.8488 |
| 1120.29 | 66.8488 |
| 1120.29 | 66.8488 |
| 1120.51 | 66.9983 |
| 1121.28 | 65.2455 |
| 1124.00 | 0.0000  |
| 1129.67 | 74.2002 |
| 1131.51 | 0.0000  |
| 1147.95 | 0.0000  |
| 1167.94 | 58.1875 |
| 1173.22 | 65.5353 |
| 1175.09 | 69.7235 |
| 1177.93 | 58.3105 |
| 1189.05 | 73.0591 |
| 1204.90 | 77.4898 |
| 1205.75 | 0.0000  |
| 1213.00 | 83.9128 |
| 1221.42 | 70.3996 |
| 1230.97 | 89.4859 |
| 1235.34 | 84.2969 |
| 1236.41 | 0.0000  |
| 1238.25 | 68.5335 |
| 1246.25 | 68.6446 |
| 1260.41 | 0.0000  |
| 1271.85 | 45.6455 |
| 1274.45 | 60.5370 |
| 1274.54 | 60.5370 |
| 1291.56 | 36.2329 |
| 1298.22 | 0.0000  |
| 1312.09 | 44.9377 |
| 1325.50 | 37.5450 |
| 1325.50 | 37.5450 |
| 1332.49 | 23.6319 |
| 1333.61 | 25.7861 |
| 1360.21 | 29.1566 |
| 1362.66 | 0.0000  |
| 1365.15 | 34.5885 |
| 1368.21 | 34.6081 |
| 1368.53 | 0.0000  |
| 1376.25 | 22.7457 |
| 1384.27 | 36.2619 |
| 1394.10 | 34.4655 |
| 1395.20 | 33.5416 |
| 1407.95 | 38.2902 |
| 1434.06 | 17.8291 |
| 1436.60 | 25.3483 |
| 1457.56 | 0.0000  |
| 1460.81 | 27.3443 |
| 1489.15 | 25.5875 |
| 1509.49 | 17.1198 |
| 1596.49 | 11.8257 |
| 1620.62 | 14.9263 |
| 1678.03 | 0.0000  |
| 1691.02 | 18.6282 |
| 1691.02 | 18.6282 |
| 1706.46 | 0.0000  |
| 1750.46 | 0.0000  |
| 1764.49 | 12.1505 |
| 1764.49 | 12.1505 |
| 1764.49 | 12.1505 |
| 1764.49 | 12.1505 |
| 1770.23 | 73.4632 |
| 1771.40 | 35.7451 |
| 1791.20 | 0.0000  |
| 1808.65 | 16.9763 |

1836.01

11.0303

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G244630001

|                             |            |      |
|-----------------------------|------------|------|
| Total Uranium Activity      | 9.7126E+00 | ug/g |
| Total Uranium Counting Unc. | 7.0115E+00 | ug/g |
| Total Uranium Tpu           | 3.5773E-06 | ug/g |
| Total Uranium Mda           | 5.6125E+00 | ug/g |

```

*****
*
*               GEL Laboratories LLC                      *
*               2040 SAVAGE ROAD                          *
*               CHARLESTON , SC 29417                     *
*               GROSS GAMMA REPORT                        *
*
*****
*
*  BATCH ID      : 941639                                SAMPLE ID   : G244630001
*  ANALYST       : MXR1                                  DETECTOR    : GAM15
*  SAMPLE DATE   : 8-JAN-2010 12:00:00.00              COUNT TIME   : 0 02:00:00.00
*  ANALYSIS DATE: 22-JAN-2010 20:49:47.87              SAMPLE ALQT: 136.730 GRAM
*
*****

```

```

GROSS GAMMA ACTIVITY (pCi/GRAM ) : 9.352E+00
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.617E+00
GROSS GAMMA MDA      (pCi/GRAM ) : 3.695E+00
GROSS GAMMA DLC      (pCi/GRAM ) : 1.790E+00

```



## VAX/VMS Nuclide Identification Report Generated 22-JAN-2010 22:51:17.59

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630002.CNF;1
Sample date        : 8-JAN-2010 12:00:00. Acquisition date : 22-JAN-2010 20:50:14
Sample ID          : G244630002          Sample quantity  : 1.40300E+02 GRAM
Detector name      : GAM18              Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00      Elapsed real time: 0 02:00:01.98  0.0%
Energy tolerance   : 1.50000 keV        Analyst Initials  : MXR1
Abundance limit    : 75.00000           Sensitivity       : 5.00000
Batch ID           : 941639             Detector SN#      :
Matrix Spike ID    :                    LCS ID            : 1032-A
*****

```

| Pk | It | Energy   | Area | Bkgnd | FWHM  | Channel | Left | Pw | Cts/Sec  | %Err | Fit      |
|----|----|----------|------|-------|-------|---------|------|----|----------|------|----------|
| 1  | 0  | 63.62*   | 82   | 713   | 1.05  | 126.36  | 122  | 9  | 1.14E-02 | 60.9 |          |
| 2  | 1  | 74.96*   | 471  | 500   | 1.08  | 149.03  | 143  | 15 | 6.55E-02 | 8.9  | 2.49E+00 |
| 3  | 1  | 77.34*   | 725  | 535   | 1.09  | 153.80  | 143  | 15 | 1.01E-01 | 6.6  |          |
| 4  | 5  | 84.32*   | 121  | 658   | 1.37  | 167.74  | 161  | 30 | 1.68E-02 | 37.3 | 1.49E+00 |
| 5  | 5  | 87.45    | 277  | 632   | 1.34  | 174.01  | 161  | 30 | 3.85E-02 | 16.7 |          |
| 6  | 5  | 90.05    | 198  | 609   | 1.28  | 179.20  | 161  | 30 | 2.75E-02 | 23.2 |          |
| 7  | 5  | 92.87*   | 552  | 575   | 1.40  | 184.85  | 161  | 30 | 7.67E-02 | 9.2  |          |
| 8  | 0  | 186.17*  | 326  | 623   | 1.32  | 371.38  | 366  | 13 | 4.53E-02 | 17.1 |          |
| 9  | 0  | 209.42   | 168  | 359   | 1.24  | 417.87  | 414  | 8  | 2.33E-02 | 21.0 |          |
| 10 | 4  | 238.78*  | 2047 | 309   | 1.15  | 476.56  | 471  | 17 | 2.84E-01 | 2.7  | 1.27E+00 |
| 11 | 4  | 241.73   | 517  | 331   | 1.73  | 482.46  | 471  | 17 | 7.18E-02 | 10.6 |          |
| 12 | 0  | 270.02   | 175  | 443   | 1.43  | 539.02  | 533  | 14 | 2.44E-02 | 26.5 |          |
| 13 | 0  | 277.36   | 113  | 353   | 1.51  | 553.70  | 548  | 12 | 1.57E-02 | 34.7 |          |
| 14 | 0  | 295.34*  | 603  | 273   | 1.30  | 589.64  | 584  | 11 | 8.38E-02 | 6.9  |          |
| 15 | 0  | 300.30   | 192  | 325   | 1.54  | 599.55  | 595  | 13 | 2.66E-02 | 20.6 |          |
| 16 | 0  | 328.02   | 118  | 303   | 1.87  | 654.98  | 648  | 12 | 1.64E-02 | 30.8 |          |
| 17 | 0  | 338.32*  | 461  | 261   | 1.21  | 675.58  | 670  | 11 | 6.41E-02 | 8.3  |          |
| 18 | 0  | 351.93*  | 1028 | 309   | 1.35  | 702.78  | 696  | 13 | 1.43E-01 | 4.8  |          |
| 19 | 0  | 463.04   | 119  | 173   | 0.99  | 924.95  | 921  | 10 | 1.65E-02 | 22.6 |          |
| 20 | 0  | 477.59   | 125  | 144   | 1.51  | 954.03  | 949  | 10 | 1.73E-02 | 20.2 |          |
| 21 | 0  | 511.09*  | 179  | 261   | 1.69  | 1021.01 | 1013 | 17 | 2.48E-02 | 24.4 |          |
| 22 | 0  | 562.34   | 59   | 117   | 2.12  | 1123.48 | 1120 | 9  | 8.15E-03 | 35.9 |          |
| 23 | 0  | 583.20*  | 638  | 254   | 1.61  | 1165.19 | 1159 | 15 | 8.86E-02 | 6.9  |          |
| 24 | 0  | 609.14*  | 790  | 251   | 1.73  | 1217.07 | 1210 | 17 | 1.10E-01 | 5.9  |          |
| 25 | 0  | 661.46   | 497  | 197   | 1.62  | 1321.67 | 1315 | 14 | 6.90E-02 | 7.5  |          |
| 26 | 0  | 727.20*  | 191  | 151   | 2.09  | 1453.12 | 1445 | 16 | 2.65E-02 | 16.4 |          |
| 27 | 0  | 795.60   | 104  | 129   | 1.51  | 1589.90 | 1581 | 18 | 1.44E-02 | 27.7 |          |
| 28 | 0  | 860.45   | 118  | 80    | 2.17  | 1719.56 | 1712 | 14 | 1.64E-02 | 18.6 |          |
| 29 | 0  | 910.81*  | 507  | 97    | 1.65  | 1820.27 | 1811 | 17 | 7.04E-02 | 6.4  |          |
| 30 | 1  | 964.48   | 103  | 99    | 2.13  | 1927.58 | 1918 | 25 | 1.44E-02 | 22.3 | 1.18E+00 |
| 31 | 1  | 968.89*  | 300  | 91    | 2.12  | 1936.40 | 1918 | 25 | 4.16E-02 | 9.0  |          |
| 32 | 0  | 1120.36* | 168  | 200   | 2.13  | 2239.29 | 2229 | 22 | 2.33E-02 | 23.1 |          |
| 33 | 0  | 1460.20* | 2505 | 33    | 2.38  | 2918.89 | 2907 | 21 | 3.48E-01 | 2.1  |          |
| 34 | 0  | 1588.31  | 66   | 47    | 2.20  | 3175.10 | 3164 | 21 | 9.16E-03 | 28.8 |          |
| 35 | 0  | 1625.28  | 73   | 21    | 11.57 | 3249.02 | 3235 | 28 | 1.01E-02 | 21.3 |          |
| 36 | 0  | 1729.59  | 54   | 6     | 1.26  | 3457.64 | 3453 | 12 | 7.50E-03 | 16.4 |          |
| 37 | 0  | 1763.97* | 159  | 13    | 2.41  | 3526.39 | 3517 | 17 | 2.20E-02 | 10.0 |          |
| 38 | 0  | 1847.25  | 29   | 21    | 1.24  | 3692.95 | 3683 | 20 | 4.05E-03 | 42.0 |          |

Peak Search Report (continued)  
Sample ID : G244630002

Page : 2  
Acquisition date : 22-JAN-2010 20:50:14

| Pk | It | Energy | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec | %Err | Fit |
|----|----|--------|------|-------|------|---------|------|----|---------|------|-----|
|----|----|--------|------|-------|------|---------|------|----|---------|------|-----|

Flag: "\*" = Peak area was modified by background subtraction

## VMS Nuclide Identification Report V3.1 Generated 22-JAN-2010 22:51:20

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630002.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 8-JAN-2010 12:00:00   Acquisition date : 22-JAN-2010 20:50:14
Sample ID         : G244630002           Sample quantity  : 140.30 GRAM
Sample type       : SOLID                Sample geometry   :
Detector name     : GAMMA18              Detector geometry: CAN
Elapsed live time : 0 02:00:00.00        Elapsed real time: 0 02:00:01.98    0.0%
Peak Width (FWHM): 3.00                  Confidence level  : 5.00 %
Energy tolerance  : 1.50 keV              Half life ratio   : 8.00
Errors propagated: Yes                    Systematic Error  : 0.00 %
Efficiency type   : Empirical              Efficiencies at   : Peak Energy
Abundance limit   : 75.00                 WTM error limit   : 3.00

```

## Full Combined Activity-MDA Report

## ---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| BE-7    | +         | 477.59       | *   | 8.563E-01           | 3.508E-01 | 3.925E-01      | 2.844E-02 | 2.181   |
| K-40    | +         | 1460.81      | *   | 3.317E+01           | 2.876E+00 | 3.558E-01      | 2.700E-02 | 93.219  |
| CD-109  | +         | 88.03        | *   | 3.155E+00           | 1.092E+00 | 1.144E+00      | 1.057E-01 | 2.758   |
| SN-126  | +         | 64.28        |     | 7.278E-01           | 8.930E-01 | 8.761E-01      | 1.295E-01 | 0.831   |
|         | +         | 86.94        |     | 1.291E+00           | 6.871E-01 | 4.752E-01      | 1.971E-01 | 2.716   |
|         | +         | 87.57        | *   | 3.104E-01           | 1.075E-01 | 1.133E-01      | 1.044E-02 | 2.741   |
| BA-137M | +         | 661.65       | *   | 4.121E-01           | 6.917E-02 | 4.637E-02      | 3.535E-03 | 8.887   |
| CS-137  | +         | 661.65       | *   | 4.357E-01           | 7.316E-02 | 4.902E-02      | 3.746E-03 | 8.887   |
| TL-208  | +         | 277.35       |     | 7.112E-01           | 4.986E-01 | 4.866E-01      | 5.110E-02 | 1.462   |
|         | +         | 510.84       |     | 5.141E-01           | 2.571E-01 | 1.623E-01      | 1.725E-02 | 3.168   |
|         | +         | 583.14       | *   | 5.151E-01           | 8.156E-02 | 4.470E-02      | 3.504E-03 | 11.525  |
|         | +         | 860.37       |     | 8.676E-01           | 3.370E-01 | 3.304E-01      | 3.696E-02 | 2.626   |
| BI-211  |           | 72.87        |     | 5.482E+00           | 3.323E+00 | 5.199E+00      | 4.293E-01 | 1.054   |
|         | +         | 351.07       | *   | 3.901E+00           | 4.491E-01 | 2.454E-01      | 1.575E-02 | 15.896  |
| PB-212  | +         | 74.81        |     | 2.390E+00           | 5.211E-01 | 5.429E-01      | 6.805E-02 | 4.403   |
|         | +         | 77.11        |     | 2.047E+00           | 3.216E-01 | 3.037E-01      | 2.574E-02 | 6.739   |
|         | +         | 87.30        |     | 1.436E+00           | 5.174E-01 | 5.259E-01      | 7.143E-02 | 2.730   |
|         | +         | 238.63       | *   | 1.808E+00           | 1.609E-01 | 7.549E-02      | 5.393E-03 | 23.951  |
|         | +         | 300.09       |     | 2.513E+00           | 1.054E+00 | 9.097E-01      | 7.470E-02 | 2.762   |
| PO-212  | +         | 74.81        |     | 2.390E+00           | 5.211E-01 | 5.429E-01      | 6.805E-02 | 4.403   |
|         | +         | 77.11        |     | 2.047E+00           | 3.216E-01 | 3.037E-01      | 2.574E-02 | 6.739   |
|         | +         | 87.30        |     | 1.436E+00           | 5.174E-01 | 5.259E-01      | 7.143E-02 | 2.730   |
|         | +         | 115.19       |     | 1.293E+00           | 3.174E+00 | 5.188E+00      | 3.268E-01 | 0.249   |
|         | +         | 238.63       | *   | 1.808E+00           | 1.609E-01 | 7.549E-02      | 5.393E-03 | 23.951  |
|         | +         | 300.09       |     | 2.513E+00           | 1.054E+00 | 9.097E-01      | 7.470E-02 | 2.762   |
| BI-214  | +         | 609.31       | *   | 1.198E+00           | 1.770E-01 | 8.640E-02      | 7.718E-03 | 13.866  |
|         | +         | 1120.29      |     | 1.273E+00           | 6.016E-01 | 3.735E-01      | 3.576E-02 | 3.409   |
|         | +         | 1764.49      |     | 1.584E+00           | 3.310E-01 | 2.398E-01      | 1.458E-02 | 6.607   |
| PB-214  | +         | 74.81        |     | 4.119E+00           | 8.666E-01 | 9.355E-01      | 1.044E-01 | 4.403   |
|         | +         | 77.11        |     | 3.509E+00           | 6.127E-01 | 5.207E-01      | 5.935E-02 | 6.739   |
|         | +         | 87.30        |     | 2.460E+00           | 8.724E-01 | 9.009E-01      | 1.081E-01 | 2.730   |
|         | +         | 241.98       |     | 2.735E+00           | 6.185E-01 | 4.538E-01      | 3.588E-02 | 6.027   |
|         | +         | 295.21       |     | 1.392E+00           | 2.255E-01 | 1.720E-01      | 1.459E-02 | 8.094   |
|         | +         | 351.92       | *   | 1.357E+00           | 1.715E-01 | 8.553E-02      | 7.075E-03 | 15.867  |

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PO-214  | +         | 74.81        |     | 4.119E+00           | 8.666E-01 | 9.355E-01      | 1.044E-01 | 4.403   |
|         | +         | 77.11        |     | 3.509E+00           | 6.127E-01 | 5.207E-01      | 5.935E-02 | 6.739   |
|         | +         | 87.30        |     | 2.460E+00           | 8.724E-01 | 9.009E-01      | 1.081E-01 | 2.730   |
|         | +         | 241.98       |     | 2.735E+00           | 6.185E-01 | 4.538E-01      | 3.588E-02 | 6.027   |
|         | +         | 295.21       |     | 1.392E+00           | 2.255E-01 | 1.720E-01      | 1.459E-02 | 8.094   |
| PO-216  | +         | 351.92       | *   | 1.357E+00           | 1.715E-01 | 8.553E-02      | 7.075E-03 | 15.867  |
|         | +         | 74.81        |     | 2.390E+00           | 5.211E-01 | 5.429E-01      | 6.805E-02 | 4.403   |
|         | +         | 77.11        |     | 2.047E+00           | 3.216E-01 | 3.037E-01      | 2.574E-02 | 6.739   |
|         | +         | 87.30        |     | 1.436E+00           | 5.174E-01 | 5.259E-01      | 7.143E-02 | 2.730   |
|         | +         | 238.63       | *   | 1.808E+00           | 1.609E-01 | 7.549E-02      | 5.393E-03 | 23.951  |
| PO-218  | +         | 300.09       |     | 2.513E+00           | 1.054E+00 | 9.097E-01      | 7.470E-02 | 2.762   |
|         | +         | 74.81        |     | 4.119E+00           | 8.666E-01 | 9.355E-01      | 1.044E-01 | 4.403   |
|         | +         | 77.11        |     | 3.509E+00           | 6.127E-01 | 5.207E-01      | 5.935E-02 | 6.739   |
|         | +         | 87.30        |     | 2.460E+00           | 8.724E-01 | 9.009E-01      | 1.081E-01 | 2.730   |
|         | +         | 241.98       |     | 2.735E+00           | 6.185E-01 | 4.538E-01      | 3.588E-02 | 6.027   |
| RA-224  | +         | 295.21       |     | 1.392E+00           | 2.255E-01 | 1.720E-01      | 1.459E-02 | 8.094   |
|         | +         | 351.92       | *   | 1.357E+00           | 1.715E-01 | 8.553E-02      | 7.075E-03 | 15.867  |
|         | +         | 240.98       | *   | 5.186E+00           | 1.136E+00 | 8.581E-01      | 4.780E-02 | 6.044   |
|         | +         | 609.31       | *   | 1.198E+00           | 1.770E-01 | 8.640E-02      | 7.718E-03 | 13.866  |
|         | +         | 1120.29      |     | 1.273E+00           | 6.016E-01 | 3.735E-01      | 3.575E-02 | 3.409   |
| AC-228  | +         | 1764.49      |     | 1.584E+00           | 3.310E-01 | 2.398E-01      | 1.458E-02 | 6.607   |
|         | +         | 338.32       |     | 1.940E+00           | 8.541E-01 | 3.004E-01      | 1.225E-01 | 6.457   |
|         | +         | 911.07       | *   | 1.761E+00           | 3.253E-01 | 1.601E-01      | 2.121E-02 | 11.002  |
|         | +         | 969.11       |     | 1.831E+00           | 5.484E-01 | 2.937E-01      | 7.032E-02 | 6.235   |
|         | +         | 338.32       |     | 1.940E+00           | 8.541E-01 | 3.004E-01      | 1.225E-01 | 6.457   |
| RA-228  | +         | 911.07       | *   | 1.761E+00           | 3.253E-01 | 1.601E-01      | 2.121E-02 | 11.002  |
|         | +         | 969.11       |     | 1.831E+00           | 5.484E-01 | 2.937E-01      | 7.032E-02 | 6.235   |
|         | +         | 74.81        |     | 2.425E+00           | 4.783E-01 | 5.508E-01      | 4.641E-02 | 4.403   |
|         | +         | 77.11        |     | 2.076E+00           | 3.262E-01 | 3.081E-01      | 2.612E-02 | 6.739   |
|         | +         | 87.30        |     | 1.456E+00           | 5.042E-01 | 5.335E-01      | 4.903E-02 | 2.730   |
| TH-228  | +         | 238.63       | *   | 1.834E+00           | 1.632E-01 | 7.658E-02      | 5.471E-03 | 23.951  |
|         | +         | 300.09       |     | 2.549E+00           | 1.832E+00 | 9.228E-01      | 5.438E-01 | 2.762   |
|         | +         | 609.31       | *   | 1.198E+00           | 1.770E-01 | 8.640E-02      | 7.718E-03 | 13.866  |
|         | +         | 1120.29      |     | 1.273E+00           | 6.016E-01 | 3.735E-01      | 3.575E-02 | 3.409   |
|         | +         | 1764.49      |     | 1.584E+00           | 3.310E-01 | 2.398E-01      | 1.458E-02 | 6.607   |
| TH-232  | +         | 338.32       |     | 1.940E+00           | 3.417E-01 | 3.004E-01      | 1.738E-02 | 6.457   |
|         | +         | 911.07       | *   | 1.761E+00           | 3.253E-01 | 1.601E-01      | 2.121E-02 | 11.002  |
|         | +         | 969.11       |     | 1.831E+00           | 5.484E-01 | 2.937E-01      | 7.032E-02 | 6.235   |
|         | +         | 63.29        | *   | 1.839E+00           | 2.263E+00 | 2.224E+00      | 3.920E-01 | 0.827   |
|         | +         | 92.38        |     | 3.929E+00           | 1.010E+00 | 7.302E-01      | 1.316E-01 | 5.381   |
| U-234   | +         | 609.31       | *   | 1.198E+00           | 1.770E-01 | 8.640E-02      | 7.718E-03 | 13.866  |
|         | +         | 1120.29      |     | 1.273E+00           | 6.016E-01 | 3.735E-01      | 3.575E-02 | 3.409   |
|         | +         | 1764.49      |     | 1.584E+00           | 3.310E-01 | 2.398E-01      | 1.458E-02 | 6.607   |
|         | +         | 86.50        | *   | 9.116E-01           | 3.674E-01 | 3.378E-01      | 7.622E-02 | 2.698   |
|         | +         | 95.87        |     | 7.275E-01           | 9.478E-01 | 1.404E+00      | 3.430E-01 | 0.518   |
| U-238   | +         | 63.29        | *   | 1.839E+00           | 2.263E+00 | 2.224E+00      | 3.920E-01 | 0.827   |
|         | +         | 92.38        |     | 3.929E+00           | 7.939E-01 | 7.302E-01      | 6.207E-02 | 5.381   |
|         | +         | 74.67        | *   | 3.875E-01           | 7.632E-02 | 8.837E-02      | 7.374E-03 | 4.385   |
|         | +         | 86.72        |     | 3.418E+01           | 1.183E+01 | 1.263E+01      | 1.155E+00 | 2.707   |

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 117.66       |     | -7.870E-01          | 3.333E+00 | 5.311E+00      | 3.267E-01 | -0.148  |
|         |           | 142.18       |     | 1.134E+01           | 1.594E+01 | 2.596E+01      | 1.430E+00 | 0.437   |
| ANH-511 | +         | 511.00       | *   | 1.110E-01           | 5.477E-02 | 3.506E-02      | 2.315E-03 | 3.167   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| NA-22   |           | 1274.54      | *   | -7.324E-03          | 3.378E-02 | 5.453E-02           | 3.710E-03 | -0.134  |
| NA-24   |           | 1368.53      | *   | -3.414E-01          | 3.378E-02 | Half-Life too short |           |         |
| AL-26   |           | 1129.67      |     | -9.619E-01          | 1.585E+00 | 2.112E+00           | 1.410E-01 | -0.456  |
|         |           | 1808.65      | *   | 1.469E-03           | 2.059E-02 | 3.415E-02           | 1.994E-03 | 0.043   |
| TI-44   |           | 67.85        |     | 1.538E-02           | 5.195E-02 | 7.832E-02           | 6.298E-03 | 0.196   |
|         | +         | 78.38        | *   | 3.777E-01           | 5.934E-02 | 7.558E-02           | 6.462E-03 | 4.998   |
| SC-46   |           | 889.25       | *   | -7.320E-03          | 3.071E-02 | 4.932E-02           | 5.501E-03 | -0.148  |
|         | +         | 1120.51      |     | 2.166E-01           | 1.013E-01 | 1.032E-01           | 7.128E-03 | 2.099   |
| V-48    |           | 944.10       |     | -4.922E-01          | 7.026E-01 | 1.080E+00           | 1.143E-01 | -0.456  |
|         |           | 983.50       | *   | 7.658E-02           | 5.238E-02 | 9.315E-02           | 9.214E-03 | 0.822   |
|         |           | 1312.09      |     | -1.454E-02          | 6.568E-02 | 1.057E-01           | 7.698E-03 | -0.138  |
| CR-51   |           | 320.08       | *   | -1.068E-01          | 3.006E-01 | 4.755E-01           | 3.061E-02 | -0.225  |
| MN-52   |           | 744.21       |     | 2.631E-01           | 1.615E-01 | 2.925E-01           | 2.579E-02 | 0.900   |
|         |           | 848.13       |     | 3.590E+00           | 4.761E+00 | 8.187E+00           | 8.566E-01 | 0.438   |
|         |           | 935.52       |     | 1.105E-01           | 2.084E-01 | 3.401E-01           | 3.647E-02 | 0.325   |
|         |           | 1246.25      |     | -2.450E+00          | 5.667E+00 | 9.067E+00           | 5.830E-01 | -0.270  |
|         |           | 1333.61      |     | 3.765E+00           | 3.554E+00 | 6.320E+00           | 4.774E-01 | 0.596   |
|         |           | 1434.06      | *   | 2.099E-02           | 1.570E-01 | 2.585E-01           | 1.905E-02 | 0.081   |
| MN-54   |           | 834.83       | *   | -1.728E-02          | 3.173E-02 | 5.040E-02           | 5.162E-03 | -0.343  |
| CO-56   |           | 846.75       | *   | 2.386E-03           | 3.039E-02 | 5.015E-02           | 5.236E-03 | 0.048   |
|         |           | 977.42       |     | -3.165E+00          | 2.543E+00 | 3.467E+00           | 3.468E-01 | -0.913  |
|         |           | 1037.82      |     | -2.677E-02          | 2.468E-01 | 4.101E-01           | 3.799E-02 | -0.065  |
|         |           | 1175.09      |     | -1.221E-01          | 1.834E+00 | 3.022E+00           | 1.677E-01 | -0.040  |
|         |           | 1238.25      |     | 1.809E-01           | 7.800E-02 | 1.422E-01           | 9.477E-03 | 1.272   |
|         |           | 1360.21      |     | 2.882E-01           | 7.328E-01 | 1.241E+00           | 9.328E-02 | 0.232   |
|         |           | 1771.40      |     | -6.049E-02          | 2.055E-01 | 2.692E-01           | 1.627E-02 | -0.225  |
| CO-57   |           | 122.06       | *   | 2.453E-03           | 2.283E-02 | 3.678E-02           | 2.179E-03 | 0.067   |
|         |           | 136.48       |     | -1.862E-01          | 1.891E-01 | 2.890E-01           | 1.892E-02 | -0.644  |
| CO-58   |           | 810.76       | *   | 1.529E-02           | 3.034E-02 | 5.159E-02           | 5.093E-03 | 0.296   |
| FE-59   |           | 142.65       |     | 2.418E+00           | 2.463E+00 | 4.008E+00           | 2.205E-01 | 0.603   |
|         |           | 192.34       |     | -3.996E-01          | 8.609E-01 | 1.237E+00           | 1.435E-01 | -0.323  |
|         |           | 1099.22      | *   | -2.877E-02          | 7.125E-02 | 1.153E-01           | 9.494E-03 | -0.249  |
|         |           | 1291.56      |     | 6.212E-02           | 9.769E-02 | 1.677E-01           | 1.409E-02 | 0.371   |
| CO-60   |           | 1173.22      |     | 3.419E-02           | 3.594E-02 | 6.297E-02           | 3.480E-03 | 0.543   |
|         |           | 1332.49      | *   | 2.557E-02           | 2.995E-02 | 5.252E-02           | 3.968E-03 | 0.487   |
| ZN-65   |           | 1115.52      | *   | 8.835E-02           | 8.685E-02 | 1.341E-01           | 9.447E-03 | 0.659   |
| GE-68   |           | 1077.35      | *   | 3.592E-01           | 1.033E+00 | 1.761E+00           | 1.399E-01 | 0.204   |
| AS-73   |           | 53.44        | *   | 3.783E-01           | 1.016E+00 | 1.731E+00           | 1.372E-01 | 0.219   |
| AS-74   |           | 595.88       | *   | -6.177E-02          | 7.190E-02 | 1.100E-01           | 7.900E-03 | -0.562  |
|         |           | 634.78       |     | 1.118E-01           | 2.800E-01 | 4.617E-01           | 3.438E-02 | 0.242   |
| SE-75   |           | 66.05        |     | -5.770E+00          | 5.756E+00 | 8.107E+00           | 8.029E-01 | -0.712  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| BR-77   |           | 96.73        |     | -2.641E-01          | 7.781E-01 | 1.112E+00      | 1.466E-01 | -0.238  |
|         |           | 121.11       |     | -2.745E-02          | 1.192E-01 | 1.895E-01      | 1.769E-02 | -0.145  |
|         |           | 136.00       |     | -1.480E-02          | 3.494E-02 | 5.472E-02      | 3.116E-03 | -0.270  |
|         |           | 198.60       |     | 1.442E-01           | 1.543E+00 | 2.560E+00      | 1.737E-01 | 0.056   |
|         |           | 264.65       | *   | 4.454E-02           | 3.943E-02 | 6.023E-02      | 3.445E-03 | 0.740   |
|         |           | 279.53       |     | 3.193E-02           | 1.037E-01 | 1.504E-01      | 9.292E-03 | 0.212   |
|         |           | 303.91       |     | 6.442E-01           | 1.938E+00 | 2.797E+00      | 2.661E-01 | 0.230   |
|         |           | 400.65       |     | -7.658E-02          | 1.968E-01 | 3.228E-01      | 2.941E-02 | -0.237  |
|         | +         | 87.88        |     | 5.485E+02           | 1.899E+02 | 2.515E+02      | 2.324E+01 | 2.181   |
|         |           | 200.40       |     | 7.961E+00           | 1.106E+02 | 1.850E+02      | 9.962E+00 | 0.043   |
|         | +         | 239.00       |     | 2.334E+02           | 1.794E+01 | 2.655E+01      | 1.477E+00 | 8.790   |
|         |           | 249.79       |     | -2.020E+00          | 4.246E+01 | 6.957E+01      | 3.900E+00 | -0.029  |
|         |           | 281.68       |     | 5.205E+01           | 6.341E+01 | 9.496E+01      | 5.419E+00 | 0.548   |
|         |           | 297.23       |     | 3.151E+02           | 5.514E+01 | 8.210E+01      | 4.713E+00 | 3.838   |
|         |           | 303.76       |     | 5.184E+01           | 1.336E+02 | 1.935E+02      | 1.113E+01 | 0.268   |
|         |           | 439.47       |     | 3.428E+00           | 8.994E+01 | 1.497E+02      | 9.123E+00 | 0.023   |
|         |           | 484.57       |     | -6.265E+01          | 1.445E+02 | 2.255E+02      | 1.447E+01 | -0.278  |
|         |           | 520.65       | *   | 2.788E-01           | 6.553E+00 | 1.076E+01      | 7.176E-01 | 0.026   |
|         |           | 574.64       |     | -6.134E+00          | 1.380E+02 | 2.234E+02      | 1.573E+01 | -0.027  |
|         |           | 578.91       |     | -5.889E+01          | 6.874E+01 | 8.940E+01      | 6.321E+00 | -0.659  |
| SR-82   |           | 585.48       |     | 1.432E+03           | 1.968E+02 | 3.359E+02      | 2.390E+01 | 4.265   |
|         |           | 755.35       |     | 1.005E+02           | 1.010E+02 | 1.771E+02      | 1.592E+01 | 0.567   |
|         |           | 817.79       |     | -9.041E+01          | 8.125E+01 | 1.222E+02      | 1.218E+01 | -0.740  |
|         |           | 698.33       |     | -5.774E+00          | 2.576E+01 | 4.247E+01      | 3.458E+00 | -0.136  |
|         |           | 776.49       | *   | -2.045E-01          | 2.894E-01 | 4.561E-01      | 4.247E-02 | -0.448  |
| RB-83   |           | 1395.20      |     | -5.969E+00          | 8.881E+00 | 1.350E+01      | 1.006E+00 | -0.442  |
|         |           | 520.41       | *   | 3.014E-03           | 5.361E-02 | 8.807E-02      | 5.874E-03 | 0.034   |
|         |           | 529.64       |     | -4.146E-02          | 8.006E-02 | 1.253E-01      | 8.438E-03 | -0.331  |
| RB-84   |           | 552.65       |     | -1.544E-01          | 1.534E-01 | 2.334E-01      | 1.609E-02 | -0.661  |
| KR-85   |           | 881.50       | *   | -4.618E-02          | 5.539E-02 | 8.482E-02      | 9.349E-03 | -0.544  |
| SR-85   |           | 513.99       | *   | 1.822E+01           | 6.738E+00 | 1.114E+01      | 7.378E-01 | 1.636   |
| RB-86   |           | 513.99       | *   | 9.268E-02           | 3.428E-02 | 5.665E-02      | 3.753E-03 | 1.636   |
| Y-88    |           | 1076.63      | *   | 3.735E-01           | 6.357E-01 | 1.099E+00      | 8.745E-02 | 0.340   |
|         |           | 898.02       |     | -1.679E-02          | 3.357E-02 | 5.281E-02      | 5.987E-03 | -0.318  |
|         |           | 1836.01      | *   | 8.715E-03           | 3.275E-02 | 5.041E-02      | 2.871E-03 | 0.173   |
| ZR-88   |           | 392.90       | *   | -2.248E-02          | 2.428E-02 | 3.883E-02      | 2.234E-03 | -0.579  |
| Y-91    |           | 1204.90      | *   | -5.065E+00          | 1.484E+01 | 2.395E+01      | 1.416E+00 | -0.211  |
| NB-94   |           | 702.63       | *   | 1.162E-03           | 2.674E-02 | 4.474E-02      | 3.671E-03 | 0.026   |
|         |           | 871.10       |     | -4.886E-03          | 2.700E-02 | 4.364E-02      | 4.733E-03 | -0.112  |
| NB-95   |           | 765.79       | *   | 5.165E-02           | 3.416E-02 | 6.065E-02      | 5.548E-03 | 0.852   |
| NB-95M  |           | 235.69       | *   | 1.582E-01           | 1.129E-01 | 1.740E-01      | 1.276E-02 | 0.909   |
| ZR-95   |           | 724.18       |     | 1.860E-01           | 9.156E-02 | 1.482E-01      | 1.374E-02 | 1.255   |
|         |           | 756.15       | *   | 4.104E-02           | 5.296E-02 | 9.183E-02      | 9.036E-03 | 0.447   |
| NB-97   |           | 657.90       | *   | 5.257E-02           | 5.296E-02 | Half-Life      | too short |         |
|         |           | 1024.50      |     | -2.930E+00          | 5.296E-02 | Half-Life      | too short |         |
| ZR-97   |           | 254.15       |     | -1.432E+00          | 5.296E-02 | Half-Life      | too short |         |
|         |           | 355.39       |     | 4.963E-01           | 5.296E-02 | Half-Life      | too short |         |
|         |           | 507.63       | *   | 1.394E+00           | 5.296E-02 | Half-Life      | too short |         |
|         |           | 602.52       |     | -5.902E-01          | 5.296E-02 | Half-Life      | too short |         |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         | 1021.30   |              |     | 1.987E+00           | 5.296E-02 | Half-Life      | too short |         |
|         | 1147.95   |              |     | -1.170E+00          | 5.296E-02 | Half-Life      | too short |         |
|         | 1362.66   |              |     | 8.646E-01           | 5.296E-02 | Half-Life      | too short |         |
|         | 1750.46   |              |     | -9.910E-01          | 5.296E-02 | Half-Life      | too short |         |
| MO-99   | 140.51    |              |     | -5.847E+00          | 2.024E+01 | 3.137E+01      | 8.436E+00 | -0.186  |
|         | 181.06    |              |     | 7.603E+00           | 1.315E+01 | 1.991E+01      | 3.380E+00 | 0.382   |
|         | 366.43    |              |     | 1.188E+00           | 5.548E+01 | 9.355E+01      | 5.404E+00 | 0.013   |
|         | 739.58    | *            |     | -6.641E+00          | 7.439E+00 | 1.154E+01      | 1.761E+00 | -0.576  |
|         | 778.00    |              |     | -5.217E+00          | 2.159E+01 | 3.515E+01      | 3.282E+00 | -0.148  |
| TC-99M  | 140.51    | *            |     | -1.296E+09          | 2.159E+01 | Half-Life      | too short |         |
| RH-101  | 127.23    |              |     | -4.904E-03          | 2.994E-02 | 4.763E-02      | 2.751E-03 | -0.103  |
|         | 198.01    | *            |     | 1.238E-02           | 2.841E-02 | 4.766E-02      | 2.562E-03 | 0.260   |
|         | 325.23    |              |     | 1.073E-01           | 2.069E-01 | 3.003E-01      | 1.735E-02 | 0.357   |
| RH-102  | 418.52    |              |     | -2.311E-01          | 2.237E-01 | 3.526E-01      | 2.096E-02 | -0.655  |
|         | 475.06    | *            |     | 3.399E-02           | 2.749E-02 | 4.270E-02      | 2.712E-03 | 0.796   |
|         | 631.29    |              |     | -1.369E-02          | 4.430E-02 | 6.987E-02      | 5.186E-03 | -0.196  |
|         | 697.49    |              |     | 5.314E-03           | 5.932E-02 | 9.958E-02      | 8.095E-03 | 0.053   |
|         | 766.84    |              |     | 1.304E-01           | 8.935E-02 | 1.580E-01      | 1.448E-02 | 0.825   |
|         | 1046.59   |              |     | -5.471E-02          | 8.790E-02 | 1.404E-01      | 1.212E-02 | -0.390  |
|         | 1112.84   |              |     | 3.378E-02           | 2.144E-01 | 3.095E-01      | 2.197E-02 | 0.109   |
| RU-103  | 497.08    | *            |     | 3.047E-02           | 3.177E-02 | 5.455E-02      | 7.083E-03 | 0.558   |
| +       | 610.33    |              |     | 1.277E+01           | 2.539E+00 | 2.340E+00      | 3.752E-01 | 5.456   |
| RH-106  | 511.85    | +            |     | 5.539E-01           | 2.732E-01 | 3.397E-01      | 2.246E-02 | 1.630   |
|         | 621.84    | *            |     | -1.258E-01          | 2.514E-01 | 3.912E-01      | 4.922E-02 | -0.321  |
|         | 1050.47   |              |     | 1.071E+00           | 1.763E+00 | 3.063E+00      | 2.617E-01 | 0.350   |
| RU-106  | 511.85    | +            |     | 5.539E-01           | 2.732E-01 | 3.397E-01      | 2.245E-02 | 1.630   |
|         | 621.84    | *            |     | -1.258E-01          | 2.511E-01 | 3.912E-01      | 2.879E-02 | -0.321  |
|         | 1050.47   |              |     | 1.071E+00           | 1.763E+00 | 3.063E+00      | 2.617E-01 | 0.350   |
| AG-108M | 433.93    | *            |     | -6.502E-03          | 2.608E-02 | 4.281E-02      | 2.797E-03 | -0.152  |
|         | 614.37    |              |     | 3.273E-02           | 3.180E-02 | 4.833E-02      | 3.724E-03 | 0.677   |
|         | 722.95    |              |     | 2.002E-02           | 3.688E-02 | 5.524E-02      | 4.885E-03 | 0.362   |
| AG-110M | 657.75    | *            |     | 2.628E-02           | 3.285E-02 | 5.041E-02      | 3.976E-03 | 0.521   |
|         | 677.61    |              |     | -1.773E-01          | 2.293E-01 | 3.649E-01      | 2.960E-02 | -0.486  |
|         | 706.67    |              |     | 4.067E-02           | 1.672E-01 | 2.826E-01      | 2.405E-02 | 0.144   |
|         | 763.93    |              |     | -7.099E-02          | 1.338E-01 | 2.147E-01      | 2.007E-02 | -0.331  |
|         | 884.67    |              |     | 6.402E-03           | 3.780E-02 | 6.255E-02      | 7.063E-03 | 0.102   |
|         | 937.48    |              |     | 2.874E-02           | 9.052E-02 | 1.503E-01      | 1.645E-02 | 0.191   |
|         | 1384.27   |              |     | -2.183E-01          | 1.338E-01 | 1.809E-01      | 1.403E-02 | -1.206  |
| IN-111  | 171.28    |              |     | 9.833E-02           | 6.914E-01 | 1.171E+00      | 6.162E-02 | 0.084   |
|         | 245.39    | *            |     | 1.745E-01           | 7.336E-01 | 1.074E+00      | 6.000E-02 | 0.163   |
| IN-113M | 391.69    | *            |     | -2.719E-02          | 3.585E-02 | 5.791E-02      | 3.553E-03 | -0.469  |
| SN-113  | 391.69    | *            |     | -2.719E-02          | 3.585E-02 | 5.791E-02      | 3.553E-03 | -0.469  |
| IN-114M | 190.27    | *            |     | -1.300E-03          | 1.618E-01 | 2.385E-01      | 1.273E-02 | -0.005  |
| CD-115  | 260.90    |              |     | -1.250E+02          | 8.458E+01 | 1.289E+02      | 7.274E+00 | -0.970  |
|         | 492.35    |              |     | -1.748E+01          | 2.292E+01 | 3.605E+01      | 2.334E+00 | -0.485  |
|         | 527.90    | *            |     | -8.971E+00          | 6.720E+00 | 9.928E+00      | 6.673E-01 | -0.904  |
| SN-117M | 156.02    |              |     | -1.444E-01          | 1.807E+00 | 3.057E+00      | 1.633E-01 | -0.047  |
|         | 158.56    | *            |     | -1.266E-02          | 4.365E-02 | 7.324E-02      | 3.893E-03 | -0.173  |
| SB-122  | 563.90    | *            |     | 2.199E+00           | 1.611E+00 | 2.494E+00      | 1.738E-01 | 0.882   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|---------------------|-----------|---------------------|-----------|---------|
| I-123   |           | 692.80       | -2.560E+00          | 2.718E+01 | 4.517E+01           | 3.642E+00 | -0.057  |
|         |           | 159.00 *     | -9.368E-01          | 2.718E+01 | Half-Life too short |           |         |
|         |           | 528.96       | -8.971E+01          | 2.718E+01 | Half-Life too short |           |         |
| TE-123M |           | 159.00 *     | -1.190E-02          | 2.323E-02 | 3.868E-02           | 2.087E-03 | -0.308  |
| I-124   |           | 602.71 *     | -4.526E-01          | 5.874E-01 | 7.599E-01           | 5.495E-02 | -0.596  |
|         |           | 722.78       | 1.512E+00           | 3.383E+00 | 5.032E+00           | 4.277E-01 | 0.300   |
|         |           | 1325.50      | -8.190E-01          | 2.364E+01 | 3.856E+01           | 2.877E+00 | -0.021  |
| SB-124  |           | 1376.25      | 6.845E+01           | 2.327E+01 | 4.533E+01           | 3.395E+00 | 1.510   |
|         |           | 1509.49      | 1.023E+01           | 1.100E+01 | 1.985E+01           | 1.422E+00 | 0.515   |
|         |           | 1691.02      | -1.446E+00          | 2.578E+00 | 3.940E+00           | 2.541E-01 | -0.367  |
|         |           | 602.71       | -2.953E-02          | 3.832E-02 | 4.957E-02           | 3.586E-03 | -0.596  |
|         |           | 645.85       | 5.273E-01           | 3.813E-01 | 6.644E-01           | 5.386E-02 | 0.794   |
|         |           | 709.31       | 4.529E-01           | 2.160E+00 | 3.644E+00           | 3.025E-01 | 0.124   |
|         |           | 713.82       | 1.769E-02           | 1.245E+00 | 2.078E+00           | 2.464E-01 | 0.009   |
|         |           | 722.78       | 1.430E-01           | 3.199E-01 | 4.759E-01           | 4.134E-02 | 0.300   |
|         | +         | 968.20       | 1.869E+01           | 3.860E+00 | 5.870E+00           | 5.969E-01 | 3.184   |
|         |           | 1045.16      | -1.665E+00          | 1.949E+00 | 3.064E+00           | 2.653E-01 | -0.543  |
|         |           | 1325.50      | -8.272E-02          | 2.388E+00 | 3.895E+00           | 2.906E-01 | -0.021  |
|         |           | 1368.21      | -1.150E+00          | 1.349E+00 | 1.996E+00           | 2.553E-01 | -0.576  |
| SB-125  |           | 1436.60      | 1.718E+00           | 2.902E+00 | 4.989E+00           | 3.674E-01 | 0.344   |
|         |           | 1691.02 *    | -3.226E-02          | 5.752E-02 | 8.788E-02           | 6.063E-03 | -0.367  |
|         |           | 427.89 *     | -2.046E-02          | 7.548E-02 | 1.240E-01           | 7.746E-03 | -0.165  |
|         | +         | 463.38       | 6.765E-01           | 3.092E-01 | 4.488E-01           | 3.217E-02 | 1.508   |
| TE-125M |           | 600.56       | 1.703E-01           | 1.463E-01 | 2.456E-01           | 1.956E-02 | 0.693   |
|         |           | 635.90       | 8.859E-02           | 2.145E-01 | 3.541E-01           | 2.921E-02 | 0.250   |
|         |           | 109.28 *     | 5.533E-01           | 8.294E+00 | 1.344E+01           | 1.181E+00 | 0.041   |
| I-126   |           | 388.63       | 8.758E-02           | 1.606E-01 | 2.757E-01           | 1.585E-02 | 0.318   |
|         |           | 666.33 *     | 2.421E-02           | 1.620E-01 | 2.371E-01           | 1.823E-02 | 0.102   |
|         |           | 753.82       | 1.478E+00           | 1.074E+00 | 1.917E+00           | 1.718E-01 | 0.771   |
| SB-126  |           | 223.80       | -1.122E+00          | 3.355E+00 | 5.485E+00           | 3.015E-01 | -0.204  |
|         | +         | 278.60       | 4.510E+00           | 3.136E+00 | 3.410E+00           | 1.943E-01 | 1.323   |
|         | +         | 296.50       | 1.329E+01           | 1.986E+00 | 2.881E+00           | 1.653E-01 | 4.614   |
|         |           | 414.70       | -3.414E-02          | 5.854E-02 | 9.490E-02           | 5.612E-03 | -0.360  |
|         |           | 415.30       | -1.085E+00          | 4.767E+00 | 7.864E+00           | 4.655E-01 | -0.138  |
|         |           | 555.20       | 6.209E-01           | 2.925E+00 | 4.825E+00           | 3.333E-01 | 0.129   |
|         |           | 573.80       | 8.552E-01           | 8.036E-01 | 1.380E+00           | 9.712E-02 | 0.620   |
|         |           | 593.00       | 2.177E-01           | 7.038E-01 | 1.161E+00           | 8.317E-02 | 0.188   |
|         |           | 656.30       | 3.465E-02           | 2.745E+00 | 3.983E+00           | 3.022E-01 | 0.009   |
|         |           | 666.33       | 1.010E-02           | 6.756E-02 | 9.891E-02           | 7.603E-03 | 0.102   |
|         |           | 675.00       | -8.418E-01          | 1.406E+00 | 2.266E+00           | 1.769E-01 | -0.372  |
|         |           | 695.00       | 3.661E-02           | 5.622E-02 | 9.728E-02           | 7.874E-03 | 0.376   |
| SB-127  |           | 697.00       | 2.735E-02           | 1.967E-01 | 3.311E-01           | 2.689E-02 | 0.083   |
|         |           | 720.50 *     | -1.504E-02          | 1.223E-01 | 1.736E-01           | 1.470E-02 | -0.087  |
|         |           | 856.80       | 5.481E-01           | 3.862E-01 | 6.131E-01           | 6.502E-02 | 0.894   |
|         |           | 989.30       | -7.599E-01          | 9.306E-01 | 1.402E+00           | 1.371E-01 | -0.542  |
|         |           | 1034.80      | -9.437E-01          | 7.143E+00 | 1.140E+01           | 1.012E+00 | -0.083  |
|         |           | 1213.00      | -2.330E+00          | 3.685E+00 | 5.834E+00           | 3.508E-01 | -0.399  |
|         |           | 61.10        | -7.136E+00          | 5.839E+01 | 8.706E+01           | 8.917E+00 | -0.082  |
|         |           | 252.40       | 1.538E+00           | 3.168E+00 | 5.197E+00           | 2.155E+00 | 0.296   |



----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Activity Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|---------------------|-----------|----------------|-----------|---------|
|         |           | 290.80       |              | -7.741E+00          | 1.806E+01 | 2.494E+01      | 2.205E+00 | -0.310  |
|         |           | 411.60       |              | 5.889E+00           | 8.971E+00 | 1.534E+01      | 2.185E+00 | 0.384   |
|         |           | 444.90       |              | 1.083E+00           | 7.070E+00 | 1.151E+01      | 1.237E+00 | 0.094   |
|         |           | 473.00       |              | -3.520E-01          | 1.344E+00 | 1.883E+00      | 2.118E-01 | -0.187  |
|         |           | 543.00       |              | -7.727E+00          | 1.131E+01 | 1.761E+01      | 2.327E+00 | -0.439  |
|         |           | 603.60       |              | -7.632E+00          | 9.906E+00 | 1.276E+01      | 1.453E+00 | -0.598  |
|         |           | 685.20       | *            | 2.683E-01           | 9.225E-01 | 1.568E+00      | 1.672E-01 | 0.171   |
|         |           | 698.50       |              | -2.503E+00          | 1.023E+01 | 1.683E+01      | 2.594E+00 | -0.149  |
|         |           | 722.20       |              | 8.246E+00           | 2.275E+01 | 3.362E+01      | 3.644E+00 | 0.245   |
|         |           | 783.80       |              | 2.102E+00           | 2.434E+00 | 4.211E+00      | 5.391E-01 | 0.499   |
| XE-127  |           | 57.60        |              | 2.496E+00           | 6.731E+00 | 1.142E+01      | 8.799E-01 | 0.219   |
|         |           | 145.22       |              | -4.169E-02          | 6.282E-01 | 9.844E-01      | 5.381E-02 | -0.042  |
|         |           | 172.10       |              | 5.458E-02           | 9.783E-02 | 1.679E-01      | 8.837E-03 | 0.325   |
|         |           | 202.84       | *            | 2.071E-05           | 3.874E-02 | 6.458E-02      | 3.486E-03 | 0.000   |
|         |           | 374.96       |              | -1.062E-01          | 1.453E-01 | 2.352E-01      | 1.357E-02 | -0.452  |
| I-131   |           | 80.18        |              | -4.464E+00          | 5.860E+00 | 6.472E+00      | 5.638E-01 | -0.690  |
|         |           | 284.30       |              | -1.238E+00          | 1.221E+00 | 1.815E+00      | 1.155E-01 | -0.682  |
|         |           | 364.48       | *            | 1.036E-02           | 8.501E-02 | 1.441E-01      | 9.289E-03 | 0.072   |
|         |           | 636.97       |              | 9.535E-01           | 1.137E+00 | 1.924E+00      | 1.540E-01 | 0.496   |
|         |           | 722.89       |              | 2.959E+00           | 5.811E+00 | 8.683E+00      | 7.425E-01 | 0.341   |
| TE-132  |           | 49.72        |              | -1.819E+01          | 2.174E+01 | 3.547E+01      | 3.545E+00 | -0.513  |
|         |           | 111.76       |              | -1.139E+01          | 2.288E+01 | 3.621E+01      | 3.277E+00 | -0.315  |
|         |           | 116.30       |              | -2.414E+00          | 2.105E+01 | 3.373E+01      | 2.982E+00 | -0.072  |
|         |           | 228.16       | *            | 4.352E-01           | 5.042E-01 | 8.532E-01      | 1.203E-01 | 0.510   |
| BA-133  |           | 53.15        |              | 2.515E+00           | 4.426E+00 | 7.586E+00      | 6.019E-01 | 0.332   |
|         |           | 79.62        |              | -1.300E+00          | 1.771E+00 | 1.952E+00      | 2.973E-01 | -0.666  |
|         |           | 81.00        |              | 1.165E-01           | 1.223E-01 | 1.499E-01      | 2.388E-02 | 0.777   |
|         | +         | 276.40       |              | 7.028E-01           | 4.955E-01 | 5.470E-01      | 7.065E-02 | 1.285   |
|         |           | 302.84       |              | 1.283E-01           | 1.340E-01 | 1.996E-01      | 2.322E-02 | 0.643   |
|         |           | 356.01       | *            | -5.517E-03          | 3.854E-02 | 5.302E-02      | 6.124E-03 | -0.104  |
|         |           | 383.85       |              | -6.332E-02          | 2.343E-01 | 3.881E-01      | 4.210E-02 | -0.163  |
| I-133   | +         | 510.53       |              | 6.207E-01           | 2.343E-01 | Half-Life      | too short |         |
|         |           | 529.87       | *            | -8.784E-04          | 2.343E-01 | Half-Life      | too short |         |
|         |           | 706.58       |              | 4.138E-02           | 2.343E-01 | Half-Life      | too short |         |
|         |           | 856.28       |              | 1.263E-01           | 2.343E-01 | Half-Life      | too short |         |
|         |           | 875.33       |              | 6.005E-02           | 2.343E-01 | Half-Life      | too short |         |
|         |           | 1236.41      |              | 4.421E-01           | 2.343E-01 | Half-Life      | too short |         |
|         |           | 1298.22      |              | 2.044E-02           | 2.343E-01 | Half-Life      | too short |         |
| CS-134  |           | 475.35       |              | 2.954E+00           | 1.850E+00 | 2.926E+00      | 1.859E-01 | 1.010   |
|         | +         | 563.23       |              | 4.706E-01           | 3.396E-01 | 5.211E-01      | 3.682E-02 | 0.903   |
|         |           | 569.32       |              | -3.354E-02          | 1.698E-01 | 2.562E-01      | 1.832E-02 | -0.131  |
|         |           | 604.70       |              | 5.243E-03           | 3.119E-02 | 4.369E-02      | 3.176E-03 | 0.120   |
|         | +         | 795.84       | *            | 1.175E-01           | 6.601E-02 | 7.037E-02      | 6.806E-03 | 1.670   |
|         |           | 801.93       |              | 4.134E-02           | 3.532E-01 | 5.176E-01      | 5.050E-02 | 0.080   |
|         |           | 1038.57      |              | -5.466E-01          | 3.106E+00 | 5.138E+00      | 4.521E-01 | -0.106  |
|         |           | 1167.94      |              | -7.017E-01          | 2.023E+00 | 3.273E+00      | 1.856E-01 | -0.214  |
|         |           | 1365.15      |              | -5.468E-02          | 8.941E-01 | 1.449E+00      | 1.153E-01 | -0.038  |
| CS-135  |           | 268.24       | *            | 1.471E-01           | 1.526E-01 | 2.292E-01      | 1.733E-02 | 0.642   |
| I-135   |           | 288.45       |              | 4.967E+09           | 1.526E-01 | Half-Life      | too short |         |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 417.63       |     | 3.515E+08           | 1.526E-01 | Half-Life      | too short |         |
|         |           | 546.56       |     | 9.624E+08           | 1.526E-01 | Half-Life      | too short |         |
|         |           | 836.80       |     | 5.019E+08           | 1.526E-01 | Half-Life      | too short |         |
|         |           | 1038.76      |     | -2.350E+08          | 1.526E-01 | Half-Life      | too short |         |
|         |           | 1124.00      |     | 7.454E+09           | 1.526E-01 | Half-Life      | too short |         |
|         |           | 1131.51      |     | -6.018E+07          | 1.526E-01 | Half-Life      | too short |         |
|         |           | 1260.41      | *   | 2.517E+08           | 1.526E-01 | Half-Life      | too short |         |
|         |           | 1457.56      |     | 1.880E+11           | 1.526E-01 | Half-Life      | too short |         |
|         |           | 1678.03      |     | -8.658E+08          | 1.526E-01 | Half-Life      | too short |         |
|         |           | 1706.46      |     | 6.525E+08           | 1.526E-01 | Half-Life      | too short |         |
|         |           | 1791.20      |     | -1.269E+08          | 1.526E-01 | Half-Life      | too short |         |
| CS-136  |           | 66.91        |     | -1.613E-01          | 8.668E-01 | 1.269E+00      | 1.916E-01 | -0.127  |
|         | +         | 86.29        |     | 3.894E+00           | 1.398E+00 | 1.796E+00      | 2.367E-01 | 2.169   |
|         |           | 153.22       |     | 1.720E-01           | 5.183E-01 | 8.890E-01      | 6.118E-02 | 0.193   |
|         |           | 163.89       |     | 1.962E-01           | 8.459E-01 | 1.441E+00      | 9.840E-02 | 0.136   |
|         |           | 176.55       |     | -1.514E-01          | 3.004E-01 | 4.968E-01      | 3.010E-02 | -0.305  |
|         |           | 273.65       |     | -1.250E-02          | 5.433E-01 | 5.562E-01      | 3.623E-02 | -0.022  |
|         |           | 340.57       |     | 5.644E-01           | 1.290E-01 | 2.160E-01      | 1.329E-02 | 2.613   |
|         |           | 818.51       |     | -3.381E-02          | 5.321E-02 | 8.343E-02      | 8.330E-03 | -0.405  |
|         |           | 1048.07      | *   | -6.322E-02          | 8.057E-02 | 1.271E-01      | 1.139E-02 | -0.497  |
|         |           | 1235.34      |     | 6.635E-01           | 5.180E-01 | 8.795E-01      | 9.041E-02 | 0.754   |
| CE-139  |           | 165.85       | *   | -3.622E-03          | 2.479E-02 | 4.167E-02      | 2.188E-03 | -0.087  |
| BA-140  |           | 162.64       |     | 5.116E-01           | 5.904E-01 | 1.025E+00      | 6.215E-02 | 0.499   |
|         |           | 304.84       |     | -8.596E-02          | 1.139E+00 | 1.600E+00      | 4.366E-01 | -0.054  |
|         |           | 423.70       |     | 6.823E-01           | 1.459E+00 | 2.458E+00      | 7.820E-01 | 0.278   |
|         |           | 537.32       | *   | 1.288E-01           | 1.989E-01 | 3.296E-01      | 1.078E-01 | 0.391   |
| LA-140  | +         | 328.77       |     | 5.938E-01           | 3.678E-01 | 4.244E-01      | 2.750E-02 | 1.399   |
|         |           | 432.53       |     | 6.250E-01           | 1.576E+00 | 2.671E+00      | 1.771E-01 | 0.234   |
|         |           | 487.03       |     | 8.867E-02           | 1.028E-01 | 1.769E-01      | 1.262E-02 | 0.501   |
|         |           | 751.79       |     | -2.343E-01          | 1.246E+00 | 2.042E+00      | 2.006E-01 | -0.115  |
|         |           | 815.85       |     | -9.286E-02          | 2.312E-01 | 3.696E-01      | 3.995E-02 | -0.251  |
|         |           | 867.82       |     | 4.405E-01           | 1.100E+00 | 1.672E+00      | 1.865E-01 | 0.263   |
|         |           | 919.63       |     | -8.367E-01          | 2.130E+00 | 3.188E+00      | 4.028E-01 | -0.262  |
|         |           | 925.24       |     | -6.194E-04          | 8.871E-01 | 1.444E+00      | 1.636E-01 | 0.000   |
|         |           | 1596.49      | *   | 2.949E-02           | 6.887E-02 | 1.041E-01      | 7.144E-03 | 0.283   |
| CE-141  |           | 145.44       | *   | -1.182E-02          | 5.665E-02 | 8.826E-02      | 5.038E-03 | -0.134  |
| CE-143  |           | 57.37        |     | 2.059E-04           | 5.665E-02 | Half-Life      | too short |         |
|         |           | 231.56       |     | -2.140E-03          | 5.665E-02 | Half-Life      | too short |         |
|         |           | 293.26       | *   | 3.837E-04           | 5.665E-02 | Half-Life      | too short |         |
|         | +         | 350.59       |     | 2.120E-02           | 5.665E-02 | Half-Life      | too short |         |
|         |           | 490.36       |     | -7.193E-04          | 5.665E-02 | Half-Life      | too short |         |
|         |           | 664.57       |     | 4.102E-03           | 5.665E-02 | Half-Life      | too short |         |
|         |           | 721.93       |     | 2.392E-04           | 5.665E-02 | Half-Life      | too short |         |
| CE-144  |           | 80.11        |     | -2.249E+00          | 2.873E+00 | 3.167E+00      | 2.742E-01 | -0.710  |
|         |           | 133.54       | *   | 2.536E-02           | 1.857E-01 | 2.977E-01      | 4.209E-02 | 0.085   |
| PM-144  | +         | 476.78       |     | 1.811E-01           | 7.426E-02 | 1.115E-01      | 8.272E-03 | 1.625   |
|         |           | 618.01       |     | -5.825E-03          | 2.713E-02 | 3.884E-02      | 2.957E-03 | -0.150  |
|         |           | 696.49       | *   | 1.747E-02           | 2.604E-02 | 4.508E-02      | 3.660E-03 | 0.387   |
|         |           | 778.57       |     | -1.240E-01          | 1.721E+00 | 2.834E+00      | 2.649E-01 | -0.044  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PR-144  |           | 696.49       | *   | 1.183E+00           | 1.764E+00 | 3.054E+00      | 2.478E-01 | 0.387   |
|         |           | 1489.15      |     | -2.012E+00          | 7.658E+00 | 1.192E+01      | 8.615E-01 | -0.169  |
| PM-146  |           | 453.90       | *   | -5.045E-03          | 3.418E-02 | 5.617E-02      | 4.997E-03 | -0.090  |
|         |           | 633.02       |     | -5.804E-02          | 1.112E+00 | 1.783E+00      | 6.617E-01 | -0.033  |
|         |           | 735.90       |     | 7.246E-02           | 1.161E-01 | 1.896E-01      | 5.428E-02 | 0.382   |
|         |           | 747.13       |     | -4.770E-02          | 7.111E-02 | 1.125E-01      | 1.596E-02 | -0.424  |
| ND-147  | +         | 91.11        |     | 6.993E-01           | 3.309E-01 | 4.685E-01      | 4.407E-02 | 1.493   |
|         |           | 319.41       |     | 1.224E-01           | 2.587E+00 | 4.177E+00      | 2.412E-01 | 0.029   |
|         |           | 439.89       |     | 5.981E-01           | 4.370E+00 | 7.307E+00      | 4.458E-01 | 0.082   |
|         |           | 531.02       | *   | 2.227E-01           | 3.975E-01 | 6.700E-01      | 9.349E-02 | 0.332   |
| PM-149  |           | 285.90       | *   | -6.130E+01          | 6.127E+01 | 9.406E+01      | 1.330E+01 | -0.652  |
| EU-152  |           | 121.78       |     | 1.176E-02           | 6.533E-02 | 1.056E-01      | 8.135E-03 | 0.111   |
|         |           | 244.69       |     | 3.553E-01           | 2.802E-01 | 4.333E-01      | 2.420E-02 | 0.820   |
|         |           | 344.27       | *   | -1.179E-02          | 9.365E-02 | 1.283E-01      | 8.373E-03 | -0.092  |
|         |           | 443.98       |     | 1.561E-01           | 7.892E-01 | 1.287E+00      | 7.890E-02 | 0.121   |
|         |           | 778.89       |     | 1.306E-02           | 1.965E-01 | 3.265E-01      | 3.053E-02 | 0.040   |
|         |           | 867.32       |     | -1.696E-01          | 7.362E-01 | 1.009E+00      | 1.087E-01 | -0.168  |
|         | +         | 964.01       |     | 7.273E-01           | 3.324E-01 | 4.825E-01      | 4.942E-02 | 1.507   |
|         |           | 1085.78      |     | -1.418E-02          | 3.054E-01 | 5.074E-01      | 3.932E-02 | -0.028  |
|         |           | 1112.02      |     | 5.153E-02           | 2.996E-01 | 4.332E-01      | 3.084E-02 | 0.119   |
|         |           | 1407.95      |     | 1.542E-01           | 1.560E-01 | 2.745E-01      | 2.039E-02 | 0.562   |
| GD-153  |           | 69.67        |     | -8.112E-01          | 1.827E+00 | 2.665E+00      | 2.163E-01 | -0.304  |
|         | +         | 83.37        |     | 2.505E+01           | 1.882E+01 | 2.368E+01      | 2.103E+00 | 1.058   |
|         |           | 97.43        | *   | -7.947E-02          | 8.240E-02 | 1.139E-01      | 8.905E-03 | -0.698  |
|         |           | 103.18       |     | -1.214E-01          | 9.791E-02 | 1.510E-01      | 1.089E-02 | -0.804  |
| EU-154  |           | 123.07       |     | 1.587E-02           | 4.602E-02 | 7.474E-02      | 7.069E-03 | 0.212   |
|         |           | 247.94       |     | -2.429E-01          | 2.957E-01 | 4.493E-01      | 4.232E-02 | -0.541  |
|         |           | 591.81       |     | 5.440E-01           | 4.985E-01 | 8.156E-01      | 8.675E-02 | 0.667   |
|         |           | 723.30       |     | 9.392E-02           | 1.602E-01 | 2.402E-01      | 2.265E-02 | 0.391   |
|         |           | 756.87       |     | 8.490E-02           | 5.889E-01 | 9.853E-01      | 1.208E-01 | 0.086   |
|         |           | 873.19       |     | -2.413E-02          | 2.397E-01 | 3.896E-01      | 5.426E-02 | -0.062  |
|         |           | 996.32       |     | -1.951E-01          | 3.146E-01 | 4.832E-01      | 8.836E-02 | -0.404  |
|         |           | 1004.76      |     | -2.126E-01          | 1.846E-01 | 2.706E-01      | 3.328E-02 | -0.786  |
|         |           | 1274.45      | *   | -3.631E-02          | 9.544E-02 | 1.520E-01      | 1.518E-02 | -0.239  |
| EU-155  |           | 48.70        |     | -1.148E+00          | 3.266E+00 | 5.446E+00      | 4.131E-01 | -0.211  |
|         |           | 60.01        |     | -7.646E-01          | 5.968E+00 | 8.905E+00      | 6.796E-01 | -0.086  |
|         | +         | 86.54        |     | 3.738E-01           | 1.295E-01 | 1.724E-01      | 1.588E-02 | 2.168   |
|         |           | 105.31       | *   | 5.815E-02           | 9.977E-02 | 1.648E-01      | 1.178E-02 | 0.353   |
| TB-160  | +         | 86.79        |     | 9.915E-01           | 3.433E-01 | 4.562E-01      | 4.174E-02 | 2.173   |
|         |           | 197.04       |     | 1.749E-01           | 4.776E-01 | 7.996E-01      | 4.294E-02 | 0.219   |
|         |           | 215.65       |     | -1.830E-01          | 6.183E-01 | 1.015E+00      | 5.541E-02 | -0.180  |
|         |           | 298.57       |     | 3.415E-01           | 1.251E-01 | 1.644E-01      | 9.444E-03 | 2.077   |
|         |           | 879.36       | *   | 2.062E-02           | 1.116E-01 | 1.849E-01      | 2.031E-02 | 0.112   |
|         |           | 962.29       |     | 1.253E+00           | 5.217E-01 | 8.465E-01      | 8.696E-02 | 1.480   |
|         |           | 966.15       |     | 1.420E+00           | 2.616E-01 | 4.477E-01      | 4.569E-02 | 3.172   |
|         |           | 1177.93      |     | -1.014E-01          | 2.880E-01 | 4.654E-01      | 2.599E-02 | -0.218  |
|         |           | 1271.85      |     | 1.408E-01           | 5.504E-01 | 9.213E-01      | 6.226E-02 | 0.153   |
| HO-166M |           | 80.57        |     | -1.638E-01          | 3.694E-01 | 4.177E-01      | 3.629E-02 | -0.392  |
|         |           | 184.41       |     | 6.327E-02           | 3.445E-02 | 5.557E-02      | 2.952E-03 | 1.139   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 280.46       |     | 1.224E-02           | 7.732E-02 | 1.112E-01      | 6.343E-03 | 0.110   |
|         |           | 410.95       |     | 2.303E-01           | 2.086E-01 | 3.638E-01      | 2.142E-02 | 0.633   |
|         |           | 711.68       | *   | -2.806E-02          | 4.770E-02 | 7.669E-02      | 6.393E-03 | -0.366  |
|         |           | 752.31       |     | 1.092E-01           | 2.074E-01 | 3.550E-01      | 3.174E-02 | 0.307   |
|         |           | 810.29       |     | 9.267E-04           | 4.628E-02 | 7.639E-02      | 7.521E-03 | 0.012   |
| TM-171  |           | 51.35        |     | -4.539E+00          | 3.872E+01 | 6.498E+01      | 5.150E+00 | -0.070  |
|         |           | 52.39        |     | 9.884E+00           | 1.967E+01 | 3.367E+01      | 2.675E+00 | 0.294   |
|         |           | 59.40        |     | 2.200E-01           | 3.183E+01 | 4.782E+01      | 3.631E+00 | 0.005   |
|         |           | 66.72        | *   | -2.892E+01          | 3.355E+01 | 4.765E+01      | 3.810E+00 | -0.607  |
| LU-176  | +         | 88.36        |     | 7.363E-01           | 2.549E-01 | 3.364E-01      | 3.089E-02 | 2.189   |
|         |           | 201.83       |     | -3.049E-02          | 2.450E-02 | 3.902E-02      | 2.104E-03 | -0.781  |
|         |           | 306.84       | *   | -5.424E-03          | 2.337E-02 | 3.248E-02      | 1.870E-03 | -0.167  |
|         |           | 401.10       |     | -3.363E+00          | 5.193E+00 | 8.409E+00      | 4.888E-01 | -0.400  |
| LU-177  |           | 112.95       |     | 4.380E-02           | 1.346E+00 | 2.173E+00      | 1.400E-01 | 0.020   |
|         | +         | 208.36       | *   | 2.493E+00           | 1.058E+00 | 1.558E+00      | 8.453E-02 | 1.599   |
| LU-177M |           | 52.97        |     | 1.239E+00           | 2.004E+00 | 3.440E+00      | 2.731E-01 | 0.360   |
|         |           | 54.07        |     | 2.462E-01           | 1.036E+00 | 1.755E+00      | 1.387E-01 | 0.140   |
|         |           | 61.30        |     | 2.958E-03           | 1.721E+00 | 2.581E+00      | 1.994E-01 | 0.001   |
|         |           | 121.62       |     | 3.530E-03           | 3.320E-01 | 5.331E-01      | 3.162E-02 | 0.007   |
|         |           | 147.16       |     | -5.711E-02          | 5.789E-01 | 9.135E-01      | 4.971E-02 | -0.063  |
|         |           | 171.86       |     | 1.364E-01           | 3.986E-01 | 6.795E-01      | 3.576E-02 | 0.201   |
|         |           | 218.09       |     | -1.377E-02          | 7.086E-01 | 1.174E+00      | 6.423E-02 | -0.012  |
|         | +         | 268.79       |     | 2.312E+00           | 1.233E+00 | 1.218E+00      | 6.907E-02 | 1.898   |
|         |           | 319.02       |     | 5.421E-02           | 2.103E-01 | 3.431E-01      | 1.981E-02 | 0.158   |
|         |           | 367.43       |     | 3.415E-01           | 7.203E-01 | 1.238E+00      | 7.150E-02 | 0.276   |
|         |           | 413.65       | *   | -1.279E-01          | 1.471E-01 | 2.354E-01      | 1.390E-02 | -0.543  |
| HF-181  |           | 56.28        |     | -4.597E-01          | 1.089E+00 | 1.800E+00      | 1.402E-01 | -0.255  |
|         |           | 57.53        |     | 1.828E-01           | 5.685E-01 | 9.630E-01      | 7.426E-02 | 0.190   |
|         |           | 65.20        |     | -7.889E-01          | 1.132E+00 | 1.623E+00      | 1.288E-01 | -0.486  |
|         |           | 133.02       |     | 2.609E-02           | 5.849E-02 | 9.484E-02      | 5.365E-03 | 0.275   |
|         |           | 136.25       |     | -3.047E-01          | 4.073E-01 | 6.293E-01      | 3.524E-02 | -0.484  |
|         |           | 345.85       |     | -8.634E-02          | 1.805E-01 | 2.431E-01      | 1.407E-02 | -0.355  |
|         |           | 482.03       | *   | -3.911E-02          | 3.755E-02 | 4.880E-02      | 3.124E-03 | -0.801  |
| W-181   |           | 56.28        |     | -1.814E-01          | 4.297E-01 | 7.100E-01      | 5.531E-02 | -0.255  |
|         |           | 57.53        |     | 7.199E-02           | 2.245E-01 | 3.802E-01      | 2.932E-02 | 0.189   |
|         |           | 65.20        | *   | -3.091E-01          | 4.435E-01 | 6.360E-01      | 5.044E-02 | -0.486  |
| TA-182  |           | 67.75        |     | -1.657E-02          | 1.269E-01 | 1.861E-01      | 1.496E-02 | -0.089  |
|         |           | 100.10       |     | 2.017E-01           | 1.584E-01 | 2.680E-01      | 2.015E-02 | 0.753   |
|         |           | 152.43       |     | -1.148E-01          | 2.988E-01 | 4.649E-01      | 2.501E-02 | -0.247  |
|         |           | 222.10       |     | 6.137E-02           | 2.949E-01 | 4.920E-01      | 2.701E-02 | 0.125   |
|         |           | 1001.68      |     | 2.108E+00           | 1.770E+00 | 3.000E+00      | 2.864E-01 | 0.703   |
|         | +         | 1121.28      |     | 5.992E-01           | 2.804E-01 | 2.825E-01      | 1.947E-02 | 2.121   |
|         |           | 1189.05      |     | -7.275E-02          | 2.462E-01 | 3.991E-01      | 2.282E-02 | -0.182  |
|         |           | 1221.42      | *   | -6.720E-02          | 1.562E-01 | 2.504E-01      | 1.532E-02 | -0.268  |
|         |           | 1230.97      |     | -5.216E-01          | 4.081E-01 | 6.190E-01      | 3.861E-02 | -0.843  |
| RE-183  |           | 57.98        |     | 3.680E-02           | 2.213E-01 | 3.728E-01      | 2.864E-02 | 0.099   |
|         |           | 59.32        |     | -1.535E-03          | 1.302E-01 | 1.954E-01      | 1.485E-02 | -0.008  |
|         |           | 67.20        |     | 8.480E-02           | 2.256E-01 | 3.379E-01      | 2.708E-02 | 0.251   |
|         |           | 162.32       | *   | 3.636E-02           | 8.994E-02 | 1.541E-01      | 8.134E-03 | 0.236   |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| RE-184  | +         | 208.81       |     | 2.403E+00           | 1.020E+00 | 1.512E+00      | 8.203E-02 | 1.590   |
|         |           | 291.72       |     | -6.231E-01          | 9.152E-01 | 1.244E+00      | 7.130E-02 | -0.501  |
|         |           | 57.98        |     | 1.362E-01           | 8.189E-01 | 1.380E+00      | 1.060E-01 | 0.099   |
|         |           | 59.32        |     | -5.678E-03          | 4.813E-01 | 7.225E-01      | 5.490E-02 | -0.008  |
|         |           | 67.20        |     | 3.137E-01           | 8.345E-01 | 1.250E+00      | 1.002E-01 | 0.251   |
|         |           | 161.27       |     | -9.009E-02          | 2.910E-01 | 4.874E-01      | 2.577E-02 | -0.185  |
|         |           | 216.55       |     | 1.624E-01           | 2.154E-01 | 3.669E-01      | 2.004E-02 | 0.442   |
|         |           | 252.85       | *   | 3.746E-02           | 1.912E-01 | 3.162E-01      | 1.776E-02 | 0.118   |
|         |           | 318.01       |     | 2.363E-02           | 3.669E-01 | 5.931E-01      | 3.423E-02 | 0.040   |
|         |           | 792.07       |     | 5.799E-02           | 9.148E-01 | 1.306E+00      | 1.248E-01 | 0.044   |
| OS-185  |           | 903.28       |     | 4.202E-01           | 8.490E-01 | 1.249E+00      | 1.402E-01 | 0.337   |
|         |           | 920.93       |     | -2.410E-01          | 3.524E-01 | 5.429E-01      | 5.950E-02 | -0.444  |
|         |           | 59.72        |     | 7.165E-03           | 3.503E-01 | 5.264E-01      | 4.004E-02 | 0.014   |
|         |           | 61.14        |     | -1.925E-02          | 1.890E-01 | 2.820E-01      | 2.176E-02 | -0.068  |
|         |           | 69.30        |     | -9.980E-02          | 3.247E-01 | 4.766E-01      | 3.861E-02 | -0.209  |
|         |           | 592.07       |     | 2.160E+00           | 1.978E+00 | 3.333E+00      | 2.386E-01 | 0.648   |
|         |           | 646.12       | *   | 3.897E-02           | 3.283E-02 | 5.662E-02      | 4.258E-03 | 0.688   |
|         |           | 717.42       |     | -1.506E-01          | 7.004E-01 | 1.126E+00      | 9.481E-02 | -0.134  |
|         |           | 874.81       |     | 3.317E-01           | 4.712E-01 | 8.053E-01      | 8.784E-02 | 0.412   |
|         |           | 880.27       |     | -5.376E-02          | 6.178E-01 | 1.004E+00      | 1.105E-01 | -0.054  |
| RE-188  |           | 155.03       | *   | 8.604E-02           | 1.400E-01 | 2.420E-01      | 1.295E-02 | 0.356   |
|         | +         | 477.96       |     | 8.218E+00           | 3.354E+00 | 5.043E+00      | 3.213E-01 | 1.630   |
| W-188   |           | 633.10       |     | -5.839E-01          | 2.257E+00 | 3.570E+00      | 2.654E-01 | -0.164  |
|         | +         | 63.58        |     | 7.335E+01           | 8.953E+01 | 1.012E+02      | 7.952E+00 | 0.725   |
| IR-192  |           | 227.08       |     | 1.798E+00           | 1.090E+01 | 1.813E+01      | 9.989E-01 | 0.099   |
|         |           | 290.67       | *   | -3.046E+00          | 7.098E+00 | 9.808E+00      | 5.618E-01 | -0.311  |
|         | +         | 295.96       |     | 1.054E+00           | 1.579E-01 | 2.312E-01      | 1.348E-02 | 4.558   |
|         |           | 308.46       |     | -1.046E-02          | 7.885E-02 | 1.266E-01      | 7.375E-03 | -0.083  |
| AU-195  |           | 316.51       | *   | -2.632E-02          | 2.903E-02 | 4.468E-02      | 2.591E-03 | -0.589  |
|         |           | 468.07       |     | -1.870E-03          | 5.948E-02 | 8.500E-02      | 6.057E-03 | -0.022  |
|         |           | 604.41       |     | -1.313E-01          | 4.322E-01 | 5.819E-01      | 7.071E-02 | -0.226  |
|         |           | 612.46       |     | 2.860E+00           | 7.808E-01 | 1.288E+00      | 1.130E-01 | 2.221   |
|         |           | 65.12        |     | -1.238E-01          | 2.064E-01 | 2.975E-01      | 2.358E-02 | -0.416  |
|         |           | 66.83        |     | -2.583E-02          | 1.080E-01 | 1.577E-01      | 1.262E-02 | -0.164  |
|         | +         | 75.70        |     | 1.251E+00           | 2.463E-01 | 4.212E-01      | 3.537E-02 | 2.969   |
| TL-200  |           | 98.88        | *   | 1.058E-01           | 2.036E-01 | 3.370E-01      | 2.578E-02 | 0.314   |
|         |           | 129.76       |     | 2.968E+00           | 2.647E+00 | 4.388E+00      | 2.510E-01 | 0.676   |
|         |           | 367.94       | *   | 7.542E-05           | 2.647E+00 | Half-Life      | too short |         |
|         |           | 579.30       |     | -1.011E-03          | 2.647E+00 | Half-Life      | too short |         |
|         |           | 828.27       |     | 2.016E-03           | 2.647E+00 | Half-Life      | too short |         |
| TL-201  |           | 1205.75      |     | 2.185E-04           | 2.647E+00 | Half-Life      | too short |         |
|         |           | 68.90        |     | -1.552E+00          | 4.200E+00 | 6.564E+00      | 5.307E-01 | -0.236  |
|         |           | 70.82        |     | -9.037E-01          | 2.485E+00 | 3.634E+00      | 2.967E-01 | -0.249  |
|         |           | 80.30        |     | -3.812E+00          | 5.748E+00 | 6.396E+00      | 5.545E-01 | -0.596  |
| TL-202  |           | 135.34       |     | -2.853E+00          | 1.902E+01 | 3.012E+01      | 1.691E+00 | -0.095  |
|         |           | 167.43       | *   | 1.845E+00           | 4.896E+00 | 8.367E+00      | 4.392E-01 | 0.221   |
|         |           | 68.90        |     | -1.587E-01          | 4.293E-01 | 6.710E-01      | 5.424E-02 | -0.236  |
|         |           | 70.82        |     | -9.213E-02          | 2.534E-01 | 3.705E-01      | 3.025E-02 | -0.249  |
|         |           | 80.30        |     | -3.887E-01          | 5.861E-01 | 6.522E-01      | 5.655E-02 | -0.596  |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| HG-203  |           | 439.56       | *   | 2.980E-03           | 5.197E-02 | 8.655E-02      | 5.277E-03 | 0.034   |
|         |           | 70.83        |     | -4.080E-01          | 1.134E+00 | 1.657E+00      | 2.207E-01 | -0.246  |
|         |           | 72.87        |     | 1.078E+00           | 6.625E-01 | 1.023E+00      | 1.326E-01 | 1.054   |
|         |           | 82.60        |     | 1.075E+00           | 1.010E+00 | 1.696E+00      | 2.354E-01 | 0.633   |
| BI-207  |           | 279.20       | *   | 1.918E-02           | 3.877E-02 | 5.681E-02      | 3.445E-03 | 0.338   |
|         |           | 72.80        |     | 2.870E-01           | 1.929E-01 | 3.006E-01      | 2.481E-02 | 0.955   |
|         | +         | 74.97        |     | 6.956E-01           | 1.370E-01 | 2.180E-01      | 1.823E-02 | 3.191   |
|         | +         | 84.90        |     | 3.246E-01           | 2.440E-01 | 3.102E-01      | 2.791E-02 | 1.046   |
| TL-207  |           | 569.67       |     | -3.387E-03          | 2.547E-02 | 3.992E-02      | 2.797E-03 | -0.085  |
|         |           | 1063.62      | *   | -8.165E-04          | 4.102E-02 | 6.843E-02      | 5.648E-03 | -0.012  |
|         |           | 1770.23      |     | -1.991E-01          | 4.273E-01 | 5.397E-01      | 3.265E-02 | -0.369  |
|         |           | 81.07        |     | 2.473E-01           | 2.673E-01 | 3.297E-01      | 2.876E-02 | 0.750   |
| PO-209  | +         | 83.78        |     | 2.140E-01           | 1.609E-01 | 2.042E-01      | 1.820E-02 | 1.048   |
|         |           | 94.90        |     | 7.473E-01           | 2.394E-01 | 3.829E-01      | 3.117E-02 | 1.952   |
|         |           | 122.32       |     | -1.550E-03          | 1.575E+00 | 2.527E+00      | 1.716E-01 | -0.001  |
|         |           | 144.24       |     | -8.052E-02          | 6.286E-01 | 9.833E-01      | 6.861E-02 | -0.082  |
| BI-210  |           | 154.21       |     | 2.326E-01           | 3.230E-01 | 5.601E-01      | 3.727E-02 | 0.415   |
|         | +         | 269.46       |     | 5.430E-01           | 2.897E-01 | 2.960E-01      | 1.758E-02 | 1.835   |
|         |           | 323.87       | *   | 1.596E-01           | 6.068E-01 | 8.667E-01      | 1.431E-01 | 0.184   |
|         | +         | 338.28       |     | 8.101E+00           | 1.595E+00 | 2.117E+00      | 2.228E-01 | 3.827   |
| PB-210  |           | 445.03       |     | 1.877E-01           | 1.893E+00 | 3.073E+00      | 3.216E-01 | 0.061   |
|         |           | 260.50       |     | -7.484E+00          | 7.803E+00 | 1.221E+01      | 6.893E-01 | -0.613  |
|         |           | 262.80       |     | 2.527E+00           | 2.199E+01 | 3.494E+01      | 1.974E+00 | 0.072   |
|         |           | 896.60       | *   | -4.740E+00          | 6.078E+00 | 9.341E+00      | 1.054E+00 | -0.507  |
| PO-210  |           | 46.50        | *   | 3.087E+00           | 4.914E+00 | 8.491E+00      | 6.569E-01 | 0.364   |
|         |           | 46.50        | *   | 3.087E+00           | 4.914E+00 | 8.491E+00      | 6.569E-01 | 0.364   |
|         |           | 46.50        | *   | 3.087E+00           | 4.912E+00 | 8.491E+00      | 5.648E-01 | 0.364   |
|         |           | 404.84       | *   | -3.755E-01          | 7.822E-01 | 1.218E+00      | 7.595E-01 | -0.308  |
| PB-211  |           | 427.08       |     | -3.774E-01          | 1.695E+00 | 2.765E+00      | 1.709E+00 | -0.137  |
|         |           | 831.96       |     | -3.657E-01          | 1.034E+00 | 1.620E+00      | 1.019E+00 | -0.226  |
|         | +         | 727.18       | *   | 1.297E+00           | 4.445E-01 | 5.530E-01      | 5.508E-02 | 2.345   |
|         |           | 785.46       |     | 2.117E+00           | 1.370E+00 | 2.413E+00      | 2.281E-01 | 0.877   |
| BI-212  |           | 1620.62      |     | 1.329E+00           | 1.070E+00 | 1.806E+00      | 1.221E-01 | 0.736   |
|         |           | 81.07        |     | 2.473E-01           | 2.673E-01 | 3.297E-01      | 2.876E-02 | 0.750   |
|         | +         | 83.78        |     | 2.140E-01           | 1.609E-01 | 2.042E-01      | 1.820E-02 | 1.048   |
|         |           | 94.90        |     | 7.473E-01           | 2.394E-01 | 3.829E-01      | 3.117E-02 | 1.952   |
| PO-215  |           | 122.32       |     | -1.550E-03          | 1.575E+00 | 2.527E+00      | 1.716E-01 | -0.001  |
|         |           | 144.24       |     | -8.052E-02          | 6.286E-01 | 9.833E-01      | 6.861E-02 | -0.082  |
|         |           | 154.21       |     | 2.326E-01           | 3.230E-01 | 5.601E-01      | 3.727E-02 | 0.415   |
|         | +         | 269.46       |     | 5.430E-01           | 2.897E-01 | 2.960E-01      | 1.758E-02 | 1.835   |
| RN-219  |           | 323.87       | *   | 1.596E-01           | 6.068E-01 | 8.667E-01      | 1.431E-01 | 0.184   |
|         | +         | 338.28       |     | 8.101E+00           | 1.595E+00 | 2.117E+00      | 2.228E-01 | 3.827   |
|         |           | 445.03       |     | 1.877E-01           | 1.893E+00 | 3.073E+00      | 3.216E-01 | 0.061   |
|         | +         | 271.23       |     | 6.967E-01           | 3.736E-01 | 3.760E-01      | 3.015E-02 | 1.853   |
| RN-220  |           | 401.81       | *   | -1.377E-01          | 3.141E-01 | 5.131E-01      | 6.985E-02 | -0.268  |
|         |           | 549.76       | *   | 3.632E+00           | 1.971E+01 | 3.249E+01      | 2.232E+00 | 0.112   |
|         |           | 81.07        |     | 2.473E-01           | 2.673E-01 | 3.297E-01      | 2.876E-02 | 0.750   |
|         | +         | 83.78        |     | 2.140E-01           | 1.609E-01 | 2.042E-01      | 1.820E-02 | 1.048   |
| RA-223  |           | 94.90        |     | 7.473E-01           | 2.394E-01 | 3.829E-01      | 3.117E-02 | 1.952   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| AC-227  |           | 122.32       |     | -1.550E-03          | 1.575E+00 | 2.527E+00      | 1.716E-01 | -0.001  |
|         |           | 144.24       |     | -8.052E-02          | 6.286E-01 | 9.833E-01      | 6.861E-02 | -0.082  |
|         |           | 154.21       |     | 2.326E-01           | 3.230E-01 | 5.601E-01      | 3.727E-02 | 0.415   |
|         | +         | 269.46       |     | 5.430E-01           | 2.897E-01 | 2.960E-01      | 1.758E-02 | 1.835   |
|         |           | 323.87       | *   | 1.596E-01           | 6.068E-01 | 8.667E-01      | 1.431E-01 | 0.184   |
|         | +         | 338.28       |     | 8.101E+00           | 1.595E+00 | 2.117E+00      | 2.228E-01 | 3.827   |
|         |           | 445.03       |     | 1.877E-01           | 1.893E+00 | 3.073E+00      | 3.216E-01 | 0.061   |
|         |           | 79.80        |     | -1.957E+00          | 2.262E+00 | 2.441E+00      | 5.250E-01 | -0.802  |
|         |           | 236.00       |     | 6.610E-01           | 2.335E-01 | 3.664E-01      | 3.780E-02 | 1.804   |
|         |           | 256.20       | *   | -1.445E-01          | 3.142E-01 | 5.039E-01      | 6.999E-02 | -0.287  |
|         |           | 286.10       |     | -1.234E+00          | 1.296E+00 | 2.003E+00      | 2.307E-01 | -0.616  |
|         | +         | 299.80       |     | 4.657E+00           | 2.060E+00 | 2.166E+00      | 3.523E-01 | 2.150   |
| TH-227  |           | 304.40       |     | -1.693E-01          | 1.775E+00 | 2.493E+00      | 4.309E-01 | -0.068  |
|         |           | 334.20       |     | 7.145E-01           | 2.236E+00 | 2.977E+00      | 5.456E-01 | 0.240   |
|         |           | 79.80        |     | -1.957E+00          | 2.263E+00 | 2.441E+00      | 5.317E-01 | -0.802  |
|         | +         | 94.00        |     | 1.518E+01           | 4.317E+00 | 3.866E+00      | 8.367E-01 | 3.927   |
|         |           | 236.00       |     | 6.610E-01           | 2.309E-01 | 3.664E-01      | 3.261E-02 | 1.804   |
|         |           | 256.20       | *   | -1.445E-01          | 3.145E-01 | 5.039E-01      | 8.487E-02 | -0.287  |
|         |           | 286.10       |     | -1.234E+00          | 1.785E+00 | 2.003E+00      | 2.006E+00 | -0.616  |
|         | +         | 299.80       |     | 4.657E+00           | 2.060E+00 | 2.166E+00      | 3.523E-01 | 2.150   |
|         |           | 304.40       |     | -1.693E-01          | 1.775E+00 | 2.493E+00      | 4.309E-01 | -0.068  |
|         |           | 334.20       |     | 7.145E-01           | 2.236E+00 | 2.977E+00      | 5.456E-01 | 0.240   |
|         | +         | 85.43        |     | 3.204E-01           | 2.408E-01 | 3.090E-01      | 2.793E-02 | 1.037   |
|         | +         | 88.47        |     | 4.238E-01           | 1.467E-01 | 1.936E-01      | 1.774E-02 | 2.189   |
| PA-231  |           | 100.00       |     | 2.127E-01           | 1.653E-01 | 2.798E-01      | 2.106E-02 | 0.760   |
|         |           | 193.63       | *   | -1.504E-01          | 4.110E-01 | 6.781E-01      | 3.631E-02 | -0.222  |
|         |           | 210.97       |     | 1.871E+00           | 7.164E-01 | 1.163E+00      | 6.321E-02 | 1.609   |
|         |           | 283.67       | *   | 2.281E-01           | 1.346E+00 | 2.041E+00      | 2.806E-01 | 0.112   |
| TH-231  | +         | 301.29       |     | 1.863E+00           | 7.903E-01 | 9.041E-01      | 9.424E-02 | 2.061   |
|         |           | 81.07        |     | 2.473E-01           | 2.673E-01 | 3.297E-01      | 2.876E-02 | 0.750   |
|         | +         | 83.78        |     | 2.140E-01           | 1.609E-01 | 2.042E-01      | 1.820E-02 | 1.048   |
|         |           | 94.90        |     | 7.473E-01           | 2.394E-01 | 3.829E-01      | 3.117E-02 | 1.952   |
| U-231   |           | 122.32       |     | -1.550E-03          | 1.575E+00 | 2.527E+00      | 1.716E-01 | -0.001  |
|         |           | 144.24       |     | -8.052E-02          | 6.286E-01 | 9.833E-01      | 6.861E-02 | -0.082  |
|         |           | 154.21       |     | 2.326E-01           | 3.230E-01 | 5.601E-01      | 3.727E-02 | 0.415   |
|         | +         | 269.46       |     | 5.430E-01           | 2.897E-01 | 2.960E-01      | 1.758E-02 | 1.835   |
|         |           | 323.87       | *   | 1.596E-01           | 6.068E-01 | 8.667E-01      | 1.431E-01 | 0.184   |
|         | +         | 338.28       |     | 8.101E+00           | 1.595E+00 | 2.117E+00      | 2.228E-01 | 3.827   |
|         |           | 445.03       |     | 1.877E-01           | 1.893E+00 | 3.073E+00      | 3.216E-01 | 0.061   |
|         | +         | 84.21        |     | 8.145E+00           | 6.122E+00 | 7.747E+00      | 6.930E-01 | 1.051   |
|         | +         | 92.29        |     | 1.325E+01           | 2.678E+00 | 3.672E+00      | 3.126E-01 | 3.608   |
|         |           | 95.87        | *   | 7.285E-01           | 9.342E-01 | 1.406E+00      | 1.127E-01 | 0.518   |
|         |           | 108.00       |     | -2.148E-01          | 1.685E+00 | 2.713E+00      | 1.845E-01 | -0.079  |
|         | +         | 75.28        |     | 2.030E+01           | 4.757E+00 | 6.433E+00      | 9.786E-01 | 3.156   |
| PA-233  | +         | 86.59        |     | 6.077E+00           | 2.609E+00 | 2.804E+00      | 7.566E-01 | 2.168   |
|         | +         | 300.12       |     | 1.298E+00           | 5.616E-01 | 6.077E-01      | 8.152E-02 | 2.137   |
|         |           | 311.98       | *   | 3.016E-02           | 5.444E-02 | 9.007E-02      | 5.517E-03 | 0.335   |
|         |           | 340.50       |     | 3.098E+00           | 9.538E-01 | 1.116E+00      | 2.563E-01 | 2.776   |
|         |           | 398.62       |     | 2.292E-01           | 1.593E+00 | 2.682E+00      | 6.935E-01 | 0.085   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-------------------------|-----------|----------------|-----------|---------|
| PA-234  | +         | 415.76       | -4.164E-02              | 1.291E+00 | 2.151E+00      | 4.435E-01 | -0.019  |
|         |           | 63.00        | 2.143E+00               | 2.631E+00 | 3.018E+00      | 4.549E-01 | 0.710   |
|         |           | 94.67        | 7.055E-01               | 1.906E-01 | 2.896E-01      | 3.502E-02 | 2.436   |
|         |           | 98.44        | -3.435E-02              | 9.025E-02 | 1.345E-01      | 7.485E-02 | -0.255  |
|         |           | 99.86        | 5.472E-01               | 4.189E-01 | 7.096E-01      | 5.353E-02 | 0.771   |
|         |           | 111.00       | -1.492E-01              | 1.670E-01 | 2.593E-01      | 2.782E-02 | -0.575  |
|         |           | 131.20       | -6.560E-02              | 1.001E-01 | 1.560E-01      | 8.881E-03 | -0.420  |
|         |           | 152.70       | 8.571E-02               | 2.827E-01 | 4.515E-01      | 7.070E-02 | 0.190   |
|         |           | 186.00       | 5.706E+00               | 2.612E+00 | 2.210E+00      | 6.732E-01 | 2.583   |
|         |           | 226.40       | 4.434E-02               | 3.457E-01 | 5.744E-01      | 6.557E-02 | 0.077   |
|         |           | 227.20       | 2.499E-01               | 3.653E-01 | 6.186E-01      | 3.409E-02 | 0.404   |
|         |           | 248.90       | -5.621E-01              | 6.630E-01 | 1.031E+00      | 2.209E-01 | -0.545  |
|         |           | 293.70       | 4.551E+00               | 1.088E+00 | 1.399E+00      | 2.246E-01 | 3.253   |
|         |           | 369.80       | -1.109E-02              | 6.633E-01 | 1.116E+00      | 2.323E-01 | -0.010  |
|         |           | 568.70       | 3.291E-01               | 8.655E-01 | 1.310E+00      | 9.171E-02 | 0.251   |
|         |           | 569.50       | -2.592E-02              | 2.263E-01 | 3.550E-01      | 2.487E-02 | -0.073  |
|         |           | 574.00       | 8.000E-01               | 1.211E+00 | 2.038E+00      | 1.434E-01 | 0.393   |
|         |           | 699.00       | -3.676E-01              | 5.595E-01 | 8.922E-01      | 1.684E-01 | -0.412  |
|         |           | 706.10       | 5.165E-01               | 8.574E-01 | 1.425E+00      | 6.347E-01 | 0.362   |
|         |           | 733.00       | 1.975E-01               | 3.147E-01 | 4.727E-01      | 1.050E-01 | 0.418   |
|         |           | 742.81       | 2.777E-01               | 1.047E+00 | 1.740E+00      | 1.170E+00 | 0.160   |
|         |           | 796.30       | 2.286E+00               | 1.411E+00 | 1.351E+00      | 3.699E-01 | 1.692   |
|         |           | 805.60       | 8.245E-01               | 8.472E-01 | 1.391E+00      | 4.311E-01 | 0.593   |
|         |           | 819.60       | 3.133E-01               | 9.175E-01 | 1.534E+00      | 5.885E-01 | 0.204   |
|         |           | 826.30       | -4.607E-01              | 7.042E-01 | 1.058E+00      | 4.764E-01 | -0.436  |
|         |           | 831.60       | -1.277E-01              | 5.267E-01 | 8.510E-01      | 2.581E-01 | -0.150  |
|         |           | 876.40       | 5.473E-01               | 8.709E-01 | 1.147E+00      | 1.182E+00 | 0.477   |
|         |           | 880.51       | -8.922E-02              | 2.276E-01 | 3.618E-01      | 3.981E-02 | -0.247  |
|         |           | 883.24       | -1.806E-02              | 2.214E-01 | 3.594E-01      | 2.429E-01 | -0.050  |
|         |           | 899.00       | -1.626E-01              | 6.794E-01 | 1.085E+00      | 4.807E-01 | -0.150  |
|         |           | 925.00       | -1.125E-01              | 9.571E-01 | 1.545E+00      | 1.684E-01 | -0.073  |
|         |           | 926.50       | 4.529E-02               | 1.450E-01 | 2.403E-01      | 6.280E-02 | 0.188   |
|         |           | 946.00       | 3.971E-03               | 2.464E-01 | 4.008E-01      | 7.906E-02 | 0.010   |
|         |           | 949.00       | 3.733E-01               | 3.533E-01 | 6.129E-01      | 6.437E-02 | 0.609   |
|         |           | 980.50       | -2.259E-01              | 5.783E-01 | 9.079E-01      | 9.030E-02 | -0.249  |
|         |           | 1394.10      | -4.624E-01              | 1.007E+00 | 1.492E+00      | 9.688E-01 | -0.310  |
| PA-234M | +         | 766.42       | 1.442E+01               | 1.175E+01 | 1.648E+01      | 8.377E+00 | 0.875   |
|         |           | 1001.03      | 3.855E+00               | 4.056E+00 | 6.782E+00      | 7.316E-01 | 0.568   |
| U-235   | +         | 89.95        | 2.920E+00               | 1.627E+00 | 1.773E+00      | 5.484E-01 | 1.647   |
|         |           | 93.35        | 4.724E+00               | 1.580E+00 | 1.300E+00      | 3.632E-01 | 3.635   |
|         |           | 105.00       | 1.228E+00               | 1.028E+00 | 1.631E+00      | 4.799E-01 | 0.753   |
|         |           | 143.76       | 5.617E-02               | 1.941E-01 | 3.081E-01      | 4.990E-02 | 0.182   |
| NP-236  | +         | 163.35       | 1.997E-01               | 3.899E-01 | 6.675E-01      | 1.189E-01 | 0.299   |
|         |           | 185.71       | 2.113E-01               | 7.306E-02 | 8.194E-02      | 4.358E-03 | 2.579   |
|         |           | 205.31       | 3.152E-01               | 4.816E-01 | 7.232E-01      | 1.292E-01 | 0.436   |
|         |           | 94.67        | 5.389E-01               | 1.367E-01 | 2.200E-01      | 1.797E-02 | 2.450   |
|         |           | 98.44        | -2.601E-02              | 6.671E-02 | 1.017E-01      | 7.830E-03 | -0.256  |
|         |           | 111.00       | -1.129E-01              | 1.260E-01 | 1.962E-01      | 1.290E-02 | -0.575  |
|         |           | 160.31       | -2.449E-02              | 6.569E-02 | 1.098E-01      | 5.819E-03 | -0.223  |



---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|---------------------|-----------|----------------|-----------|---------|
| NP-239  |           | 99.55        |              | 1.307E-01           | 1.418E-01 | 2.375E-01      | 1.800E-02 | 0.550   |
|         |           | 117.00       | *            | -4.015E-02          | 1.681E-01 | 2.680E-01      | 1.659E-02 | -0.150  |
|         | +         | 209.75       |              | 1.910E+00           | 8.105E-01 | 1.200E+00      | 6.516E-02 | 1.592   |
|         |           | 228.18       |              | 1.684E-01           | 1.922E-01 | 3.274E-01      | 1.806E-02 | 0.514   |
|         | +         | 277.60       |              | 3.430E-01           | 2.385E-01 | 2.685E-01      | 1.529E-02 | 1.278   |
| AM-241  |           | 334.30       |              | 3.722E-01           | 1.264E+00 | 1.682E+00      | 9.726E-02 | 0.221   |
|         |           | 59.54        | *            | 7.312E-03           | 1.847E-01 | 2.779E-01      | 2.305E-02 | 0.026   |
|         |           | 99.55        |              | 1.345E-01           | 1.459E-01 | 2.444E-01      | 1.852E-02 | 0.550   |
|         |           | 103.76       | *            | -3.885E-02          | 8.989E-02 | 1.434E-01      | 1.027E-02 | -0.271  |
|         |           | 117.00       |              | -4.130E-02          | 1.729E-01 | 2.757E-01      | 1.706E-02 | -0.150  |
| CM-243  | +         | 209.75       |              | 1.883E+00           | 7.990E-01 | 1.183E+00      | 6.423E-02 | 1.592   |
|         |           | 228.18       |              | 1.701E-01           | 1.942E-01 | 3.308E-01      | 1.825E-02 | 0.514   |
|         | +         | 277.60       |              | 3.458E-01           | 2.405E-01 | 2.706E-01      | 1.542E-02 | 1.278   |
|         |           | 798.80       |              | -9.270E-02          | 1.263E-01 | 1.660E-01      | 1.604E-02 | -0.558  |
|         |           | 1036.00      |              | 1.655E-01           | 2.365E-01 | 4.132E-01      | 3.658E-02 | 0.401   |
| AM-246  |           | 1062.04      |              | 5.406E-02           | 1.793E-01 | 3.053E-01      | 2.531E-02 | 0.177   |
|         |           | 1078.86      | *            | 8.859E-02           | 1.152E-01 | 2.013E-01      | 1.592E-02 | 0.440   |
|         | +         | 278.00       |              | 1.422E+00           | 9.892E-01 | 1.090E+00      | 6.212E-02 | 1.304   |
|         |           | 287.40       |              | 4.764E-01           | 1.015E+00 | 1.683E+00      | 9.630E-02 | 0.283   |
|         |           | 402.60       | *            | -2.673E-02          | 2.865E-02 | 4.565E-02      | 2.659E-03 | -0.586  |
| CF-249  |           | 252.85       |              | 1.410E-01           | 7.197E-01 | 1.190E+00      | 6.685E-02 | 0.118   |
|         |           | 333.44       |              | 1.782E-01           | 2.015E-01 | 2.241E-01      | 1.296E-02 | 0.795   |
|         |           | 387.95       | *            | 3.068E-02           | 3.258E-02 | 5.681E-02      | 3.266E-03 | 0.540   |
| CF-251  |           | 176.60       | *            | -5.411E-02          | 1.078E-01 | 1.782E-01      | 9.413E-03 | -0.304  |
|         |           | 227.00       |              | 4.538E-02           | 3.291E-01 | 5.469E-01      | 3.014E-02 | 0.083   |
|         |           | 285.00       |              | -2.224E+00          | 1.467E+00 | 2.209E+00      | 1.262E-01 | -1.007  |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630002      *
* Acquisition date   : 22-JAN-2010 20:50:14 Detector SN# :                  *
* Detector ID        : GAM18 Sensitivity      : 5.000                      *
* Geometry           : CAN Energy tolerance: 1.500                      *
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000           *
* Elapsed real time  : 0 02:00:01.98 Half life ratio : 8.000             *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G244630002 Analyst initials: MXR1                 *
* Batch Number       : 941639 Sample Quantity : 1.4030E+02 GRAM          *
* Recovery           : 1.00000 Carrier Weight  : 0.00000                 *
*****
*
*                                     QC DATA                               *
*
* Standard Weight    : 0.00000                                             *
* CALIB. DATE/TIME   : 23-APR-2009 11:59:23 MS Isotope :                  *
* MSD DPM             : 0.000 MSD Isotope :                               *
* LCS DPM             : 0.000 LCS Isotope :                               *
* LCSD DPM            : 0.000 LCSD Isotope :                              *
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act error | MDA<br>(pCi/GRAM ) |           |
|---------|-------------------------|-----------|--------------------|-----------|
| BE-7    | 8.563E-01               | 3.437E-01 | 4.034E-01          | 0.000E+00 |
| K-40    | 3.317E+01               | 2.818E+00 | 3.572E-01          | 0.000E+00 |
| CD-109  | 3.155E+00               | 1.070E+00 | 1.215E+00          | 0.000E+00 |
| SN-126  | 3.104E-01               | 1.053E-01 | 1.204E-01          | 0.000E+00 |
| BA-137M | 4.121E-01               | 6.779E-02 | 4.734E-02          | 0.000E+00 |
| CS-137  | 4.357E-01               | 7.169E-02 | 5.004E-02          | 0.000E+00 |
| TL-208  | 5.151E-01               | 7.992E-02 | 4.575E-02          | 0.000E+00 |
| BI-211  | 3.901E+00               | 4.401E-01 | 2.538E-01          | 0.000E+00 |
| PB-212  | 1.808E+00               | 1.577E-01 | 7.868E-02          | 0.000E+00 |
| PO-212  | 1.808E+00               | 1.577E-01 | 7.868E-02          | 0.000E+00 |
| BI-214  | 1.198E+00               | 1.734E-01 | 8.834E-02          | 0.000E+00 |
| PB-214  | 1.357E+00               | 1.681E-01 | 8.844E-02          | 0.000E+00 |
| PO-214  | 1.357E+00               | 1.681E-01 | 8.844E-02          | 0.000E+00 |
| PO-216  | 1.808E+00               | 1.577E-01 | 7.868E-02          | 0.000E+00 |
| PO-218  | 1.357E+00               | 1.681E-01 | 8.844E-02          | 0.000E+00 |
| RA-224  | 5.186E+00               | 1.113E+00 | 8.941E-01          | 0.000E+00 |
| RA-226  | 1.198E+00               | 1.734E-01 | 8.834E-02          | 0.000E+00 |
| AC-228  | 1.761E+00               | 3.188E-01 | 1.623E-01          | 0.000E+00 |
| RA-228  | 1.761E+00               | 3.188E-01 | 1.623E-01          | 0.000E+00 |
| TH-228  | 1.834E+00               | 1.600E-01 | 7.981E-02          | 0.000E+00 |
| TH-230  | 1.198E+00               | 1.734E-01 | 8.834E-02          | 0.000E+00 |
| TH-232  | 1.761E+00               | 3.188E-01 | 1.623E-01          | 0.000E+00 |
| TH-234  | 1.839E+00               | 2.218E+00 | 2.378E+00          | 0.000E+00 |
| U-234   | 1.198E+00               | 1.734E-01 | 8.834E-02          | 0.000E+00 |
| NP-237  | 9.116E-01               | 3.600E-01 | 3.591E-01          | 0.000E+00 |
| U-238   | 1.839E+00               | 2.218E+00 | 2.378E+00          | 0.000E+00 |
| AM-243  | 3.875E-01               | 7.479E-02 | 9.420E-02          | 0.000E+00 |
| ANH-511 | 1.110E-01               | 5.367E-02 | 3.598E-02          | 0.000E+00 |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L. Act error<br>) Ided | MDA<br>(pCi/GRAM ) |
|---------|-------------------------------------|--------------------------|--------------------|
|---------|-------------------------------------|--------------------------|--------------------|

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| NA-22   | -7.324E-03 | 3.310E-02 | 5.490E-02 | 0.000E+00 | NOT IDENT. |
| NA-24   | 0.000E+00  | 2.594E+05 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| AL-26   | 1.469E-03  | 2.018E-02 | 3.412E-02 | 0.000E+00 | NOT IDENT. |
| TI-44   | 0.000E+00  | 5.815E-02 | 8.049E-02 | 0.000E+00 | FAIL ABUN  |
| SC-46   | -7.320E-03 | 3.010E-02 | 5.004E-02 | 0.000E+00 | FAIL ABUN  |
| V-48    | 7.658E-02  | 5.133E-02 | 9.430E-02 | 0.000E+00 | NOT IDENT. |
| CR-51   | -1.068E-01 | 2.946E-01 | 4.926E-01 | 0.000E+00 | NOT IDENT. |
| MN-52   | 2.099E-02  | 1.538E-01 | 2.596E-01 | 0.000E+00 | NOT IDENT. |
| MN-54   | -1.728E-02 | 3.110E-02 | 5.120E-02 | 0.000E+00 | NOT IDENT. |
| CO-56   | 2.386E-03  | 2.978E-02 | 5.093E-02 | 0.000E+00 | NOT IDENT. |
| CO-57   | 2.453E-03  | 2.237E-02 | 3.884E-02 | 0.000E+00 | NOT IDENT. |
| CO-58   | 1.529E-02  | 2.974E-02 | 5.244E-02 | 0.000E+00 | NOT IDENT. |
| FE-59   | -2.877E-02 | 6.983E-02 | 1.165E-01 | 0.000E+00 | NOT IDENT. |
| CO-60   | 2.557E-02  | 2.935E-02 | 5.283E-02 | 0.000E+00 | NOT IDENT. |
| ZN-65   | 8.835E-02  | 8.511E-02 | 1.354E-01 | 0.000E+00 | NOT IDENT. |
| GE-68   | 3.592E-01  | 1.013E+00 | 1.779E+00 | 0.000E+00 | NOT IDENT. |
| AS-73   | 3.783E-01  | 9.960E-01 | 1.856E+00 | 0.000E+00 | NOT IDENT. |
| AS-74   | -6.177E-02 | 7.046E-02 | 1.125E-01 | 0.000E+00 | NOT IDENT. |
| SE-75   | 4.454E-02  | 3.864E-02 | 6.264E-02 | 0.000E+00 | NOT IDENT. |
| BR-77   | 2.788E-01  | 6.422E+00 | 1.103E+01 | 0.000E+00 | FAIL ABUN  |
| SR-82   | -2.045E-01 | 2.836E-01 | 4.640E-01 | 0.000E+00 | NOT IDENT. |
| RB-83   | 3.014E-03  | 5.254E-02 | 9.035E-02 | 0.000E+00 | NOT IDENT. |
| RB-84   | -4.618E-02 | 5.429E-02 | 8.607E-02 | 0.000E+00 | NOT IDENT. |
| KR-85   | 0.000E+00  | 6.603E+00 | 1.143E+01 | 0.000E+00 | NOT IDENT. |
| SR-85   | 0.000E+00  | 3.359E-02 | 5.813E-02 | 0.000E+00 | NOT IDENT. |
| RB-86   | 3.735E-01  | 6.230E-01 | 1.110E+00 | 0.000E+00 | NOT IDENT. |
| Y-88    | 8.715E-03  | 3.210E-02 | 5.036E-02 | 0.000E+00 | NOT IDENT. |
| ZR-88   | -2.248E-02 | 2.379E-02 | 4.007E-02 | 0.000E+00 | NOT IDENT. |
| Y-91    | -5.065E+00 | 1.454E+01 | 2.414E+01 | 0.000E+00 | NOT IDENT. |
| NB-94   | 1.162E-03  | 2.621E-02 | 4.561E-02 | 0.000E+00 | NOT IDENT. |
| NB-95   | 5.165E-02  | 3.347E-02 | 6.172E-02 | 0.000E+00 | NOT IDENT. |
| NB-95M  | 1.582E-01  | 1.107E-01 | 1.814E-01 | 0.000E+00 | NOT IDENT. |
| ZR-95   | 4.104E-02  | 5.190E-02 | 9.348E-02 | 0.000E+00 | NOT IDENT. |
| NB-97   | 0.000E+00  | 4.398E+04 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| ZR-97   | 0.000E+00  | 7.519E+05 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| MO-99   | -6.641E+00 | 7.290E+00 | 1.175E+01 | 0.000E+00 | NOT IDENT. |
| TC-99M  | 0.000E+00  | 4.397E+15 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | 1.238E-02  | 2.784E-02 | 4.985E-02 | 0.000E+00 | NOT IDENT. |
| RH-102  | 3.399E-02  | 2.694E-02 | 4.389E-02 | 0.000E+00 | NOT IDENT. |
| RU-103  | 3.047E-02  | 3.113E-02 | 5.601E-02 | 0.000E+00 | FAIL ABUN  |
| RH-106  | -1.258E-01 | 2.464E-01 | 3.998E-01 | 0.000E+00 | FAIL ABUN  |
| RU-106  | -1.258E-01 | 2.461E-01 | 3.998E-01 | 0.000E+00 | FAIL ABUN  |
| AG-108M | -6.502E-03 | 2.556E-02 | 4.408E-02 | 0.000E+00 | NOT IDENT. |
| AG-110M | 2.628E-02  | 3.219E-02 | 5.147E-02 | 0.000E+00 | NOT IDENT. |
| IN-111  | 1.745E-01  | 7.189E-01 | 1.118E+00 | 0.000E+00 | NOT IDENT. |
| IN-113M | -2.719E-02 | 3.514E-02 | 5.976E-02 | 0.000E+00 | NOT IDENT. |
| SN-113  | -2.719E-02 | 3.514E-02 | 5.976E-02 | 0.000E+00 | NOT IDENT. |
| IN-114M | -1.300E-03 | 1.586E-01 | 2.497E-01 | 0.000E+00 | NOT IDENT. |
| CD-115  | -8.971E+00 | 6.586E+00 | 1.018E+01 | 0.000E+00 | NOT IDENT. |
| SN-117M | -1.266E-02 | 4.277E-02 | 7.695E-02 | 0.000E+00 | NOT IDENT. |
| SB-122  | 2.199E+00  | 1.578E+00 | 2.554E+00 | 0.000E+00 | NOT IDENT. |
| I-123   | 0.000E+00  | 1.793E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TE-123M | -1.190E-02 | 2.277E-02 | 4.063E-02 | 0.000E+00 | NOT IDENT. |
| I-124   | -4.526E-01 | 5.757E-01 | 7.772E-01 | 0.000E+00 | NOT IDENT. |
| SB-124  | -3.226E-02 | 5.637E-02 | 8.794E-02 | 0.000E+00 | FAIL ABUN  |
| SB-125  | -2.046E-02 | 7.397E-02 | 1.277E-01 | 0.000E+00 | FAIL ABUN  |
| TE-125M | 5.533E-01  | 8.128E+00 | 1.422E+01 | 0.000E+00 | NOT IDENT. |
| I-126   | 2.421E-02  | 1.587E-01 | 2.420E-01 | 0.000E+00 | NOT IDENT. |
| SB-126  | -1.504E-02 | 1.199E-01 | 1.769E-01 | 0.000E+00 | FAIL ABUN  |
| SB-127  | 2.683E-01  | 9.041E-01 | 1.600E+00 | 0.000E+00 | NOT IDENT. |
| XE-127  | 2.071E-05  | 3.797E-02 | 6.752E-02 | 0.000E+00 | NOT IDENT. |
| I-131   | 1.036E-02  | 8.331E-02 | 1.489E-01 | 0.000E+00 | NOT IDENT. |
| TE-132  | 4.352E-01  | 4.941E-01 | 8.899E-01 | 0.000E+00 | NOT IDENT. |
| BA-133  | -5.517E-03 | 3.777E-02 | 5.481E-02 | 0.000E+00 | FAIL ABUN  |
| I-133   | 0.000E+00  | 2.465E+03 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-134  | 0.000E+00  | 6.469E-02 | 7.155E-02 | 0.000E+00 | FAIL ABUN  |
| CS-135  | 1.471E-01  | 1.495E-01 | 2.384E-01 | 0.000E+00 | NOT IDENT. |
| I-135   | 0.000E+00  | 6.748E+14 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-136  | -6.322E-02 | 7.896E-02 | 1.285E-01 | 0.000E+00 | FAIL ABUN  |
| CE-139  | -3.622E-03 | 2.429E-02 | 4.374E-02 | 0.000E+00 | NOT IDENT. |
| BA-140  | 1.288E-01  | 1.949E-01 | 3.379E-01 | 0.000E+00 | NOT IDENT. |
| LA-140  | 2.949E-02  | 6.749E-02 | 1.043E-01 | 0.000E+00 | FAIL ABUN  |
| CE-141  | -1.182E-02 | 5.552E-02 | 9.288E-02 | 0.000E+00 | NOT IDENT. |
| CE-143  | 0.000E+00  | 1.288E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CE-144  | 2.536E-02  | 1.820E-01 | 3.138E-01 | 0.000E+00 | NOT IDENT. |
| PM-144  | 1.747E-02  | 2.552E-02 | 4.597E-02 | 0.000E+00 | FAIL ABUN  |
| PR-144  | 1.183E+00  | 1.728E+00 | 3.114E+00 | 0.000E+00 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PM-146  | -5.045E-03 | 3.350E-02 | 5.778E-02 | 0.000E+00 | NOT IDENT. |
| ND-147  | 2.227E-01  | 3.895E-01 | 6.871E-01 | 0.000E+00 | FAIL ABUN  |
| PM-149  | -6.130E+01 | 6.004E+01 | 9.767E+01 | 0.000E+00 | NOT IDENT. |
| EU-152  | -1.179E-02 | 9.177E-02 | 1.327E-01 | 0.000E+00 | FAIL ABUN  |
| GD-153  | -7.947E-02 | 8.075E-02 | 1.208E-01 | 0.000E+00 | FAIL ABUN  |
| EU-154  | -3.631E-02 | 9.353E-02 | 1.530E-01 | 0.000E+00 | NOT IDENT. |
| EU-155  | 5.815E-02  | 9.778E-02 | 1.745E-01 | 0.000E+00 | FAIL ABUN  |
| TB-160  | 2.062E-02  | 1.094E-01 | 1.876E-01 | 0.000E+00 | FAIL ABUN  |
| HO-166M | -2.806E-02 | 4.675E-02 | 7.817E-02 | 0.000E+00 | NOT IDENT. |
| TM-171  | -2.892E+01 | 3.288E+01 | 5.090E+01 | 0.000E+00 | NOT IDENT. |
| LU-176  | -5.424E-03 | 2.290E-02 | 3.368E-02 | 0.000E+00 | FAIL ABUN  |
| LU-177  | 0.000E+00  | 1.037E+00 | 1.629E+00 | 0.000E+00 | FAIL ABUN  |
| LU-177M | -1.279E-01 | 1.442E-01 | 2.426E-01 | 0.000E+00 | FAIL ABUN  |
| HF-181  | -3.911E-02 | 3.679E-02 | 5.014E-02 | 0.000E+00 | NOT IDENT. |
| W-181   | -3.091E-01 | 4.346E-01 | 6.797E-01 | 0.000E+00 | NOT IDENT. |
| TA-182  | -6.720E-02 | 1.531E-01 | 2.523E-01 | 0.000E+00 | FAIL ABUN  |
| RE-183  | 3.636E-02  | 8.814E-02 | 1.618E-01 | 0.000E+00 | FAIL ABUN  |
| RE-184  | 3.746E-02  | 1.874E-01 | 3.292E-01 | 0.000E+00 | NOT IDENT. |
| OS-185  | 3.897E-02  | 3.217E-02 | 5.782E-02 | 0.000E+00 | NOT IDENT. |
| RE-188  | 8.604E-02  | 1.372E-01 | 2.543E-01 | 0.000E+00 | FAIL ABUN  |
| W-188   | -3.046E+00 | 6.956E+00 | 1.018E+01 | 0.000E+00 | FAIL ABUN  |
| IR-192  | -2.632E-02 | 2.845E-02 | 4.630E-02 | 0.000E+00 | FAIL ABUN  |
| AU-195  | 1.058E-01  | 1.995E-01 | 3.573E-01 | 0.000E+00 | FAIL ABUN  |
| TL-200  | 0.000E+00  | 2.235E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TL-201  | 1.845E+00  | 4.798E+00 | 8.781E+00 | 0.000E+00 | NOT IDENT. |
| TL-202  | 2.980E-03  | 5.093E-02 | 8.910E-02 | 0.000E+00 | NOT IDENT. |
| HG-203  | 1.918E-02  | 3.800E-02 | 5.902E-02 | 0.000E+00 | NOT IDENT. |
| BI-207  | -8.165E-04 | 4.020E-02 | 6.916E-02 | 0.000E+00 | FAIL ABUN  |
| TL-207  | 1.596E-01  | 5.946E-01 | 8.978E-01 | 0.000E+00 | FAIL ABUN  |
| PO-209  | -4.740E+00 | 5.956E+00 | 9.475E+00 | 0.000E+00 | NOT IDENT. |
| BI-210  | 3.087E+00  | 4.815E+00 | 9.132E+00 | 0.000E+00 | NOT IDENT. |
| PB-210  | 3.087E+00  | 4.815E+00 | 9.132E+00 | 0.000E+00 | NOT IDENT. |
| PO-210  | 3.087E+00  | 4.814E+00 | 9.132E+00 | 0.000E+00 | NOT IDENT. |
| PB-211  | -3.755E-01 | 7.666E-01 | 1.256E+00 | 0.000E+00 | NOT IDENT. |
| BI-212  | 0.000E+00  | 4.356E-01 | 5.634E-01 | 0.000E+00 | FAIL ABUN  |
| PO-215  | 1.596E-01  | 5.946E-01 | 8.978E-01 | 0.000E+00 | FAIL ABUN  |
| RN-219  | -1.377E-01 | 3.078E-01 | 5.292E-01 | 0.000E+00 | FAIL ABUN  |
| RN-220  | 3.632E+00  | 1.932E+01 | 3.329E+01 | 0.000E+00 | NOT IDENT. |
| RA-223  | 1.596E-01  | 5.946E-01 | 8.978E-01 | 0.000E+00 | FAIL ABUN  |
| AC-227  | -1.445E-01 | 3.079E-01 | 5.244E-01 | 0.000E+00 | FAIL ABUN  |
| TH-227  | -1.445E-01 | 3.082E-01 | 5.244E-01 | 0.000E+00 | FAIL ABUN  |
| TH-229  | -1.504E-01 | 4.027E-01 | 7.097E-01 | 0.000E+00 | FAIL ABUN  |
| PA-231  | 2.281E-01  | 1.319E+00 | 2.120E+00 | 0.000E+00 | FAIL ABUN  |
| TH-231  | 1.596E-01  | 5.946E-01 | 8.978E-01 | 0.000E+00 | FAIL ABUN  |
| U-231   | 7.285E-01  | 9.155E-01 | 1.492E+00 | 0.000E+00 | FAIL ABUN  |
| PA-233  | 3.016E-02  | 5.335E-02 | 9.336E-02 | 0.000E+00 | FAIL ABUN  |
| PA-234  | 3.971E-03  | 2.414E-01 | 4.061E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234M | 3.855E+00  | 3.975E+00 | 6.863E+00 | 0.000E+00 | NOT IDENT. |
| U-235   | 5.617E-02  | 1.902E-01 | 3.243E-01 | 0.000E+00 | FAIL ABUN  |
| NP-236  | -2.449E-02 | 6.438E-02 | 1.154E-01 | 0.000E+00 | NOT IDENT. |
| NP-239  | -4.015E-02 | 1.647E-01 | 2.832E-01 | 0.000E+00 | FAIL ABUN  |
| AM-241  | 7.312E-03  | 1.810E-01 | 2.975E-01 | 0.000E+00 | NOT IDENT. |
| CM-243  | -3.885E-02 | 8.809E-02 | 1.519E-01 | 0.000E+00 | FAIL ABUN  |
| AM-246  | 8.859E-02  | 1.129E-01 | 2.034E-01 | 0.000E+00 | NOT IDENT. |
| CM-247  | -2.673E-02 | 2.808E-02 | 4.708E-02 | 0.000E+00 | FAIL ABUN  |
| CF-249  | 3.068E-02  | 3.193E-02 | 5.863E-02 | 0.000E+00 | NOT IDENT. |
| CF-251  | -5.411E-02 | 1.056E-01 | 1.869E-01 | 0.000E+00 | NOT IDENT. |

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630002.CNF;1
Sample date       : 8-JAN-2010 12:00:00. Acquisition date : 22-JAN-2010 20:50:14
Sample ID        : G244630002      Sample quantity   : 1.40300E+02 GRAM
Detector name    : GAM18           Detector geometry: CAN
Elapsed live time: 0 02:00:00.00   Elapsed real time: 0 02:00:01.98  0.0%
Energy tolerance : 1.50000 keV     Analyst Initials : MXR1
Abundance limit  : 75.00000         Sensitivity      : 5.00000
Batch ID        : 941639           Detector SN#     :
Matrix Spike ID  :                  LCS ID           : 1032-A
*****

```

## Nuclide Line Activity Report

## Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| BE-7    | 477.59  | 125   | 10.42* | 4.506E+00 | 7.103E-01               | 8.563E-01              | 40.96             |
| K-40    | 1460.81 | 2505  | 10.67* | 1.893E+00 | 3.317E+01               | 3.317E+01              | 8.67              |
| CD-109  | 88.03   | 277   | 3.72*  | 6.462E+00 | 3.088E+00               | 3.155E+00              | 34.62             |
| SN-126  | 64.28   | 82    | 9.60   | 3.135E+00 | 7.278E-01               | 7.278E-01              | 122.71            |
|         | 86.94   | 277   | 8.90   | 6.462E+00 | 1.291E+00               | 1.291E+00              | 53.24             |
|         | 87.57   | 277   | 37.00* | 6.462E+00 | 3.104E-01               | 3.104E-01              | 34.62             |
| BA-137M | 661.65  | 497   | 89.98* | 3.588E+00 | 4.118E-01               | 4.121E-01              | 16.78             |
| CS-137  | 661.65  | 497   | 85.12* | 3.588E+00 | 4.353E-01               | 4.357E-01              | 16.79             |
| TL-208  | 277.35  | 113   | 6.80   | 6.258E+00 | 7.112E-01               | 7.112E-01              | 70.10             |
|         | 510.84  | 179   | 21.60  | 4.308E+00 | 5.141E-01               | 5.141E-01              | 50.02             |
|         | 583.14  | 638   | 84.20* | 3.933E+00 | 5.151E-01               | 5.151E-01              | 15.83             |
|         | 860.37  | 118   | 12.46  | 2.915E+00 | 8.676E-01               | 8.676E-01              | 38.84             |
| BI-211  | 72.87   | ----- | 1.27   | 4.622E+00 | -----                   | Line Not Found         | -----             |
|         | 351.07  | 1028  | 12.94* | 5.451E+00 | 3.901E+00               | 3.901E+00              | 11.51             |
| PB-212  | 74.81   | 471   | 10.70  | 4.930E+00 | 2.390E+00               | 2.390E+00              | 21.80             |
|         | 77.11   | 725   | 18.00  | 5.266E+00 | 2.047E+00               | 2.047E+00              | 15.71             |
|         | 87.30   | 277   | 8.00   | 6.462E+00 | 1.436E+00               | 1.436E+00              | 36.04             |
|         | 238.63  | 2047  | 44.60* | 6.791E+00 | 1.808E+00               | 1.808E+00              | 8.90              |
|         | 300.09  | 192   | 3.41   | 5.982E+00 | 2.513E+00               | 2.513E+00              | 41.94             |
| PO-212  | 74.81   | 471   | 10.70  | 4.930E+00 | 2.390E+00               | 2.390E+00              | 21.80             |
|         | 77.11   | 725   | 18.00  | 5.266E+00 | 2.047E+00               | 2.047E+00              | 15.71             |
|         | 87.30   | 277   | 8.00   | 6.462E+00 | 1.436E+00               | 1.436E+00              | 36.04             |
|         | 115.19  | ----- | 0.60   | 8.058E+00 | -----                   | Line Not Found         | -----             |
|         | 238.63  | 2047  | 44.60* | 6.791E+00 | 1.808E+00               | 1.808E+00              | 8.90              |
|         | 300.09  | 192   | 3.41   | 5.982E+00 | 2.513E+00               | 2.513E+00              | 41.94             |
| BI-214  | 609.31  | 790   | 46.30* | 3.812E+00 | 1.198E+00               | 1.198E+00              | 14.77             |
|         | 1120.29 | 168   | 15.10  | 2.334E+00 | 1.273E+00               | 1.273E+00              | 47.26             |
|         | 1764.49 | 159   | 15.80  | 1.695E+00 | 1.584E+00               | 1.584E+00              | 20.89             |
| PB-214  | 74.81   | 471   | 6.21   | 4.930E+00 | 4.119E+00               | 4.119E+00              | 21.04             |
|         | 77.11   | 725   | 10.50  | 5.266E+00 | 3.509E+00               | 3.509E+00              | 17.46             |
|         | 87.30   | 277   | 4.67   | 6.462E+00 | 2.460E+00               | 2.460E+00              | 35.47             |
|         | 241.98  | 517   | 7.49   | 6.747E+00 | 2.735E+00               | 2.735E+00              | 22.61             |

Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| PO-214  | 295.21  | 603   | 19.20  | 6.039E+00 | 1.392E+00               | 1.392E+00              | 16.20             |
|         | 351.92  | 1028  | 37.20* | 5.451E+00 | 1.357E+00               | 1.357E+00              | 12.64             |
|         | 74.81   | 471   | 6.21   | 4.930E+00 | 4.119E+00               | 4.119E+00              | 21.04             |
|         | 77.11   | 725   | 10.50  | 5.266E+00 | 3.509E+00               | 3.509E+00              | 17.46             |
|         | 87.30   | 277   | 4.67   | 6.462E+00 | 2.460E+00               | 2.460E+00              | 35.47             |
| PO-216  | 241.98  | 517   | 7.49   | 6.747E+00 | 2.735E+00               | 2.735E+00              | 22.61             |
|         | 295.21  | 603   | 19.20  | 6.039E+00 | 1.392E+00               | 1.392E+00              | 16.20             |
|         | 351.92  | 1028  | 37.20* | 5.451E+00 | 1.357E+00               | 1.357E+00              | 12.64             |
|         | 74.81   | 471   | 10.70  | 4.930E+00 | 2.390E+00               | 2.390E+00              | 21.80             |
|         | 77.11   | 725   | 18.00  | 5.266E+00 | 2.047E+00               | 2.047E+00              | 15.71             |
| PO-218  | 87.30   | 277   | 8.00   | 6.462E+00 | 1.436E+00               | 1.436E+00              | 36.04             |
|         | 238.63  | 2047  | 44.60* | 6.791E+00 | 1.808E+00               | 1.808E+00              | 8.90              |
|         | 300.09  | 192   | 3.41   | 5.982E+00 | 2.513E+00               | 2.513E+00              | 41.94             |
|         | 74.81   | 471   | 6.21   | 4.930E+00 | 4.119E+00               | 4.119E+00              | 21.04             |
|         | 77.11   | 725   | 10.50  | 5.266E+00 | 3.509E+00               | 3.509E+00              | 17.46             |
| RA-224  | 87.30   | 277   | 4.67   | 6.462E+00 | 2.460E+00               | 2.460E+00              | 35.47             |
|         | 241.98  | 517   | 7.49   | 6.747E+00 | 2.735E+00               | 2.735E+00              | 22.61             |
|         | 295.21  | 603   | 19.20  | 6.039E+00 | 1.392E+00               | 1.392E+00              | 16.20             |
|         | 351.92  | 1028  | 37.20* | 5.451E+00 | 1.357E+00               | 1.357E+00              | 12.64             |
|         | 240.98  | 517   | 3.95*  | 6.747E+00 | 5.186E+00               | 5.186E+00              | 21.91             |
| AC-228  | 609.31  | 790   | 46.30* | 3.812E+00 | 1.198E+00               | 1.198E+00              | 14.77             |
|         | 1120.29 | 168   | 15.10  | 2.334E+00 | 1.273E+00               | 1.273E+00              | 47.26             |
|         | 1764.49 | 159   | 15.80  | 1.695E+00 | 1.584E+00               | 1.584E+00              | 20.89             |
|         | 338.32  | 461   | 11.40  | 5.580E+00 | 1.940E+00               | 1.940E+00              | 44.03             |
|         | 911.07  | 507   | 27.70* | 2.780E+00 | 1.761E+00               | 1.761E+00              | 18.47             |
| RA-228  | 969.11  | 300   | 16.60  | 2.639E+00 | 1.831E+00               | 1.831E+00              | 29.95             |
|         | 338.32  | 461   | 11.40  | 5.580E+00 | 1.940E+00               | 1.940E+00              | 44.03             |
|         | 911.07  | 507   | 27.70* | 2.780E+00 | 1.761E+00               | 1.761E+00              | 18.47             |
|         | 969.11  | 300   | 16.60  | 2.639E+00 | 1.831E+00               | 1.831E+00              | 29.95             |
|         | 74.81   | 471   | 10.70  | 4.930E+00 | 2.390E+00               | 2.425E+00              | 19.73             |
| TH-228  | 77.11   | 725   | 18.00  | 5.266E+00 | 2.047E+00               | 2.076E+00              | 15.71             |
|         | 87.30   | 277   | 8.00   | 6.462E+00 | 1.436E+00               | 1.456E+00              | 34.62             |
|         | 238.63  | 2047  | 44.60* | 6.791E+00 | 1.808E+00               | 1.834E+00              | 8.90              |
|         | 300.09  | 192   | 3.41   | 5.982E+00 | 2.513E+00               | 2.549E+00              | 71.86             |
|         | 609.31  | 790   | 46.30* | 3.812E+00 | 1.198E+00               | 1.198E+00              | 14.77             |
| TH-230  | 1120.29 | 168   | 15.10  | 2.334E+00 | 1.273E+00               | 1.273E+00              | 47.26             |
|         | 1764.49 | 159   | 15.80  | 1.695E+00 | 1.584E+00               | 1.584E+00              | 20.89             |
|         | 338.32  | 461   | 11.40  | 5.580E+00 | 1.940E+00               | 1.940E+00              | 17.62             |
|         | 911.07  | 507   | 27.70* | 2.780E+00 | 1.761E+00               | 1.761E+00              | 18.47             |
|         | 969.11  | 300   | 16.60  | 2.639E+00 | 1.831E+00               | 1.831E+00              | 29.95             |
| TH-234  | 63.29   | 82    | 3.80*  | 3.135E+00 | 1.839E+00               | 1.839E+00              | 123.08            |
|         | 92.38   | 552   | 5.41   | 6.952E+00 | 3.929E+00               | 3.929E+00              | 25.71             |
|         | 609.31  | 790   | 46.30* | 3.812E+00 | 1.198E+00               | 1.198E+00              | 14.77             |
|         | 1120.29 | 168   | 15.10  | 2.334E+00 | 1.273E+00               | 1.273E+00              | 47.26             |
|         | 1764.49 | 159   | 15.80  | 1.695E+00 | 1.584E+00               | 1.584E+00              | 20.89             |
| NP-237  | 86.50   | 277   | 12.60* | 6.462E+00 | 9.116E-01               | 9.116E-01              | 40.30             |
|         | 95.87   | ----- | 2.60   | 7.180E+00 | -----                   | Line Not Found         | -----             |
|         | 63.29   | 82    | 3.80*  | 3.135E+00 | 1.839E+00               | 1.839E+00              | 123.08            |
|         | 92.38   | 552   | 5.41   | 6.952E+00 | 3.929E+00               | 3.929E+00              | 20.21             |
|         |         |       |        |           |                         |                        |                   |

Nuclide Type:

| Nuclide | Energy | Area  | %Abn    | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|--------|-------|---------|-----------|-------------------------|------------------------|-------------------|
| AM-243  | 74.67  | 471   | 66.00*  | 4.930E+00 | 3.875E-01               | 3.875E-01              | 19.69             |
|         | 86.72  | 277   | 0.34    | 6.462E+00 | 3.418E+01               | 3.418E+01              | 34.62             |
|         | 117.66 | ----- | 0.55    | 8.112E+00 | -----                   | Line Not Found         | -----             |
|         | 142.18 | ----- | 0.13    | 8.232E+00 | -----                   | Line Not Found         | -----             |
| ANH-511 | 511.00 | 179   | 100.00* | 4.308E+00 | 1.110E-01               | 1.110E-01              | 49.32             |

Flag: "\*" = Keyline

Summary of Nuclide Activity  
Sample ID : G244630002

Page : 4  
Acquisition date : 22-JAN-2010 20:50:14

Total number of lines in spectrum 38  
Number of unidentified lines 4  
Number of lines tentatively identified by NID 34 89.47%

Nuclide Type :

| Nuclide | Hlife     | Decay | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | Decay Corr<br>2-Sigma Error | 2-Sigma<br>%Error | Flags |
|---------|-----------|-------|-------------------------|------------------------|-----------------------------|-------------------|-------|
| BE-7    | 53.44D    | 1.21  | 7.103E-01               | 8.563E-01              | 3.508E-01                   | 40.96             |       |
| K-40    | 1.28E+09Y | 1.00  | 3.317E+01               | 3.317E+01              | 0.288E+01                   | 8.67              |       |
| CD-109  | 464.00D   | 1.02  | 3.088E+00               | 3.155E+00              | 1.092E+00                   | 34.62             |       |
| SN-126  | 1.00E+05Y | 1.00  | 3.104E-01               | 3.104E-01              | 1.075E-01                   | 34.62             |       |
| BA-137M | 30.17Y    | 1.00  | 4.118E-01               | 4.121E-01              | 0.692E-01                   | 16.78             |       |
| CS-137  | 30.17Y    | 1.00  | 4.353E-01               | 4.357E-01              | 0.732E-01                   | 16.79             |       |
| TL-208  | 1.41E+10Y | 1.00  | 5.151E-01               | 5.151E-01              | 0.816E-01                   | 15.83             |       |
| BI-211  | 7.04E+08Y | 1.00  | 3.901E+00               | 3.901E+00              | 0.449E+00                   | 11.51             |       |
| PB-212  | 1.41E+10Y | 1.00  | 1.808E+00               | 1.808E+00              | 0.161E+00                   | 8.90              |       |
| PO-212  | 1.41E+10Y | 1.00  | 1.808E+00               | 1.808E+00              | 0.161E+00                   | 8.90              |       |
| BI-214  | 1600.00Y  | 1.00  | 1.198E+00               | 1.198E+00              | 0.177E+00                   | 14.77             |       |
| PB-214  | 1600.00Y  | 1.00  | 1.357E+00               | 1.357E+00              | 0.172E+00                   | 12.64             |       |
| PO-214  | 1600.00Y  | 1.00  | 1.357E+00               | 1.357E+00              | 0.172E+00                   | 12.64             |       |
| PO-216  | 1.41E+10Y | 1.00  | 1.808E+00               | 1.808E+00              | 0.161E+00                   | 8.90              |       |
| PO-218  | 1600.00Y  | 1.00  | 1.357E+00               | 1.357E+00              | 0.172E+00                   | 12.64             |       |
| RA-224  | 1.41E+10Y | 1.00  | 5.186E+00               | 5.186E+00              | 1.136E+00                   | 21.91             |       |
| RA-226  | 1600.00Y  | 1.00  | 1.198E+00               | 1.198E+00              | 0.177E+00                   | 14.77             |       |
| AC-228  | 1.41E+10Y | 1.00  | 1.761E+00               | 1.761E+00              | 0.325E+00                   | 18.47             |       |
| RA-228  | 1.41E+10Y | 1.00  | 1.761E+00               | 1.761E+00              | 0.325E+00                   | 18.47             |       |
| TH-228  | 1.91Y     | 1.01  | 1.808E+00               | 1.834E+00              | 0.163E+00                   | 8.90              |       |
| TH-230  | 4.47E+09Y | 1.00  | 1.198E+00               | 1.198E+00              | 0.177E+00                   | 14.77             |       |
| TH-232  | 1.41E+10Y | 1.00  | 1.761E+00               | 1.761E+00              | 0.325E+00                   | 18.47             |       |
| TH-234  | 4.47E+09Y | 1.00  | 1.839E+00               | 1.839E+00              | 2.263E+00                   | 123.08            |       |
| U-234   | 4.47E+09Y | 1.00  | 1.198E+00               | 1.198E+00              | 0.177E+00                   | 14.77             |       |
| NP-237  | 2.14E+06Y | 1.00  | 9.116E-01               | 9.116E-01              | 3.674E-01                   | 40.30             |       |
| U-238   | 4.47E+09Y | 1.00  | 1.839E+00               | 1.839E+00              | 2.263E+00                   | 123.08            |       |
| AM-243  | 7380.00Y  | 1.00  | 3.875E-01               | 3.875E-01              | 0.763E-01                   | 19.69             |       |
| ANH-511 | 1.00E+09Y | 1.00  | 1.110E-01               | 1.110E-01              | 0.548E-01                   | 49.32             |       |

Total Activity : 7.420E+01 7.444E+01

Grand Total Activity : 7.420E+01 7.444E+01

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit



Unidentified Energy Lines  
Sample ID : G244630002

Page : 5  
Acquisition date : 22-JAN-2010 20:50:14

| It | Energy  | Area | Bkgnd | FWHM  | Channel | Left | Pw | Cts/Sec  | %Err | %Eff     | Flags |
|----|---------|------|-------|-------|---------|------|----|----------|------|----------|-------|
| 5  | 84.32   | 121  | 658   | 1.37  | 167.74  | 161  | 30 | 1.68E-02 | 74.6 | 6.13E+00 | T     |
| 5  | 90.05   | 198  | 609   | 1.28  | 179.20  | 161  | 30 | 2.75E-02 | 46.3 | 6.71E+00 | T     |
| 0  | 186.17  | 326  | 623   | 1.32  | 371.38  | 366  | 13 | 4.53E-02 | 34.2 | 7.64E+00 | T     |
| 0  | 209.42  | 168  | 359   | 1.24  | 417.87  | 414  | 8  | 2.33E-02 | 42.1 | 7.26E+00 | T     |
| 0  | 270.02  | 175  | 443   | 1.43  | 539.02  | 533  | 14 | 2.44E-02 | 53.0 | 6.35E+00 | T     |
| 0  | 328.02  | 118  | 303   | 1.87  | 654.98  | 648  | 12 | 1.64E-02 | 61.6 | 5.68E+00 | T     |
| 0  | 463.04  | 119  | 173   | 0.99  | 924.95  | 921  | 10 | 1.65E-02 | 45.1 | 4.60E+00 | T     |
| 0  | 562.34  | 59   | 117   | 2.12  | 1123.48 | 1120 | 9  | 8.15E-03 | 71.8 | 4.04E+00 | T     |
| 0  | 727.20  | 191  | 151   | 2.09  | 1453.12 | 1445 | 16 | 2.65E-02 | 32.8 | 3.34E+00 | T     |
| 0  | 795.60  | 104  | 129   | 1.51  | 1589.90 | 1581 | 18 | 1.44E-02 | 55.3 | 3.11E+00 | T     |
| 1  | 964.48  | 103  | 99    | 2.13  | 1927.58 | 1918 | 25 | 1.44E-02 | 44.5 | 2.65E+00 | T     |
| 0  | 1588.31 | 66   | 47    | 2.20  | 3175.10 | 3164 | 21 | 9.16E-03 | 57.6 | 1.79E+00 |       |
| 0  | 1625.28 | 73   | 21    | 11.57 | 3249.02 | 3235 | 28 | 1.01E-02 | 42.6 | 1.77E+00 |       |
| 0  | 1729.59 | 54   | 6     | 1.26  | 3457.64 | 3453 | 12 | 7.50E-03 | 32.7 | 1.71E+00 |       |
| 0  | 1847.25 | 29   | 21    | 1.24  | 3692.95 | 3683 | 20 | 4.05E-03 | 83.9 | 1.66E+00 |       |

Flags: "T" = Tentatively associated

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
*                               DETECTOR DATA                               *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630002.CNF;1
* Acquisition date   : 22-JAN-2010 20:50:14   Detector SN#      :
* Detector ID        : GAM18                  Sensitivity       : 5.00000
* Geometry           : CAN                    Energy tolerance: 1.50000
* Elapsed live time  : 0 02:00:00.00          Abundance limit  : 75.00000
* Elapsed real time  : 0 02:00:01.98          Half life ratio  : 8.00000
*****
*                               SAMPLE DATA                               *
*
* Sample date        : 8-JAN-2010 12:00:00.   Nuclide Library : SOLID
* Sample ID          : G244630002             Analyst initials: MXR1
* Batch Number       : 941639                 Sample Quantity  : 1.40300E+02 GRAM
*****
*                               QC DATA                               *
*
* CALIB. DATE/TIME   : 23-APR-2009 11:59:23.2MS Isotope      :
* MSD ID              :                      MSD Isotope      :
* LCS ID              : 1032-A                LCS Isotope     :
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| BE-7    | 8.563E-01              | 3.508E-01 | 3.925E-01         | 2.844E-02 | 2.181   |
| K-40    | 3.317E+01              | 2.876E+00 | 3.558E-01         | 2.700E-02 | 93.219  |
| CD-109  | 3.155E+00              | 1.092E+00 | 1.144E+00         | 1.057E-01 | 2.758   |
| SN-126  | 3.104E-01              | 1.075E-01 | 1.133E-01         | 1.044E-02 | 2.741   |
| BA-137M | 4.121E-01              | 6.917E-02 | 4.637E-02         | 3.535E-03 | 8.887   |
| CS-137  | 4.357E-01              | 7.316E-02 | 4.902E-02         | 3.746E-03 | 8.887   |
| TL-208  | 5.151E-01              | 8.156E-02 | 4.470E-02         | 3.504E-03 | 11.525  |
| BI-211  | 3.901E+00              | 4.491E-01 | 2.454E-01         | 1.575E-02 | 15.896  |
| PB-212  | 1.808E+00              | 1.609E-01 | 7.549E-02         | 5.393E-03 | 23.951  |
| PO-212  | 1.808E+00              | 1.609E-01 | 7.549E-02         | 5.393E-03 | 23.951  |
| BI-214  | 1.198E+00              | 1.770E-01 | 8.640E-02         | 7.718E-03 | 13.866  |
| PB-214  | 1.357E+00              | 1.715E-01 | 8.553E-02         | 7.075E-03 | 15.867  |
| PO-214  | 1.357E+00              | 1.715E-01 | 8.553E-02         | 7.075E-03 | 15.867  |
| PO-216  | 1.808E+00              | 1.609E-01 | 7.549E-02         | 5.393E-03 | 23.951  |
| PO-218  | 1.357E+00              | 1.715E-01 | 8.553E-02         | 7.075E-03 | 15.867  |
| RA-224  | 5.186E+00              | 1.136E+00 | 8.581E-01         | 4.780E-02 | 6.044   |
| RA-226  | 1.198E+00              | 1.770E-01 | 8.640E-02         | 7.718E-03 | 13.866  |
| AC-228  | 1.761E+00              | 3.253E-01 | 1.601E-01         | 2.121E-02 | 11.002  |

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| RA-228  | 1.761E+00              | 3.253E-01 | 1.601E-01         | 2.121E-02 | 11.002  |
| TH-228  | 1.834E+00              | 1.632E-01 | 7.658E-02         | 5.471E-03 | 23.951  |
| TH-230  | 1.198E+00              | 1.770E-01 | 8.640E-02         | 7.718E-03 | 13.866  |
| TH-232  | 1.761E+00              | 3.253E-01 | 1.601E-01         | 2.121E-02 | 11.002  |
| TH-234  | 1.839E+00              | 2.263E+00 | 2.224E+00         | 3.920E-01 | 0.827   |
| U-234   | 1.198E+00              | 1.770E-01 | 8.640E-02         | 7.718E-03 | 13.866  |
| NP-237  | 9.116E-01              | 3.674E-01 | 3.378E-01         | 7.622E-02 | 2.698   |
| U-238   | 1.839E+00              | 2.263E+00 | 2.224E+00         | 3.920E-01 | 0.827   |
| AM-243  | 3.875E-01              | 7.632E-02 | 8.837E-02         | 7.374E-03 | 4.385   |
| ANH-511 | 1.110E-01              | 5.477E-02 | 3.506E-02         | 2.315E-03 | 3.167   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| NA-22   | -7.324E-03                         |              | 3.378E-02 | 5.453E-02           | 3.710E-03 | -0.134  |
| NA-24   | -3.414E-01                         |              | 1.323E-01 | Half-Life too short |           |         |
| AL-26   | 1.469E-03                          |              | 2.059E-02 | 3.415E-02           | 1.994E-03 | 0.043   |
| TI-44   | 3.777E-01                          | +            | 5.934E-02 | 7.558E-02           | 6.462E-03 | 4.998   |
| SC-46   | -7.320E-03                         |              | 3.071E-02 | 4.932E-02           | 5.501E-03 | -0.148  |
| V-48    | 7.658E-02                          |              | 5.238E-02 | 9.315E-02           | 9.214E-03 | 0.822   |
| CR-51   | -1.068E-01                         |              | 3.006E-01 | 4.755E-01           | 3.061E-02 | -0.225  |
| MN-52   | 2.099E-02                          |              | 1.570E-01 | 2.585E-01           | 1.905E-02 | 0.081   |
| MN-54   | -1.728E-02                         |              | 3.173E-02 | 5.040E-02           | 5.162E-03 | -0.343  |
| CO-56   | 2.386E-03                          |              | 3.039E-02 | 5.015E-02           | 5.236E-03 | 0.048   |
| CO-57   | 2.453E-03                          |              | 2.283E-02 | 3.678E-02           | 2.179E-03 | 0.067   |
| CO-58   | 1.529E-02                          |              | 3.034E-02 | 5.159E-02           | 5.093E-03 | 0.296   |
| FE-59   | -2.877E-02                         |              | 7.125E-02 | 1.153E-01           | 9.494E-03 | -0.249  |
| CO-60   | 2.557E-02                          |              | 2.995E-02 | 5.252E-02           | 3.968E-03 | 0.487   |
| ZN-65   | 8.835E-02                          |              | 8.685E-02 | 1.341E-01           | 9.447E-03 | 0.659   |
| GE-68   | 3.592E-01                          |              | 1.033E+00 | 1.761E+00           | 1.399E-01 | 0.204   |
| AS-73   | 3.783E-01                          |              | 1.016E+00 | 1.731E+00           | 1.372E-01 | 0.219   |
| AS-74   | -6.177E-02                         |              | 7.190E-02 | 1.100E-01           | 7.900E-03 | -0.562  |
| SE-75   | 4.454E-02                          |              | 3.943E-02 | 6.023E-02           | 3.445E-03 | 0.740   |
| BR-77   | 2.788E-01                          |              | 6.553E+00 | 1.076E+01           | 7.176E-01 | 0.026   |
| SR-82   | -2.045E-01                         |              | 2.894E-01 | 4.561E-01           | 4.247E-02 | -0.448  |
| RB-83   | 3.014E-03                          |              | 5.361E-02 | 8.807E-02           | 5.874E-03 | 0.034   |
| RB-84   | -4.618E-02                         |              | 5.539E-02 | 8.482E-02           | 9.349E-03 | -0.544  |
| KR-85   | 1.822E+01                          |              | 6.738E+00 | 1.114E+01           | 7.378E-01 | 1.636   |
| SR-85   | 9.268E-02                          |              | 3.428E-02 | 5.665E-02           | 3.753E-03 | 1.636   |
| RB-86   | 3.735E-01                          |              | 6.357E-01 | 1.099E+00           | 8.745E-02 | 0.340   |
| Y-88    | 8.715E-03                          |              | 3.275E-02 | 5.041E-02           | 2.871E-03 | 0.173   |
| ZR-88   | -2.248E-02                         |              | 2.428E-02 | 3.883E-02           | 2.234E-03 | -0.579  |
| Y-91    | -5.065E+00                         |              | 1.484E+01 | 2.395E+01           | 1.416E+00 | -0.211  |
| NB-94   | 1.162E-03                          |              | 2.674E-02 | 4.474E-02           | 3.671E-03 | 0.026   |
| NB-95   | 5.165E-02                          |              | 3.416E-02 | 6.065E-02           | 5.548E-03 | 0.852   |
| NB-95M  | 1.582E-01                          |              | 1.129E-01 | 1.740E-01           | 1.276E-02 | 0.909   |
| ZR-95   | 4.104E-02                          |              | 5.296E-02 | 9.183E-02           | 9.036E-03 | 0.447   |

----- Non-Identified Nuclides -----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| NB-97   | 5.257E-02                          |              | 2.244E-02 | Half-Life too short |           |         |
| ZR-97   | 1.394E+00                          |              | 3.836E-01 | Half-Life too short |           |         |
| MO-99   | -6.641E+00                         |              | 7.439E+00 | 1.154E+01           | 1.761E+00 | -0.576  |
| TC-99M  | -1.296E+09                         |              | 2.243E+09 | Half-Life too short |           |         |
| RH-101  | 1.238E-02                          |              | 2.841E-02 | 4.766E-02           | 2.562E-03 | 0.260   |
| RH-102  | 3.399E-02                          |              | 2.749E-02 | 4.270E-02           | 2.712E-03 | 0.796   |
| RU-103  | 3.047E-02                          |              | 3.177E-02 | 5.455E-02           | 7.083E-03 | 0.558   |
| RH-106  | -1.258E-01                         |              | 2.514E-01 | 3.912E-01           | 4.922E-02 | -0.321  |
| RU-106  | -1.258E-01                         |              | 2.511E-01 | 3.912E-01           | 2.879E-02 | -0.321  |
| AG-108M | -6.502E-03                         |              | 2.608E-02 | 4.281E-02           | 2.797E-03 | -0.152  |
| AG-110M | 2.628E-02                          |              | 3.285E-02 | 5.041E-02           | 3.976E-03 | 0.521   |
| IN-111  | 1.745E-01                          |              | 7.336E-01 | 1.074E+00           | 6.000E-02 | 0.163   |
| IN-113M | -2.719E-02                         |              | 3.585E-02 | 5.791E-02           | 3.553E-03 | -0.469  |
| SN-113  | -2.719E-02                         |              | 3.585E-02 | 5.791E-02           | 3.553E-03 | -0.469  |
| IN-114M | -1.300E-03                         |              | 1.618E-01 | 2.385E-01           | 1.273E-02 | -0.005  |
| CD-115  | -8.971E+00                         |              | 6.720E+00 | 9.928E+00           | 6.673E-01 | -0.904  |
| SN-117M | -1.266E-02                         |              | 4.365E-02 | 7.324E-02           | 3.893E-03 | -0.173  |
| SB-122  | 2.199E+00                          |              | 1.611E+00 | 2.494E+00           | 1.738E-01 | 0.882   |
| I-123   | -9.368E-01                         |              | 9.146E-01 | Half-Life too short |           |         |
| TE-123M | -1.190E-02                         |              | 2.323E-02 | 3.868E-02           | 2.087E-03 | -0.308  |
| I-124   | -4.526E-01                         |              | 5.874E-01 | 7.599E-01           | 5.495E-02 | -0.596  |
| SB-124  | -3.226E-02                         |              | 5.752E-02 | 8.788E-02           | 6.063E-03 | -0.367  |
| SB-125  | -2.046E-02                         |              | 7.548E-02 | 1.240E-01           | 7.746E-03 | -0.165  |
| TE-125M | 5.533E-01                          |              | 8.294E+00 | 1.344E+01           | 1.181E+00 | 0.041   |
| I-126   | 2.421E-02                          |              | 1.620E-01 | 2.371E-01           | 1.823E-02 | 0.102   |
| SB-126  | -1.504E-02                         |              | 1.223E-01 | 1.736E-01           | 1.470E-02 | -0.087  |
| SB-127  | 2.683E-01                          |              | 9.225E-01 | 1.568E+00           | 1.672E-01 | 0.171   |
| XE-127  | 2.071E-05                          |              | 3.874E-02 | 6.458E-02           | 3.486E-03 | 0.000   |
| I-131   | 1.036E-02                          |              | 8.501E-02 | 1.441E-01           | 9.289E-03 | 0.072   |
| TE-132  | 4.352E-01                          |              | 5.042E-01 | 8.532E-01           | 1.203E-01 | 0.510   |
| BA-133  | -5.517E-03                         |              | 3.854E-02 | 5.302E-02           | 6.124E-03 | -0.104  |
| I-133   | -8.784E-04                         |              | 1.257E-03 | Half-Life too short |           |         |
| CS-134  | 1.175E-01                          | +            | 6.601E-02 | 7.037E-02           | 6.806E-03 | 1.670   |
| CS-135  | 1.471E-01                          |              | 1.526E-01 | 2.292E-01           | 1.733E-02 | 0.642   |
| I-135   | 2.517E+08                          |              | 3.443E+08 | Half-Life too short |           |         |
| CS-136  | -6.322E-02                         |              | 8.057E-02 | 1.271E-01           | 1.139E-02 | -0.497  |
| CE-139  | -3.622E-03                         |              | 2.479E-02 | 4.167E-02           | 2.188E-03 | -0.087  |
| BA-140  | 1.288E-01                          |              | 1.989E-01 | 3.296E-01           | 1.078E-01 | 0.391   |
| LA-140  | 2.949E-02                          |              | 6.887E-02 | 1.041E-01           | 7.144E-03 | 0.283   |
| CE-141  | -1.182E-02                         |              | 5.665E-02 | 8.826E-02           | 5.038E-03 | -0.134  |
| CE-143  | 3.837E-04                          |              | 6.572E-05 | Half-Life too short |           |         |
| CE-144  | 2.536E-02                          |              | 1.857E-01 | 2.977E-01           | 4.209E-02 | 0.085   |
| PM-144  | 1.747E-02                          |              | 2.604E-02 | 4.508E-02           | 3.660E-03 | 0.387   |
| PR-144  | 1.183E+00                          |              | 1.764E+00 | 3.054E+00           | 2.478E-01 | 0.387   |
| PM-146  | -5.045E-03                         |              | 3.418E-02 | 5.617E-02           | 4.997E-03 | -0.090  |
| ND-147  | 2.227E-01                          |              | 3.975E-01 | 6.700E-01           | 9.349E-02 | 0.332   |
| PM-149  | -6.130E+01                         |              | 6.127E+01 | 9.406E+01           | 1.330E+01 | -0.652  |
| EU-152  | -1.179E-02                         |              | 9.365E-02 | 1.283E-01           | 8.373E-03 | -0.092  |

----- Non-Identified Nuclides -----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| GD-153  | -7.947E-02                         |              | 8.240E-02 | 1.139E-01           | 8.905E-03 | -0.698  |
| EU-154  | -3.631E-02                         |              | 9.544E-02 | 1.520E-01           | 1.518E-02 | -0.239  |
| EU-155  | 5.815E-02                          |              | 9.977E-02 | 1.648E-01           | 1.178E-02 | 0.353   |
| TB-160  | 2.062E-02                          |              | 1.116E-01 | 1.849E-01           | 2.031E-02 | 0.112   |
| HO-166M | -2.806E-02                         |              | 4.770E-02 | 7.669E-02           | 6.393E-03 | -0.366  |
| TM-171  | -2.892E+01                         |              | 3.355E+01 | 4.765E+01           | 3.810E+00 | -0.607  |
| LU-176  | -5.424E-03                         |              | 2.337E-02 | 3.248E-02           | 1.870E-03 | -0.167  |
| LU-177  | 2.493E+00                          | +            | 1.058E+00 | 1.558E+00           | 8.453E-02 | 1.599   |
| LU-177M | -1.279E-01                         |              | 1.471E-01 | 2.354E-01           | 1.390E-02 | -0.543  |
| HF-181  | -3.911E-02                         |              | 3.755E-02 | 4.880E-02           | 3.124E-03 | -0.801  |
| W-181   | -3.091E-01                         |              | 4.435E-01 | 6.360E-01           | 5.044E-02 | -0.486  |
| TA-182  | -6.720E-02                         |              | 1.562E-01 | 2.504E-01           | 1.532E-02 | -0.268  |
| RE-183  | 3.636E-02                          |              | 8.994E-02 | 1.541E-01           | 8.134E-03 | 0.236   |
| RE-184  | 3.746E-02                          |              | 1.912E-01 | 3.162E-01           | 1.776E-02 | 0.118   |
| OS-185  | 3.897E-02                          |              | 3.283E-02 | 5.662E-02           | 4.258E-03 | 0.688   |
| RE-188  | 8.604E-02                          |              | 1.400E-01 | 2.420E-01           | 1.295E-02 | 0.356   |
| W-188   | -3.046E+00                         |              | 7.098E+00 | 9.808E+00           | 5.618E-01 | -0.311  |
| IR-192  | -2.632E-02                         |              | 2.903E-02 | 4.468E-02           | 2.591E-03 | -0.589  |
| AU-195  | 1.058E-01                          |              | 2.036E-01 | 3.370E-01           | 2.578E-02 | 0.314   |
| TL-200  | 7.542E-05                          |              | 1.141E-04 | Half-Life too short |           |         |
| TL-201  | 1.845E+00                          |              | 4.896E+00 | 8.367E+00           | 4.392E-01 | 0.221   |
| TL-202  | 2.980E-03                          |              | 5.197E-02 | 8.655E-02           | 5.277E-03 | 0.034   |
| HG-203  | 1.918E-02                          |              | 3.877E-02 | 5.681E-02           | 3.445E-03 | 0.338   |
| BI-207  | -8.165E-04                         |              | 4.102E-02 | 6.843E-02           | 5.648E-03 | -0.012  |
| TL-207  | 1.596E-01                          |              | 6.068E-01 | 8.667E-01           | 1.431E-01 | 0.184   |
| PO-209  | -4.740E+00                         |              | 6.078E+00 | 9.341E+00           | 1.054E+00 | -0.507  |
| BI-210  | 3.087E+00                          |              | 4.914E+00 | 8.491E+00           | 6.569E-01 | 0.364   |
| PB-210  | 3.087E+00                          |              | 4.914E+00 | 8.491E+00           | 6.569E-01 | 0.364   |
| PO-210  | 3.087E+00                          |              | 4.912E+00 | 8.491E+00           | 5.648E-01 | 0.364   |
| PB-211  | -3.755E-01                         |              | 7.822E-01 | 1.218E+00           | 7.595E-01 | -0.308  |
| BI-212  | 1.297E+00                          | +            | 4.445E-01 | 5.530E-01           | 5.508E-02 | 2.345   |
| PO-215  | 1.596E-01                          |              | 6.068E-01 | 8.667E-01           | 1.431E-01 | 0.184   |
| RN-219  | -1.377E-01                         |              | 3.141E-01 | 5.131E-01           | 6.985E-02 | -0.268  |
| RN-220  | 3.632E+00                          |              | 1.971E+01 | 3.249E+01           | 2.232E+00 | 0.112   |
| RA-223  | 1.596E-01                          |              | 6.068E-01 | 8.667E-01           | 1.431E-01 | 0.184   |
| AC-227  | -1.445E-01                         |              | 3.142E-01 | 5.039E-01           | 6.999E-02 | -0.287  |
| TH-227  | -1.445E-01                         |              | 3.145E-01 | 5.039E-01           | 8.487E-02 | -0.287  |
| TH-229  | -1.504E-01                         |              | 4.110E-01 | 6.781E-01           | 3.631E-02 | -0.222  |
| PA-231  | 2.281E-01                          |              | 1.346E+00 | 2.041E+00           | 2.806E-01 | 0.112   |
| TH-231  | 1.596E-01                          |              | 6.068E-01 | 8.667E-01           | 1.431E-01 | 0.184   |
| U-231   | 7.285E-01                          |              | 9.342E-01 | 1.406E+00           | 1.127E-01 | 0.518   |
| PA-233  | 3.016E-02                          |              | 5.444E-02 | 9.007E-02           | 5.517E-03 | 0.335   |
| PA-234  | 3.971E-03                          |              | 2.464E-01 | 4.008E-01           | 7.906E-02 | 0.010   |
| PA-234M | 3.855E+00                          |              | 4.056E+00 | 6.782E+00           | 7.316E-01 | 0.568   |
| U-235   | 5.617E-02                          |              | 1.941E-01 | 3.081E-01           | 4.990E-02 | 0.182   |
| NP-236  | -2.449E-02                         |              | 6.569E-02 | 1.098E-01           | 5.819E-03 | -0.223  |
| NP-239  | -4.015E-02                         |              | 1.681E-01 | 2.680E-01           | 1.659E-02 | -0.150  |
| AM-241  | 7.312E-03                          |              | 1.847E-01 | 2.779E-01           | 2.305E-02 | 0.026   |

----- Non-Identified Nuclides -----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| CM-243  | -3.885E-02                         |              | 8.989E-02 | 1.434E-01         | 1.027E-02 | -0.271  |
| AM-246  | 8.859E-02                          |              | 1.152E-01 | 2.013E-01         | 1.592E-02 | 0.440   |
| CM-247  | -2.673E-02                         |              | 2.865E-02 | 4.565E-02         | 2.659E-03 | -0.586  |
| CF-249  | 3.068E-02                          |              | 3.258E-02 | 5.681E-02         | 3.266E-03 | 0.540   |
| CF-251  | -5.411E-02                         |              | 1.078E-01 | 1.782E-01         | 9.413E-03 | -0.304  |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : SYSSYSROOT:[ALPHA.ARCHIVE.GAMMA]G244630002           *
* Acquisition date   : 22-JAN-2010 20:50:14 Detector SN# :                 *
* Detector ID        : GAM18 Sensitivity      : 5.000                      *
* Geometry           : CAN Energy tolerance: 1.500                      *
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000             *
* Elapsed real time  : 0 02:00:01.98 Half life ratio : 8.000             *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G244630002 Analyst initials: MXR1                 *
* Batch Number       : 941639 Sample Quantity : 1.4030E+02 GRAM          *
* Recovery           : 1.00000 Carrier Weight : 0.00000                 *
*****
*                                     QC DATA                                *
*
* CALIB. DATE/TIME  : 23-APR-2009 11:59:23 MS Isotope :                   *
* MSD DPM           : 0.000 MSD Isotope :                               *
* LCS DPM           : 0.000 LCS Isotope :                               *
* LCSD DPM          : 0.000 LCSD Isotope :                               *
*****

```

## Combined Activity-MDA Report

### ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act Error | DLC<br>(pCi/GRAM ) | TPU       |
|---------|-------------------------|-----------|--------------------|-----------|
| BE-7    | 8.563E-01               | 3.437E-01 | 2.018E-01          | 1.754E-01 |
| K-40    | 3.317E+01               | 2.818E+00 | 1.787E-01          | 1.438E+00 |
| CD-109  | 3.155E+00               | 1.070E+00 | 6.081E-01          | 5.461E-01 |
| SN-126  | 3.104E-01               | 1.053E-01 | 6.023E-02          | 5.374E-02 |
| BA-137M | 4.121E-01               | 6.779E-02 | 2.368E-02          | 3.459E-02 |
| CS-137  | 4.357E-01               | 7.169E-02 | 2.503E-02          | 3.658E-02 |
| TL-208  | 5.151E-01               | 7.992E-02 | 2.289E-02          | 4.078E-02 |
| BI-211  | 3.901E+00               | 4.401E-01 | 1.270E-01          | 2.246E-01 |
| PB-212  | 1.808E+00               | 1.577E-01 | 3.936E-02          | 8.045E-02 |
| PO-212  | 1.808E+00               | 1.577E-01 | 3.936E-02          | 8.045E-02 |
| BI-214  | 1.198E+00               | 1.734E-01 | 4.420E-02          | 8.849E-02 |
| PB-214  | 1.357E+00               | 1.681E-01 | 4.425E-02          | 8.576E-02 |
| PO-214  | 1.357E+00               | 1.681E-01 | 4.425E-02          | 8.576E-02 |
| PO-216  | 1.808E+00               | 1.577E-01 | 3.936E-02          | 8.045E-02 |
| PO-218  | 1.357E+00               | 1.681E-01 | 4.425E-02          | 8.576E-02 |
| RA-224  | 5.186E+00               | 1.113E+00 | 4.473E-01          | 5.681E-01 |
| RA-226  | 1.198E+00               | 1.734E-01 | 4.420E-02          | 8.849E-02 |
| AC-228  | 1.761E+00               | 3.188E-01 | 8.121E-02          | 1.626E-01 |
| RA-228  | 1.761E+00               | 3.188E-01 | 8.121E-02          | 1.626E-01 |
| TH-228  | 1.834E+00               | 1.600E-01 | 3.993E-02          | 8.161E-02 |
| TH-230  | 1.198E+00               | 1.734E-01 | 4.420E-02          | 8.849E-02 |
| TH-232  | 1.761E+00               | 3.188E-01 | 8.121E-02          | 1.626E-01 |
| TH-234  | 1.839E+00               | 2.218E+00 | 1.190E+00          | 1.131E+00 |
| U-234   | 1.198E+00               | 1.734E-01 | 4.420E-02          | 8.849E-02 |
| NP-237  | 9.116E-01               | 3.600E-01 | 1.797E-01          | 1.837E-01 |
| U-238   | 1.839E+00               | 2.218E+00 | 1.190E+00          | 1.131E+00 |
| AM-243  | 3.875E-01               | 7.479E-02 | 4.713E-02          | 3.816E-02 |
| ANH-511 | 1.110E-01               | 5.367E-02 | 1.800E-02          | 2.738E-02 |

### ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L Act error | DLC<br>(pCi/GRAM ) | TPU |
|---------|-------------------------------------|---------------|--------------------|-----|
|---------|-------------------------------------|---------------|--------------------|-----|

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| NA-22   | -7.324E-03 | 3.310E-02 | 2.747E-02 | 1.689E-02 | NOT IDENT. |
| NA-24   | -3.414E+05 | 2.594E+05 | 0.000E+00 | 1.323E+05 | SHORT HLIF |
| AL-26   | 1.469E-03  | 2.018E-02 | 1.707E-02 | 1.029E-02 | NOT IDENT. |
| TI-44   | 3.777E-01  | 5.815E-02 | 4.027E-02 | 2.967E-02 | FAIL ABUN  |
| SC-46   | -7.320E-03 | 3.010E-02 | 2.503E-02 | 1.536E-02 | FAIL ABUN  |
| V-48    | 7.658E-02  | 5.133E-02 | 4.718E-02 | 2.619E-02 | NOT IDENT. |
| CR-51   | -1.068E-01 | 2.946E-01 | 2.465E-01 | 1.503E-01 | NOT IDENT. |
| MN-52   | 2.099E-02  | 1.538E-01 | 1.299E-01 | 7.848E-02 | NOT IDENT. |
| MN-54   | -1.728E-02 | 3.110E-02 | 2.561E-02 | 1.587E-02 | NOT IDENT. |
| CO-56   | 2.386E-03  | 2.978E-02 | 2.548E-02 | 1.519E-02 | NOT IDENT. |
| CO-57   | 2.453E-03  | 2.237E-02 | 1.943E-02 | 1.141E-02 | NOT IDENT. |
| CO-58   | 1.529E-02  | 2.974E-02 | 2.624E-02 | 1.517E-02 | NOT IDENT. |
| FE-59   | -2.877E-02 | 6.983E-02 | 5.828E-02 | 3.563E-02 | NOT IDENT. |
| CO-60   | 2.557E-02  | 2.935E-02 | 2.643E-02 | 1.497E-02 | NOT IDENT. |
| ZN-65   | 8.835E-02  | 8.511E-02 | 6.775E-02 | 4.342E-02 | NOT IDENT. |
| GE-68   | 3.592E-01  | 1.013E+00 | 8.902E-01 | 5.167E-01 | NOT IDENT. |
| AS-73   | 3.783E-01  | 9.960E-01 | 9.288E-01 | 5.081E-01 | NOT IDENT. |
| AS-74   | -6.177E-02 | 7.046E-02 | 5.627E-02 | 3.595E-02 | NOT IDENT. |
| SE-75   | 4.454E-02  | 3.864E-02 | 3.134E-02 | 1.972E-02 | NOT IDENT. |
| BR-77   | 2.788E-01  | 6.422E+00 | 5.520E+00 | 3.277E+00 | FAIL ABUN  |
| SR-82   | -2.045E-01 | 2.836E-01 | 2.321E-01 | 1.447E-01 | NOT IDENT. |
| RB-83   | 3.014E-03  | 5.254E-02 | 4.520E-02 | 2.681E-02 | NOT IDENT. |
| RB-84   | -4.618E-02 | 5.429E-02 | 4.306E-02 | 2.770E-02 | NOT IDENT. |
| KR-85   | 1.822E+01  | 6.603E+00 | 5.717E+00 | 3.369E+00 | NOT IDENT. |
| SR-85   | 9.268E-02  | 3.359E-02 | 2.908E-02 | 1.714E-02 | NOT IDENT. |
| RB-86   | 3.735E-01  | 6.230E-01 | 5.553E-01 | 3.179E-01 | NOT IDENT. |
| Y-88    | 8.715E-03  | 3.210E-02 | 2.519E-02 | 1.638E-02 | NOT IDENT. |
| ZR-88   | -2.248E-02 | 2.379E-02 | 2.005E-02 | 1.214E-02 | NOT IDENT. |
| Y-91    | -5.065E+00 | 1.454E+01 | 1.208E+01 | 7.418E+00 | NOT IDENT. |
| NB-94   | 1.162E-03  | 2.621E-02 | 2.282E-02 | 1.337E-02 | NOT IDENT. |
| NB-95   | 5.165E-02  | 3.347E-02 | 3.088E-02 | 1.708E-02 | NOT IDENT. |
| NB-95M  | 1.582E-01  | 1.107E-01 | 9.073E-02 | 5.647E-02 | NOT IDENT. |
| ZR-95   | 4.104E-02  | 5.190E-02 | 4.677E-02 | 2.648E-02 | NOT IDENT. |
| NB-97   | 5.257E+04  | 4.398E+04 | 0.000E+00 | 2.244E+04 | SHORT HLIF |
| ZR-97   | 1.394E+06  | 7.519E+05 | 0.000E+00 | 3.836E+05 | SHORT HLIF |
| MO-99   | -6.641E+00 | 7.290E+00 | 5.879E+00 | 3.720E+00 | NOT IDENT. |
| TC-99M  | -1.296E+15 | 4.397E+15 | 0.000E+00 | 2.243E+15 | SHORT HLIF |
| RH-101  | 1.238E-02  | 2.784E-02 | 2.494E-02 | 1.421E-02 | NOT IDENT. |
| RH-102  | 3.399E-02  | 2.694E-02 | 2.196E-02 | 1.374E-02 | NOT IDENT. |
| RU-103  | 3.047E-02  | 3.113E-02 | 2.802E-02 | 1.588E-02 | FAIL ABUN  |
| RH-106  | -1.258E-01 | 2.464E-01 | 2.000E-01 | 1.257E-01 | FAIL ABUN  |
| RU-106  | -1.258E-01 | 2.461E-01 | 2.000E-01 | 1.255E-01 | FAIL ABUN  |
| AG-108M | -6.502E-03 | 2.556E-02 | 2.205E-02 | 1.304E-02 | NOT IDENT. |
| AG-110M | 2.628E-02  | 3.219E-02 | 2.575E-02 | 1.643E-02 | NOT IDENT. |
| IN-111  | 1.745E-01  | 7.189E-01 | 5.595E-01 | 3.668E-01 | NOT IDENT. |
| IN-113M | -2.719E-02 | 3.514E-02 | 2.990E-02 | 1.793E-02 | NOT IDENT. |
| SN-113  | -2.719E-02 | 3.514E-02 | 2.990E-02 | 1.793E-02 | NOT IDENT. |
| IN-114M | -1.300E-03 | 1.586E-01 | 1.249E-01 | 8.089E-02 | NOT IDENT. |
| CD-115  | -8.971E+00 | 6.586E+00 | 5.094E+00 | 3.360E+00 | NOT IDENT. |
| SN-117M | -1.266E-02 | 4.277E-02 | 3.850E-02 | 2.182E-02 | NOT IDENT. |
| SB-122  | 2.199E+00  | 1.578E+00 | 1.278E+00 | 8.053E-01 | NOT IDENT. |
| I-123   | -9.368E+05 | 1.793E+06 | 0.000E+00 | 9.146E+05 | SHORT HLIF |
| TE-123M | -1.190E-02 | 2.277E-02 | 2.033E-02 | 1.162E-02 | NOT IDENT. |
| I-124   | -4.526E-01 | 5.757E-01 | 3.888E-01 | 2.937E-01 | NOT IDENT. |
| SB-124  | -3.226E-02 | 5.637E-02 | 4.400E-02 | 2.876E-02 | FAIL ABUN  |
| SB-125  | -2.046E-02 | 7.397E-02 | 6.387E-02 | 3.774E-02 | FAIL ABUN  |
| TE-125M | 5.533E-01  | 8.128E+00 | 7.114E+00 | 4.147E+00 | NOT IDENT. |
| I-126   | 2.421E-02  | 1.587E-01 | 1.211E-01 | 8.098E-02 | NOT IDENT. |
| SB-126  | -1.504E-02 | 1.199E-01 | 8.851E-01 | 6.117E-02 | FAIL ABUN  |
| SB-127  | 2.683E-01  | 9.041E-01 | 8.003E-02 | 4.613E-01 | NOT IDENT. |
| XE-127  | 2.071E-05  | 3.797E-02 | 3.378E-02 | 1.937E-02 | NOT IDENT. |
| I-131   | 1.036E-02  | 8.331E-02 | 7.447E-02 | 4.251E-02 | NOT IDENT. |
| TE-132  | 4.352E-01  | 4.941E-01 | 4.452E-01 | 2.521E-01 | NOT IDENT. |
| BA-133  | -5.517E-03 | 3.777E-02 | 2.742E-02 | 1.927E-02 | FAIL ABUN  |
| I-133   | -8.784E+02 | 2.465E+03 | 0.000E+00 | 1.257E+03 | SHORT HLIF |
| CS-134  | 1.175E-01  | 6.469E-02 | 3.580E-02 | 3.301E-02 | FAIL ABUN  |
| CS-135  | 1.471E-01  | 1.495E-01 | 1.192E-01 | 7.629E-02 | NOT IDENT. |
| I-135   | 2.517E+14  | 6.748E+14 | 0.000E+00 | 3.443E+14 | SHORT HLIF |
| CS-136  | -6.322E-02 | 7.896E-02 | 6.428E-02 | 4.029E-02 | FAIL ABUN  |
| CE-139  | -3.622E-03 | 2.429E-02 | 2.188E-02 | 1.239E-02 | NOT IDENT. |
| BA-140  | 1.288E-01  | 1.949E-01 | 1.691E-01 | 9.944E-02 | NOT IDENT. |
| LA-140  | 2.949E-02  | 6.749E-02 | 5.220E-02 | 3.443E-02 | FAIL ABUN  |
| CE-141  | -1.182E-02 | 5.552E-02 | 4.647E-02 | 2.833E-02 | NOT IDENT. |
| CE-143  | 3.837E+02  | 1.288E+02 | 0.000E+00 | 6.572E+01 | SHORT HLIF |
| CE-144  | 2.536E-02  | 1.820E-01 | 1.570E-01 | 9.287E-02 | NOT IDENT. |
| PM-144  | 1.747E-02  | 2.552E-02 | 2.300E-02 | 1.302E-02 | FAIL ABUN  |
| PR-144  | 1.183E+00  | 1.728E+00 | 1.558E+00 | 8.818E-01 | NOT IDENT. |



|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PM-146  | -5.045E-03 | 3.350E-02 | 2.891E-02 | 1.709E-02 | NOT IDENT. |
| ND-147  | 2.227E-01  | 3.895E-01 | 3.437E-01 | 1.987E-01 | FAIL ABUN  |
| PM-149  | -6.130E+01 | 6.004E+01 | 4.886E+01 | 3.063E+01 | NOT IDENT. |
| EU-152  | -1.179E-02 | 9.177E-02 | 6.641E-02 | 4.682E-02 | FAIL ABUN  |
| GD-153  | -7.947E-02 | 8.075E-02 | 6.043E-02 | 4.120E-02 | FAIL ABUN  |
| EU-154  | -3.631E-02 | 9.353E-02 | 7.657E-02 | 4.772E-02 | NOT IDENT. |
| EU-155  | 5.815E-02  | 9.778E-02 | 8.732E-02 | 4.989E-02 | FAIL ABUN  |
| TB-160  | 2.062E-02  | 1.094E-01 | 9.386E-02 | 5.581E-02 | FAIL ABUN  |
| HO-166M | -2.806E-02 | 4.675E-02 | 3.911E-02 | 2.385E-02 | NOT IDENT. |
| TM-171  | -2.892E+01 | 3.288E+01 | 2.547E+01 | 1.678E+01 | NOT IDENT. |
| LU-176  | -5.424E-03 | 2.290E-02 | 1.685E-02 | 1.168E-02 | FAIL ABUN  |
| LU-177  | 2.493E+00  | 1.037E+00 | 8.147E-01 | 5.289E-01 | FAIL ABUN  |
| LU-177M | -1.279E-01 | 1.442E-01 | 1.214E-01 | 7.357E-02 | FAIL ABUN  |
| HF-181  | -3.911E-02 | 3.679E-02 | 2.509E-02 | 1.877E-02 | NOT IDENT. |
| W-181   | -3.091E-01 | 4.346E-01 | 3.400E-01 | 2.217E-01 | NOT IDENT. |
| TA-182  | -6.720E-02 | 1.531E-01 | 1.262E-01 | 7.809E-02 | FAIL ABUN  |
| RE-183  | 3.636E-02  | 8.814E-02 | 8.096E-02 | 4.497E-02 | FAIL ABUN  |
| RE-184  | 3.746E-02  | 1.874E-01 | 1.647E-01 | 9.561E-02 | NOT IDENT. |
| OS-185  | 3.897E-02  | 3.217E-02 | 2.893E-02 | 1.641E-02 | NOT IDENT. |
| RE-188  | 8.604E-02  | 1.372E-01 | 1.272E-01 | 6.999E-02 | FAIL ABUN  |
| W-188   | -3.046E+00 | 6.956E+00 | 5.094E+00 | 3.549E+00 | FAIL ABUN  |
| IR-192  | -2.632E-02 | 2.845E-02 | 2.316E-02 | 1.452E-02 | FAIL ABUN  |
| AU-195  | 1.058E-01  | 1.995E-01 | 1.787E-01 | 1.018E-01 | FAIL ABUN  |
| TL-200  | 7.542E+01  | 2.235E+02 | 0.000E+00 | 1.141E+02 | SHORT HLIF |
| TL-201  | 1.845E+00  | 4.798E+00 | 4.393E+00 | 2.448E+00 | NOT IDENT. |
| TL-202  | 2.980E-03  | 5.093E-02 | 4.457E-02 | 2.598E-02 | NOT IDENT. |
| HG-203  | 1.918E-02  | 3.800E-02 | 2.953E-02 | 1.939E-02 | NOT IDENT. |
| BI-207  | -8.165E-04 | 4.020E-02 | 3.460E-02 | 2.051E-02 | FAIL ABUN  |
| TL-207  | 1.596E-01  | 5.946E-01 | 4.492E-01 | 3.034E-01 | FAIL ABUN  |
| PO-209  | -4.740E+00 | 5.956E+00 | 4.740E+00 | 3.039E+00 | NOT IDENT. |
| BI-210  | 3.087E+00  | 4.815E+00 | 4.569E+00 | 2.457E+00 | NOT IDENT. |
| PB-210  | 3.087E+00  | 4.815E+00 | 4.569E+00 | 2.457E+00 | NOT IDENT. |
| PO-210  | 3.087E+00  | 4.814E+00 | 4.569E+00 | 2.456E+00 | NOT IDENT. |
| PB-211  | -3.755E-01 | 7.666E-01 | 6.285E-01 | 3.911E-01 | NOT IDENT. |
| BI-212  | 1.297E+00  | 4.356E-01 | 2.819E-01 | 2.222E-01 | FAIL ABUN  |
| PO-215  | 1.596E-01  | 5.946E-01 | 4.492E-01 | 3.034E-01 | FAIL ABUN  |
| RN-219  | -1.377E-01 | 3.078E-01 | 2.647E-01 | 1.571E-01 | FAIL ABUN  |
| RN-220  | 3.632E+00  | 1.932E+01 | 1.665E+01 | 9.856E+00 | NOT IDENT. |
| RA-223  | 1.596E-01  | 5.946E-01 | 4.492E-01 | 3.034E-01 | FAIL ABUN  |
| AC-227  | -1.445E-01 | 3.079E-01 | 2.624E-01 | 1.571E-01 | FAIL ABUN  |
| TH-227  | -1.445E-01 | 3.082E-01 | 2.624E-01 | 1.573E-01 | FAIL ABUN  |
| TH-229  | -1.504E-01 | 4.027E-01 | 3.550E-01 | 2.055E-01 | FAIL ABUN  |
| PA-231  | 2.281E-01  | 1.319E+00 | 1.061E+00 | 6.728E-01 | FAIL ABUN  |
| TH-231  | 1.596E-01  | 5.946E-01 | 4.492E-01 | 3.034E-01 | FAIL ABUN  |
| U-231   | 7.285E-01  | 9.155E-01 | 7.464E-01 | 4.671E-01 | FAIL ABUN  |
| PA-233  | 3.016E-02  | 5.335E-02 | 4.671E-02 | 2.722E-02 | FAIL ABUN  |
| PA-234  | 3.971E-03  | 2.414E-01 | 2.032E-01 | 1.232E-01 | FAIL ABUN  |
| PA-234M | 3.855E+00  | 3.975E+00 | 3.433E+00 | 2.028E+00 | NOT IDENT. |
| U-235   | 5.617E-02  | 1.902E-01 | 1.623E-01 | 9.706E-02 | FAIL ABUN  |
| NP-236  | -2.449E-02 | 6.438E-02 | 5.772E-02 | 3.285E-02 | NOT IDENT. |
| NP-239  | -4.015E-02 | 1.647E-01 | 1.417E-01 | 8.405E-02 | FAIL ABUN  |
| AM-241  | 7.312E-03  | 1.810E-01 | 1.489E-01 | 9.237E-02 | NOT IDENT. |
| CM-243  | -3.885E-02 | 8.809E-02 | 7.600E-02 | 4.494E-02 | FAIL ABUN  |
| AM-246  | 8.859E-02  | 1.129E-01 | 1.017E-01 | 5.761E-02 | NOT IDENT. |
| CM-247  | -2.673E-02 | 2.808E-02 | 2.355E-02 | 1.433E-02 | FAIL ABUN  |
| CF-249  | 3.068E-02  | 3.193E-02 | 2.933E-02 | 1.629E-02 | NOT IDENT. |
| CF-251  | -5.411E-02 | 1.056E-01 | 9.349E-02 | 5.388E-02 | NOT IDENT. |

\*\*\*\*\*  
 \* GEL Laboratories LLC \*  
 \* 2040 SAVAGE ROAD \*  
 \* CHARLESTON ,SC 29417 \*  
 \* GAMMA SPECTROSCOPY BACKGROUND REPORT \*  
 \*\*\*\*\*

| ENERGY | MDA COUNTS |
|--------|------------|
| 46.50  | 318.9752   |
| 46.50  | 318.9752   |
| 46.50  | 318.9752   |
| 48.70  | 349.5907   |
| 49.72  | 363.5953   |
| 51.35  | 345.1577   |
| 52.39  | 336.5716   |
| 52.97  | 338.2290   |
| 53.15  | 340.2805   |
| 53.44  | 349.7646   |
| 54.07  | 356.0757   |
| 56.28  | 386.6171   |
| 56.28  | 386.6214   |
| 57.37  | 0.0000     |
| 57.53  | 367.1101   |
| 57.53  | 367.1121   |
| 57.60  | 365.3521   |
| 57.98  | 376.0396   |
| 57.98  | 376.0396   |
| 59.32  | 386.6740   |
| 59.32  | 386.6740   |
| 59.40  | 386.7828   |
| 59.54  | 386.9731   |
| 59.72  | 394.2066   |
| 60.01  | 409.9993   |
| 61.10  | 414.3632   |
| 61.14  | 414.4206   |
| 61.30  | 414.6491   |
| 63.00  | 437.3223   |
| 63.29  | 437.7495   |
| 63.29  | 437.7495   |
| 63.58  | 438.1754   |
| 64.28  | 481.3238   |
| 65.12  | 495.4782   |
| 65.20  | 495.6090   |
| 65.20  | 495.6090   |
| 66.05  | 498.4204   |
| 66.72  | 493.7791   |
| 66.83  | 453.8688   |
| 66.91  | 453.9849   |
| 67.20  | 425.7411   |
| 67.20  | 425.7411   |
| 67.75  | 458.0855   |
| 67.85  | 471.1622   |
| 68.90  | 496.9521   |
| 68.90  | 496.9521   |
| 69.30  | 492.0971   |
| 69.67  | 505.6778   |
| 70.82  | 508.9409   |
| 70.82  | 508.9409   |
| 70.83  | 508.9570   |
| 72.80  | 481.4120   |
| 72.87  | 481.5152   |
| 72.87  | 481.5152   |
| 74.67  | 525.2116   |
| 74.81  | 525.4315   |
| 74.81  | 525.4315   |
| 74.81  | 525.4315   |
| 74.81  | 525.4315   |
| 74.81  | 525.4315   |
| 74.81  | 525.4315   |
| 74.81  | 525.4315   |
| 74.97  | 525.6814   |
| 75.28  | 526.1676   |
| 75.70  | 526.8231   |
| 77.11  | 529.0082   |
| 77.11  | 529.0082   |

|        |          |
|--------|----------|
| 77.11  | 529.0082 |
| 77.11  | 529.0082 |
| 77.11  | 529.0082 |
| 77.11  | 529.0082 |
| 77.11  | 529.0082 |
| 78.38  | 560.6237 |
| 79.62  | 562.6223 |
| 79.80  | 562.9106 |
| 79.80  | 562.9106 |
| 80.11  | 563.4067 |
| 80.18  | 563.5191 |
| 80.30  | 563.7095 |
| 80.30  | 563.7095 |
| 80.57  | 564.1420 |
| 81.00  | 436.3203 |
| 81.07  | 436.4071 |
| 81.07  | 436.4071 |
| 81.07  | 436.4071 |
| 81.07  | 436.4071 |
| 82.60  | 469.2958 |
| 83.37  | 470.2929 |
| 83.78  | 470.8296 |
| 83.78  | 470.8296 |
| 83.78  | 470.8296 |
| 83.78  | 470.8296 |
| 84.21  | 471.3854 |
| 84.90  | 472.2728 |
| 85.43  | 472.9527 |
| 86.29  | 474.0524 |
| 86.50  | 474.3195 |
| 86.54  | 474.3697 |
| 86.59  | 474.4341 |
| 86.72  | 474.5987 |
| 86.79  | 474.6845 |
| 86.94  | 474.8777 |
| 87.30  | 475.3358 |
| 87.30  | 475.3358 |
| 87.30  | 475.3358 |
| 87.30  | 475.3358 |
| 87.30  | 475.3358 |
| 87.30  | 475.3358 |
| 87.57  | 475.6769 |
| 87.88  | 476.0681 |
| 88.03  | 476.2589 |
| 88.36  | 476.6740 |
| 88.47  | 476.8123 |
| 89.95  | 478.6682 |
| 91.11  | 480.1115 |
| 92.29  | 481.5714 |
| 92.38  | 481.6835 |
| 92.38  | 481.6835 |
| 93.35  | 482.8738 |
| 94.00  | 483.6705 |
| 94.67  | 378.0797 |
| 94.67  | 378.0853 |
| 94.90  | 378.3031 |
| 94.90  | 378.3031 |
| 94.90  | 378.3031 |
| 94.90  | 378.3031 |
| 95.87  | 393.2086 |
| 95.87  | 393.2086 |
| 96.73  | 434.5475 |
| 97.43  | 466.4986 |
| 98.44  | 431.6796 |
| 98.44  | 431.6796 |
| 98.88  | 395.6090 |
| 99.55  | 380.5700 |
| 99.55  | 380.5700 |
| 99.86  | 357.8364 |
| 100.00 | 357.9582 |
| 100.10 | 358.0469 |
| 103.18 | 461.9264 |
| 103.76 | 436.1552 |
| 105.00 | 375.9904 |
| 105.31 | 409.1198 |
| 108.00 | 438.3181 |
| 109.28 | 407.5061 |

|        |          |
|--------|----------|
| 111.00 | 433.7789 |
| 111.00 | 433.7789 |
| 111.76 | 429.1349 |
| 112.95 | 405.4630 |
| 115.19 | 385.7807 |
| 116.30 | 399.7438 |
| 117.00 | 388.3788 |
| 117.00 | 388.3788 |
| 117.66 | 381.3029 |
| 121.11 | 378.6054 |
| 121.62 | 376.8119 |
| 121.78 | 376.9375 |
| 122.06 | 391.4519 |
| 122.32 | 391.6619 |
| 122.32 | 391.6619 |
| 122.32 | 391.6619 |
| 122.32 | 391.6619 |
| 123.07 | 375.7438 |
| 127.23 | 462.2903 |
| 129.76 | 427.7766 |
| 131.20 | 487.2421 |
| 133.02 | 403.5500 |
| 133.54 | 416.3328 |
| 135.34 | 405.3650 |
| 136.00 | 416.0514 |
| 136.25 | 430.9543 |
| 136.48 | 442.4603 |
| 140.51 | 438.9996 |
| 140.51 | 0.0000   |
| 142.18 | 417.4903 |
| 142.65 | 402.9717 |
| 143.76 | 426.7382 |
| 144.24 | 438.5943 |
| 144.24 | 438.5943 |
| 144.24 | 438.5943 |
| 144.24 | 438.5943 |
| 145.22 | 430.1776 |
| 145.44 | 430.3526 |
| 147.16 | 420.1493 |
| 152.43 | 422.9424 |
| 152.70 | 385.8401 |
| 153.22 | 393.7775 |
| 154.21 | 376.9258 |
| 154.21 | 376.9258 |
| 154.21 | 376.9258 |
| 154.21 | 376.9258 |
| 155.03 | 386.2421 |
| 156.02 | 410.6452 |
| 158.56 | 403.6057 |
| 159.00 | 0.0000   |
| 159.00 | 403.9055 |
| 160.31 | 404.8016 |
| 161.27 | 400.1338 |
| 162.32 | 383.9524 |
| 162.64 | 363.7039 |
| 163.35 | 379.2697 |
| 163.89 | 386.7399 |
| 165.85 | 405.8747 |
| 167.43 | 382.7272 |
| 171.28 | 377.9030 |
| 171.86 | 373.7409 |
| 172.10 | 367.5613 |
| 176.55 | 419.2725 |
| 176.60 | 419.3042 |
| 181.06 | 376.6060 |
| 184.41 | 403.5747 |
| 185.71 | 376.3273 |
| 186.00 | 376.4923 |
| 190.27 | 356.6104 |
| 192.34 | 375.5822 |
| 193.63 | 373.3063 |
| 197.04 | 376.0905 |
| 198.01 | 379.4312 |
| 198.60 | 389.1516 |
| 200.40 | 392.9800 |
| 201.83 | 441.9349 |
| 202.84 | 391.4984 |
| 205.31 | 359.8309 |

|        |          |
|--------|----------|
| 208.36 | 410.1462 |
| 208.81 | 387.5143 |
| 209.75 | 345.2404 |
| 209.75 | 345.2404 |
| 210.97 | 321.3344 |
| 215.65 | 371.4932 |
| 216.55 | 323.7620 |
| 218.09 | 359.1887 |
| 222.10 | 365.9464 |
| 223.80 | 388.1599 |
| 226.40 | 367.0182 |
| 227.00 | 365.3485 |
| 227.08 | 365.3856 |
| 227.20 | 340.0376 |
| 228.16 | 336.5438 |
| 228.18 | 336.5516 |
| 228.18 | 336.5516 |
| 231.56 | 0.0000   |
| 235.69 | 331.8625 |
| 236.00 | 341.4762 |
| 236.00 | 341.4762 |
| 238.63 | 338.0341 |
| 238.63 | 338.0341 |
| 238.63 | 338.0341 |
| 238.63 | 338.0341 |
| 239.00 | 338.1877 |
| 240.98 | 339.0124 |
| 241.98 | 339.4286 |
| 241.98 | 339.4286 |
| 241.98 | 339.4286 |
| 244.69 | 238.0853 |
| 245.39 | 241.4857 |
| 247.94 | 289.8951 |
| 248.90 | 295.1036 |
| 249.79 | 275.3212 |
| 252.40 | 274.1603 |
| 252.85 | 286.4073 |
| 252.85 | 286.4073 |
| 254.15 | 0.0000   |
| 256.20 | 300.6991 |
| 256.20 | 300.6991 |
| 260.50 | 298.1325 |
| 260.90 | 313.5410 |
| 262.80 | 260.0098 |
| 264.65 | 233.9181 |
| 268.24 | 297.2845 |
| 268.79 | 307.3311 |
| 269.46 | 292.7570 |
| 269.46 | 292.7570 |
| 269.46 | 292.7570 |
| 269.46 | 292.7570 |
| 271.23 | 293.3393 |
| 273.65 | 280.9109 |
| 276.40 | 276.7935 |
| 277.35 | 277.0830 |
| 277.60 | 277.1564 |
| 277.60 | 277.1564 |
| 278.00 | 277.2787 |
| 278.60 | 292.4153 |
| 279.20 | 287.6167 |
| 279.53 | 287.7181 |
| 280.46 | 258.0470 |
| 281.68 | 221.7132 |
| 283.67 | 254.7673 |
| 284.30 | 297.3289 |
| 285.00 | 306.3678 |
| 285.90 | 296.1965 |
| 286.10 | 296.2570 |
| 286.10 | 296.2570 |
| 287.40 | 253.6909 |
| 288.45 | 0.0000   |
| 290.67 | 299.5928 |
| 290.80 | 299.6362 |
| 291.72 | 318.4622 |
| 293.26 | 0.0000   |
| 293.70 | 305.6143 |
| 295.21 | 257.0566 |
| 295.21 | 257.0566 |

|        |          |
|--------|----------|
| 295.21 | 257.0566 |
| 295.96 | 169.2480 |
| 296.50 | 169.3433 |
| 297.23 | 169.4702 |
| 298.57 | 169.7070 |
| 299.80 | 169.9219 |
| 299.80 | 169.9219 |
| 300.09 | 222.6648 |
| 300.09 | 222.6648 |
| 300.09 | 222.6648 |
| 300.09 | 222.6648 |
| 300.12 | 222.6712 |
| 301.29 | 222.9367 |
| 302.84 | 236.9278 |
| 303.76 | 245.6824 |
| 303.91 | 245.7176 |
| 304.40 | 262.9129 |
| 304.40 | 262.9129 |
| 304.84 | 251.0771 |
| 306.84 | 249.8717 |
| 308.46 | 247.4960 |
| 311.98 | 241.9189 |
| 316.51 | 268.9281 |
| 318.01 | 232.5514 |
| 319.02 | 226.2849 |
| 319.41 | 231.7865 |
| 320.08 | 243.8587 |
| 323.87 | 226.2686 |
| 323.87 | 226.2686 |
| 323.87 | 226.2686 |
| 323.87 | 226.2686 |
| 325.23 | 233.5349 |
| 328.77 | 262.3096 |
| 333.44 | 188.8257 |
| 334.20 | 221.9177 |
| 334.20 | 221.9177 |
| 334.30 | 221.9392 |
| 338.28 | 236.0021 |
| 338.28 | 236.0021 |
| 338.28 | 236.0021 |
| 338.28 | 236.0021 |
| 338.32 | 236.0119 |
| 338.32 | 236.0119 |
| 338.32 | 236.0119 |
| 340.50 | 213.9479 |
| 340.57 | 213.9626 |
| 344.27 | 228.8900 |
| 345.85 | 238.1052 |
| 350.59 | 0.0000   |
| 351.07 | 194.1596 |
| 351.92 | 194.3110 |
| 351.92 | 194.3110 |
| 351.92 | 194.3110 |
| 355.39 | 0.0000   |
| 356.01 | 197.2668 |
| 364.48 | 205.0787 |
| 366.43 | 209.9555 |
| 367.43 | 202.8934 |
| 367.94 | 0.0000   |
| 369.80 | 203.3117 |
| 374.96 | 199.6611 |
| 383.85 | 206.6858 |
| 387.95 | 200.9448 |
| 388.63 | 211.2044 |
| 391.69 | 231.1584 |
| 391.69 | 231.1584 |
| 392.90 | 225.8370 |
| 398.62 | 185.9839 |
| 400.65 | 203.0551 |
| 401.10 | 210.5867 |
| 401.81 | 198.5863 |
| 402.60 | 215.5051 |
| 404.84 | 222.4393 |
| 410.95 | 216.0153 |
| 411.60 | 217.0672 |
| 413.65 | 243.7736 |
| 414.70 | 219.4842 |
| 415.30 | 202.6254 |

|        |          |
|--------|----------|
| 415.76 | 191.3855 |
| 417.63 | 0.0000   |
| 418.52 | 206.9165 |
| 423.70 | 180.2449 |
| 427.08 | 204.4941 |
| 427.89 | 206.5262 |
| 432.53 | 177.6514 |
| 433.93 | 190.2719 |
| 439.47 | 176.6687 |
| 439.56 | 176.6800 |
| 439.89 | 176.7249 |
| 443.98 | 177.2662 |
| 444.90 | 179.3156 |
| 445.03 | 182.2263 |
| 445.03 | 182.2263 |
| 445.03 | 182.2263 |
| 445.03 | 182.2263 |
| 453.90 | 177.6007 |
| 463.38 | 186.6447 |
| 468.07 | 173.2205 |
| 473.00 | 175.4685 |
| 475.06 | 159.3005 |
| 475.35 | 162.6193 |
| 476.78 | 166.0710 |
| 477.59 | 151.0296 |
| 477.96 | 125.0679 |
| 482.03 | 174.9349 |
| 484.57 | 162.0174 |
| 487.03 | 143.0842 |
| 490.36 | 0.0000   |
| 492.35 | 178.5127 |
| 497.08 | 142.0711 |
| 507.63 | 0.0000   |
| 510.53 | 0.0000   |
| 510.84 | 147.4294 |
| 511.00 | 147.4445 |
| 511.85 | 147.5283 |
| 511.85 | 147.5283 |
| 513.99 | 150.0970 |
| 513.99 | 150.0970 |
| 520.41 | 150.3920 |
| 520.65 | 150.4173 |
| 527.90 | 164.4000 |
| 528.96 | 0.0000   |
| 529.64 | 144.1395 |
| 529.87 | 0.0000   |
| 531.02 | 123.8034 |
| 537.32 | 136.6335 |
| 543.00 | 156.7129 |
| 546.56 | 0.0000   |
| 549.76 | 132.5313 |
| 552.65 | 159.7374 |
| 555.20 | 135.0559 |
| 563.23 | 157.6505 |
| 563.90 | 141.0018 |
| 568.70 | 145.1583 |
| 569.32 | 165.0482 |
| 569.50 | 161.8613 |
| 569.67 | 161.8801 |
| 573.80 | 136.5984 |
| 574.00 | 146.0722 |
| 574.64 | 162.9506 |
| 578.91 | 196.7428 |
| 579.30 | 0.0000   |
| 583.14 | 141.5898 |
| 585.48 | 125.2091 |
| 591.81 | 112.8439 |
| 592.07 | 115.6652 |
| 593.00 | 137.1003 |
| 595.88 | 167.1421 |
| 600.56 | 136.4003 |
| 602.52 | 0.0000   |
| 602.71 | 190.6068 |
| 602.71 | 190.6068 |
| 603.60 | 185.3558 |
| 604.41 | 172.9628 |
| 604.70 | 155.1564 |
| 609.31 | 150.2026 |

|        |          |
|--------|----------|
| 609.31 | 150.2026 |
| 609.31 | 150.2026 |
| 609.31 | 150.2026 |
| 610.33 | 150.2915 |
| 612.46 | 146.8900 |
| 614.37 | 107.5977 |
| 618.01 | 135.5449 |
| 621.84 | 143.7088 |
| 621.84 | 143.7088 |
| 631.29 | 144.4719 |
| 633.02 | 136.9973 |
| 633.10 | 143.5274 |
| 634.78 | 131.6909 |
| 635.90 | 125.2366 |
| 636.97 | 115.5053 |
| 645.85 | 99.6423  |
| 646.12 | 105.1336 |
| 656.30 | 127.4213 |
| 657.75 | 143.2634 |
| 657.90 | 0.0000   |
| 661.65 | 144.4852 |
| 661.65 | 144.4852 |
| 664.57 | 0.0000   |
| 666.33 | 153.4097 |
| 666.33 | 153.4097 |
| 675.00 | 131.6054 |
| 677.61 | 136.4248 |
| 685.20 | 128.5804 |
| 692.80 | 135.6307 |
| 695.00 | 123.6104 |
| 696.49 | 124.6415 |
| 696.49 | 124.6415 |
| 697.00 | 136.8602 |
| 697.49 | 141.5840 |
| 698.33 | 147.2705 |
| 698.50 | 147.2833 |
| 699.00 | 156.7052 |
| 702.63 | 150.4134 |
| 706.10 | 135.6094 |
| 706.58 | 0.0000   |
| 706.67 | 146.0126 |
| 709.31 | 136.7724 |
| 711.68 | 147.3228 |
| 713.82 | 129.5190 |
| 717.42 | 132.2500 |
| 720.50 | 131.7126 |
| 721.93 | 0.0000   |
| 722.20 | 126.9404 |
| 722.78 | 128.6064 |
| 722.78 | 128.6064 |
| 722.89 | 128.6120 |
| 722.95 | 128.6147 |
| 723.30 | 138.4096 |
| 724.18 | 135.2108 |
| 727.18 | 130.3802 |
| 733.00 | 101.4398 |
| 735.90 | 102.0740 |
| 739.58 | 135.0016 |
| 742.81 | 113.1578 |
| 744.21 | 86.3635  |
| 747.13 | 133.5731 |
| 751.79 | 121.3499 |
| 752.31 | 109.8206 |
| 753.82 | 96.4030  |
| 755.35 | 102.2626 |
| 756.15 | 104.2317 |
| 756.87 | 117.7829 |
| 763.93 | 158.8617 |
| 765.79 | 125.0685 |
| 766.42 | 128.9845 |
| 766.84 | 134.8288 |
| 776.49 | 132.5164 |
| 778.00 | 120.9071 |
| 778.57 | 114.1126 |
| 778.89 | 109.2520 |
| 783.80 | 109.5003 |
| 785.46 | 94.9971  |
| 792.07 | 132.9102 |



|         |          |
|---------|----------|
| 795.84  | 94.3770  |
| 796.30  | 94.3965  |
| 798.80  | 131.6304 |
| 801.93  | 103.0886 |
| 805.60  | 104.4899 |
| 810.29  | 113.7951 |
| 810.76  | 104.9131 |
| 815.85  | 106.1423 |
| 817.79  | 118.1502 |
| 818.51  | 108.2549 |
| 819.60  | 92.4097  |
| 826.30  | 131.5515 |
| 828.27  | 0.0000   |
| 831.60  | 139.8490 |
| 831.96  | 139.8718 |
| 834.83  | 156.0508 |
| 836.80  | 0.0000   |
| 846.75  | 107.5900 |
| 848.13  | 94.5756  |
| 856.28  | 0.0000   |
| 856.80  | 81.3665  |
| 860.37  | 93.0500  |
| 867.32  | 102.5977 |
| 867.82  | 88.2709  |
| 871.10  | 107.6972 |
| 873.19  | 109.8259 |
| 874.81  | 98.7070  |
| 875.33  | 0.0000   |
| 876.40  | 93.6808  |
| 879.36  | 106.0313 |
| 880.27  | 108.1113 |
| 880.51  | 115.2622 |
| 881.50  | 119.3923 |
| 883.24  | 100.0756 |
| 884.67  | 95.0264  |
| 889.25  | 106.4692 |
| 896.60  | 122.1934 |
| 898.02  | 118.1562 |
| 899.00  | 113.0638 |
| 903.28  | 86.4900  |
| 911.07  | 98.1272  |
| 911.07  | 98.1272  |
| 911.07  | 98.1272  |
| 919.63  | 98.2582  |
| 920.93  | 107.8509 |
| 925.00  | 108.0265 |
| 925.24  | 106.9983 |
| 926.50  | 104.9741 |
| 935.52  | 114.7378 |
| 937.48  | 106.4762 |
| 944.10  | 115.1272 |
| 946.00  | 107.8805 |
| 949.00  | 85.9872  |
| 962.29  | 102.9944 |
| 964.01  | 106.5296 |
| 966.15  | 106.6180 |
| 968.20  | 106.7002 |
| 969.11  | 106.8902 |
| 969.11  | 106.8902 |
| 969.11  | 106.8902 |
| 977.42  | 122.1328 |
| 980.50  | 101.8965 |
| 983.50  | 69.0704  |
| 989.30  | 101.1714 |
| 996.32  | 124.9290 |
| 1001.03 | 99.4785  |
| 1001.68 | 94.1517  |
| 1004.76 | 134.9645 |
| 1021.30 | 0.0000   |
| 1024.50 | 0.0000   |
| 1034.80 | 108.3008 |
| 1036.00 | 91.0137  |
| 1037.82 | 105.9406 |
| 1038.57 | 107.8276 |
| 1038.76 | 0.0000   |
| 1045.16 | 116.4725 |
| 1046.59 | 105.3463 |
| 1048.07 | 110.0653 |

|         |          |
|---------|----------|
| 1050.47 | 87.7545  |
| 1050.47 | 87.7545  |
| 1062.04 | 96.5517  |
| 1063.62 | 101.2952 |
| 1076.63 | 102.7045 |
| 1077.35 | 107.4396 |
| 1078.86 | 95.2405  |
| 1085.78 | 96.4148  |
| 1099.22 | 110.1579 |
| 1112.02 | 111.8316 |
| 1112.84 | 115.2036 |
| 1115.52 | 113.6377 |
| 1120.29 | 111.9074 |
| 1120.29 | 111.9074 |
| 1120.29 | 111.9074 |
| 1120.29 | 111.9074 |
| 1120.51 | 111.9155 |
| 1121.28 | 111.9441 |
| 1124.00 | 0.0000   |
| 1129.67 | 117.5397 |
| 1131.51 | 0.0000   |
| 1147.95 | 0.0000   |
| 1167.94 | 121.4643 |
| 1173.22 | 99.2856  |
| 1175.09 | 121.7477 |
| 1177.93 | 120.8862 |
| 1189.05 | 122.2970 |
| 1204.90 | 124.8827 |
| 1205.75 | 0.0000   |
| 1213.00 | 139.9942 |
| 1221.42 | 131.4646 |
| 1230.97 | 172.5071 |
| 1235.34 | 143.9532 |
| 1236.41 | 0.0000   |
| 1238.25 | 124.2065 |
| 1246.25 | 134.4774 |
| 1260.41 | 0.0000   |
| 1271.85 | 83.3271  |
| 1274.45 | 92.4332  |
| 1274.54 | 88.4174  |
| 1291.56 | 76.7501  |
| 1298.22 | 0.0000   |
| 1312.09 | 88.3958  |
| 1325.50 | 66.3013  |
| 1325.50 | 66.3013  |
| 1332.49 | 53.1498  |
| 1333.61 | 52.1437  |
| 1360.21 | 48.4229  |
| 1362.66 | 0.0000   |
| 1365.15 | 49.5234  |
| 1368.21 | 64.0218  |
| 1368.53 | 0.0000   |
| 1376.25 | 39.3293  |
| 1384.27 | 81.9482  |
| 1394.10 | 63.4509  |
| 1395.20 | 67.6320  |
| 1407.95 | 55.3402  |
| 1434.06 | 42.0661  |
| 1436.60 | 43.1478  |
| 1457.56 | 0.0000   |
| 1460.81 | 33.3666  |
| 1489.15 | 30.9501  |
| 1509.49 | 43.1854  |
| 1596.49 | 34.1233  |
| 1620.62 | 25.7446  |
| 1678.03 | 0.0000   |
| 1691.02 | 34.3634  |
| 1691.02 | 34.3634  |
| 1706.46 | 0.0000   |
| 1750.46 | 0.0000   |
| 1764.49 | 26.6276  |
| 1764.49 | 26.6276  |
| 1764.49 | 26.6276  |
| 1764.49 | 26.6276  |
| 1770.23 | 33.7716  |
| 1771.40 | 30.2250  |
| 1791.20 | 0.0000   |
| 1808.65 | 20.1685  |

1836.01

32.4639

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G244630002

|                             |            |      |
|-----------------------------|------------|------|
| Total Uranium Activity      | 5.4957E+00 | ug/g |
| Total Uranium Counting Unc. | 6.5983E+00 | ug/g |
| Total Uranium Tpu           | 3.3665E-06 | ug/g |
| Total Uranium Mda           | 3.5400E+00 | ug/g |

```

*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON , SC 29417              *
*               GROSS GAMMA REPORT                 *
*
*****
*
*  BATCH ID      : 941639                      SAMPLE ID   : G244630002
*  ANALYST       : MXR1                        DETECTOR    : GAM18
*  SAMPLE DATE   : 8-JAN-2010 12:00:00.00    COUNT TIME   : 0 02:00:00.00
*  ANALYSIS DATE : 22-JAN-2010 20:50:14.75    SAMPLE ALQT  : 140.300 GRAM
*
*****

```

```

GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.082E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.389E+00
GROSS GAMMA MDA     (pCi/GRAM ) : 2.770E+00
GROSS GAMMA DLC     (pCi/GRAM ) : 1.347E+00

```

VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 13:46:03.39

```

*****
*                               GEL Laboratories LLC                      *
*                               2040 Savage Road                        *
*                               Charleston, SC 29414                    *
*****
Configuration   : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630003.CNF;1
Sample date     : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 11:45:37
Sample ID      : G244630003      Sample quantity   : 1.33250E+02 GRAM
Detector name   : GAM04          Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:01.38 0.0%
Energy tolerance: 1.50000 keV    Analyst Initials  : MXR1
Abundance limit : 75.00000       Sensitivity    : 5.00000
Batch ID       : 941639          Detector SN#   :
Matrix Spike ID :                 LCS ID          : 1032-A
*****

```

| Pk | It | Energy   | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | Fit      |
|----|----|----------|------|-------|------|---------|------|----|----------|------|----------|
| 1  | 3  | 74.81*   | 281  | 399   | 0.98 | 149.66  | 146  | 18 | 3.91E-02 | 12.5 | 2.06E+00 |
| 2  | 3  | 77.15*   | 515  | 355   | 1.03 | 154.34  | 146  | 18 | 7.15E-02 | 7.5  |          |
| 3  | 0  | 87.10    | 203  | 400   | 0.99 | 174.25  | 171  | 7  | 2.82E-02 | 17.8 |          |
| 4  | 5  | 89.94    | 111  | 187   | 0.89 | 179.93  | 178  | 16 | 1.54E-02 | 18.0 | 2.02E+00 |
| 5  | 5  | 92.97*   | 254  | 479   | 1.53 | 185.99  | 178  | 16 | 3.53E-02 | 17.3 |          |
| 6  | 0  | 128.68   | 106  | 385   | 0.80 | 257.40  | 253  | 9  | 1.47E-02 | 34.7 |          |
| 7  | 0  | 185.73*  | 249  | 364   | 1.41 | 371.53  | 367  | 10 | 3.46E-02 | 16.0 |          |
| 8  | 0  | 209.32   | 116  | 358   | 1.21 | 418.71  | 413  | 11 | 1.61E-02 | 32.9 |          |
| 9  | 5  | 238.56*  | 1457 | 193   | 1.15 | 477.19  | 470  | 19 | 2.02E-01 | 3.1  | 1.46E+00 |
| 10 | 5  | 241.51   | 324  | 252   | 1.62 | 483.09  | 470  | 19 | 4.50E-02 | 13.1 |          |
| 11 | 0  | 270.20   | 134  | 207   | 1.28 | 540.47  | 536  | 11 | 1.87E-02 | 22.4 |          |
| 12 | 0  | 277.45   | 60   | 124   | 1.20 | 554.97  | 552  | 7  | 8.30E-03 | 33.7 |          |
| 13 | 0  | 295.06   | 438  | 157   | 1.12 | 590.20  | 585  | 10 | 6.08E-02 | 7.2  |          |
| 14 | 0  | 300.83   | 111  | 228   | 1.12 | 601.74  | 596  | 13 | 1.54E-02 | 29.6 |          |
| 15 | 0  | 328.01   | 60   | 155   | 0.92 | 656.09  | 652  | 8  | 8.37E-03 | 38.1 |          |
| 16 | 0  | 338.16*  | 266  | 139   | 1.17 | 676.41  | 671  | 10 | 3.70E-02 | 10.6 |          |
| 17 | 0  | 351.84*  | 680  | 163   | 1.09 | 703.77  | 699  | 10 | 9.45E-02 | 5.3  |          |
| 18 | 0  | 409.03   | 52   | 122   | 0.95 | 818.16  | 815  | 9  | 7.20E-03 | 40.6 |          |
| 19 | 0  | 462.70   | 97   | 96    | 1.47 | 925.48  | 920  | 11 | 1.35E-02 | 22.1 |          |
| 20 | 0  | 511.09*  | 167  | 135   | 1.69 | 1022.27 | 1014 | 17 | 2.32E-02 | 19.7 |          |
| 21 | 0  | 583.06*  | 441  | 94    | 1.58 | 1166.22 | 1159 | 14 | 6.12E-02 | 6.8  |          |
| 22 | 0  | 609.28*  | 448  | 105   | 1.30 | 1218.65 | 1213 | 13 | 6.22E-02 | 6.8  |          |
| 23 | 0  | 662.00*  | 36   | 60    | 1.29 | 1324.09 | 1318 | 9  | 4.98E-03 | 45.2 |          |
| 24 | 0  | 727.45   | 122  | 65    | 1.16 | 1454.98 | 1449 | 13 | 1.69E-02 | 16.4 |          |
| 25 | 0  | 768.76   | 61   | 47    | 2.02 | 1537.61 | 1533 | 9  | 8.48E-03 | 24.3 |          |
| 26 | 0  | 786.89   | 50   | 52    | 2.74 | 1573.86 | 1569 | 10 | 6.99E-03 | 31.1 |          |
| 27 | 0  | 794.62   | 65   | 25    | 1.84 | 1589.33 | 1584 | 11 | 9.03E-03 | 19.3 |          |
| 28 | 0  | 861.08   | 57   | 95    | 1.93 | 1722.23 | 1715 | 19 | 7.92E-03 | 43.1 |          |
| 29 | 0  | 911.20*  | 303  | 32    | 1.39 | 1822.46 | 1818 | 10 | 4.20E-02 | 6.8  |          |
| 30 | 0  | 968.97*  | 129  | 89    | 1.80 | 1938.00 | 1933 | 11 | 1.79E-02 | 16.9 |          |
| 31 | 0  | 1000.64  | 40   | 25    | 1.20 | 2001.33 | 1996 | 11 | 5.50E-03 | 29.2 |          |
| 32 | 0  | 1120.64  | 130  | 56    | 1.70 | 2241.30 | 2234 | 15 | 1.80E-02 | 15.4 |          |
| 33 | 0  | 1460.67* | 1420 | 4     | 1.93 | 2921.23 | 2912 | 17 | 1.97E-01 | 2.7  |          |
| 34 | 0  | 1630.78  | 14   | 4     | 1.63 | 3261.36 | 3257 | 8  | 1.94E-03 | 36.4 |          |
| 35 | 0  | 1764.24* | 79   | 4     | 2.84 | 3528.19 | 3520 | 16 | 1.10E-02 | 13.4 |          |

Flag: "\*" = Peak area was modified by background subtraction

## VMS Nuclide Identification Report V3.1 Generated 23-JAN-2010 13:46:06

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630003.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 8-JAN-2010 12:00:00   Acquisition date : 23-JAN-2010 11:45:37
Sample ID         : G244630003           Sample quantity  : 133.25 GRAM
Sample type       : SOLID                 Sample geometry   :
Detector name     : GAMMA4               Detector geometry: CAN
Elapsed live time : 0 02:00:00.00        Elapsed real time: 0 02:00:01.38   0.0%
Peak Width (FWHM): 3.00                  Confidence level  : 5.00 %
Energy tolerance  : 1.50 keV              Half life ratio   : 8.00
Errors propagated: Yes                    Systematic Error  : 0.00 %
Efficiency type   : Empirical              Efficiencies at   : Peak Energy
Abundance limit   : 75.00                 WTM error limit   : 3.00

```

## Full Combined Activity-MDA Report

## ---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| K-40    | +         | 1460.81      | *   | 3.489E+01           | 3.108E+00 | 4.650E-01      | 3.305E-02 | 75.028  |
| CD-109  | +         | 88.03        | *   | 3.137E+00           | 1.175E+00 | 1.358E+00      | 1.632E-01 | 2.311   |
| SN-126  |           | 64.28        |     | 5.490E-01           | 6.474E-01 | 1.106E+00      | 1.905E-01 | 0.496   |
|         | +         | 86.94        |     | 1.282E+00           | 7.069E-01 | 5.748E-01      | 2.424E-01 | 2.230   |
|         | +         | 87.57        | *   | 3.084E-01           | 1.156E-01 | 1.345E-01      | 1.613E-02 | 2.293   |
| BA-137M | +         | 661.65       | *   | 5.091E-02           | 4.605E-02 | 5.965E-02      | 2.909E-03 | 0.853   |
| CS-137  | +         | 661.65       | *   | 5.382E-02           | 4.868E-02 | 6.306E-02      | 3.094E-03 | 0.853   |
| TL-208  | +         | 277.35       |     | 5.722E-01           | 3.904E-01 | 5.706E-01      | 6.306E-02 | 1.003   |
|         | +         | 510.84       |     | 7.979E-01           | 3.238E-01 | 2.039E-01      | 2.046E-02 | 3.914   |
|         | +         | 583.14       | *   | 6.006E-01           | 9.007E-02 | 5.465E-02      | 3.438E-03 | 10.990  |
|         | +         | 860.37       |     | 7.395E-01           | 6.403E-01 | 4.310E-01      | 3.595E-02 | 1.716   |
| BI-211  |           | 72.87        |     | 2.227E+00           | 3.838E+00 | 5.903E+00      | 6.767E-01 | 0.377   |
|         | +         | 351.07       | *   | 4.083E+00           | 5.098E-01 | 3.263E-01      | 2.204E-02 | 12.514  |
| BI-212  | +         | 727.18       | *   | 1.428E+00           | 4.813E-01 | 4.600E-01      | 3.516E-02 | 3.104   |
|         | +         | 785.46       |     | 3.803E+00           | 2.380E+00 | 3.129E+00      | 2.037E-01 | 1.215   |
|         |           | 1620.62      |     | 7.636E-01           | 1.297E+00 | 2.318E+00      | 1.513E-01 | 0.329   |
| PB-212  | +         | 74.81        |     | 2.035E+00           | 5.916E-01 | 6.004E-01      | 8.874E-02 | 3.389   |
|         | +         | 77.11        |     | 2.048E+00           | 3.856E-01 | 3.314E-01      | 3.802E-02 | 6.181   |
|         | +         | 87.30        |     | 1.426E+00           | 5.531E-01 | 6.355E-01      | 9.914E-02 | 2.244   |
|         | +         | 238.63       | *   | 1.907E+00           | 1.933E-01 | 8.967E-02      | 7.202E-03 | 21.262  |
|         | +         | 300.09       |     | 2.250E+00           | 1.346E+00 | 1.080E+00      | 9.510E-02 | 2.083   |
| PO-212  | +         | 74.81        |     | 2.035E+00           | 5.916E-01 | 6.004E-01      | 8.874E-02 | 3.389   |
|         | +         | 77.11        |     | 2.048E+00           | 3.856E-01 | 3.314E-01      | 3.802E-02 | 6.181   |
|         | +         | 87.30        |     | 1.426E+00           | 5.531E-01 | 6.355E-01      | 9.914E-02 | 2.244   |
|         |           | 115.19       |     | 2.510E+00           | 3.457E+00 | 5.859E+00      | 4.409E-01 | 0.428   |
|         | +         | 238.63       | *   | 1.907E+00           | 1.933E-01 | 8.967E-02      | 7.202E-03 | 21.262  |
|         | +         | 300.09       |     | 2.250E+00           | 1.346E+00 | 1.080E+00      | 9.510E-02 | 2.083   |
| BI-214  | +         | 609.31       | *   | 1.152E+00           | 1.778E-01 | 1.060E-01      | 7.788E-03 | 10.866  |
|         | +         | 1120.29      |     | 1.782E+00           | 5.723E-01 | 4.579E-01      | 4.266E-02 | 3.891   |
|         | +         | 1764.49      |     | 1.485E+00           | 4.088E-01 | 2.510E-01      | 1.530E-02 | 5.915   |
| PB-214  | +         | 74.81        |     | 3.506E+00           | 9.995E-01 | 1.034E+00      | 1.411E-01 | 3.389   |
|         | +         | 77.11        |     | 3.511E+00           | 7.132E-01 | 5.681E-01      | 7.824E-02 | 6.181   |
|         | +         | 87.30        |     | 2.444E+00           | 9.347E-01 | 1.089E+00      | 1.550E-01 | 2.244   |
|         | +         | 241.98       |     | 2.546E+00           | 7.018E-01 | 5.402E-01      | 4.706E-02 | 4.713   |

----- Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PO-214  | +         | 295.21       |     | 1.553E+00           | 2.641E-01 | 2.082E-01      | 1.891E-02 | 7.462   |
|         | +         | 351.92       | *   | 1.420E+00           | 1.922E-01 | 1.149E-01      | 9.802E-03 | 12.359  |
|         | +         | 74.81        |     | 3.506E+00           | 9.995E-01 | 1.034E+00      | 1.411E-01 | 3.389   |
|         | +         | 77.11        |     | 3.511E+00           | 7.132E-01 | 5.681E-01      | 7.824E-02 | 6.181   |
|         | +         | 87.30        |     | 2.444E+00           | 9.347E-01 | 1.089E+00      | 1.550E-01 | 2.244   |
|         | +         | 241.98       |     | 2.546E+00           | 7.018E-01 | 5.402E-01      | 4.706E-02 | 4.713   |
| PO-216  | +         | 295.21       |     | 1.553E+00           | 2.641E-01 | 2.082E-01      | 1.891E-02 | 7.462   |
|         | +         | 351.92       | *   | 1.420E+00           | 1.922E-01 | 1.149E-01      | 9.802E-03 | 12.359  |
|         | +         | 74.81        |     | 2.035E+00           | 5.916E-01 | 6.004E-01      | 8.874E-02 | 3.389   |
|         | +         | 77.11        |     | 2.048E+00           | 3.856E-01 | 3.314E-01      | 3.802E-02 | 6.181   |
|         | +         | 87.30        |     | 1.426E+00           | 5.531E-01 | 6.355E-01      | 9.914E-02 | 2.244   |
|         | +         | 238.63       | *   | 1.907E+00           | 1.933E-01 | 8.967E-02      | 7.202E-03 | 21.262  |
| PO-218  | +         | 300.09       |     | 2.250E+00           | 1.346E+00 | 1.080E+00      | 9.510E-02 | 2.083   |
|         | +         | 74.81        |     | 3.506E+00           | 9.995E-01 | 1.034E+00      | 1.411E-01 | 3.389   |
|         | +         | 77.11        |     | 3.511E+00           | 7.132E-01 | 5.681E-01      | 7.824E-02 | 6.181   |
|         | +         | 87.30        |     | 2.444E+00           | 9.347E-01 | 1.089E+00      | 1.550E-01 | 2.244   |
|         | +         | 241.98       |     | 2.546E+00           | 7.018E-01 | 5.402E-01      | 4.706E-02 | 4.713   |
|         | +         | 295.21       |     | 1.553E+00           | 2.641E-01 | 2.082E-01      | 1.891E-02 | 7.462   |
| RA-224  | +         | 351.92       | *   | 1.420E+00           | 1.922E-01 | 1.149E-01      | 9.802E-03 | 12.359  |
| RA-226  | +         | 240.98       | *   | 4.827E+00           | 1.303E+00 | 1.021E+00      | 6.805E-02 | 4.729   |
| AC-228  | +         | 609.31       | *   | 1.152E+00           | 1.778E-01 | 1.060E-01      | 7.788E-03 | 10.866  |
|         | +         | 1120.29      |     | 1.782E+00           | 5.723E-01 | 4.579E-01      | 4.266E-02 | 3.891   |
|         | +         | 1764.49      |     | 1.485E+00           | 4.088E-01 | 2.510E-01      | 1.530E-02 | 5.915   |
|         | +         | 338.32       |     | 1.761E+00           | 8.103E-01 | 3.381E-01      | 1.381E-01 | 5.211   |
|         | +         | 911.07       | *   | 1.863E+00           | 3.260E-01 | 2.413E-01      | 2.630E-02 | 7.721   |
|         | +         | 969.11       |     | 1.407E+00           | 5.759E-01 | 5.142E-01      | 1.186E-01 | 2.736   |
| RA-228  | +         | 338.32       |     | 1.761E+00           | 8.103E-01 | 3.381E-01      | 1.381E-01 | 5.211   |
|         | +         | 911.07       | *   | 1.863E+00           | 3.260E-01 | 2.413E-01      | 2.630E-02 | 7.721   |
|         | +         | 969.11       |     | 1.407E+00           | 5.759E-01 | 5.142E-01      | 1.186E-01 | 2.736   |
| TH-228  | +         | 74.81        |     | 2.065E+00           | 5.691E-01 | 6.094E-01      | 7.012E-02 | 3.389   |
|         | +         | 77.11        |     | 2.079E+00           | 3.914E-01 | 3.364E-01      | 3.859E-02 | 6.181   |
|         | +         | 87.30        |     | 1.448E+00           | 5.425E-01 | 6.451E-01      | 7.723E-02 | 2.244   |
| TH-230  | +         | 238.63       | *   | 1.935E+00           | 1.962E-01 | 9.102E-02      | 7.310E-03 | 21.262  |
|         | +         | 300.09       |     | 2.284E+00           | 1.909E+00 | 1.096E+00      | 6.471E-01 | 2.083   |
|         | +         | 609.31       | *   | 1.152E+00           | 1.778E-01 | 1.060E-01      | 7.788E-03 | 10.866  |
|         | +         | 1120.29      |     | 1.782E+00           | 5.723E-01 | 4.579E-01      | 4.266E-02 | 3.891   |
|         | +         | 1764.49      |     | 1.485E+00           | 4.088E-01 | 2.510E-01      | 1.530E-02 | 5.915   |
|         | +         | 338.32       |     | 1.761E+00           | 3.891E-01 | 3.381E-01      | 2.125E-02 | 5.211   |
| TH-232  | +         | 911.07       | *   | 1.863E+00           | 3.260E-01 | 2.413E-01      | 2.630E-02 | 7.721   |
|         | +         | 969.11       |     | 1.407E+00           | 5.759E-01 | 5.142E-01      | 1.186E-01 | 2.736   |
|         | +         | 609.31       | *   | 1.152E+00           | 1.778E-01 | 1.060E-01      | 7.788E-03 | 10.866  |
| U-234   | +         | 1120.29      |     | 1.782E+00           | 5.723E-01 | 4.579E-01      | 4.266E-02 | 3.891   |
|         | +         | 1764.49      |     | 1.485E+00           | 4.088E-01 | 2.510E-01      | 1.530E-02 | 5.915   |
|         | +         | 86.50        | *   | 9.056E-01           | 3.874E-01 | 4.145E-01      | 9.875E-02 | 2.185   |
| NP-237  | +         | 95.87        |     | -1.312E-01          | 1.027E+00 | 1.519E+00      | 3.828E-01 | -0.086  |
|         | +         | 74.67        | *   | 3.299E-01           | 9.081E-02 | 9.780E-02      | 1.120E-02 | 3.373   |
|         | +         | 86.72        |     | 3.396E+01           | 1.272E+01 | 1.529E+01      | 1.823E+00 | 2.222   |
| AM-243  | +         | 117.66       |     | -2.585E+00          | 3.732E+00 | 5.955E+00      | 4.347E-01 | -0.434  |
|         | +         | 142.18       |     | 9.373E+00           | 1.677E+01 | 2.800E+01      | 1.831E+00 | 0.335   |



---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| ANH-511 | +         | 511.00       | *   | 1.724E-01           | 6.845E-02 | 4.405E-02      | 2.463E-03 | 3.913   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| BE-7    |           | 477.59       | *   | 2.307E-02           | 3.015E-01 | 4.945E-01           | 3.275E-02 | 0.047   |
| NA-22   |           | 1274.54      | *   | -2.717E-02          | 4.468E-02 | 7.008E-02           | 4.582E-03 | -0.388  |
| NA-24   |           | 1368.53      | *   | -4.380E-01          | 4.468E-02 | Half-Life too short |           |         |
| AL-26   |           | 1129.67      |     | 5.549E-02           | 1.855E+00 | 3.005E+00           | 1.938E-01 | 0.018   |
|         |           | 1808.65      | *   | 6.139E-03           | 3.038E-02 | 5.136E-02           | 3.046E-03 | 0.120   |
| TI-44   |           | 67.85        |     | -1.641E-02          | 5.509E-02 | 9.176E-02           | 1.067E-02 | -0.179  |
|         | +         | 78.38        | *   | 3.780E-01           | 7.116E-02 | 8.329E-02           | 9.577E-03 | 4.538   |
| SC-46   |           | 889.25       | *   | 1.733E-03           | 4.061E-02 | 6.713E-02           | 5.430E-03 | 0.026   |
|         | +         | 1120.51      |     | 3.047E-01           | 9.577E-02 | 1.375E-01           | 9.006E-03 | 2.216   |
| V-48    |           | 944.10       |     | -5.417E-01          | 9.323E-01 | 1.440E+00           | 1.151E-01 | -0.376  |
|         |           | 983.50       | *   | -3.262E-02          | 7.360E-02 | 1.148E-01           | 8.894E-03 | -0.284  |
|         |           | 1312.09      |     | -1.765E-02          | 6.980E-02 | 1.127E-01           | 7.594E-03 | -0.157  |
| CR-51   |           | 320.08       | *   | -2.282E-01          | 3.537E-01 | 5.694E-01           | 4.010E-02 | -0.401  |
| MN-52   |           | 744.21       |     | -7.406E-02          | 2.138E-01 | 3.456E-01           | 2.051E-02 | -0.214  |
|         |           | 848.13       |     | 3.326E+00           | 6.708E+00 | 1.157E+01           | 8.604E-01 | 0.288   |
|         |           | 935.52       |     | 1.396E-01           | 2.629E-01 | 4.512E-01           | 3.629E-02 | 0.309   |
|         |           | 1246.25      |     | 1.124E+00           | 8.195E+00 | 1.389E+01           | 8.838E-01 | 0.081   |
|         |           | 1333.61      |     | 1.869E+00           | 5.324E+00 | 9.209E+00           | 6.310E-01 | 0.203   |
|         |           | 1434.06      | *   | 3.456E-02           | 1.901E-01 | 3.246E-01           | 2.215E-02 | 0.106   |
| MN-54   |           | 834.83       | *   | 4.402E-03           | 3.989E-02 | 6.659E-02           | 4.819E-03 | 0.066   |
| CO-56   |           | 846.75       | *   | 3.510E-02           | 4.021E-02 | 7.129E-02           | 5.289E-03 | 0.492   |
|         |           | 977.42       |     | 5.032E-01           | 3.060E+00 | 5.081E+00           | 3.957E-01 | 0.099   |
|         |           | 1037.82      |     | 6.429E-02           | 3.272E-01 | 5.425E-01           | 4.270E-02 | 0.119   |
|         |           | 1175.09      |     | 1.048E+00           | 2.411E+00 | 4.041E+00           | 2.408E-01 | 0.259   |
|         |           | 1238.25      |     | 8.606E-02           | 1.057E-01 | 1.866E-01           | 1.242E-02 | 0.461   |
|         |           | 1360.21      |     | 7.030E-03           | 1.031E+00 | 1.718E+00           | 1.177E-01 | 0.004   |
|         |           | 1771.40      |     | -5.709E-01          | 2.981E-01 | 3.080E-01           | 1.870E-02 | -1.853  |
| CO-57   |           | 122.06       | *   | -1.969E-02          | 2.478E-02 | 3.926E-02           | 2.726E-03 | -0.502  |
|         |           | 136.48       |     | -4.356E-02          | 2.023E-01 | 3.275E-01           | 2.436E-02 | -0.133  |
| CO-58   |           | 810.76       | *   | -3.160E-02          | 3.922E-02 | 6.017E-02           | 4.154E-03 | -0.525  |
| FE-59   |           | 142.65       |     | 2.016E+00           | 2.600E+00 | 4.374E+00           | 2.859E-01 | 0.461   |
|         |           | 192.34       |     | -5.858E-01          | 9.383E-01 | 1.455E+00           | 1.770E-01 | -0.402  |
|         |           | 1099.22      | *   | -4.210E-02          | 1.070E-01 | 1.668E-01           | 1.275E-02 | -0.252  |
|         |           | 1291.56      |     | 1.675E-02           | 1.371E-01 | 2.318E-01           | 1.873E-02 | 0.072   |
| CO-60   |           | 1173.22      |     | -7.897E-02          | 5.379E-02 | 7.501E-02           | 4.461E-03 | -1.053  |
|         |           | 1332.49      | *   | 1.089E-02           | 4.212E-02 | 7.218E-02           | 4.946E-03 | 0.151   |
| ZN-65   |           | 1115.52      | *   | 5.675E-03           | 9.694E-02 | 1.364E-01           | 9.022E-03 | 0.042   |
| GE-68   |           | 1077.35      | *   | 1.031E+00           | 1.459E+00 | 2.510E+00           | 1.753E-01 | 0.410   |
| AS-73   |           | 53.44        | *   | -5.594E-01          | 1.476E+00 | 2.465E+00           | 3.225E-01 | -0.227  |
| AS-74   |           | 595.88       | *   | -1.684E-02          | 8.912E-02 | 1.406E-01           | 7.424E-03 | -0.120  |
|         |           | 634.78       |     | 2.955E-01           | 3.858E-01 | 6.537E-01           | 3.307E-02 | 0.452   |
| SE-75   |           | 66.05        |     | -3.605E+00          | 6.096E+00 | 9.938E+00           | 1.304E+00 | -0.363  |
|         |           | 96.73        |     | -1.225E+00          | 8.752E-01 | 1.176E+00           | 1.705E-01 | -1.042  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| BR-77   |           | 121.11       |     | -6.704E-02          | 1.334E-01 | 2.142E-01           | 2.150E-02 | -0.313  |
|         |           | 136.00       |     | 4.017E-03           | 3.779E-02 | 6.206E-02           | 4.159E-03 | 0.065   |
|         |           | 198.60       |     | 9.986E-02           | 1.844E+00 | 2.879E+00           | 2.222E-01 | 0.035   |
|         |           | 264.65       | *   | -2.175E-02          | 4.530E-02 | 6.917E-02           | 4.653E-03 | -0.314  |
|         |           | 279.53       |     | 1.898E-02           | 1.067E-01 | 1.610E-01           | 1.137E-02 | 0.118   |
|         |           | 303.91       |     | 1.900E+00           | 2.090E+00 | 3.300E+00           | 3.304E-01 | 0.576   |
|         |           | 400.65       |     | 7.310E-03           | 2.484E-01 | 4.106E-01           | 3.697E-02 | 0.018   |
|         | +         | 87.88        |     | 6.533E+02           | 2.448E+02 | 3.436E+02           | 4.129E+01 | 1.901   |
|         |           | 200.40       |     | 3.555E+01           | 1.598E+02 | 2.584E+02           | 1.686E+01 | 0.138   |
|         | +         | 239.00       |     | 2.951E+02           | 2.683E+01 | 3.865E+01           | 2.576E+00 | 7.633   |
|         |           | 249.79       |     | -3.038E+01          | 5.936E+01 | 9.822E+01           | 6.558E+00 | -0.309  |
|         |           | 281.68       |     | 3.896E+01           | 8.600E+01 | 1.323E+02           | 8.787E+00 | 0.294   |
|         |           | 297.23       |     | 1.376E+02           | 7.447E+01 | 9.713E+01           | 6.391E+00 | 1.417   |
|         |           | 303.76       |     | 1.374E+02           | 1.749E+02 | 2.741E+02           | 1.794E+01 | 0.501   |
|         |           | 439.47       |     | 1.334E+02           | 1.346E+02 | 2.354E+02           | 1.335E+01 | 0.567   |
|         |           | 484.57       |     | -7.161E+01          | 2.198E+02 | 3.491E+02           | 1.970E+01 | -0.205  |
|         |           | 520.65       | *   | -9.544E+00          | 1.023E+01 | 1.531E+01           | 8.528E-01 | -0.623  |
|         |           | 574.64       |     | -7.011E+01          | 2.034E+02 | 3.178E+02           | 1.710E+01 | -0.221  |
|         |           | 578.91       |     | -3.513E+00          | 8.846E+01 | 1.235E+02           | 6.621E+00 | -0.028  |
|         |           | 585.48       |     | 1.005E+03           | 2.305E+02 | 4.244E+02           | 2.262E+01 | 2.369   |
| SR-82   |           | 755.35       |     | 1.435E+02           | 1.642E+02 | 2.918E+02           | 1.776E+01 | 0.492   |
|         |           | 817.79       |     | -9.413E+01          | 1.350E+02 | 2.098E+02           | 1.464E+01 | -0.449  |
|         |           | 698.33       |     | 6.071E+00           | 3.483E+01 | 5.913E+01           | 3.153E+00 | 0.103   |
| RB-83   |           | 776.49       | *   | -9.067E-02          | 4.081E-01 | 6.672E-01           | 4.258E-02 | -0.136  |
|         |           | 1395.20      |     | 3.689E+00           | 1.103E+01 | 1.910E+01           | 1.307E+00 | 0.193   |
|         |           | 520.41       | *   | -5.273E-02          | 6.939E-02 | 1.054E-01           | 5.871E-03 | -0.500  |
| RB-84   |           | 529.64       |     | -6.165E-02          | 1.124E-01 | 1.742E-01           | 9.655E-03 | -0.354  |
|         |           | 552.65       |     | -3.170E-02          | 2.024E-01 | 3.223E-01           | 1.763E-02 | -0.098  |
|         |           | 881.50       | *   | 7.615E-03           | 7.271E-02 | 1.190E-01           | 9.475E-03 | 0.064   |
| KR-85   |           | 513.99       | *   | 7.942E+00           | 8.130E+00 | 1.258E+01           | 7.029E-01 | 0.631   |
| SR-85   |           | 513.99       | *   | 4.067E-02           | 4.163E-02 | 6.444E-02           | 3.599E-03 | 0.631   |
| RB-86   |           | 1076.63      | *   | 3.878E-01           | 9.198E-01 | 1.547E+00           | 1.082E-01 | 0.251   |
| Y-88    |           | 898.02       |     | 4.084E-02           | 4.180E-02 | 7.466E-02           | 6.178E-03 | 0.547   |
|         |           | 1836.01      | *   | 3.770E-02           | 3.147E-02 | 6.314E-02           | 3.685E-03 | 0.597   |
| ZR-88   |           | 392.90       | *   | 2.321E-02           | 2.876E-02 | 4.997E-02           | 2.812E-03 | 0.465   |
| Y-91    |           | 1204.90      | *   | 9.210E+00           | 2.253E+01 | 3.742E+01           | 2.293E+00 | 0.246   |
| NB-94   |           | 702.63       | *   | 1.838E-04           | 3.496E-02 | 5.861E-02           | 3.157E-03 | 0.003   |
|         |           | 871.10       |     | -3.590E-02          | 3.529E-02 | 4.790E-02           | 3.735E-03 | -0.749  |
| NB-95   |           | 765.79       | *   | 1.750E-04           | 5.220E-02 | 7.557E-02           | 4.710E-03 | 0.002   |
| NB-95M  |           | 235.69       | *   | 2.145E-02           | 1.407E-01 | 2.001E-01           | 1.642E-02 | 0.107   |
| ZR-95   |           | 724.18       |     | -2.772E-03          | 1.046E-01 | 1.517E-01           | 1.023E-02 | -0.018  |
|         |           | 756.15       | *   | 3.339E-02           | 7.074E-02 | 1.223E-01           | 8.907E-03 | 0.273   |
| NB-97   |           | 657.90       | *   | -6.876E-02          | 7.074E-02 | Half-Life too short |           |         |
|         |           | 1024.50      |     | 4.470E+00           | 7.074E-02 | Half-Life too short |           |         |
| ZR-97   |           | 254.15       |     | -4.357E-01          | 7.074E-02 | Half-Life too short |           |         |
|         |           | 355.39       |     | 3.344E+00           | 7.074E-02 | Half-Life too short |           |         |
|         |           | 507.63       | *   | 1.928E+00           | 7.074E-02 | Half-Life too short |           |         |
|         |           | 602.52       |     | 1.702E+00           | 7.074E-02 | Half-Life too short |           |         |
|         |           | 1021.30      |     | -3.909E+00          | 7.074E-02 | Half-Life too short |           |         |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Activity Key | (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|------------|-----------|----------------|-----------|---------|
| MO-99   |           | 1147.95      |              | -9.050E-01 | 7.074E-02 | Half-Life      | too short |         |
|         |           | 1362.66      |              | 7.033E+00  | 7.074E-02 | Half-Life      | too short |         |
|         |           | 1750.46      |              | 1.141E+00  | 7.074E-02 | Half-Life      | too short |         |
|         |           | 140.51       |              | -4.571E-01 | 2.432E+01 | 3.966E+01      | 1.076E+01 | -0.012  |
|         |           | 181.06       |              | 8.409E-01  | 1.817E+01 | 2.614E+01      | 4.538E+00 | 0.032   |
|         |           | 366.43       |              | -2.217E+01 | 7.721E+01 | 1.257E+02      | 7.515E+00 | -0.176  |
| TC-99M  |           | 739.58       | *            | 5.495E+00  | 9.930E+00 | 1.736E+01      | 2.397E+00 | 0.317   |
|         |           | 778.00       |              | -4.086E+00 | 3.425E+01 | 5.642E+01      | 3.614E+00 | -0.072  |
|         |           | 140.51       | *            | -4.830E+08 | 3.425E+01 | Half-Life      | too short |         |
| RH-101  | +         | 127.23       |              | 6.808E-02  | 4.746E-02 | 4.982E-02      | 3.384E-03 | 1.366   |
|         |           | 198.01       | *            | -1.189E-02 | 3.378E-02 | 5.167E-02      | 3.365E-03 | -0.230  |
| RH-102  |           | 325.23       |              | -3.390E-02 | 2.375E-01 | 3.457E-01      | 2.213E-02 | -0.098  |
|         |           | 418.52       |              | -6.628E-03 | 2.809E-01 | 4.614E-01      | 2.613E-02 | -0.014  |
|         |           | 475.06       | *            | -2.039E-02 | 2.747E-02 | 4.209E-02      | 2.380E-03 | -0.484  |
|         |           | 631.29       |              | -1.659E-02 | 5.851E-02 | 9.117E-02      | 4.632E-03 | -0.182  |
|         |           | 697.49       |              | -2.286E-02 | 7.821E-02 | 1.283E-01      | 6.829E-03 | -0.178  |
|         |           | 766.84       |              | 1.517E-01  | 1.361E-01 | 2.174E-01      | 1.358E-02 | 0.698   |
| RU-103  |           | 1046.59      |              | 8.777E-03  | 1.273E-01 | 2.083E-01      | 1.513E-02 | 0.042   |
|         |           | 1112.84      |              | -3.891E-02 | 2.474E-01 | 3.542E-01      | 2.349E-02 | -0.110  |
|         | *         | 497.08       |              | 2.536E-02  | 4.022E-02 | 6.829E-02      | 8.580E-03 | 0.371   |
| RH-106  | +         | 610.33       |              | 1.241E+01  | 2.529E+00 | 2.924E+00      | 4.446E-01 | 4.243   |
|         |           | 511.85       |              | 8.607E-01  | 3.418E-01 | 4.281E-01      | 2.393E-02 | 2.011   |
| RU-106  | +         | 621.84       | *            | -5.959E-02 | 2.919E-01 | 4.574E-01      | 5.225E-02 | -0.130  |
|         |           | 1050.47      |              | 2.417E+00  | 2.498E+00 | 4.415E+00      | 3.192E-01 | 0.547   |
|         |           | 511.85       |              | 8.607E-01  | 3.418E-01 | 4.281E-01      | 2.393E-02 | 2.011   |
|         | *         | 621.84       |              | -5.959E-02 | 2.919E-01 | 4.574E-01      | 2.350E-02 | -0.130  |
| AG-108M |           | 1050.47      |              | 2.417E+00  | 2.498E+00 | 4.415E+00      | 3.192E-01 | 0.547   |
|         |           | 433.93       | *            | 7.530E-03  | 2.878E-02 | 4.818E-02      | 2.977E-03 | 0.156   |
|         |           | 614.37       |              | -9.908E-03 | 4.189E-02 | 5.671E-02      | 3.247E-03 | -0.175  |
| AG-110M |           | 722.95       |              | -3.643E-02 | 4.715E-02 | 6.236E-02      | 3.838E-03 | -0.584  |
|         |           | 657.75       | *            | -2.751E-02 | 3.818E-02 | 5.130E-02      | 2.741E-03 | -0.536  |
|         |           | 677.61       |              | 2.583E-01  | 3.079E-01 | 5.487E-01      | 3.004E-02 | 0.471   |
|         |           | 706.67       |              | 3.682E-02  | 2.010E-01 | 3.415E-01      | 1.984E-02 | 0.108   |
|         |           | 763.93       |              | 1.160E-01  | 1.881E-01 | 2.906E-01      | 1.901E-02 | 0.399   |
|         |           | 884.67       |              | 6.057E-04  | 5.147E-02 | 8.488E-02      | 7.055E-03 | 0.007   |
| IN-111  |           | 937.48       |              | -9.321E-02 | 1.185E-01 | 1.795E-01      | 1.501E-02 | -0.519  |
|         |           | 1384.27      |              | -2.722E-02 | 1.581E-01 | 2.567E-01      | 1.836E-02 | -0.106  |
|         |           | 171.28       |              | 3.957E-01  | 9.857E-01 | 1.620E+00      | 1.033E-01 | 0.244   |
|         | *         | 245.39       |              | -4.556E-01 | 1.135E+00 | 1.542E+00      | 1.029E-01 | -0.296  |
|         |           | 391.69       | *            | 1.656E-02  | 4.242E-02 | 7.184E-02      | 4.329E-03 | 0.230   |
| IN-113M |           | 391.69       | *            | 1.656E-02  | 4.242E-02 | 7.184E-02      | 4.329E-03 | 0.230   |
| SN-113  |           | 391.69       | *            | 1.656E-02  | 4.242E-02 | 7.184E-02      | 4.329E-03 | 0.230   |
| IN-114M |           | 190.27       | *            | 8.675E-02  | 1.997E-01 | 2.932E-01      | 1.898E-02 | 0.296   |
| CD-115  |           | 260.90       |              | 1.939E+01  | 1.214E+02 | 2.072E+02      | 1.384E+01 | 0.094   |
|         |           | 492.35       |              | -2.088E+01 | 3.357E+01 | 5.183E+01      | 2.918E+00 | -0.403  |
|         | *         | 527.90       |              | -1.176E+01 | 1.078E+01 | 1.588E+01      | 8.812E-01 | -0.740  |
| SN-117M |           | 156.02       |              | -1.470E+00 | 2.141E+00 | 3.363E+00      | 2.157E-01 | -0.437  |
|         | *         | 158.56       |              | 2.636E-02  | 5.259E-02 | 8.718E-02      | 5.576E-03 | 0.302   |
| SB-122  |           | 563.90       | *            | 1.317E+00  | 1.923E+00 | 3.270E+00      | 1.774E-01 | 0.403   |
|         |           | 692.80       |              | 1.041E+01  | 3.904E+01 | 6.688E+01      | 3.519E+00 | 0.156   |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| I-123   | 159.00    | *            |     | 5.124E+00           | 3.904E+01 | Half-Life      | too short |         |
|         | 528.96    |              |     | -5.361E+02          | 3.904E+01 | Half-Life      | too short |         |
| TE-123M | 159.00    | *            |     | 2.971E-02           | 2.730E-02 | 4.631E-02      | 2.994E-03 | 0.641   |
| I-124   | 602.71    | *            |     | 1.819E-01           | 6.967E-01 | 1.057E+00      | 5.545E-02 | 0.172   |
|         | 722.78    |              |     | -3.785E+00          | 4.817E+00 | 6.362E+00      | 3.594E-01 | -0.595  |
|         | 1325.50   |              |     | -7.164E-01          | 3.658E+01 | 6.089E+01      | 4.149E+00 | -0.012  |
|         | 1376.25   |              |     | 2.904E+01           | 3.162E+01 | 5.767E+01      | 3.951E+00 | 0.504   |
|         | 1509.49   |              |     | 3.232E+01           | 1.632E+01 | 3.316E+01      | 2.236E+00 | 0.975   |
|         | 1691.02   |              |     | -1.665E-01          | 3.567E+00 | 5.773E+00      | 3.659E-01 | -0.029  |
| SB-124  | 602.71    |              |     | 1.078E-02           | 4.129E-02 | 6.266E-02      | 3.288E-03 | 0.172   |
|         | 645.85    |              |     | -2.169E-01          | 4.543E-01 | 7.354E-01      | 4.291E-02 | -0.295  |
|         | 709.31    |              |     | -1.174E+00          | 2.631E+00 | 4.246E+00      | 2.324E-01 | -0.277  |
|         | 713.82    |              |     | 5.915E-01           | 1.588E+00 | 2.735E+00      | 2.751E-01 | 0.216   |
|         | 722.78    |              |     | -3.252E-01          | 4.139E-01 | 5.466E-01      | 3.241E-02 | -0.595  |
|         | + 968.20  |              |     | 1.446E+01           | 5.021E+00 | 7.794E+00      | 6.117E-01 | 1.855   |
|         | 1045.16   |              |     | -1.928E+00          | 2.765E+00 | 4.183E+00      | 3.043E-01 | -0.461  |
|         | 1325.50   |              |     | -6.574E-02          | 3.357E+00 | 5.588E+00      | 3.807E-01 | -0.012  |
|         | 1368.21   |              |     | -1.092E+00          | 1.706E+00 | 2.579E+00      | 3.203E-01 | -0.423  |
|         | 1436.60   |              |     | -1.688E+00          | 3.228E+00 | 4.870E+00      | 3.322E-01 | -0.347  |
|         | 1691.02   | *            |     | -3.375E-03          | 7.228E-02 | 1.170E-01      | 7.950E-03 | -0.029  |
| SB-125  | 427.89    | *            |     | -1.317E-02          | 8.693E-02 | 1.412E-01      | 8.361E-03 | -0.093  |
|         | + 463.38  |              |     | 9.035E-01           | 4.035E-01 | 5.513E-01      | 3.665E-02 | 1.639   |
|         | 600.56    |              |     | -7.785E-02          | 1.807E-01 | 2.793E-01      | 1.744E-02 | -0.279  |
|         | 635.90    |              |     | 3.009E-01           | 2.937E-01 | 5.067E-01      | 3.124E-02 | 0.594   |
| TE-125M | 109.28    | *            |     | -1.047E+00          | 9.353E+00 | 1.504E+01      | 1.493E+00 | -0.070  |
| I-126   | 388.63    |              |     | -6.564E-02          | 1.959E-01 | 3.167E-01      | 1.796E-02 | -0.207  |
|         | 666.33    | *            |     | 1.136E-01           | 1.978E-01 | 3.076E-01      | 1.517E-02 | 0.369   |
|         | 753.82    |              |     | 1.235E+00           | 1.453E+00 | 2.582E+00      | 1.567E-01 | 0.478   |
| SB-126  | 223.80    |              |     | -4.194E-01          | 3.850E+00 | 6.085E+00      | 4.031E-01 | -0.069  |
|         | + 278.60  |              |     | 3.757E+00           | 2.542E+00 | 3.948E+00      | 2.625E-01 | 0.952   |
|         | + 296.50  |              |     | 1.536E+01           | 2.428E+00 | 3.512E+00      | 2.312E-01 | 4.372   |
|         | 414.70    |              |     | 2.228E-02           | 8.098E-02 | 1.261E-01      | 7.136E-03 | 0.177   |
|         | 415.30    |              |     | -3.659E+00          | 6.564E+00 | 1.001E+01      | 5.667E-01 | -0.365  |
|         | 555.20    |              |     | 1.012E-01           | 3.927E+00 | 6.347E+00      | 3.465E-01 | 0.016   |
|         | 573.80    |              |     | -4.244E-01          | 1.065E+00 | 1.657E+00      | 8.919E-02 | -0.256  |
|         | 593.00    |              |     | 6.526E-02           | 9.055E-01 | 1.462E+00      | 7.741E-02 | 0.045   |
|         | 656.30    |              |     | -5.836E-01          | 3.647E+00 | 5.256E+00      | 2.584E-01 | -0.111  |
|         | 666.33    |              |     | 4.746E-02           | 8.265E-02 | 1.285E-01      | 6.338E-03 | 0.369   |
|         | 675.00    |              |     | -1.205E-01          | 2.017E+00 | 3.376E+00      | 1.701E-01 | -0.036  |
|         | 695.00    |              |     | -5.865E-02          | 7.391E-02 | 1.160E-01      | 6.137E-03 | -0.506  |
|         | 697.00    |              |     | -7.071E-02          | 2.559E-01 | 4.200E-01      | 2.232E-02 | -0.168  |
|         | 720.50    | *            |     | 9.027E-02           | 1.573E-01 | 2.529E-01      | 1.421E-02 | 0.357   |
|         | 856.80    |              |     | 9.509E-02           | 4.743E-01 | 6.987E-01      | 5.292E-02 | 0.136   |
|         | 989.30    |              |     | -1.396E+00          | 1.265E+00 | 1.810E+00      | 1.395E-01 | -0.771  |
|         | 1034.80   |              |     | -4.567E+00          | 9.225E+00 | 1.423E+01      | 1.047E+00 | -0.321  |
|         | 1213.00   |              |     | -2.264E+00          | 5.524E+00 | 8.544E+00      | 5.276E-01 | -0.265  |
| SB-127  | 61.10     |              |     | -6.682E+01          | 7.703E+01 | 1.249E+02      | 1.745E+01 | -0.535  |
|         | 252.40    |              |     | 2.990E+00           | 4.202E+00 | 7.046E+00      | 2.936E+00 | 0.424   |
|         | 290.80    |              |     | 7.481E+00           | 2.215E+01 | 3.367E+01      | 3.248E+00 | 0.222   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 411.60       |     | 1.010E+01           | 1.428E+01 | 2.175E+01      | 3.107E+00 | 0.465   |
|         |           | 444.90       |     | 1.384E+01           | 9.468E+00 | 1.667E+01      | 1.781E+00 | 0.830   |
|         |           | 473.00       |     | 8.146E-02           | 1.465E+00 | 2.401E+00      | 2.655E-01 | 0.034   |
|         |           | 543.00       |     | 1.758E-01           | 1.554E+01 | 2.513E+01      | 3.202E+00 | 0.007   |
|         |           | 603.60       |     | 6.569E+00           | 1.225E+01 | 1.817E+01      | 1.895E+00 | 0.362   |
|         |           | 685.20       | *   | 1.372E-01           | 1.236E+00 | 2.094E+00      | 1.886E-01 | 0.066   |
|         |           | 698.50       |     | 5.816E+00           | 1.508E+01 | 2.594E+01      | 3.700E+00 | 0.224   |
|         |           | 722.20       |     | -1.729E+01          | 3.299E+01 | 4.506E+01      | 4.061E+00 | -0.384  |
|         |           | 783.80       |     | 3.191E+00           | 4.357E+00 | 6.762E+00      | 7.441E-01 | 0.472   |
| XE-127  |           | 57.60        |     | -3.943E+00          | 9.330E+00 | 1.552E+01      | 1.943E+00 | -0.254  |
|         |           | 145.22       |     | 4.740E-01           | 6.663E-01 | 1.117E+00      | 7.271E-02 | 0.424   |
|         |           | 172.10       |     | 6.962E-02           | 1.196E-01 | 1.981E-01      | 1.263E-02 | 0.352   |
|         |           | 202.84       | *   | -4.528E-03          | 4.789E-02 | 7.626E-02      | 4.985E-03 | -0.059  |
|         |           | 374.96       |     | -4.143E-02          | 1.889E-01 | 3.087E-01      | 1.810E-02 | -0.134  |
| I-131   |           | 80.18        |     | 4.649E-01           | 4.581E+00 | 7.699E+00      | 8.928E-01 | 0.060   |
|         |           | 284.30       |     | 1.671E-01           | 1.338E+00 | 2.271E+00      | 1.636E-01 | 0.074   |
|         |           | 364.48       | *   | -3.446E-02          | 1.093E-01 | 1.777E-01      | 1.183E-02 | -0.194  |
|         |           | 636.97       |     | 6.868E-01           | 1.680E+00 | 2.770E+00      | 1.615E-01 | 0.248   |
|         |           | 722.89       |     | -6.103E+00          | 7.850E+00 | 1.038E+01      | 5.950E-01 | -0.588  |
| TE-132  |           | 49.72        |     | 3.761E+00           | 3.909E+01 | 6.688E+01      | 9.333E+00 | 0.056   |
|         |           | 111.76       |     | -7.292E+00          | 2.827E+01 | 4.615E+01      | 4.720E+00 | -0.158  |
|         |           | 116.30       |     | -1.163E+01          | 2.647E+01 | 4.277E+01      | 4.232E+00 | -0.272  |
|         |           | 228.16       | *   | -1.070E-01          | 6.773E-01 | 1.066E+00      | 1.567E-01 | -0.100  |
| BA-133  |           | 53.15        |     | -3.263E+00          | 6.333E+00 | 1.050E+01      | 1.375E+00 | -0.311  |
|         |           | 79.62        |     | 2.260E-01           | 1.314E+00 | 2.214E+00      | 3.774E-01 | 0.102   |
|         |           | 81.00        |     | -7.670E-02          | 1.112E-01 | 1.600E-01      | 2.827E-02 | -0.479  |
|         | +         | 276.40       |     | 5.655E-01           | 3.882E-01 | 6.271E-01      | 8.383E-02 | 0.902   |
|         |           | 302.84       |     | 1.725E-01           | 1.475E-01 | 2.354E-01      | 2.837E-02 | 0.733   |
|         |           | 356.01       | *   | 5.791E-02           | 4.752E-02 | 7.564E-02      | 8.860E-03 | 0.766   |
|         |           | 383.85       |     | -8.640E-02          | 2.992E-01 | 4.858E-01      | 5.267E-02 | -0.178  |
| I-133   | +         | 510.53       |     | 1.584E+00           | 2.992E-01 | Half-Life      | too short |         |
|         |           | 529.87       | *   | -8.689E-04          | 2.992E-01 | Half-Life      | too short |         |
|         |           | 706.58       |     | 7.390E-02           | 2.992E-01 | Half-Life      | too short |         |
|         |           | 856.28       |     | 2.158E-01           | 2.992E-01 | Half-Life      | too short |         |
|         |           | 875.33       |     | 8.703E-02           | 2.992E-01 | Half-Life      | too short |         |
|         |           | 1236.41      |     | 5.033E-01           | 2.992E-01 | Half-Life      | too short |         |
|         |           | 1298.22      |     | 3.614E-02           | 2.992E-01 | Half-Life      | too short |         |
| CS-134  |           | 475.35       |     | -4.680E-01          | 1.752E+00 | 2.795E+00      | 1.580E-01 | -0.167  |
|         |           | 563.23       |     | 3.383E-01           | 3.399E-01 | 5.919E-01      | 3.289E-02 | 0.572   |
|         |           | 569.32       |     | 2.121E-01           | 1.990E-01 | 3.463E-01      | 1.935E-02 | 0.613   |
|         |           | 604.70       |     | -1.644E-03          | 3.833E-02 | 5.330E-02      | 2.809E-03 | -0.031  |
|         | +         | 795.84       | *   | 1.287E-01           | 5.053E-02 | 8.359E-02      | 5.634E-03 | 1.540   |
|         |           | 801.93       |     | -1.312E-01          | 4.426E-01 | 7.054E-01      | 4.803E-02 | -0.186  |
|         |           | 1038.57      |     | 1.400E+00           | 4.140E+00 | 6.951E+00      | 5.095E-01 | 0.201   |
|         |           | 1167.94      |     | 8.528E-01           | 3.017E+00 | 4.976E+00      | 2.991E-01 | 0.171   |
|         |           | 1365.15      |     | 3.082E-01           | 1.236E+00 | 2.121E+00      | 1.557E-01 | 0.145   |
| CS-135  |           | 268.24       | *   | 2.060E-01           | 1.571E-01 | 2.546E-01      | 2.122E-02 | 0.809   |
| I-135   |           | 288.45       |     | 1.660E+10           | 1.571E-01 | Half-Life      | too short |         |
|         |           | 417.63       |     | -3.946E+09          | 1.571E-01 | Half-Life      | too short |         |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| CS-136  |           | 546.56       |     | 4.794E+09           | 1.571E-01 | Half-Life      | too short |         |
|         |           | 836.80       |     | 1.655E+10           | 1.571E-01 | Half-Life      | too short |         |
|         |           | 1038.76      |     | 5.992E+09           | 1.571E-01 | Half-Life      | too short |         |
|         |           | 1124.00      |     | 3.346E+10           | 1.571E-01 | Half-Life      | too short |         |
|         |           | 1131.51      |     | -7.575E+08          | 1.571E-01 | Half-Life      | too short |         |
|         |           | 1260.41      | *   | -6.931E+07          | 1.571E-01 | Half-Life      | too short |         |
|         |           | 1457.56      |     | 4.492E+11           | 1.571E-01 | Half-Life      | too short |         |
|         |           | 1678.03      |     | 7.993E+09           | 1.571E-01 | Half-Life      | too short |         |
|         |           | 1706.46      |     | -1.149E+10          | 1.571E-01 | Half-Life      | too short |         |
|         |           | 1791.20      |     | -1.979E+09          | 1.571E-01 | Half-Life      | too short |         |
|         |           | 66.91        |     | 1.381E-01           | 9.174E-01 | 1.555E+00      | 2.696E-01 | 0.089   |
|         | +         | 86.29        |     | 3.998E+00           | 1.546E+00 | 2.092E+00      | 3.189E-01 | 1.911   |
|         |           | 153.22       |     | 4.133E-01           | 6.280E-01 | 1.049E+00      | 8.118E-02 | 0.394   |
|         |           | 163.89       |     | 1.279E+00           | 1.010E+00 | 1.721E+00      | 1.327E-01 | 0.743   |
|         |           | 176.55       |     | -1.031E-01          | 3.621E-01 | 5.759E-01      | 4.064E-02 | -0.179  |
|         |           | 273.65       |     | 3.836E-01           | 5.696E-01 | 6.745E-01      | 4.978E-02 | 0.569   |
|         |           | 340.57       |     | 2.004E-01           | 1.360E-01 | 2.200E-01      | 1.453E-02 | 0.911   |
|         |           | 818.51       |     | -3.295E-02          | 7.658E-02 | 1.220E-01      | 8.544E-03 | -0.270  |
| CE-139  |           | 1048.07      | *   | 2.661E-02           | 1.197E-01 | 1.986E-01      | 1.525E-02 | 0.134   |
|         |           | 1235.34      |     | 7.606E-02           | 6.763E-01 | 1.143E+00      | 1.176E-01 | 0.067   |
|         |           | 165.85       | *   | -3.172E-02          | 2.927E-02 | 4.484E-02      | 2.849E-03 | -0.707  |
|         |           | 162.64       |     | -4.235E-01          | 7.527E-01 | 1.188E+00      | 8.357E-02 | -0.357  |
| BA-140  |           | 304.84       |     | 1.293E-01           | 1.260E+00 | 1.879E+00      | 5.160E-01 | 0.069   |
|         |           | 423.70       |     | -1.292E-01          | 1.870E+00 | 3.060E+00      | 9.717E-01 | -0.042  |
| LA-140  |           | 537.32       | *   | -3.235E-01          | 2.815E-01 | 3.747E-01      | 1.217E-01 | -0.863  |
|         | +         | 328.77       |     | 4.894E-01           | 3.745E-01 | 5.532E-01      | 3.879E-02 | 0.885   |
|         |           | 432.53       |     | 4.105E-01           | 1.792E+00 | 2.994E+00      | 1.883E-01 | 0.137   |
|         |           | 487.03       |     | 5.161E-02           | 1.332E-01 | 2.231E-01      | 1.433E-02 | 0.231   |
|         |           | 751.79       |     | -1.073E+00          | 1.685E+00 | 2.657E+00      | 1.938E-01 | -0.404  |
|         |           | 815.85       |     | 1.639E-01           | 3.285E-01 | 5.672E-01      | 4.624E-02 | 0.289   |
|         |           | 867.82       |     | 9.615E-01           | 1.427E+00 | 2.235E+00      | 1.844E-01 | 0.430   |
|         |           | 919.63       |     | -6.619E-01          | 2.853E+00 | 4.579E+00      | 4.694E-01 | -0.145  |
|         |           | 925.24       |     | -4.138E-02          | 1.178E+00 | 1.927E+00      | 1.671E-01 | -0.021  |
|         |           | 1596.49      | *   | -1.477E-01          | 1.013E-01 | 1.298E-01      | 8.550E-03 | -1.138  |
| CE-141  |           | 145.44       | *   | 2.038E-02           | 6.089E-02 | 1.006E-01      | 6.752E-03 | 0.203   |
| CE-143  |           | 57.37        |     | -6.073E-04          | 6.089E-02 | Half-Life      | too short |         |
|         |           | 231.56       |     | -9.625E-05          | 6.089E-02 | Half-Life      | too short |         |
|         |           | 293.26       | *   | 5.537E-04           | 6.089E-02 | Half-Life      | too short |         |
|         | +         | 350.59       |     | 3.036E-02           | 6.089E-02 | Half-Life      | too short |         |
|         |           | 490.36       |     | -2.900E-04          | 6.089E-02 | Half-Life      | too short |         |
|         |           | 664.57       |     | 4.604E-04           | 6.089E-02 | Half-Life      | too short |         |
|         |           | 721.93       |     | -1.252E-04          | 6.089E-02 | Half-Life      | too short |         |
|         |           | 80.11        |     | 3.013E-01           | 2.137E+00 | 3.596E+00      | 4.155E-01 | 0.084   |
| CE-144  |           | 133.54       | *   | -1.444E-02          | 2.084E-01 | 3.239E-01      | 4.720E-02 | -0.045  |
| PM-144  |           | 476.78       |     | 3.209E-02           | 6.305E-02 | 1.068E-01      | 7.282E-03 | 0.301   |
|         |           | 618.01       |     | 3.342E-02           | 2.973E-02 | 5.226E-02      | 2.900E-03 | 0.639   |
| PR-144  |           | 696.49       | *   | -1.131E-02          | 3.374E-02 | 5.513E-02      | 2.929E-03 | -0.205  |
|         |           | 778.57       |     | -4.465E-01          | 2.399E+00 | 3.930E+00      | 2.521E-01 | -0.114  |
|         |           | 696.49       | *   | -7.663E-01          | 2.286E+00 | 3.736E+00      | 1.983E-01 | -0.205  |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PM-146  | 1489.15   |              |     | -5.414E+00          | 9.930E+00 | 1.468E+01      | 9.935E-01 | -0.369  |
|         | 453.90    | *            |     | 3.363E-03           | 4.284E-02 | 6.976E-02      | 5.954E-03 | 0.048   |
|         | 633.02    |              |     | -1.073E+00          | 1.577E+00 | 2.294E+00      | 8.422E-01 | -0.468  |
|         | 735.90    |              |     | -4.730E-02          | 1.427E-01 | 2.306E-01      | 6.431E-02 | -0.205  |
| ND-147  | 747.13    |              |     | 5.716E-02           | 8.094E-02 | 1.431E-01      | 1.801E-02 | 0.400   |
|         | 91.11     | +            |     | 5.490E-01           | 2.082E-01 | 4.959E-01      | 5.815E-02 | 1.107   |
|         | 319.41    |              |     | -2.709E+00          | 3.131E+00 | 4.968E+00      | 3.203E-01 | -0.545  |
|         | 439.89    |              |     | 5.712E+00           | 5.712E+00 | 9.930E+00      | 5.635E-01 | 0.575   |
| PM-149  | 531.02    | *            |     | 5.253E-01           | 5.890E-01 | 1.009E+00      | 1.353E-01 | 0.521   |
|         | 285.90    | *            |     | -7.006E+01          | 8.303E+01 | 1.325E+02      | 1.926E+01 | -0.529  |
|         | 121.78    |              |     | -6.064E-02          | 7.188E-02 | 1.135E-01      | 9.673E-03 | -0.534  |
|         | 244.69    |              |     | -1.235E-01          | 3.609E-01 | 4.931E-01      | 3.290E-02 | -0.250  |
| EU-152  | 344.27    | *            |     | -1.103E-02          | 9.253E-02 | 1.531E-01      | 1.059E-02 | -0.072  |
|         | 443.98    |              |     | 4.105E-02           | 9.869E-01 | 1.602E+00      | 9.085E-02 | 0.026   |
|         | 778.89    |              |     | -1.141E-01          | 2.826E-01 | 4.549E-01      | 2.918E-02 | -0.251  |
|         | 867.32    |              |     | 7.788E-01           | 8.445E-01 | 1.364E+00      | 1.056E-01 | 0.571   |
| GD-153  | 964.01    |              |     | 4.611E-01           | 3.771E-01 | 6.006E-01      | 4.729E-02 | 0.768   |
|         | 1085.78   |              |     | -2.151E-02          | 4.442E-01 | 7.164E-01      | 4.946E-02 | -0.030  |
|         | 1112.02   |              |     | -7.942E-02          | 3.280E-01 | 5.015E-01      | 3.330E-02 | -0.158  |
|         | 1407.95   |              |     | -2.428E-02          | 1.759E-01 | 2.864E-01      | 1.959E-02 | -0.085  |
| EU-154  | 69.67     |              |     | -4.435E-01          | 1.921E+00 | 3.205E+00      | 3.702E-01 | -0.138  |
|         | 83.37     |              |     | 3.207E+01           | 1.885E+01 | 2.515E+01      | 2.944E+00 | 1.275   |
|         | 97.43     | *            |     | -4.875E-02          | 8.760E-02 | 1.263E-01      | 1.239E-02 | -0.386  |
|         | 103.18    |              |     | -8.409E-02          | 1.047E-01 | 1.673E-01      | 1.489E-02 | -0.503  |
| EU-155  | 123.07    |              |     | 4.283E-02           | 5.050E-02 | 8.562E-02      | 8.666E-03 | 0.500   |
|         | 247.94    |              |     | -3.437E-02          | 3.578E-01 | 5.621E-01      | 5.675E-02 | -0.061  |
|         | 591.81    |              |     | 4.528E-01           | 6.150E-01 | 1.046E+00      | 9.918E-02 | 0.433   |
|         | 723.30    |              |     | -1.367E-01          | 1.943E-01 | 2.590E-01      | 1.803E-02 | -0.528  |
| TB-160  | 756.87    |              |     | 1.105E-01           | 7.752E-01 | 1.307E+00      | 1.348E-01 | 0.085   |
|         | 873.19    |              |     | -6.992E-02          | 2.703E-01 | 4.333E-01      | 5.070E-02 | -0.161  |
|         | 996.32    |              |     | 2.454E-01           | 3.997E-01 | 6.123E-01      | 1.060E-01 | 0.401   |
|         | 1004.76   |              |     | 6.278E-02           | 2.372E-01 | 3.473E-01      | 3.787E-02 | 0.181   |
| EU-155  | 1274.45   | *            |     | -4.881E-02          | 1.226E-01 | 1.967E-01      | 1.929E-02 | -0.248  |
|         | 48.70     |              |     | -5.165E-01          | 5.461E+00 | 9.274E+00      | 1.069E+00 | -0.056  |
|         | 60.01     |              |     | 1.798E+00           | 6.884E+00 | 1.177E+01      | 1.430E+00 | 0.153   |
|         | 86.54     | +            |     | 3.714E-01           | 1.392E-01 | 1.951E-01      | 2.337E-02 | 1.904   |
| HO-166M | 105.31    | *            |     | 4.271E-02           | 1.088E-01 | 1.827E-01      | 1.592E-02 | 0.234   |
|         | 86.79     | +            |     | 9.910E-01           | 3.713E-01 | 5.231E-01      | 6.242E-02 | 1.894   |
|         | 197.04    |              |     | -4.531E-01          | 5.736E-01 | 8.565E-01      | 5.573E-02 | -0.529  |
|         | 215.65    |              |     | 2.782E-01           | 7.270E-01 | 1.181E+00      | 7.790E-02 | 0.236   |
| HO-166M | 298.57    |              |     | 8.607E-02           | 1.563E-01 | 1.806E-01      | 1.187E-02 | 0.477   |
|         | 879.36    | *            |     | -2.294E-02          | 1.369E-01 | 2.219E-01      | 1.760E-02 | -0.103  |
|         | 962.29    |              |     | 3.875E-01           | 6.450E-01 | 1.014E+00      | 7.996E-02 | 0.382   |
|         | 966.15    |              |     | 8.533E-01           | 2.970E-01 | 5.172E-01      | 4.066E-02 | 1.650   |
| HO-166M | 1177.93   |              |     | -2.248E-01          | 4.120E-01 | 6.283E-01      | 3.754E-02 | -0.358  |
|         | 1271.85   |              |     | -4.788E-01          | 7.305E-01 | 1.140E+00      | 7.423E-02 | -0.420  |
|         | 80.57     |              |     | 1.861E-02           | 2.986E-01 | 4.503E-01      | 5.210E-02 | 0.041   |
|         | 184.41    | +            |     | 1.712E-01           | 5.581E-02 | 6.515E-02      | 4.196E-03 | 2.627   |
|         | 280.46    |              |     | -1.928E-02          | 8.280E-02 | 1.210E-01      | 8.038E-03 | -0.159  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| TM-171  |           | 410.95       |     | 3.393E-01           | 2.996E-01 | 4.709E-01      | 2.663E-02 | 0.720   |
|         |           | 711.68       | *   | -1.950E-02          | 5.769E-02 | 9.391E-02      | 5.169E-03 | -0.208  |
|         |           | 752.31       |     | -3.898E-02          | 2.754E-01 | 4.539E-01      | 2.744E-02 | -0.086  |
|         |           | 810.29       |     | -7.233E-02          | 6.066E-02 | 8.939E-02      | 6.141E-03 | -0.809  |
|         |           | 51.35        |     | -1.195E+01          | 5.727E+01 | 9.653E+01      | 1.250E+01 | -0.124  |
|         |           | 52.39        |     | -2.792E+01          | 2.885E+01 | 4.657E+01      | 6.091E+00 | -0.599  |
|         |           | 59.40        |     | -5.306E-01          | 3.769E+01 | 6.380E+01      | 7.780E+00 | -0.008  |
|         |           | 66.72        | *   | 1.087E+00           | 3.405E+01 | 5.749E+01      | 6.721E+00 | 0.019   |
| LU-176  | +         | 88.36        |     | 7.315E-01           | 2.741E-01 | 3.736E-01      | 4.453E-02 | 1.958   |
|         |           | 201.83       |     | -5.701E-03          | 2.966E-02 | 4.703E-02      | 3.072E-03 | -0.121  |
|         |           | 306.84       | *   | -5.441E-03          | 2.552E-02 | 3.708E-02      | 2.421E-03 | -0.147  |
|         |           | 401.10       |     | 9.909E-01           | 6.576E+00 | 1.095E+01      | 6.180E-01 | 0.090   |
| LU-177  |           | 112.95       |     | -4.237E-01          | 1.583E+00 | 2.582E+00      | 1.999E-01 | -0.164  |
| LU-177M | +         | 208.36       | *   | 2.661E+00           | 1.757E+00 | 1.921E+00      | 1.261E-01 | 1.385   |
|         |           | 52.97        |     | -2.142E+00          | 2.880E+00 | 4.713E+00      | 6.171E-01 | -0.454  |
|         |           | 54.07        |     | 7.819E-01           | 1.462E+00 | 2.536E+00      | 3.306E-01 | 0.308   |
|         |           | 61.30        |     | -1.754E+00          | 2.018E+00 | 3.278E+00      | 3.955E-01 | -0.535  |
| HF-181  |           | 121.62       |     | -5.668E-01          | 3.813E-01 | 5.835E-01      | 4.064E-02 | -0.971  |
|         |           | 147.16       |     | -7.847E-02          | 6.356E-01 | 1.029E+00      | 6.678E-02 | -0.076  |
|         |           | 171.86       |     | 2.712E-01           | 4.823E-01 | 7.982E-01      | 5.090E-02 | 0.340   |
|         |           | 218.09       |     | -1.684E-01          | 8.528E-01 | 1.344E+00      | 8.876E-02 | -0.125  |
|         | +         | 268.79       |     | 2.695E+00           | 1.222E+00 | 1.416E+00      | 9.441E-02 | 1.904   |
|         |           | 319.02       |     | -1.489E-01          | 2.413E-01 | 3.891E-01      | 2.509E-02 | -0.383  |
|         |           | 367.43       |     | -5.662E-02          | 8.489E-01 | 1.403E+00      | 8.365E-02 | -0.040  |
|         |           | 413.65       | *   | 8.141E-02           | 2.026E-01 | 3.030E-01      | 1.714E-02 | 0.269   |
|         |           | 56.28        |     | 9.720E-01           | 1.511E+00 | 2.624E+00      | 3.345E-01 | 0.370   |
|         |           | 57.53        |     | -4.727E-01          | 7.959E-01 | 1.313E+00      | 1.645E-01 | -0.360  |
|         |           | 65.20        |     | -8.017E-01          | 1.197E+00 | 1.944E+00      | 2.292E-01 | -0.412  |
|         |           | 133.02       |     | -2.168E-02          | 7.146E-02 | 1.027E-01      | 6.853E-03 | -0.211  |
| W-181   |           | 136.25       |     | 2.375E-03           | 4.407E-01 | 7.207E-01      | 4.771E-02 | 0.003   |
|         |           | 345.85       |     | -1.275E-02          | 1.988E-01 | 3.058E-01      | 1.899E-02 | -0.042  |
|         |           | 482.03       | *   | 7.232E-03           | 4.131E-02 | 6.821E-02      | 3.851E-03 | 0.106   |
|         |           | 56.28        |     | 3.816E-01           | 5.924E-01 | 1.028E+00      | 1.311E-01 | 0.371   |
| TA-182  |           | 57.53        |     | -1.855E-01          | 3.122E-01 | 5.151E-01      | 6.455E-02 | -0.360  |
|         |           | 65.20        | *   | -3.120E-01          | 4.657E-01 | 7.566E-01      | 8.918E-02 | -0.412  |
|         |           | 67.75        |     | -3.152E-02          | 1.320E-01 | 2.204E-01      | 2.564E-02 | -0.143  |
|         |           | 100.10       |     | 2.039E-01           | 1.747E-01 | 3.016E-01      | 2.823E-02 | 0.676   |
| RE-183  |           | 152.43       |     | 9.625E-02           | 3.249E-01 | 5.347E-01      | 3.445E-02 | 0.180   |
|         |           | 222.10       |     | 8.929E-02           | 3.385E-01 | 5.460E-01      | 3.613E-02 | 0.164   |
|         | +         | 1001.68      |     | 3.864E+00           | 2.272E+00 | 3.656E+00      | 2.786E-01 | 1.057   |
|         | +         | 1121.28      |     | 8.419E-01           | 2.646E-01 | 3.869E-01      | 2.531E-02 | 2.176   |
|         |           | 1189.05      |     | -3.030E-01          | 3.567E-01 | 5.269E-01      | 3.182E-02 | -0.575  |
|         |           | 1221.42      | *   | 4.074E-02           | 2.204E-01 | 3.751E-01      | 2.335E-02 | 0.109   |
|         |           | 1230.97      |     | 1.175E-01           | 5.518E-01 | 9.355E-01      | 5.873E-02 | 0.126   |
|         |           | 57.98        |     | -1.681E-01          | 2.981E-01 | 4.921E-01      | 6.128E-02 | -0.342  |
|         |           | 59.32        |     | -1.074E-02          | 1.549E-01 | 2.616E-01      | 3.194E-02 | -0.041  |
|         |           | 67.20        |     | 5.798E-02           | 2.361E-01 | 4.015E-01      | 4.683E-02 | 0.144   |
|         |           | 162.32       | *   | -7.233E-02          | 1.108E-01 | 1.742E-01      | 1.110E-02 | -0.415  |
|         | +         | 208.81       |     | 2.421E+00           | 1.598E+00 | 1.761E+00      | 1.156E-01 | 1.374   |



----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Activity Key | Act error (pCi/GRAM) | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|----------------------|----------------|-----------|---------|
| RE-184  | 291.72    |              | -5.587E-01   | 1.014E+00            | 1.445E+00      | 9.542E-02 | -0.387  |
|         | 57.98     |              | -6.199E-01   | 1.099E+00            | 1.815E+00      | 2.260E-01 | -0.342  |
|         | 59.32     |              | -3.956E-02   | 5.707E-01            | 9.638E-01      | 1.177E-01 | -0.041  |
|         | 67.20     |              | 2.137E-01    | 8.702E-01            | 1.480E+00      | 1.726E-01 | 0.144   |
|         | 161.27    |              | 2.717E-01    | 3.435E-01            | 5.756E-01      | 3.672E-02 | 0.472   |
|         | 216.55    |              | 1.500E-01    | 2.647E-01            | 4.337E-01      | 2.861E-02 | 0.346   |
|         | 252.85    | *            | 1.560E-01    | 2.222E-01            | 3.889E-01      | 2.597E-02 | 0.401   |
|         | 318.01    |              | 1.738E-02    | 4.253E-01            | 7.137E-01      | 4.607E-02 | 0.024   |
|         | 792.07    |              | 1.080E+00    | 1.173E+00            | 1.447E+00      | 9.557E-02 | 0.746   |
|         | 903.28    |              | -2.230E-01   | 1.086E+00            | 1.753E+00      | 1.439E-01 | -0.127  |
| OS-185  | 920.93    |              | -9.664E-02   | 4.595E-01            | 7.390E-01      | 6.001E-02 | -0.131  |
|         | 59.72     |              | 1.739E-01    | 4.084E-01            | 7.026E-01      | 8.547E-02 | 0.248   |
|         | 61.14     |              | -1.940E-01   | 2.233E-01            | 3.626E-01      | 4.379E-02 | -0.535  |
|         | 69.30     |              | 3.454E-02    | 3.435E-01            | 5.805E-01      | 6.712E-02 | 0.059   |
|         | 592.07    |              | 1.498E+00    | 2.547E+00            | 4.285E+00      | 2.271E-01 | 0.350   |
|         | 646.12    | *            | -6.443E-03   | 3.840E-02            | 6.385E-02      | 3.183E-03 | -0.101  |
|         | 717.42    |              | 3.733E-01    | 9.188E-01            | 1.584E+00      | 8.837E-02 | 0.236   |
|         | 874.81    |              | 1.372E-01    | 5.245E-01            | 8.882E-01      | 6.979E-02 | 0.154   |
|         | 880.27    |              | 1.054E-01    | 7.899E-01            | 1.295E+00      | 1.029E-01 | 0.081   |
|         | 155.03    | *            | 1.205E-01    | 1.611E-01            | 2.701E-01      | 1.734E-02 | 0.446   |
| RE-188  | 477.96    |              | -1.129E+00   | 2.945E+00            | 4.657E+00      | 2.632E-01 | -0.242  |
|         | 633.10    |              | -2.075E+00   | 3.092E+00            | 4.654E+00      | 2.359E-01 | -0.446  |
| W-188   | 63.58     |              | 3.614E+01    | 6.722E+01            | 1.158E+02      | 1.378E+01 | 0.312   |
|         | 227.08    |              | -8.348E+00   | 1.262E+01            | 1.931E+01      | 1.281E+00 | -0.432  |
| IR-192  | 290.67    | *            | 3.316E+00    | 7.871E+00            | 1.203E+01      | 7.952E-01 | 0.276   |
|         | 295.96    | +            | 1.183E+00    | 1.874E-01            | 2.881E-01      | 1.921E-02 | 4.106   |
|         | 308.46    |              | 2.495E-02    | 8.759E-02            | 1.493E-01      | 9.820E-03 | 0.167   |
|         | 316.51    | *            | 3.533E-02    | 3.151E-02            | 5.600E-02      | 3.636E-03 | 0.631   |
|         | 468.07    |              | 1.102E-02    | 7.010E-02            | 1.019E-01      | 6.692E-03 | 0.108   |
|         | 604.41    |              | -6.814E-02   | 5.200E-01            | 7.158E-01      | 7.925E-02 | -0.095  |
|         | 612.46    |              | 2.062E-01    | 7.554E-01            | 1.088E+00      | 7.747E-02 | 0.189   |
| AU-195  | 65.12     |              | -1.406E-01   | 2.164E-01            | 3.519E-01      | 4.150E-02 | -0.400  |
|         | 66.83     |              | -2.190E-03   | 1.120E-01            | 1.887E-01      | 2.205E-02 | -0.012  |
|         | 75.70     | +            | 1.067E+00    | 2.937E-01            | 4.960E-01      | 5.681E-02 | 2.151   |
|         | 98.88     | *            | 3.181E-01    | 2.454E-01            | 3.874E-01      | 3.705E-02 | 0.821   |
|         | 129.76    | +            | 5.998E+00    | 4.182E+00            | 4.984E+00      | 3.357E-01 | 1.203   |
| TL-200  | 367.94    | *            | 1.672E-05    | 4.182E+00            | Half-Life      | too short |         |
|         | 579.30    |              | 2.521E-04    | 4.182E+00            | Half-Life      | too short |         |
|         | 828.27    |              | -2.128E-03   | 4.182E+00            | Half-Life      | too short |         |
|         | 1205.75   |              | 1.724E-04    | 4.182E+00            | Half-Life      | too short |         |
| TL-201  | 68.90     |              | 2.143E-01    | 5.367E+00            | 9.053E+00      | 1.048E+00 | 0.024   |
|         | 70.82     |              | 3.548E-01    | 3.295E+00            | 5.009E+00      | 5.765E-01 | 0.071   |
|         | 80.30     |              | 1.675E-01    | 4.883E+00            | 8.185E+00      | 9.463E-01 | 0.020   |
|         | 135.34    |              | -1.716E+00   | 2.381E+01            | 3.882E+01      | 2.576E+00 | -0.044  |
|         | 167.43    | *            | -9.451E-01   | 6.559E+00            | 1.054E+01      | 6.697E-01 | -0.090  |
| TL-202  | 68.90     |              | 1.970E-02    | 4.933E-01            | 8.321E-01      | 9.635E-02 | 0.024   |
|         | 70.82     |              | 3.252E-02    | 3.020E-01            | 4.591E-01      | 5.284E-02 | 0.071   |
|         | 80.30     |              | 1.536E-02    | 4.477E-01            | 7.505E-01      | 8.676E-02 | 0.020   |
|         | 439.56    | *            | 6.612E-02    | 6.711E-02            | 1.173E-01      | 6.655E-03 | 0.564   |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| HG-203  |           | 70.83        |     | 1.393E-01           | 1.315E+00 | 1.999E+00      | 3.118E-01 | 0.070   |
|         |           | 72.87        |     | 4.420E-01           | 7.632E-01 | 1.172E+00      | 1.783E-01 | 0.377   |
|         |           | 82.60        |     | -2.977E-01          | 1.334E+00 | 1.806E+00      | 2.859E-01 | -0.165  |
|         |           | 279.20       | *   | 1.498E-02           | 4.122E-02 | 6.299E-02      | 4.385E-03 | 0.238   |
| BI-207  |           | 72.80        |     | 1.422E-01           | 2.209E-01 | 3.428E-01      | 3.930E-02 | 0.415   |
|         | +         | 74.97        |     | 5.921E-01           | 1.630E-01 | 2.516E-01      | 2.882E-02 | 2.353   |
|         |           | 84.90        |     | 2.012E-01           | 2.011E-01 | 3.143E-01      | 3.708E-02 | 0.640   |
|         |           | 569.67       |     | 3.320E-02           | 3.162E-02 | 5.490E-02      | 2.965E-03 | 0.605   |
|         |           | 1063.62      | *   | 3.310E-03           | 6.233E-02 | 1.016E-01      | 7.229E-03 | 0.033   |
|         |           | 1770.23      |     | 3.033E-01           | 3.572E-01 | 6.550E-01      | 3.980E-02 | 0.463   |
| TL-207  |           | 81.07        |     | -1.746E-01          | 2.440E-01 | 3.521E-01      | 4.082E-02 | -0.496  |
|         |           | 83.78        |     | 2.560E-01           | 1.618E-01 | 2.142E-01      | 2.512E-02 | 1.195   |
|         |           | 94.90        |     | 3.487E-01           | 2.514E-01 | 3.968E-01      | 4.090E-02 | 0.879   |
|         |           | 122.32       |     | -1.040E+00          | 1.717E+00 | 2.746E+00      | 2.112E-01 | -0.379  |
|         |           | 144.24       |     | 3.529E-01           | 6.695E-01 | 1.114E+00      | 8.714E-02 | 0.317   |
|         |           | 154.21       |     | 2.035E-01           | 3.817E-01 | 6.340E-01      | 4.781E-02 | 0.321   |
|         | +         | 269.46       |     | 6.313E-01           | 2.864E-01 | 3.525E-01      | 2.432E-02 | 1.791   |
|         |           | 323.87       | *   | 1.781E-01           | 6.990E-01 | 1.049E+00      | 1.757E-01 | 0.170   |
|         | +         | 338.28       |     | 7.356E+00           | 1.749E+00 | 2.510E+00      | 2.712E-01 | 2.931   |
|         |           | 445.03       |     | 3.381E+00           | 2.261E+00 | 3.991E+00      | 4.070E-01 | 0.847   |
| PO-209  |           | 260.50       |     | -3.098E-01          | 9.202E+00 | 1.556E+01      | 1.039E+00 | -0.020  |
|         |           | 262.80       |     | 1.909E+01           | 2.555E+01 | 4.474E+01      | 2.987E+00 | 0.427   |
|         |           | 896.60       | *   | 1.049E+00           | 7.439E+00 | 1.240E+01      | 1.018E+00 | 0.085   |
| BI-210  |           | 46.50        | *   | 1.175E+00           | 9.371E+00 | 1.604E+01      | 1.398E+00 | 0.073   |
| PB-210  |           | 46.50        | *   | 1.175E+00           | 9.371E+00 | 1.604E+01      | 1.398E+00 | 0.073   |
| PO-210  |           | 46.50        | *   | 1.175E+00           | 9.371E+00 | 1.604E+01      | 1.246E+00 | 0.073   |
| PB-211  |           | 404.84       | *   | 2.089E-01           | 1.012E+00 | 1.481E+00      | 9.228E-01 | 0.141   |
|         |           | 427.08       |     | 3.239E-01           | 2.001E+00 | 3.308E+00      | 2.044E+00 | 0.098   |
|         |           | 831.96       |     | -1.415E-01          | 1.252E+00 | 2.047E+00      | 1.279E+00 | -0.069  |
| PO-215  |           | 81.07        |     | -1.746E-01          | 2.440E-01 | 3.521E-01      | 4.082E-02 | -0.496  |
|         |           | 83.78        |     | 2.560E-01           | 1.618E-01 | 2.142E-01      | 2.512E-02 | 1.195   |
|         |           | 94.90        |     | 3.487E-01           | 2.514E-01 | 3.968E-01      | 4.090E-02 | 0.879   |
|         |           | 122.32       |     | -1.040E+00          | 1.717E+00 | 2.746E+00      | 2.112E-01 | -0.379  |
|         |           | 144.24       |     | 3.529E-01           | 6.695E-01 | 1.114E+00      | 8.714E-02 | 0.317   |
|         |           | 154.21       |     | 2.035E-01           | 3.817E-01 | 6.340E-01      | 4.781E-02 | 0.321   |
|         | +         | 269.46       |     | 6.313E-01           | 2.864E-01 | 3.525E-01      | 2.432E-02 | 1.791   |
|         |           | 323.87       | *   | 1.781E-01           | 6.990E-01 | 1.049E+00      | 1.757E-01 | 0.170   |
|         | +         | 338.28       |     | 7.356E+00           | 1.749E+00 | 2.510E+00      | 2.712E-01 | 2.931   |
|         |           | 445.03       |     | 3.381E+00           | 2.261E+00 | 3.991E+00      | 4.070E-01 | 0.847   |
| RN-219  | +         | 271.23       |     | 8.099E-01           | 3.701E-01 | 4.452E-01      | 3.893E-02 | 1.819   |
|         |           | 401.81       | *   | 1.119E-01           | 4.073E-01 | 6.831E-01      | 9.249E-02 | 0.164   |
| RN-220  |           | 549.76       | *   | -9.322E+00          | 2.465E+01 | 3.844E+01      | 2.106E+00 | -0.242  |
| RA-223  |           | 81.07        |     | -1.746E-01          | 2.440E-01 | 3.521E-01      | 4.082E-02 | -0.496  |
|         |           | 83.78        |     | 2.560E-01           | 1.618E-01 | 2.142E-01      | 2.512E-02 | 1.195   |
|         |           | 94.90        |     | 3.487E-01           | 2.514E-01 | 3.968E-01      | 4.090E-02 | 0.879   |
|         |           | 122.32       |     | -1.040E+00          | 1.717E+00 | 2.746E+00      | 2.112E-01 | -0.379  |
|         |           | 144.24       |     | 3.529E-01           | 6.695E-01 | 1.114E+00      | 8.714E-02 | 0.317   |
|         |           | 154.21       |     | 2.035E-01           | 3.817E-01 | 6.340E-01      | 4.781E-02 | 0.321   |
|         | +         | 269.46       |     | 6.313E-01           | 2.864E-01 | 3.525E-01      | 2.432E-02 | 1.791   |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| AC-227  |           | 323.87       | *   | 1.781E-01           | 6.990E-01 | 1.049E+00      | 1.757E-01 | 0.170   |
|         | +         | 338.28       |     | 7.356E+00           | 1.749E+00 | 2.510E+00      | 2.712E-01 | 2.931   |
|         |           | 445.03       |     | 3.381E+00           | 2.261E+00 | 3.991E+00      | 4.070E-01 | 0.847   |
|         |           | 79.80        |     | 4.636E-01           | 1.673E+00 | 2.825E+00      | 6.450E-01 | 0.164   |
|         |           | 236.00       |     | 1.081E-01           | 2.667E-01 | 3.850E-01      | 4.216E-02 | 0.281   |
|         |           | 256.20       | *   | -1.558E-01          | 3.595E-01 | 5.956E-01      | 8.545E-02 | -0.262  |
|         |           | 286.10       |     | -1.198E+00          | 1.454E+00 | 2.330E+00      | 2.795E-01 | -0.514  |
| TH-227  | +         | 299.80       |     | 4.169E+00           | 2.563E+00 | 2.513E+00      | 4.164E-01 | 1.659   |
|         |           | 304.40       |     | 7.056E-01           | 1.889E+00 | 2.872E+00      | 5.044E-01 | 0.246   |
|         |           | 334.20       |     | -2.722E+00          | 2.457E+00 | 3.192E+00      | 5.908E-01 | -0.853  |
|         |           | 79.80        |     | 4.636E-01           | 1.673E+00 | 2.825E+00      | 6.523E-01 | 0.164   |
|         | +         | 94.00        |     | 9.336E+00           | 3.856E+00 | 3.792E+00      | 8.564E-01 | 2.462   |
|         |           | 236.00       |     | 1.081E-01           | 2.667E-01 | 3.850E-01      | 3.707E-02 | 0.281   |
|         |           | 256.20       | *   | -1.558E-01          | 3.598E-01 | 5.956E-01      | 1.026E-01 | -0.262  |
| TH-229  |           | 286.10       |     | -1.198E+00          | 1.880E+00 | 2.330E+00      | 2.335E+00 | -0.514  |
|         | +         | 299.80       |     | 4.169E+00           | 2.563E+00 | 2.513E+00      | 4.164E-01 | 1.659   |
|         |           | 304.40       |     | 7.056E-01           | 1.889E+00 | 2.872E+00      | 5.044E-01 | 0.246   |
|         |           | 334.20       |     | -2.722E+00          | 2.457E+00 | 3.192E+00      | 5.908E-01 | -0.853  |
|         |           | 85.43        |     | 1.756E-01           | 2.047E-01 | 3.178E-01      | 3.761E-02 | 0.553   |
|         | +         | 88.47        |     | 4.211E-01           | 1.578E-01 | 2.129E-01      | 2.531E-02 | 1.977   |
|         |           | 100.00       |     | 2.254E-01           | 1.823E-01 | 3.153E-01      | 2.956E-02 | 0.715   |
| PA-231  |           | 193.63       | *   | -9.992E-02          | 4.962E-01 | 7.879E-01      | 5.113E-02 | -0.127  |
|         |           | 210.97       |     | 7.994E-01           | 8.209E-01 | 1.237E+00      | 8.132E-02 | 0.646   |
|         |           | 283.67       | *   | 7.855E-02           | 1.376E+00 | 2.327E+00      | 3.293E-01 | 0.034   |
| TH-231  | +         | 301.29       |     | 1.668E+00           | 1.004E+00 | 1.045E+00      | 1.138E-01 | 1.597   |
|         |           | 81.07        |     | -1.746E-01          | 2.440E-01 | 3.521E-01      | 4.082E-02 | -0.496  |
|         |           | 83.78        |     | 2.560E-01           | 1.618E-01 | 2.142E-01      | 2.512E-02 | 1.195   |
|         |           | 94.90        |     | 3.487E-01           | 2.514E-01 | 3.968E-01      | 4.090E-02 | 0.879   |
|         |           | 122.32       |     | -1.040E+00          | 1.717E+00 | 2.746E+00      | 2.112E-01 | -0.379  |
|         |           | 144.24       |     | 3.529E-01           | 6.695E-01 | 1.114E+00      | 8.714E-02 | 0.317   |
|         |           | 154.21       |     | 2.035E-01           | 3.817E-01 | 6.340E-01      | 4.781E-02 | 0.321   |
| U-231   | +         | 269.46       |     | 6.313E-01           | 2.864E-01 | 3.525E-01      | 2.432E-02 | 1.791   |
|         |           | 323.87       | *   | 1.781E-01           | 6.990E-01 | 1.049E+00      | 1.757E-01 | 0.170   |
|         | +         | 338.28       |     | 7.356E+00           | 1.749E+00 | 2.510E+00      | 2.712E-01 | 2.931   |
|         |           | 445.03       |     | 3.381E+00           | 2.261E+00 | 3.991E+00      | 4.070E-01 | 0.847   |
|         | +         | 84.21        |     | 5.249E+00           | 6.158E+00 | 8.842E+00      | 1.039E+00 | 0.594   |
|         |           | 92.29        |     | 9.028E+00           | 3.263E+00 | 3.927E+00      | 4.273E-01 | 2.299   |
|         |           | 95.87        | *   | -1.456E-01          | 1.140E+00 | 1.686E+00      | 1.705E-01 | -0.086  |
| PA-233  |           | 108.00       |     | -1.723E+00          | 2.090E+00 | 3.261E+00      | 2.699E-01 | -0.529  |
|         | +         | 75.28        |     | 1.728E+01           | 5.239E+00 | 7.490E+00      | 1.281E+00 | 2.307   |
|         | +         | 86.59        |     | 6.038E+00           | 2.733E+00 | 3.172E+00      | 8.897E-01 | 1.904   |
|         | +         | 300.12       |     | 1.162E+00           | 7.064E-01 | 7.137E-01      | 9.838E-02 | 1.629   |
|         |           | 311.98       | *   | -1.801E-02          | 5.796E-02 | 9.535E-02      | 6.502E-03 | -0.189  |
|         |           | 340.50       |     | 1.212E+00           | 7.282E-01 | 1.113E+00      | 2.570E-01 | 1.089   |
|         |           | 398.62       |     | -3.376E-01          | 2.009E+00 | 3.277E+00      | 8.460E-01 | -0.103  |
| PA-234  |           | 415.76       |     | -1.099E+00          | 1.685E+00 | 2.628E+00      | 5.400E-01 | -0.418  |
|         |           | 63.00        |     | 3.934E-01           | 2.030E+00 | 3.460E+00      | 6.078E-01 | 0.114   |
|         |           | 94.67        |     | 3.457E-01           | 1.874E-01 | 2.953E-01      | 4.035E-02 | 1.170   |
|         |           | 98.44        |     | 1.098E-01           | 1.168E-01 | 1.565E-01      | 8.758E-02 | 0.702   |

## ---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 99.86        |     | 6.173E-01           | 4.642E-01 | 8.047E-01      | 7.564E-02 | 0.767   |
|         |           | 111.00       |     | -8.858E-02          | 1.821E-01 | 2.941E-01      | 3.416E-02 | -0.301  |
|         |           | 131.20       |     | 7.002E-03           | 1.136E-01 | 1.668E-01      | 1.119E-02 | 0.042   |
|         |           | 152.70       |     | 1.839E-01           | 3.153E-01 | 5.231E-01      | 8.398E-02 | 0.351   |
|         | +         | 186.00       |     | 6.162E+00           | 2.730E+00 | 2.616E+00      | 8.027E-01 | 2.356   |
|         |           | 226.40       |     | -3.221E-01          | 3.970E-01 | 5.996E-01      | 7.195E-02 | -0.537  |
|         |           | 227.20       |     | -2.728E-01          | 4.274E-01 | 6.547E-01      | 4.343E-02 | -0.417  |
|         |           | 248.90       |     | -7.819E-02          | 8.199E-01 | 1.288E+00      | 2.799E-01 | -0.061  |
|         | +         | 293.70       |     | 7.456E+00           | 1.625E+00 | 1.688E+00      | 2.767E-01 | 4.416   |
|         |           | 369.80       |     | 5.366E-02           | 7.834E-01 | 1.305E+00      | 2.723E-01 | 0.041   |
|         |           | 568.70       |     | 5.102E-01           | 1.028E+00 | 1.718E+00      | 9.286E-02 | 0.297   |
|         |           | 569.50       |     | 3.564E-01           | 2.751E-01 | 4.860E-01      | 2.625E-02 | 0.733   |
|         |           | 574.00       |     | -8.481E-01          | 1.551E+00 | 2.384E+00      | 1.283E-01 | -0.356  |
|         |           | 699.00       |     | 4.809E-01           | 7.267E-01 | 1.267E+00      | 2.261E-01 | 0.380   |
|         |           | 706.10       |     | -4.686E-02          | 1.016E+00 | 1.696E+00      | 7.479E-01 | -0.028  |
|         |           | 733.00       |     | 2.569E-01           | 3.998E-01 | 6.204E-01      | 1.319E-01 | 0.414   |
|         |           | 742.81       |     | 3.583E-01           | 1.227E+00 | 2.063E+00      | 1.380E+00 | 0.174   |
|         |           | 796.30       |     | 9.955E-01           | 1.032E+00 | 1.606E+00      | 4.254E-01 | 0.620   |
|         |           | 805.60       |     | 9.618E-01           | 1.086E+00 | 1.862E+00      | 5.622E-01 | 0.516   |
|         |           | 819.60       |     | -5.042E-02          | 1.259E+00 | 2.079E+00      | 7.836E-01 | -0.024  |
|         |           | 826.30       |     | 9.124E-02           | 8.620E-01 | 1.439E+00      | 6.399E-01 | 0.063   |
|         |           | 831.60       |     | -4.126E-01          | 6.785E-01 | 1.048E+00      | 3.087E-01 | -0.394  |
|         |           | 876.40       |     | -1.053E-01          | 7.918E-01 | 1.275E+00      | 1.310E+00 | -0.083  |
|         |           | 880.51       |     | 1.228E-02           | 2.834E-01 | 4.607E-01      | 3.662E-02 | 0.027   |
|         |           | 883.24       |     | 1.659E-01           | 3.110E-01 | 5.035E-01      | 3.381E-01 | 0.330   |
|         |           | 899.00       |     | 9.401E-02           | 8.710E-01 | 1.446E+00      | 6.308E-01 | 0.065   |
|         |           | 925.00       |     | -5.330E-01          | 1.252E+00 | 1.972E+00      | 1.597E-01 | -0.270  |
|         |           | 926.50       |     | 8.454E-02           | 1.866E-01 | 3.170E-01      | 7.956E-02 | 0.267   |
|         |           | 946.00       | *   | -3.681E-01          | 3.425E-01 | 4.936E-01      | 9.121E-02 | -0.746  |
|         |           | 949.00       |     | 3.292E-01           | 4.989E-01 | 8.625E-01      | 6.870E-02 | 0.382   |
|         |           | 980.50       |     | 5.135E-01           | 7.290E-01 | 1.273E+00      | 9.886E-02 | 0.403   |
|         |           | 1394.10      |     | 6.277E-01           | 1.191E+00 | 1.999E+00      | 1.297E+00 | 0.314   |
| PA-234M |           | 766.42       |     | 8.466E+00           | 1.501E+01 | 2.201E+01      | 1.109E+01 | 0.385   |
|         | +         | 1001.03      | *   | 8.778E+00           | 5.180E+00 | 8.392E+00      | 7.651E-01 | 1.046   |
| TH-234  |           | 63.29        | *   | 4.841E-01           | 1.707E+00 | 2.916E+00      | 5.769E-01 | 0.166   |
|         | +         | 92.38        |     | 2.416E+00           | 9.539E-01 | 1.052E+00      | 2.026E-01 | 2.295   |
| U-235   |           | 89.95        |     | 2.204E+00           | 1.058E+00 | 1.961E+00      | 6.231E-01 | 1.124   |
|         | +         | 93.35        |     | 2.904E+00           | 1.305E+00 | 1.268E+00      | 3.640E-01 | 2.291   |
|         |           | 105.00       |     | 1.128E+00           | 1.092E+00 | 1.794E+00      | 5.357E-01 | 0.629   |
|         |           | 143.76       | *   | -1.626E-02          | 2.075E-01 | 3.372E-01      | 5.589E-02 | -0.048  |
|         |           | 163.35       |     | 2.411E-01           | 4.580E-01 | 7.558E-01      | 1.374E-01 | 0.319   |
|         | +         | 185.71       |     | 2.282E-01           | 7.441E-02 | 9.756E-02      | 6.290E-03 | 2.339   |
|         |           | 205.31       |     | -4.117E-01          | 5.978E-01 | 8.055E-01      | 1.469E-01 | -0.511  |
| NP-236  |           | 94.67        |     | 2.636E-01           | 1.403E-01 | 2.242E-01      | 2.321E-02 | 1.176   |
|         |           | 98.44        |     | 8.299E-02           | 7.550E-02 | 1.183E-01      | 1.140E-02 | 0.701   |
|         |           | 111.00       |     | -6.700E-02          | 1.376E-01 | 2.224E-01      | 1.767E-02 | -0.301  |
|         |           | 160.31       | *   | 2.700E-02           | 7.956E-02 | 1.309E-01      | 8.355E-03 | 0.206   |
| U-238   |           | 63.29        | *   | 4.841E-01           | 1.707E+00 | 2.916E+00      | 5.769E-01 | 0.166   |
|         | +         | 92.38        |     | 2.416E+00           | 8.732E-01 | 1.052E+00      | 1.143E-01 | 2.295   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| NP-239  |           | 99.55        |     | 2.144E-01           | 1.629E-01 | 2.713E-01      | 2.563E-02 | 0.790   |
|         |           | 117.00       | *   | -1.101E-01          | 1.855E-01 | 2.974E-01      | 2.188E-02 | -0.370  |
|         | +         | 209.75       |     | 1.912E+00           | 1.262E+00 | 1.421E+00      | 9.331E-02 | 1.346   |
|         |           | 228.18       |     | -3.468E-02          | 2.276E-01 | 3.586E-01      | 2.380E-02 | -0.097  |
|         | +         | 277.60       |     | 2.760E-01           | 1.867E-01 | 2.930E-01      | 1.949E-02 | 0.942   |
| AM-241  |           | 334.30       |     | -1.601E+00          | 1.364E+00 | 1.796E+00      | 1.136E-01 | -0.892  |
|         |           | 59.54        | *   | 3.717E-03           | 2.190E-01 | 3.711E-01      | 4.685E-02 | 0.010   |
|         |           | 99.55        |     | 2.206E-01           | 1.676E-01 | 2.791E-01      | 2.638E-02 | 0.790   |
|         |           | 103.76       | *   | 6.341E-02           | 9.662E-02 | 1.640E-01      | 1.446E-02 | 0.387   |
|         |           | 117.00       |     | -1.133E-01          | 1.908E-01 | 3.060E-01      | 2.251E-02 | -0.370  |
| CM-243  | +         | 209.75       |     | 1.885E+00           | 1.245E+00 | 1.400E+00      | 9.199E-02 | 1.346   |
|         |           | 228.18       |     | -3.504E-02          | 2.300E-01 | 3.623E-01      | 2.405E-02 | -0.097  |
|         | +         | 277.60       |     | 2.782E-01           | 1.882E-01 | 2.954E-01      | 1.965E-02 | 0.942   |
|         |           | 798.80       |     | -1.793E-01          | 1.593E-01 | 1.947E-01      | 1.305E-02 | -0.921  |
|         |           | 1036.00      |     | -3.914E-01          | 3.294E-01 | 4.683E-01      | 3.443E-02 | -0.836  |
| AM-246  |           | 1062.04      |     | -4.678E-02          | 2.627E-01 | 4.194E-01      | 2.989E-02 | -0.112  |
|         |           | 1078.86      | *   | 8.130E-02           | 1.662E-01 | 2.811E-01      | 1.960E-02 | 0.289   |
|         | +         | 278.00       |     | 1.144E+00           | 7.743E-01 | 1.205E+00      | 8.015E-02 | 0.950   |
|         |           | 287.40       |     | 9.356E-02           | 1.163E+00 | 1.968E+00      | 1.303E-01 | 0.048   |
|         |           | 402.60       | *   | 1.531E-02           | 3.595E-02 | 6.090E-02      | 3.437E-03 | 0.251   |
| CF-249  |           | 252.85       |     | 5.858E-01           | 8.343E-01 | 1.460E+00      | 9.750E-02 | 0.401   |
|         |           | 333.44       |     | -9.763E-02          | 1.931E-01 | 2.516E-01      | 1.593E-02 | -0.388  |
|         |           | 387.95       | *   | 4.176E-03           | 3.867E-02 | 6.438E-02      | 3.658E-03 | 0.065   |
| CF-251  |           | 176.60       | *   | -3.633E-02          | 1.257E-01 | 1.999E-01      | 1.279E-02 | -0.182  |
|         |           | 227.00       |     | -1.345E-01          | 3.720E-01 | 5.791E-01      | 3.842E-02 | -0.232  |
|         |           | 285.00       |     | -1.425E+00          | 1.599E+00 | 2.558E+00      | 1.696E-01 | -0.557  |

## VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630003      *
* Acquisition date   : 23-JAN-2010 11:45:37 Detector SN#      :              *
* Detector ID        : GAM04                      Sensitivity    : 5.000      *
* Geometry           : CAN                      Energy tolerance: 1.500      *
* Elapsed live time  : 0 02:00:00.00           Abundance limit : 75.000      *
* Elapsed real time  : 0 02:00:01.38           Half life ratio  : 8.000      *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G244630003           Analyst initials: MXR1          *
* Batch Number       : 941639              Sample Quantity : 1.3325E+02 GRAM  *
* Recovery           : 1.00000             Carrier Weight  : 0.00000        *
*****
*
*                                     QC DATA                                *
*
* Standard Weight    : 0.00000                                                    *
* CALIB. DATE/TIME   : 5-MAY-2009 14:25:41 MS Isotope      :                *
* MSD DPM             : 0.000              MSD Isotope      :                *
* LCS DPM             : 0.000              LCS Isotope       :                *
* LCSD DPM           : 0.000              LCSD Isotope      :                *
*****

```

## Combined Activity-MDA Report

## ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act error | MDA<br>(pCi/GRAM ) |           |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 3.489E+01               | 3.046E+00 | 4.658E-01          | 0.000E+00 |
| CD-109  | 3.137E+00               | 1.152E+00 | 1.428E+00          | 0.000E+00 |
| SN-126  | 3.084E-01               | 1.132E-01 | 1.414E-01          | 0.000E+00 |
| BA-137M | 5.091E-02               | 4.513E-02 | 6.061E-02          | 0.000E+00 |
| CS-137  | 5.382E-02               | 4.770E-02 | 6.407E-02          | 0.000E+00 |
| TL-208  | 6.006E-01               | 8.827E-02 | 5.565E-02          | 0.000E+00 |
| BI-211  | 4.083E+00               | 4.996E-01 | 3.352E-01          | 0.000E+00 |
| BI-212  | 1.428E+00               | 4.717E-01 | 4.666E-01          | 0.000E+00 |
| PB-212  | 1.907E+00               | 1.895E-01 | 9.274E-02          | 0.000E+00 |
| PO-212  | 1.907E+00               | 1.895E-01 | 9.274E-02          | 0.000E+00 |
| BI-214  | 1.152E+00               | 1.742E-01 | 1.078E-01          | 0.000E+00 |
| PB-214  | 1.420E+00               | 1.884E-01 | 1.181E-01          | 0.000E+00 |
| PO-214  | 1.420E+00               | 1.884E-01 | 1.181E-01          | 0.000E+00 |
| PO-216  | 1.907E+00               | 1.895E-01 | 9.274E-02          | 0.000E+00 |
| PO-218  | 1.420E+00               | 1.884E-01 | 1.181E-01          | 0.000E+00 |
| RA-224  | 4.827E+00               | 1.277E+00 | 1.056E+00          | 0.000E+00 |
| RA-226  | 1.152E+00               | 1.742E-01 | 1.078E-01          | 0.000E+00 |
| AC-228  | 1.863E+00               | 3.195E-01 | 2.437E-01          | 0.000E+00 |
| RA-228  | 1.863E+00               | 3.195E-01 | 2.437E-01          | 0.000E+00 |
| TH-228  | 1.935E+00               | 1.923E-01 | 9.414E-02          | 0.000E+00 |
| TH-230  | 1.152E+00               | 1.742E-01 | 1.078E-01          | 0.000E+00 |
| TH-232  | 1.863E+00               | 3.195E-01 | 2.437E-01          | 0.000E+00 |
| U-234   | 1.152E+00               | 1.742E-01 | 1.078E-01          | 0.000E+00 |
| NP-237  | 9.056E-01               | 3.796E-01 | 4.360E-01          | 0.000E+00 |
| AM-243  | 3.299E-01               | 8.900E-02 | 1.031E-01          | 0.000E+00 |
| ANH-511 | 1.724E-01               | 6.708E-02 | 4.496E-02          | 0.000E+00 |

## ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L. Act error<br>) Ided | MDA<br>(pCi/GRAM ) |                      |
|---------|-------------------------------------|--------------------------|--------------------|----------------------|
| BE-7    | 2.307E-02                           | 2.955E-01                | 5.053E-01          | 0.000E+00 NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| NA-22   | -2.717E-02 | 4.379E-02 | 7.037E-02 | 0.000E+00 | NOT IDENT. |
| NA-24   | 0.000E+00  | 6.082E+05 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| AL-26   | 6.139E-03  | 2.977E-02 | 5.124E-02 | 0.000E+00 | NOT IDENT. |
| TI-44   | 0.000E+00  | 6.974E-02 | 8.776E-02 | 0.000E+00 | FAIL ABUN  |
| SC-46   | 1.733E-03  | 3.980E-02 | 6.785E-02 | 0.000E+00 | FAIL ABUN  |
| V-48    | -3.262E-02 | 7.213E-02 | 1.158E-01 | 0.000E+00 | NOT IDENT. |
| CR-51   | -2.282E-01 | 3.466E-01 | 5.859E-01 | 0.000E+00 | NOT IDENT. |
| MN-52   | 3.456E-02  | 1.863E-01 | 3.253E-01 | 0.000E+00 | NOT IDENT. |
| MN-54   | 4.402E-03  | 3.909E-02 | 6.737E-02 | 0.000E+00 | NOT IDENT. |
| CO-56   | 3.510E-02  | 3.941E-02 | 7.211E-02 | 0.000E+00 | NOT IDENT. |
| CO-57   | -1.969E-02 | 2.429E-02 | 4.107E-02 | 0.000E+00 | NOT IDENT. |
| CO-58   | -3.160E-02 | 3.844E-02 | 6.091E-02 | 0.000E+00 | NOT IDENT. |
| FE-59   | -4.210E-02 | 1.049E-01 | 1.680E-01 | 0.000E+00 | NOT IDENT. |
| CO-60   | 1.089E-02  | 4.128E-02 | 7.243E-02 | 0.000E+00 | NOT IDENT. |
| ZN-65   | 5.675E-03  | 9.500E-02 | 1.373E-01 | 0.000E+00 | NOT IDENT. |
| GE-68   | 1.031E+00  | 1.430E+00 | 2.529E+00 | 0.000E+00 | NOT IDENT. |
| AS-73   | -5.594E-01 | 1.446E+00 | 2.614E+00 | 0.000E+00 | NOT IDENT. |
| AS-74   | -1.684E-02 | 8.734E-02 | 1.431E-01 | 0.000E+00 | NOT IDENT. |
| SE-75   | -2.175E-02 | 4.440E-02 | 7.141E-02 | 0.000E+00 | NOT IDENT. |
| BR-77   | -9.544E+00 | 1.003E+01 | 1.563E+01 | 0.000E+00 | FAIL ABUN  |
| SR-82   | -9.067E-02 | 3.999E-01 | 6.759E-01 | 0.000E+00 | NOT IDENT. |
| RB-83   | -5.273E-02 | 6.800E-02 | 1.076E-01 | 0.000E+00 | NOT IDENT. |
| RB-84   | 7.615E-03  | 7.126E-02 | 1.203E-01 | 0.000E+00 | NOT IDENT. |
| KR-85   | 7.942E+00  | 7.968E+00 | 1.284E+01 | 0.000E+00 | NOT IDENT. |
| SR-85   | 4.067E-02  | 4.080E-02 | 6.576E-02 | 0.000E+00 | NOT IDENT. |
| RB-86   | 3.878E-01  | 9.014E-01 | 1.558E+00 | 0.000E+00 | NOT IDENT. |
| Y-88    | 3.770E-02  | 3.084E-02 | 6.299E-02 | 0.000E+00 | NOT IDENT. |
| ZR-88   | 2.321E-02  | 2.818E-02 | 5.124E-02 | 0.000E+00 | NOT IDENT. |
| Y-91    | 9.210E+00  | 2.208E+01 | 3.761E+01 | 0.000E+00 | NOT IDENT. |
| NB-94   | 1.838E-04  | 3.426E-02 | 5.949E-02 | 0.000E+00 | NOT IDENT. |
| NB-95   | 1.750E-04  | 5.116E-02 | 7.658E-02 | 0.000E+00 | NOT IDENT. |
| NB-95M  | 2.145E-02  | 1.379E-01 | 2.070E-01 | 0.000E+00 | NOT IDENT. |
| ZR-95   | 3.339E-02  | 6.933E-02 | 1.240E-01 | 0.000E+00 | NOT IDENT. |
| NB-97   | 0.000E+00  | 9.202E+04 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| ZR-97   | 0.000E+00  | 1.543E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| MO-99   | 5.495E+00  | 9.732E+00 | 1.760E+01 | 0.000E+00 | NOT IDENT. |
| TC-99M  | 0.000E+00  | 2.518E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | -1.189E-02 | 3.311E-02 | 5.361E-02 | 0.000E+00 | FAIL ABUN  |
| RH-102  | -2.039E-02 | 2.692E-02 | 4.302E-02 | 0.000E+00 | NOT IDENT. |
| RU-103  | 2.536E-02  | 3.942E-02 | 6.974E-02 | 0.000E+00 | FAIL ABUN  |
| RH-106  | -5.959E-02 | 2.861E-01 | 4.652E-01 | 0.000E+00 | FAIL ABUN  |
| RU-106  | -5.959E-02 | 2.860E-01 | 4.652E-01 | 0.000E+00 | FAIL ABUN  |
| AG-108M | 7.530E-03  | 2.820E-02 | 4.932E-02 | 0.000E+00 | NOT IDENT. |
| AG-110M | -2.751E-02 | 3.741E-02 | 5.213E-02 | 0.000E+00 | NOT IDENT. |
| IN-111  | -4.556E-01 | 1.112E+00 | 1.594E+00 | 0.000E+00 | NOT IDENT. |
| IN-113M | 1.656E-02  | 4.157E-02 | 7.367E-02 | 0.000E+00 | NOT IDENT. |
| SN-113  | 1.656E-02  | 4.157E-02 | 7.367E-02 | 0.000E+00 | NOT IDENT. |
| IN-114M | 8.675E-02  | 1.957E-01 | 3.045E-01 | 0.000E+00 | NOT IDENT. |
| CD-115  | -1.176E+01 | 1.057E+01 | 1.620E+01 | 0.000E+00 | NOT IDENT. |
| SN-117M | 2.636E-02  | 5.154E-02 | 9.079E-02 | 0.000E+00 | NOT IDENT. |
| SB-122  | 1.317E+00  | 1.885E+00 | 3.332E+00 | 0.000E+00 | NOT IDENT. |
| I-123   | 0.000E+00  | 4.614E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TE-123M | 2.971E-02  | 2.675E-02 | 4.823E-02 | 0.000E+00 | NOT IDENT. |
| I-124   | 1.819E-01  | 6.828E-01 | 1.076E+00 | 0.000E+00 | NOT IDENT. |
| SB-124  | -3.375E-03 | 7.084E-02 | 1.169E-01 | 0.000E+00 | FAIL ABUN  |
| SB-125  | -1.317E-02 | 8.519E-02 | 1.446E-01 | 0.000E+00 | FAIL ABUN  |
| TE-125M | -1.047E+00 | 9.166E+00 | 1.577E+01 | 0.000E+00 | NOT IDENT. |
| I-126   | 1.136E-01  | 1.939E-01 | 3.125E-01 | 0.000E+00 | NOT IDENT. |
| SB-126  | 9.027E-02  | 1.542E-01 | 2.565E-01 | 0.000E+00 | FAIL ABUN  |
| SB-127  | 1.372E-01  | 1.212E+00 | 2.127E+00 | 0.000E+00 | NOT IDENT. |
| XE-127  | -4.528E-03 | 4.693E-02 | 7.909E-02 | 0.000E+00 | NOT IDENT. |
| I-131   | -3.446E-02 | 1.071E-01 | 1.825E-01 | 0.000E+00 | NOT IDENT. |
| TE-132  | -1.070E-01 | 6.637E-01 | 1.104E+00 | 0.000E+00 | NOT IDENT. |
| BA-133  | 5.791E-02  | 4.657E-02 | 7.769E-02 | 0.000E+00 | FAIL ABUN  |
| I-133   | 0.000E+00  | 5.645E+03 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-134  | 0.000E+00  | 4.952E-02 | 8.465E-02 | 0.000E+00 | FAIL ABUN  |
| CS-135  | 2.060E-01  | 1.540E-01 | 2.627E-01 | 0.000E+00 | NOT IDENT. |
| I-135   | 0.000E+00  | 4.289E+15 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-136  | 2.661E-02  | 1.173E-01 | 2.001E-01 | 0.000E+00 | FAIL ABUN  |
| CE-139  | -3.172E-02 | 2.868E-02 | 4.666E-02 | 0.000E+00 | NOT IDENT. |
| BA-140  | -3.235E-01 | 2.758E-01 | 3.821E-01 | 0.000E+00 | NOT IDENT. |
| LA-140  | -1.477E-01 | 9.930E-02 | 1.298E-01 | 0.000E+00 | FAIL ABUN  |
| CE-141  | 2.038E-02  | 5.967E-02 | 1.049E-01 | 0.000E+00 | NOT IDENT. |
| CE-143  | 0.000E+00  | 1.928E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CE-144  | -1.444E-02 | 2.042E-01 | 3.382E-01 | 0.000E+00 | NOT IDENT. |
| PM-144  | -1.131E-02 | 3.307E-02 | 5.596E-02 | 0.000E+00 | NOT IDENT. |
| PR-144  | -7.663E-01 | 2.241E+00 | 3.792E+00 | 0.000E+00 | NOT IDENT. |
| PM-146  | 3.363E-03  | 4.198E-02 | 7.135E-02 | 0.000E+00 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| ND-147  | 5.253E-01  | 5.772E-01 | 1.029E+00 | 0.000E+00 | FAIL ABUN  |
| PM-149  | -7.006E+01 | 8.137E+01 | 1.366E+02 | 0.000E+00 | NOT IDENT. |
| EU-152  | -1.103E-02 | 9.067E-02 | 1.573E-01 | 0.000E+00 | NOT IDENT. |
| GD-153  | -4.875E-02 | 8.585E-02 | 1.326E-01 | 0.000E+00 | NOT IDENT. |
| EU-154  | -4.881E-02 | 1.202E-01 | 1.975E-01 | 0.000E+00 | NOT IDENT. |
| EU-155  | 4.271E-02  | 1.066E-01 | 1.916E-01 | 0.000E+00 | FAIL ABUN  |
| TB-160  | -2.294E-02 | 1.342E-01 | 2.243E-01 | 0.000E+00 | FAIL ABUN  |
| HO-166M | -1.950E-02 | 5.654E-02 | 9.530E-02 | 0.000E+00 | FAIL ABUN  |
| TM-171  | 1.087E+00  | 3.337E+01 | 6.074E+01 | 0.000E+00 | NOT IDENT. |
| LU-176  | -5.441E-03 | 2.501E-02 | 3.818E-02 | 0.000E+00 | FAIL ABUN  |
| LU-177  | 0.000E+00  | 1.722E+00 | 1.992E+00 | 0.000E+00 | FAIL ABUN  |
| LU-177M | 8.141E-02  | 1.986E-01 | 3.104E-01 | 0.000E+00 | FAIL ABUN  |
| HF-181  | 7.232E-03  | 4.049E-02 | 6.969E-02 | 0.000E+00 | NOT IDENT. |
| W-181   | -3.120E-01 | 4.564E-01 | 7.997E-01 | 0.000E+00 | NOT IDENT. |
| TA-182  | 4.074E-02  | 2.160E-01 | 3.770E-01 | 0.000E+00 | FAIL ABUN  |
| RE-183  | -7.233E-02 | 1.086E-01 | 1.813E-01 | 0.000E+00 | FAIL ABUN  |
| RE-184  | 1.560E-01  | 2.178E-01 | 4.018E-01 | 0.000E+00 | NOT IDENT. |
| OS-185  | -6.443E-03 | 3.763E-02 | 6.490E-02 | 0.000E+00 | NOT IDENT. |
| RE-188  | 1.205E-01  | 1.579E-01 | 2.814E-01 | 0.000E+00 | NOT IDENT. |
| W-188   | 3.316E+00  | 7.713E+00 | 1.240E+01 | 0.000E+00 | NOT IDENT. |
| IR-192  | 3.533E-02  | 3.088E-02 | 5.764E-02 | 0.000E+00 | FAIL ABUN  |
| AU-195  | 3.181E-01  | 2.404E-01 | 4.067E-01 | 0.000E+00 | FAIL ABUN  |
| TL-200  | 0.000E+00  | 3.813E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TL-201  | -9.451E-01 | 6.428E+00 | 1.096E+01 | 0.000E+00 | NOT IDENT. |
| TL-202  | 6.612E-02  | 6.577E-02 | 1.201E-01 | 0.000E+00 | NOT IDENT. |
| HG-203  | 1.498E-02  | 4.040E-02 | 6.497E-02 | 0.000E+00 | NOT IDENT. |
| BI-207  | 3.310E-03  | 6.109E-02 | 1.024E-01 | 0.000E+00 | FAIL ABUN  |
| TL-207  | 1.781E-01  | 6.850E-01 | 1.080E+00 | 0.000E+00 | FAIL ABUN  |
| PO-209  | 1.049E+00  | 7.290E+00 | 1.254E+01 | 0.000E+00 | NOT IDENT. |
| BI-210  | 1.175E+00  | 9.184E+00 | 1.705E+01 | 0.000E+00 | NOT IDENT. |
| PB-210  | 1.175E+00  | 9.184E+00 | 1.705E+01 | 0.000E+00 | NOT IDENT. |
| PO-210  | 1.175E+00  | 9.184E+00 | 1.705E+01 | 0.000E+00 | NOT IDENT. |
| PB-211  | 2.089E-01  | 9.919E-01 | 1.517E+00 | 0.000E+00 | NOT IDENT. |
| PO-215  | 1.781E-01  | 6.850E-01 | 1.080E+00 | 0.000E+00 | FAIL ABUN  |
| RN-219  | 1.119E-01  | 3.991E-01 | 7.002E-01 | 0.000E+00 | FAIL ABUN  |
| RN-220  | -9.322E+00 | 2.415E+01 | 3.919E+01 | 0.000E+00 | NOT IDENT. |
| RA-223  | 1.781E-01  | 6.850E-01 | 1.080E+00 | 0.000E+00 | FAIL ABUN  |
| AC-227  | -1.558E-01 | 3.523E-01 | 6.152E-01 | 0.000E+00 | FAIL ABUN  |
| TH-227  | -1.558E-01 | 3.526E-01 | 6.152E-01 | 0.000E+00 | FAIL ABUN  |
| TH-229  | -9.992E-02 | 4.862E-01 | 8.177E-01 | 0.000E+00 | FAIL ABUN  |
| PA-231  | 7.855E-02  | 1.349E+00 | 2.400E+00 | 0.000E+00 | FAIL ABUN  |
| TH-231  | 1.781E-01  | 6.850E-01 | 1.080E+00 | 0.000E+00 | FAIL ABUN  |
| U-231   | -1.456E-01 | 1.117E+00 | 1.771E+00 | 0.000E+00 | FAIL ABUN  |
| PA-233  | -1.801E-02 | 5.680E-02 | 9.816E-02 | 0.000E+00 | FAIL ABUN  |
| PA-234  | -3.681E-01 | 3.357E-01 | 4.983E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234M | 0.000E+00  | 5.077E+00 | 8.464E+00 | 0.000E+00 | FAIL ABUN  |
| TH-234  | 4.841E-01  | 1.673E+00 | 3.083E+00 | 0.000E+00 | FAIL ABUN  |
| U-235   | -1.626E-02 | 2.034E-01 | 3.517E-01 | 0.000E+00 | FAIL ABUN  |
| NP-236  | 2.700E-02  | 7.797E-02 | 1.362E-01 | 0.000E+00 | NOT IDENT. |
| U-238   | 4.841E-01  | 1.673E+00 | 3.083E+00 | 0.000E+00 | FAIL ABUN  |
| NP-239  | -1.101E-01 | 1.818E-01 | 3.113E-01 | 0.000E+00 | FAIL ABUN  |
| AM-241  | 3.717E-03  | 2.146E-01 | 3.928E-01 | 0.000E+00 | NOT IDENT. |
| CM-243  | 6.341E-02  | 9.469E-02 | 1.720E-01 | 0.000E+00 | FAIL ABUN  |
| AM-246  | 8.130E-02  | 1.629E-01 | 2.832E-01 | 0.000E+00 | NOT IDENT. |
| CM-247  | 1.531E-02  | 3.523E-02 | 6.242E-02 | 0.000E+00 | FAIL ABUN  |
| CF-249  | 4.176E-03  | 3.790E-02 | 6.603E-02 | 0.000E+00 | NOT IDENT. |
| CF-251  | -3.633E-02 | 1.232E-01 | 2.078E-01 | 0.000E+00 | NOT IDENT. |



```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630003.CNF;1
Sample date        : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 11:45:37
Sample ID          : G244630003          Sample quantity   : 1.33250E+02 GRAM
Detector name      : GAM04              Detector geometry  : CAN
Elapsed live time  : 0 02:00:00.00      Elapsed real time  : 0 02:00:01.38  0.0%
Energy tolerance   : 1.50000 keV        Analyst Initials  : MXR1
Abundance limit    : 75.00000           Sensitivity        : 5.00000
Batch ID           : 941639             Detector SN#       :
Matrix Spike ID    :                    LCS ID             : 1032-A
*****

```

## Nuclide Line Activity Report

## Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| K-40    | 1460.81 | 1420  | 10.67* | 1.075E+00 | 3.489E+01               | 3.489E+01              | 8.91              |
| CD-109  | 88.03   | 203   | 3.72*  | 5.004E+00 | 3.067E+00               | 3.137E+00              | 37.47             |
| SN-126  | 64.28   | ----- | 9.60   | 2.203E+00 | -----                   | Line Not Found         | -----             |
|         | 86.94   | 203   | 8.90   | 5.004E+00 | 1.282E+00               | 1.282E+00              | 55.14             |
|         | 87.57   | 203   | 37.00* | 5.004E+00 | 3.084E-01               | 3.084E-01              | 37.47             |
| BA-137M | 661.65  | 36    | 89.98* | 2.207E+00 | 5.086E-02               | 5.091E-02              | 90.45             |
| CS-137  | 661.65  | 36    | 85.12* | 2.207E+00 | 5.377E-02               | 5.382E-02              | 90.45             |
| TL-208  | 277.35  | 60    | 6.80   | 4.325E+00 | 5.722E-01               | 5.722E-01              | 68.23             |
|         | 510.84  | 167   | 21.60  | 2.729E+00 | 7.979E-01               | 7.979E-01              | 40.58             |
|         | 583.14  | 441   | 84.20* | 2.455E+00 | 6.006E-01               | 6.006E-01              | 15.00             |
|         | 860.37  | 57    | 12.46  | 1.743E+00 | 7.395E-01               | 7.395E-01              | 86.58             |
| BI-211  | 72.87   | ----- | 1.27   | 3.384E+00 | -----                   | Line Not Found         | -----             |
|         | 351.07  | 680   | 12.94* | 3.627E+00 | 4.083E+00               | 4.083E+00              | 12.49             |
| BI-212  | 727.18  | 122   | 11.80* | 2.033E+00 | 1.428E+00               | 1.428E+00              | 33.72             |
|         | 785.46  | 50    | 1.97   | 1.894E+00 | 3.803E+00               | 3.803E+00              | 62.60             |
|         | 1620.62 | ----- | 2.75   | 9.985E-01 | -----                   | Line Not Found         | -----             |
| PB-212  | 74.81   | 281   | 10.70  | 3.638E+00 | 2.035E+00               | 2.035E+00              | 29.07             |
|         | 77.11   | 515   | 18.00  | 3.933E+00 | 2.048E+00               | 2.048E+00              | 18.83             |
|         | 87.30   | 203   | 8.00   | 5.004E+00 | 1.426E+00               | 1.426E+00              | 38.78             |
|         | 238.63  | 1457  | 44.60* | 4.826E+00 | 1.907E+00               | 1.907E+00              | 10.14             |
|         | 300.09  | 111   | 3.41   | 4.074E+00 | 2.250E+00               | 2.250E+00              | 59.84             |
| PO-212  | 74.81   | 281   | 10.70  | 3.638E+00 | 2.035E+00               | 2.035E+00              | 29.07             |
|         | 77.11   | 515   | 18.00  | 3.933E+00 | 2.048E+00               | 2.048E+00              | 18.83             |
|         | 87.30   | 203   | 8.00   | 5.004E+00 | 1.426E+00               | 1.426E+00              | 38.78             |
|         | 115.19  | ----- | 0.60   | 6.408E+00 | -----                   | Line Not Found         | -----             |
|         | 238.63  | 1457  | 44.60* | 4.826E+00 | 1.907E+00               | 1.907E+00              | 10.14             |
|         | 300.09  | 111   | 3.41   | 4.074E+00 | 2.250E+00               | 2.250E+00              | 59.84             |
| BI-214  | 609.31  | 448   | 46.30* | 2.368E+00 | 1.152E+00               | 1.152E+00              | 15.44             |
|         | 1120.29 | 130   | 15.10  | 1.357E+00 | 1.782E+00               | 1.782E+00              | 32.12             |
|         | 1764.49 | 79    | 15.80  | 9.530E-01 | 1.485E+00               | 1.485E+00              | 27.54             |
| PB-214  | 74.81   | 281   | 6.21   | 3.638E+00 | 3.506E+00               | 3.506E+00              | 28.51             |
|         | 77.11   | 515   | 10.50  | 3.933E+00 | 3.511E+00               | 3.511E+00              | 20.31             |

Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| PO-214  | 87.30   | 203   | 4.67   | 5.004E+00 | 2.443E+00               | 2.444E+00              | 38.25             |
|         | 241.98  | 324   | 7.49   | 4.784E+00 | 2.546E+00               | 2.546E+00              | 27.57             |
|         | 295.21  | 438   | 19.20  | 4.133E+00 | 1.553E+00               | 1.553E+00              | 17.00             |
|         | 351.92  | 680   | 37.20* | 3.627E+00 | 1.420E+00               | 1.420E+00              | 13.53             |
|         | 74.81   | 281   | 6.21   | 3.638E+00 | 3.506E+00               | 3.506E+00              | 28.51             |
|         | 77.11   | 515   | 10.50  | 3.933E+00 | 3.511E+00               | 3.511E+00              | 20.31             |
|         | 87.30   | 203   | 4.67   | 5.004E+00 | 2.443E+00               | 2.444E+00              | 38.25             |
|         | 241.98  | 324   | 7.49   | 4.784E+00 | 2.546E+00               | 2.546E+00              | 27.57             |
|         | 295.21  | 438   | 19.20  | 4.133E+00 | 1.553E+00               | 1.553E+00              | 17.00             |
|         | 351.92  | 680   | 37.20* | 3.627E+00 | 1.420E+00               | 1.420E+00              | 13.53             |
| PO-216  | 74.81   | 281   | 10.70  | 3.638E+00 | 2.035E+00               | 2.035E+00              | 29.07             |
|         | 77.11   | 515   | 18.00  | 3.933E+00 | 2.048E+00               | 2.048E+00              | 18.83             |
|         | 87.30   | 203   | 8.00   | 5.004E+00 | 1.426E+00               | 1.426E+00              | 38.78             |
|         | 238.63  | 1457  | 44.60* | 4.826E+00 | 1.907E+00               | 1.907E+00              | 10.14             |
|         | 300.09  | 111   | 3.41   | 4.074E+00 | 2.250E+00               | 2.250E+00              | 59.84             |
| PO-218  | 74.81   | 281   | 6.21   | 3.638E+00 | 3.506E+00               | 3.506E+00              | 28.51             |
|         | 77.11   | 515   | 10.50  | 3.933E+00 | 3.511E+00               | 3.511E+00              | 20.31             |
| RA-224  | 87.30   | 203   | 4.67   | 5.004E+00 | 2.443E+00               | 2.444E+00              | 38.25             |
|         | 241.98  | 324   | 7.49   | 4.784E+00 | 2.546E+00               | 2.546E+00              | 27.57             |
|         | 295.21  | 438   | 19.20  | 4.133E+00 | 1.553E+00               | 1.553E+00              | 17.00             |
|         | 351.92  | 680   | 37.20* | 3.627E+00 | 1.420E+00               | 1.420E+00              | 13.53             |
|         | 240.98  | 324   | 3.95*  | 4.784E+00 | 4.827E+00               | 4.827E+00              | 26.99             |
|         | 609.31  | 448   | 46.30* | 2.368E+00 | 1.152E+00               | 1.152E+00              | 15.44             |
|         | 1120.29 | 130   | 15.10  | 1.357E+00 | 1.782E+00               | 1.782E+00              | 32.12             |
|         | 1764.49 | 79    | 15.80  | 9.530E-01 | 1.485E+00               | 1.485E+00              | 27.54             |
|         | 338.32  | 266   | 11.40  | 3.736E+00 | 1.761E+00               | 1.761E+00              | 46.00             |
|         | 911.07  | 303   | 27.70* | 1.652E+00 | 1.863E+00               | 1.863E+00              | 17.50             |
| RA-228  | 969.11  | 129   | 16.60  | 1.559E+00 | 1.407E+00               | 1.407E+00              | 40.94             |
|         | 338.32  | 266   | 11.40  | 3.736E+00 | 1.761E+00               | 1.761E+00              | 46.00             |
|         | 911.07  | 303   | 27.70* | 1.652E+00 | 1.863E+00               | 1.863E+00              | 17.50             |
| TH-228  | 969.11  | 129   | 16.60  | 1.559E+00 | 1.407E+00               | 1.407E+00              | 40.94             |
|         | 74.81   | 281   | 10.70  | 3.638E+00 | 2.035E+00               | 2.065E+00              | 27.55             |
|         | 77.11   | 515   | 18.00  | 3.933E+00 | 2.048E+00               | 2.079E+00              | 18.83             |
|         | 87.30   | 203   | 8.00   | 5.004E+00 | 1.426E+00               | 1.448E+00              | 37.47             |
|         | 238.63  | 1457  | 44.60* | 4.826E+00 | 1.907E+00               | 1.935E+00              | 10.14             |
| TH-230  | 300.09  | 111   | 3.41   | 4.074E+00 | 2.250E+00               | 2.284E+00              | 83.59             |
|         | 609.31  | 448   | 46.30* | 2.368E+00 | 1.152E+00               | 1.152E+00              | 15.44             |
|         | 1120.29 | 130   | 15.10  | 1.357E+00 | 1.782E+00               | 1.782E+00              | 32.12             |
|         | 1764.49 | 79    | 15.80  | 9.530E-01 | 1.485E+00               | 1.485E+00              | 27.54             |
| TH-232  | 338.32  | 266   | 11.40  | 3.736E+00 | 1.761E+00               | 1.761E+00              | 22.09             |
|         | 911.07  | 303   | 27.70* | 1.652E+00 | 1.863E+00               | 1.863E+00              | 17.50             |
|         | 969.11  | 129   | 16.60  | 1.559E+00 | 1.407E+00               | 1.407E+00              | 40.94             |
| U-234   | 609.31  | 448   | 46.30* | 2.368E+00 | 1.152E+00               | 1.152E+00              | 15.44             |
|         | 1120.29 | 130   | 15.10  | 1.357E+00 | 1.782E+00               | 1.782E+00              | 32.12             |
|         | 1764.49 | 79    | 15.80  | 9.530E-01 | 1.485E+00               | 1.485E+00              | 27.54             |
| NP-237  | 86.50   | 203   | 12.60* | 5.004E+00 | 9.056E-01               | 9.056E-01              | 42.77             |
|         | 95.87   | ----- | 2.60   | 5.678E+00 | -----                   | Line Not Found         | -----             |
| AM-243  | 74.67   | 281   | 66.00* | 3.638E+00 | 3.299E-01               | 3.299E-01              | 27.53             |
|         | 86.72   | 203   | 0.34   | 5.004E+00 | 3.396E+01               | 3.396E+01              | 37.47             |

Nuclide Type:

| Nuclide | Energy | Area  | %Abn    | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|--------|-------|---------|-----------|-------------------------|------------------------|-------------------|
|         | 117.66 | ----- | 0.55    | 6.445E+00 | -----                   | Line Not Found         | -----             |
|         | 142.18 | ----- | 0.13    | 6.417E+00 | -----                   | Line Not Found         | -----             |
| ANH-511 | 511.00 | 167   | 100.00* | 2.729E+00 | 1.724E-01               | 1.724E-01              | 39.71             |

Flag: "\*" = Keyline

Summary of Nuclide Activity  
Sample ID : G244630003

Page : 4  
Acquisition date : 23-JAN-2010 11:45:37

Total number of lines in spectrum 35  
Number of unidentified lines 3  
Number of lines tentatively identified by NID 32 91.43%

Nuclide Type :

| Nuclide | Hlife     | Decay | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | Decay Corr<br>2-Sigma Error | 2-Sigma<br>%Error | Flags |
|---------|-----------|-------|-------------------------|------------------------|-----------------------------|-------------------|-------|
| K-40    | 1.28E+09Y | 1.00  | 3.489E+01               | 3.489E+01              | 0.311E+01                   | 8.91              |       |
| CD-109  | 464.00D   | 1.02  | 3.067E+00               | 3.137E+00              | 1.175E+00                   | 37.47             |       |
| SN-126  | 1.00E+05Y | 1.00  | 3.084E-01               | 3.084E-01              | 1.156E-01                   | 37.47             |       |
| BA-137M | 30.17Y    | 1.00  | 5.086E-02               | 5.091E-02              | 4.605E-02                   | 90.45             |       |
| CS-137  | 30.17Y    | 1.00  | 5.377E-02               | 5.382E-02              | 4.868E-02                   | 90.45             |       |
| TL-208  | 1.41E+10Y | 1.00  | 6.006E-01               | 6.006E-01              | 0.901E-01                   | 15.00             |       |
| BI-211  | 7.04E+08Y | 1.00  | 4.083E+00               | 4.083E+00              | 0.510E+00                   | 12.49             |       |
| BI-212  | 1.41E+10Y | 1.00  | 1.428E+00               | 1.428E+00              | 0.481E+00                   | 33.72             |       |
| PB-212  | 1.41E+10Y | 1.00  | 1.907E+00               | 1.907E+00              | 0.193E+00                   | 10.14             |       |
| PO-212  | 1.41E+10Y | 1.00  | 1.907E+00               | 1.907E+00              | 0.193E+00                   | 10.14             |       |
| BI-214  | 1600.00Y  | 1.00  | 1.152E+00               | 1.152E+00              | 0.178E+00                   | 15.44             |       |
| PB-214  | 1600.00Y  | 1.00  | 1.420E+00               | 1.420E+00              | 0.192E+00                   | 13.53             |       |
| PO-214  | 1600.00Y  | 1.00  | 1.420E+00               | 1.420E+00              | 0.192E+00                   | 13.53             |       |
| PO-216  | 1.41E+10Y | 1.00  | 1.907E+00               | 1.907E+00              | 0.193E+00                   | 10.14             |       |
| PO-218  | 1600.00Y  | 1.00  | 1.420E+00               | 1.420E+00              | 0.192E+00                   | 13.53             |       |
| RA-224  | 1.41E+10Y | 1.00  | 4.827E+00               | 4.827E+00              | 1.303E+00                   | 26.99             |       |
| RA-226  | 1600.00Y  | 1.00  | 1.152E+00               | 1.152E+00              | 0.178E+00                   | 15.44             |       |
| AC-228  | 1.41E+10Y | 1.00  | 1.863E+00               | 1.863E+00              | 0.326E+00                   | 17.50             |       |
| RA-228  | 1.41E+10Y | 1.00  | 1.863E+00               | 1.863E+00              | 0.326E+00                   | 17.50             |       |
| TH-228  | 1.91Y     | 1.02  | 1.907E+00               | 1.935E+00              | 0.196E+00                   | 10.14             |       |
| TH-230  | 4.47E+09Y | 1.00  | 1.152E+00               | 1.152E+00              | 0.178E+00                   | 15.44             |       |
| TH-232  | 1.41E+10Y | 1.00  | 1.863E+00               | 1.863E+00              | 0.326E+00                   | 17.50             |       |
| U-234   | 4.47E+09Y | 1.00  | 1.152E+00               | 1.152E+00              | 0.178E+00                   | 15.44             |       |
| NP-237  | 2.14E+06Y | 1.00  | 9.056E-01               | 9.056E-01              | 3.874E-01                   | 42.77             |       |
| AM-243  | 7380.00Y  | 1.00  | 3.299E-01               | 3.299E-01              | 0.908E-01                   | 27.53             |       |
| ANH-511 | 1.00E+09Y | 1.00  | 1.724E-01               | 1.724E-01              | 0.684E-01                   | 39.71             |       |

Total Activity : 7.280E+01 7.290E+01

Grand Total Activity : 7.280E+01 7.290E+01

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

Unidentified Energy Lines  
Sample ID : G244630003

Page : 5  
Acquisition date : 23-JAN-2010 11:45:37

| It | Energy  | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | %Eff     | Flags |
|----|---------|------|-------|------|---------|------|----|----------|------|----------|-------|
| 5  | 89.94   | 111  | 187   | 0.89 | 179.93  | 178  | 16 | 1.54E-02 | 36.0 | 5.25E+00 | T     |
| 5  | 92.97   | 254  | 479   | 1.53 | 185.99  | 178  | 16 | 3.53E-02 | 34.5 | 5.48E+00 | T     |
| 0  | 128.68  | 106  | 385   | 0.80 | 257.40  | 253  | 9  | 1.47E-02 | 69.4 | 6.50E+00 | T     |
| 0  | 185.73  | 249  | 364   | 1.41 | 371.53  | 367  | 10 | 3.46E-02 | 32.0 | 5.70E+00 | T     |
| 0  | 209.32  | 116  | 358   | 1.21 | 418.71  | 413  | 11 | 1.61E-02 | 65.7 | 5.28E+00 | T     |
| 0  | 270.20  | 134  | 207   | 1.28 | 540.47  | 536  | 11 | 1.87E-02 | 44.8 | 4.41E+00 | T     |
| 0  | 328.01  | 60   | 155   | 0.92 | 656.09  | 652  | 8  | 8.37E-03 | 76.2 | 3.82E+00 | T     |
| 0  | 409.03  | 52   | 122   | 0.95 | 818.16  | 815  | 9  | 7.20E-03 | 81.1 | 3.24E+00 |       |
| 0  | 462.70  | 97   | 96    | 1.47 | 925.48  | 920  | 11 | 1.35E-02 | 44.2 | 2.95E+00 | T     |
| 0  | 768.76  | 61   | 47    | 2.02 | 1537.61 | 1533 | 9  | 8.48E-03 | 48.5 | 1.93E+00 |       |
| 0  | 794.62  | 65   | 25    | 1.84 | 1589.33 | 1584 | 11 | 9.03E-03 | 38.7 | 1.88E+00 | T     |
| 0  | 1000.64 | 40   | 25    | 1.20 | 2001.33 | 1996 | 11 | 5.50E-03 | 58.3 | 1.51E+00 | T     |
| 0  | 1630.78 | 14   | 4     | 1.63 | 3261.36 | 3257 | 8  | 1.94E-03 | 72.8 | 9.95E-01 |       |

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC
*                                     2040 Savage Road
*                                     Charleston, SC 29414
*****
*
*                               DETECTOR DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630003.CNF;1
* Acquisition date   : 23-JAN-2010 11:45:37   Detector SN#      :
* Detector ID        : GAM04                   Sensitivity         : 5.00000
* Geometry           : CAN                     Energy tolerance    : 1.50000
* Elapsed live time  : 0 02:00:00.00           Abundance limit      : 75.00000
* Elapsed real time  : 0 02:00:01.38           Half life ratio      : 8.00000
*****
*
*                               SAMPLE DATA
*
* Sample date        : 8-JAN-2010 12:00:00.   Nuclide Library      : SOLID
* Sample ID          : G244630003             Analyst initials     : MXR1
* Batch Number       : 941639                 Sample Quantity      : 1.33250E+02 GRAM
*****
*
*                               QC DATA
*
* CALIB. DATE/TIME   : 5-MAY-2009 14:25:41.36MS Isotope      :
* MSD ID             :                          MSD Isotope    :
* LCS ID             : 1032-A                   LCS Isotope         :
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| K-40    | 3.489E+01              | 3.108E+00 | 4.650E-01         | 3.305E-02 | 75.028  |
| CD-109  | 3.137E+00              | 1.175E+00 | 1.358E+00         | 1.632E-01 | 2.311   |
| SN-126  | 3.084E-01              | 1.156E-01 | 1.345E-01         | 1.613E-02 | 2.293   |
| BA-137M | 5.091E-02              | 4.605E-02 | 5.965E-02         | 2.909E-03 | 0.853   |
| CS-137  | 5.382E-02              | 4.868E-02 | 6.306E-02         | 3.094E-03 | 0.853   |
| TL-208  | 6.006E-01              | 9.007E-02 | 5.465E-02         | 3.438E-03 | 10.990  |
| BI-211  | 4.083E+00              | 5.098E-01 | 3.263E-01         | 2.204E-02 | 12.514  |
| BI-212  | 1.428E+00              | 4.813E-01 | 4.600E-01         | 3.516E-02 | 3.104   |
| PB-212  | 1.907E+00              | 1.933E-01 | 8.967E-02         | 7.202E-03 | 21.262  |
| PO-212  | 1.907E+00              | 1.933E-01 | 8.967E-02         | 7.202E-03 | 21.262  |
| BI-214  | 1.152E+00              | 1.778E-01 | 1.060E-01         | 7.788E-03 | 10.866  |
| PB-214  | 1.420E+00              | 1.922E-01 | 1.149E-01         | 9.802E-03 | 12.359  |
| PO-214  | 1.420E+00              | 1.922E-01 | 1.149E-01         | 9.802E-03 | 12.359  |
| PO-216  | 1.907E+00              | 1.933E-01 | 8.967E-02         | 7.202E-03 | 21.262  |
| PO-218  | 1.420E+00              | 1.922E-01 | 1.149E-01         | 9.802E-03 | 12.359  |
| RA-224  | 4.827E+00              | 1.303E+00 | 1.021E+00         | 6.805E-02 | 4.729   |
| RA-226  | 1.152E+00              | 1.778E-01 | 1.060E-01         | 7.788E-03 | 10.866  |
| AC-228  | 1.863E+00              | 3.260E-01 | 2.413E-01         | 2.630E-02 | 7.721   |

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| RA-228  | 1.863E+00              | 3.260E-01 | 2.413E-01         | 2.630E-02 | 7.721   |
| TH-228  | 1.935E+00              | 1.962E-01 | 9.102E-02         | 7.310E-03 | 21.262  |
| TH-230  | 1.152E+00              | 1.778E-01 | 1.060E-01         | 7.788E-03 | 10.866  |
| TH-232  | 1.863E+00              | 3.260E-01 | 2.413E-01         | 2.630E-02 | 7.721   |
| U-234   | 1.152E+00              | 1.778E-01 | 1.060E-01         | 7.788E-03 | 10.866  |
| NP-237  | 9.056E-01              | 3.874E-01 | 4.145E-01         | 9.875E-02 | 2.185   |
| AM-243  | 3.299E-01              | 9.081E-02 | 9.780E-02         | 1.120E-02 | 3.373   |
| ANH-511 | 1.724E-01              | 6.845E-02 | 4.405E-02         | 2.463E-03 | 3.913   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| BE-7    | 2.307E-02                          |              | 3.015E-01 | 4.945E-01           | 3.275E-02 | 0.047   |
| NA-22   | -2.717E-02                         |              | 4.468E-02 | 7.008E-02           | 4.582E-03 | -0.388  |
| NA-24   | -4.380E-01                         |              | 3.103E-01 | Half-Life too short |           |         |
| AL-26   | 6.139E-03                          |              | 3.038E-02 | 5.136E-02           | 3.046E-03 | 0.120   |
| TI-44   | 3.780E-01                          | +            | 7.116E-02 | 8.329E-02           | 9.577E-03 | 4.538   |
| SC-46   | 1.733E-03                          |              | 4.061E-02 | 6.713E-02           | 5.430E-03 | 0.026   |
| V-48    | -3.262E-02                         |              | 7.360E-02 | 1.148E-01           | 8.894E-03 | -0.284  |
| CR-51   | -2.282E-01                         |              | 3.537E-01 | 5.694E-01           | 4.010E-02 | -0.401  |
| MN-52   | 3.456E-02                          |              | 1.901E-01 | 3.246E-01           | 2.215E-02 | 0.106   |
| MN-54   | 4.402E-03                          |              | 3.989E-02 | 6.659E-02           | 4.819E-03 | 0.066   |
| CO-56   | 3.510E-02                          |              | 4.021E-02 | 7.129E-02           | 5.289E-03 | 0.492   |
| CO-57   | -1.969E-02                         |              | 2.478E-02 | 3.926E-02           | 2.726E-03 | -0.502  |
| CO-58   | -3.160E-02                         |              | 3.922E-02 | 6.017E-02           | 4.154E-03 | -0.525  |
| FE-59   | -4.210E-02                         |              | 1.070E-01 | 1.668E-01           | 1.275E-02 | -0.252  |
| CO-60   | 1.089E-02                          |              | 4.212E-02 | 7.218E-02           | 4.946E-03 | 0.151   |
| ZN-65   | 5.675E-03                          |              | 9.694E-02 | 1.364E-01           | 9.022E-03 | 0.042   |
| GE-68   | 1.031E+00                          |              | 1.459E+00 | 2.510E+00           | 1.753E-01 | 0.410   |
| AS-73   | -5.594E-01                         |              | 1.476E+00 | 2.465E+00           | 3.225E-01 | -0.227  |
| AS-74   | -1.684E-02                         |              | 8.912E-02 | 1.406E-01           | 7.424E-03 | -0.120  |
| SE-75   | -2.175E-02                         |              | 4.530E-02 | 6.917E-02           | 4.653E-03 | -0.314  |
| BR-77   | -9.544E+00                         |              | 1.023E+01 | 1.531E+01           | 8.528E-01 | -0.623  |
| SR-82   | -9.067E-02                         |              | 4.081E-01 | 6.672E-01           | 4.258E-02 | -0.136  |
| RB-83   | -5.273E-02                         |              | 6.939E-02 | 1.054E-01           | 5.871E-03 | -0.500  |
| RB-84   | 7.615E-03                          |              | 7.271E-02 | 1.190E-01           | 9.475E-03 | 0.064   |
| KR-85   | 7.942E+00                          |              | 8.130E+00 | 1.258E+01           | 7.029E-01 | 0.631   |
| SR-85   | 4.067E-02                          |              | 4.163E-02 | 6.444E-02           | 3.599E-03 | 0.631   |
| RB-86   | 3.878E-01                          |              | 9.198E-01 | 1.547E+00           | 1.082E-01 | 0.251   |
| Y-88    | 3.770E-02                          |              | 3.147E-02 | 6.314E-02           | 3.685E-03 | 0.597   |
| ZR-88   | 2.321E-02                          |              | 2.876E-02 | 4.997E-02           | 2.812E-03 | 0.465   |
| Y-91    | 9.210E+00                          |              | 2.253E+01 | 3.742E+01           | 2.293E+00 | 0.246   |
| NB-94   | 1.838E-04                          |              | 3.496E-02 | 5.861E-02           | 3.157E-03 | 0.003   |
| NB-95   | 1.750E-04                          |              | 5.220E-02 | 7.557E-02           | 4.710E-03 | 0.002   |
| NB-95M  | 2.145E-02                          |              | 1.407E-01 | 2.001E-01           | 1.642E-02 | 0.107   |
| ZR-95   | 3.339E-02                          |              | 7.074E-02 | 1.223E-01           | 8.907E-03 | 0.273   |
| NB-97   | -6.876E-02                         |              | 4.695E-02 | Half-Life too short |           |         |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| ZR-97   | 1.928E+00                          |              | 7.873E-01 | Half-Life too short |           |         |
| MO-99   | 5.495E+00                          |              | 9.930E+00 | 1.736E+01           | 2.397E+00 | 0.317   |
| TC-99M  | -4.830E+08                         |              | 1.285E+10 | Half-Life too short |           |         |
| RH-101  | -1.189E-02                         |              | 3.378E-02 | 5.167E-02           | 3.365E-03 | -0.230  |
| RH-102  | -2.039E-02                         |              | 2.747E-02 | 4.209E-02           | 2.380E-03 | -0.484  |
| RU-103  | 2.536E-02                          |              | 4.022E-02 | 6.829E-02           | 8.580E-03 | 0.371   |
| RH-106  | -5.959E-02                         |              | 2.919E-01 | 4.574E-01           | 5.225E-02 | -0.130  |
| RU-106  | -5.959E-02                         |              | 2.919E-01 | 4.574E-01           | 2.350E-02 | -0.130  |
| AG-108M | 7.530E-03                          |              | 2.878E-02 | 4.818E-02           | 2.977E-03 | 0.156   |
| AG-110M | -2.751E-02                         |              | 3.818E-02 | 5.130E-02           | 2.741E-03 | -0.536  |
| IN-111  | -4.556E-01                         |              | 1.135E+00 | 1.542E+00           | 1.029E-01 | -0.296  |
| IN-113M | 1.656E-02                          |              | 4.242E-02 | 7.184E-02           | 4.329E-03 | 0.230   |
| SN-113  | 1.656E-02                          |              | 4.242E-02 | 7.184E-02           | 4.329E-03 | 0.230   |
| IN-114M | 8.675E-02                          |              | 1.997E-01 | 2.932E-01           | 1.898E-02 | 0.296   |
| CD-115  | -1.176E+01                         |              | 1.078E+01 | 1.588E+01           | 8.812E-01 | -0.740  |
| SN-117M | 2.636E-02                          |              | 5.259E-02 | 8.718E-02           | 5.576E-03 | 0.302   |
| SB-122  | 1.317E+00                          |              | 1.923E+00 | 3.270E+00           | 1.774E-01 | 0.403   |
| I-123   | 5.124E+00                          |              | 2.354E+00 | Half-Life too short |           |         |
| TE-123M | 2.971E-02                          |              | 2.730E-02 | 4.631E-02           | 2.994E-03 | 0.641   |
| I-124   | 1.819E-01                          |              | 6.967E-01 | 1.057E+00           | 5.545E-02 | 0.172   |
| SB-124  | -3.375E-03                         |              | 7.228E-02 | 1.170E-01           | 7.950E-03 | -0.029  |
| SB-125  | -1.317E-02                         |              | 8.693E-02 | 1.412E-01           | 8.361E-03 | -0.093  |
| TE-125M | -1.047E+00                         |              | 9.353E+00 | 1.504E+01           | 1.493E+00 | -0.070  |
| I-126   | 1.136E-01                          |              | 1.978E-01 | 3.076E-01           | 1.517E-02 | 0.369   |
| SB-126  | 9.027E-02                          |              | 1.573E-01 | 2.529E-01           | 1.421E-02 | 0.357   |
| SB-127  | 1.372E-01                          |              | 1.236E+00 | 2.094E+00           | 1.886E-01 | 0.066   |
| XE-127  | -4.528E-03                         |              | 4.789E-02 | 7.626E-02           | 4.985E-03 | -0.059  |
| I-131   | -3.446E-02                         |              | 1.093E-01 | 1.777E-01           | 1.183E-02 | -0.194  |
| TE-132  | -1.070E-01                         |              | 6.773E-01 | 1.066E+00           | 1.567E-01 | -0.100  |
| BA-133  | 5.791E-02                          |              | 4.752E-02 | 7.564E-02           | 8.860E-03 | 0.766   |
| I-133   | -8.689E-04                         |              | 2.880E-03 | Half-Life too short |           |         |
| CS-134  | 1.287E-01                          | +            | 5.053E-02 | 8.359E-02           | 5.634E-03 | 1.540   |
| CS-135  | 2.060E-01                          |              | 1.571E-01 | 2.546E-01           | 2.122E-02 | 0.809   |
| I-135   | -6.931E+07                         |              | 2.188E+09 | Half-Life too short |           |         |
| CS-136  | 2.661E-02                          |              | 1.197E-01 | 1.986E-01           | 1.525E-02 | 0.134   |
| CE-139  | -3.172E-02                         |              | 2.927E-02 | 4.484E-02           | 2.849E-03 | -0.707  |
| BA-140  | -3.235E-01                         |              | 2.815E-01 | 3.747E-01           | 1.217E-01 | -0.863  |
| LA-140  | -1.477E-01                         |              | 1.013E-01 | 1.298E-01           | 8.550E-03 | -1.138  |
| CE-141  | 2.038E-02                          |              | 6.089E-02 | 1.006E-01           | 6.752E-03 | 0.203   |
| CE-143  | 5.537E-04                          |              | 9.836E-05 | Half-Life too short |           |         |
| CE-144  | -1.444E-02                         |              | 2.084E-01 | 3.239E-01           | 4.720E-02 | -0.045  |
| PM-144  | -1.131E-02                         |              | 3.374E-02 | 5.513E-02           | 2.929E-03 | -0.205  |
| PR-144  | -7.663E-01                         |              | 2.286E+00 | 3.736E+00           | 1.983E-01 | -0.205  |
| PM-146  | 3.363E-03                          |              | 4.284E-02 | 6.976E-02           | 5.954E-03 | 0.048   |
| ND-147  | 5.253E-01                          |              | 5.890E-01 | 1.009E+00           | 1.353E-01 | 0.521   |
| PM-149  | -7.006E+01                         |              | 8.303E+01 | 1.325E+02           | 1.926E+01 | -0.529  |
| EU-152  | -1.103E-02                         |              | 9.253E-02 | 1.531E-01           | 1.059E-02 | -0.072  |
| GD-153  | -4.875E-02                         |              | 8.760E-02 | 1.263E-01           | 1.239E-02 | -0.386  |



----- Non-Identified Nuclides -----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| EU-154  | -4.881E-02                         |              | 1.226E-01 | 1.967E-01           | 1.929E-02 | -0.248  |
| EU-155  | 4.271E-02                          |              | 1.088E-01 | 1.827E-01           | 1.592E-02 | 0.234   |
| TB-160  | -2.294E-02                         |              | 1.369E-01 | 2.219E-01           | 1.760E-02 | -0.103  |
| HO-166M | -1.950E-02                         |              | 5.769E-02 | 9.391E-02           | 5.169E-03 | -0.208  |
| TM-171  | 1.087E+00                          |              | 3.405E+01 | 5.749E+01           | 6.721E+00 | 0.019   |
| LU-176  | -5.441E-03                         |              | 2.552E-02 | 3.708E-02           | 2.421E-03 | -0.147  |
| LU-177  | 2.661E+00                          | +            | 1.757E+00 | 1.921E+00           | 1.261E-01 | 1.385   |
| LU-177M | 8.141E-02                          |              | 2.026E-01 | 3.030E-01           | 1.714E-02 | 0.269   |
| HF-181  | 7.232E-03                          |              | 4.131E-02 | 6.821E-02           | 3.851E-03 | 0.106   |
| W-181   | -3.120E-01                         |              | 4.657E-01 | 7.566E-01           | 8.918E-02 | -0.412  |
| TA-182  | 4.074E-02                          |              | 2.204E-01 | 3.751E-01           | 2.335E-02 | 0.109   |
| RE-183  | -7.233E-02                         |              | 1.108E-01 | 1.742E-01           | 1.110E-02 | -0.415  |
| RE-184  | 1.560E-01                          |              | 2.222E-01 | 3.889E-01           | 2.597E-02 | 0.401   |
| OS-185  | -6.443E-03                         |              | 3.840E-02 | 6.385E-02           | 3.183E-03 | -0.101  |
| RE-188  | 1.205E-01                          |              | 1.611E-01 | 2.701E-01           | 1.734E-02 | 0.446   |
| W-188   | 3.316E+00                          |              | 7.871E+00 | 1.203E+01           | 7.952E-01 | 0.276   |
| IR-192  | 3.533E-02                          |              | 3.151E-02 | 5.600E-02           | 3.636E-03 | 0.631   |
| AU-195  | 3.181E-01                          |              | 2.454E-01 | 3.874E-01           | 3.705E-02 | 0.821   |
| TL-200  | 1.672E-05                          |              | 1.945E-04 | Half-Life too short |           |         |
| TL-201  | -9.451E-01                         |              | 6.559E+00 | 1.054E+01           | 6.697E-01 | -0.090  |
| TL-202  | 6.612E-02                          |              | 6.711E-02 | 1.173E-01           | 6.655E-03 | 0.564   |
| HG-203  | 1.498E-02                          |              | 4.122E-02 | 6.299E-02           | 4.385E-03 | 0.238   |
| BI-207  | 3.310E-03                          |              | 6.233E-02 | 1.016E-01           | 7.229E-03 | 0.033   |
| TL-207  | 1.781E-01                          |              | 6.990E-01 | 1.049E+00           | 1.757E-01 | 0.170   |
| PO-209  | 1.049E+00                          |              | 7.439E+00 | 1.240E+01           | 1.018E+00 | 0.085   |
| BI-210  | 1.175E+00                          |              | 9.371E+00 | 1.604E+01           | 1.398E+00 | 0.073   |
| PB-210  | 1.175E+00                          |              | 9.371E+00 | 1.604E+01           | 1.398E+00 | 0.073   |
| PO-210  | 1.175E+00                          |              | 9.371E+00 | 1.604E+01           | 1.246E+00 | 0.073   |
| PB-211  | 2.089E-01                          |              | 1.012E+00 | 1.481E+00           | 9.228E-01 | 0.141   |
| PO-215  | 1.781E-01                          |              | 6.990E-01 | 1.049E+00           | 1.757E-01 | 0.170   |
| RN-219  | 1.119E-01                          |              | 4.073E-01 | 6.831E-01           | 9.249E-02 | 0.164   |
| RN-220  | -9.322E+00                         |              | 2.465E+01 | 3.844E+01           | 2.106E+00 | -0.242  |
| RA-223  | 1.781E-01                          |              | 6.990E-01 | 1.049E+00           | 1.757E-01 | 0.170   |
| AC-227  | -1.558E-01                         |              | 3.595E-01 | 5.956E-01           | 8.545E-02 | -0.262  |
| TH-227  | -1.558E-01                         |              | 3.598E-01 | 5.956E-01           | 1.026E-01 | -0.262  |
| TH-229  | -9.992E-02                         |              | 4.962E-01 | 7.879E-01           | 5.113E-02 | -0.127  |
| PA-231  | 7.855E-02                          |              | 1.376E+00 | 2.327E+00           | 3.293E-01 | 0.034   |
| TH-231  | 1.781E-01                          |              | 6.990E-01 | 1.049E+00           | 1.757E-01 | 0.170   |
| U-231   | -1.456E-01                         |              | 1.140E+00 | 1.686E+00           | 1.705E-01 | -0.086  |
| PA-233  | -1.801E-02                         |              | 5.796E-02 | 9.535E-02           | 6.502E-03 | -0.189  |
| PA-234  | -3.681E-01                         |              | 3.425E-01 | 4.936E-01           | 9.121E-02 | -0.746  |
| PA-234M | 8.778E+00                          | +            | 5.180E+00 | 8.392E+00           | 7.651E-01 | 1.046   |
| TH-234  | 4.841E-01                          |              | 1.707E+00 | 2.916E+00           | 5.769E-01 | 0.166   |
| U-235   | -1.626E-02                         |              | 2.075E-01 | 3.372E-01           | 5.589E-02 | -0.048  |
| NP-236  | 2.700E-02                          |              | 7.956E-02 | 1.309E-01           | 8.355E-03 | 0.206   |
| U-238   | 4.841E-01                          |              | 1.707E+00 | 2.916E+00           | 5.769E-01 | 0.166   |
| NP-239  | -1.101E-01                         |              | 1.855E-01 | 2.974E-01           | 2.188E-02 | -0.370  |
| AM-241  | 3.717E-03                          |              | 2.190E-01 | 3.711E-01           | 4.685E-02 | 0.010   |

----- Non-Identified Nuclides -----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| CM-243  | 6.341E-02                          |              | 9.662E-02 | 1.640E-01         | 1.446E-02 | 0.387   |
| AM-246  | 8.130E-02                          |              | 1.662E-01 | 2.811E-01         | 1.960E-02 | 0.289   |
| CM-247  | 1.531E-02                          |              | 3.595E-02 | 6.090E-02         | 3.437E-03 | 0.251   |
| CF-249  | 4.176E-03                          |              | 3.867E-02 | 6.438E-02         | 3.658E-03 | 0.065   |
| CF-251  | -3.633E-02                         |              | 1.257E-01 | 1.999E-01         | 1.279E-02 | -0.182  |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                          *
*****
*                               DETECTOR DATA                               *
*
* Configuration      : SYSSYSROOT:[ALPHA.ARCHIVE.GAMMA]G244630003             *
* Acquisition date   : 23-JAN-2010 11:45:37 Detector SN#      :             *
* Detector ID        : GAM04                      Sensitivity   : 5.000        *
* Geometry           : CAN                        Energy tolerance: 1.500        *
* Elapsed live time  : 0 02:00:00.00             Abundance limit : 75.000        *
* Elapsed real time  : 0 02:00:01.38             Half life ratio : 8.000        *
*****
*                               SAMPLE DATA                               *
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID             *
* Sample ID          : G244630003                 Analyst initials: MXR1         *
* Batch Number       : 941639                     Sample Quantity : 1.3325E+02 GRAM *
* Recovery           : 1.00000                     Carrier Weight  : 0.00000        *
*****
*                               QC DATA                               *
*
* CALIB. DATE/TIME   : 5-MAY-2009 14:25:41 MS Isotope        :             *
* MSD DPM             : 0.000                      MSD Isotope   :             *
* LCS DPM             : 0.000                      LCS Isotope   :             *
* LCSD DPM            : 0.000                      LCSD Isotope  :             *
*****

```

## Combined Activity-MDA Report

### ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act Error | DLC<br>(pCi/GRAM ) | TPU       |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 3.489E+01               | 3.046E+00 | 2.330E-01          | 1.554E+00 |
| CD-109  | 3.137E+00               | 1.152E+00 | 7.143E-01          | 5.877E-01 |
| SN-126  | 3.084E-01               | 1.132E-01 | 7.077E-02          | 5.778E-02 |
| BA-137M | 5.091E-02               | 4.513E-02 | 3.032E-02          | 2.302E-02 |
| CS-137  | 5.382E-02               | 4.770E-02 | 3.205E-02          | 2.434E-02 |
| TL-208  | 6.006E-01               | 8.827E-02 | 2.784E-02          | 4.503E-02 |
| BI-211  | 4.083E+00               | 4.996E-01 | 1.677E-01          | 2.549E-01 |
| BI-212  | 1.428E+00               | 4.717E-01 | 2.334E-01          | 2.407E-01 |
| PB-212  | 1.907E+00               | 1.895E-01 | 4.640E-02          | 9.667E-02 |
| PO-212  | 1.907E+00               | 1.895E-01 | 4.640E-02          | 9.667E-02 |
| BI-214  | 1.152E+00               | 1.742E-01 | 5.395E-02          | 8.888E-02 |
| PE-214  | 1.420E+00               | 1.884E-01 | 5.906E-02          | 9.610E-02 |
| PO-214  | 1.420E+00               | 1.884E-01 | 5.906E-02          | 9.610E-02 |
| PO-216  | 1.907E+00               | 1.895E-01 | 4.640E-02          | 9.667E-02 |
| PO-218  | 1.420E+00               | 1.884E-01 | 5.906E-02          | 9.610E-02 |
| RA-224  | 4.827E+00               | 1.277E+00 | 5.281E-01          | 6.514E-01 |
| RA-226  | 1.152E+00               | 1.742E-01 | 5.395E-02          | 8.888E-02 |
| AC-228  | 1.863E+00               | 3.195E-01 | 1.219E-01          | 1.630E-01 |
| RA-228  | 1.863E+00               | 3.195E-01 | 1.219E-01          | 1.630E-01 |
| TH-228  | 1.935E+00               | 1.923E-01 | 4.710E-02          | 9.812E-02 |
| TH-230  | 1.152E+00               | 1.742E-01 | 5.395E-02          | 8.888E-02 |
| TH-232  | 1.863E+00               | 3.195E-01 | 1.219E-01          | 1.630E-01 |
| U-234   | 1.152E+00               | 1.742E-01 | 5.395E-02          | 8.888E-02 |
| NP-237  | 9.056E-01               | 3.796E-01 | 2.182E-01          | 1.937E-01 |
| AM-243  | 3.299E-01               | 8.900E-02 | 5.160E-02          | 4.541E-02 |
| ANH-511 | 1.724E-01               | 6.708E-02 | 2.249E-02          | 3.422E-02 |

### ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L Act error | DLC<br>(pCi/GRAM ) | TPU                  |
|---------|-------------------------------------|---------------|--------------------|----------------------|
| BE-7    | 2.307E-02                           | 2.955E-01     | 2.528E-01          | 1.507E-01 NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| NA-22   | -2.717E-02 | 4.379E-02 | 3.521E-02 | 2.234E-02 | NOT IDENT. |
| NA-24   | -4.380E+05 | 6.082E+05 | 0.000E+00 | 3.103E+05 | SHORT HLIF |
| AL-26   | 6.139E-03  | 2.977E-02 | 2.564E-02 | 1.519E-02 | NOT IDENT. |
| TI-44   | 3.780E-01  | 6.974E-02 | 4.391E-02 | 3.558E-02 | FAIL ABUN  |
| SC-46   | 1.733E-03  | 3.980E-02 | 3.395E-02 | 2.030E-02 | FAIL ABUN  |
| V-48    | -3.262E-02 | 7.213E-02 | 5.795E-02 | 3.680E-02 | NOT IDENT. |
| CR-51   | -2.282E-01 | 3.466E-01 | 2.931E-01 | 1.768E-01 | NOT IDENT. |
| MN-52   | 3.456E-02  | 1.863E-01 | 1.627E-01 | 9.507E-02 | NOT IDENT. |
| MN-54   | 4.402E-03  | 3.909E-02 | 3.371E-02 | 1.995E-02 | NOT IDENT. |
| CO-56   | 3.510E-02  | 3.941E-02 | 3.608E-02 | 2.011E-02 | NOT IDENT. |
| CO-57   | -1.969E-02 | 2.429E-02 | 2.055E-02 | 1.239E-02 | NOT IDENT. |
| CO-58   | -3.160E-02 | 3.844E-02 | 3.047E-02 | 1.961E-02 | NOT IDENT. |
| FE-59   | -4.210E-02 | 1.049E-01 | 8.403E-02 | 5.350E-02 | NOT IDENT. |
| CO-60   | 1.089E-02  | 4.128E-02 | 3.623E-02 | 2.106E-02 | NOT IDENT. |
| ZN-65   | 5.675E-03  | 9.500E-02 | 6.868E-02 | 4.847E-02 | NOT IDENT. |
| GE-68   | 1.031E+00  | 1.430E+00 | 1.265E+00 | 7.294E-01 | NOT IDENT. |
| AS-73   | -5.594E-01 | 1.446E+00 | 1.308E+00 | 7.379E-01 | NOT IDENT. |
| AS-74   | -1.684E-02 | 8.734E-02 | 7.161E-02 | 4.456E-02 | NOT IDENT. |
| SE-75   | -2.175E-02 | 4.440E-02 | 3.573E-02 | 2.265E-02 | NOT IDENT. |
| BR-77   | -9.544E+00 | 1.003E+01 | 7.817E+00 | 5.117E+00 | FAIL ABUN  |
| SR-82   | -9.067E-02 | 3.999E-01 | 3.382E-01 | 2.040E-01 | NOT IDENT. |
| RB-83   | -5.273E-02 | 6.800E-02 | 5.382E-02 | 3.469E-02 | NOT IDENT. |
| RB-84   | 7.615E-03  | 7.126E-02 | 6.017E-02 | 3.635E-02 | NOT IDENT. |
| KR-85   | 7.942E+00  | 7.968E+00 | 6.425E+00 | 4.065E+00 | NOT IDENT. |
| SR-85   | 4.067E-02  | 4.080E-02 | 3.290E-02 | 2.081E-02 | NOT IDENT. |
| RB-86   | 3.878E-01  | 9.014E-01 | 7.796E-01 | 4.599E-01 | NOT IDENT. |
| Y-88    | 3.770E-02  | 3.084E-02 | 3.151E-02 | 1.573E-02 | NOT IDENT. |
| ZR-88   | 2.321E-02  | 2.818E-02 | 2.563E-02 | 1.438E-02 | NOT IDENT. |
| Y-91    | 9.210E+00  | 2.208E+01 | 1.882E+01 | 1.126E+01 | NOT IDENT. |
| NB-94   | 1.838E-04  | 3.426E-02 | 2.976E-02 | 1.748E-02 | NOT IDENT. |
| NB-95   | 1.750E-04  | 5.116E-02 | 3.831E-02 | 2.610E-02 | NOT IDENT. |
| NB-95M  | 2.145E-02  | 1.379E-01 | 1.036E-01 | 7.035E-02 | NOT IDENT. |
| ZR-95   | 3.339E-02  | 6.933E-02 | 6.203E-02 | 3.537E-02 | NOT IDENT. |
| NB-97   | -6.876E+04 | 9.202E+04 | 0.000E+00 | 4.695E+04 | SHORT HLIF |
| ZR-97   | 1.928E+06  | 1.543E+06 | 0.000E+00 | 7.873E+05 | SHORT HLIF |
| MO-99   | 5.495E+00  | 9.732E+00 | 8.806E+00 | 4.965E+00 | NOT IDENT. |
| TC-99M  | -4.830E+14 | 2.518E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | -1.189E-02 | 3.311E-02 | 2.682E-02 | 1.689E-02 | FAIL ABUN  |
| RH-102  | -2.039E-02 | 2.692E-02 | 2.152E-02 | 1.373E-02 | NOT IDENT. |
| RU-103  | 2.536E-02  | 3.942E-02 | 3.489E-02 | 2.011E-02 | FAIL ABUN  |
| RH-106  | -5.959E-02 | 2.861E-01 | 2.327E-01 | 1.460E-01 | FAIL ABUN  |
| RU-106  | -5.959E-02 | 2.860E-01 | 2.327E-01 | 1.459E-01 | FAIL ABUN  |
| AG-108M | 7.530E-03  | 2.820E-02 | 2.467E-02 | 1.439E-02 | NOT IDENT. |
| AG-110M | -2.751E-02 | 3.741E-02 | 2.608E-02 | 1.909E-02 | NOT IDENT. |
| IN-111  | -4.556E-01 | 1.112E+00 | 7.974E-01 | 5.673E-01 | NOT IDENT. |
| IN-113M | 1.656E-02  | 4.157E-02 | 3.686E-02 | 2.121E-02 | NOT IDENT. |
| SN-113  | 1.656E-02  | 4.157E-02 | 3.686E-02 | 2.121E-02 | NOT IDENT. |
| IN-114M | 8.675E-02  | 1.957E-01 | 1.523E-01 | 9.986E-02 | NOT IDENT. |
| CD-115  | -1.176E+01 | 1.057E+01 | 8.105E+00 | 5.390E+00 | NOT IDENT. |
| SN-117M | 2.636E-02  | 5.154E-02 | 4.542E-02 | 2.630E-02 | NOT IDENT. |
| SB-122  | 1.317E+00  | 1.885E+00 | 1.667E+00 | 9.615E-01 | NOT IDENT. |
| I-123   | 5.124E+06  | 4.614E+06 | 0.000E+00 | 2.354E+06 | SHORT HLIF |
| TE-123M | 2.971E-02  | 2.675E-02 | 2.413E-02 | 1.365E-02 | NOT IDENT. |
| I-124   | 1.819E-01  | 6.828E-01 | 5.383E-01 | 3.483E-01 | NOT IDENT. |
| SB-124  | -3.375E-03 | 7.084E-02 | 5.847E-02 | 3.614E-02 | FAIL ABUN  |
| SB-125  | -1.317E-02 | 8.519E-02 | 7.235E-02 | 4.346E-02 | FAIL ABUN  |
| TE-125M | -1.047E+00 | 9.166E+00 | 7.887E+00 | 4.677E+00 | NOT IDENT. |
| I-126   | 1.136E-01  | 1.939E-01 | 1.563E-01 | 9.892E-02 | NOT IDENT. |
| SB-126  | 9.027E-02  | 1.542E-01 | 1.283E-01 | 7.866E-02 | FAIL ABUN  |
| SB-127  | 1.372E-01  | 1.212E+00 | 1.064E+00 | 6.181E-01 | NOT IDENT. |
| XE-127  | -4.528E-03 | 4.693E-02 | 3.957E-02 | 2.394E-02 | NOT IDENT. |
| I-131   | -3.446E-02 | 1.071E-01 | 9.130E-02 | 5.464E-02 | NOT IDENT. |
| TE-132  | -1.070E-01 | 6.637E-01 | 5.522E-01 | 3.386E-01 | NOT IDENT. |
| BA-133  | 5.791E-02  | 4.657E-02 | 3.887E-02 | 2.376E-02 | FAIL ABUN  |
| I-133   | -8.689E+02 | 5.645E+03 | 0.000E+00 | 2.880E+03 | SHORT HLIF |
| CS-134  | 1.287E-01  | 4.952E-02 | 4.235E-02 | 2.526E-02 | FAIL ABUN  |
| CS-135  | 2.060E-01  | 1.540E-01 | 1.315E-01 | 7.857E-02 | NOT IDENT. |
| I-135   | -6.931E+13 | 4.289E+15 | 0.000E+00 | 2.188E+15 | SHORT HLIF |
| CS-136  | 2.661E-02  | 1.173E-01 | 1.001E-01 | 5.986E-02 | FAIL ABUN  |
| CE-139  | -3.172E-02 | 2.868E-02 | 2.335E-02 | 1.463E-02 | NOT IDENT. |
| BA-140  | -3.235E-01 | 2.758E-01 | 1.912E-01 | 1.407E-01 | NOT IDENT. |
| LA-140  | -1.477E-01 | 9.930E-02 | 6.495E-02 | 5.066E-02 | FAIL ABUN  |
| CE-141  | 2.038E-02  | 5.967E-02 | 5.249E-02 | 3.045E-02 | NOT IDENT. |
| CE-143  | 5.537E+02  | 1.928E+02 | 0.000E+00 | 9.836E+01 | SHORT HLIF |
| CE-144  | -1.444E-02 | 2.042E-01 | 1.692E-01 | 1.042E-01 | NOT IDENT. |
| PM-144  | -1.131E-02 | 3.307E-02 | 2.800E-02 | 1.687E-02 | NOT IDENT. |
| PR-144  | -7.663E-01 | 2.241E+00 | 1.897E+00 | 1.143E+00 | NOT IDENT. |
| PM-146  | 3.363E-03  | 4.198E-02 | 3.569E-02 | 2.142E-02 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| ND-147  | 5.253E-01  | 5.772E-01 | 5.149E-01 | 2.945E-01 | FAIL ABUN  |
| PM-149  | -7.006E+01 | 8.137E+01 | 6.835E+01 | 4.151E+01 | NOT IDENT. |
| EU-152  | -1.103E-02 | 9.067E-02 | 7.870E-02 | 4.626E-02 | NOT IDENT. |
| GD-153  | -4.875E-02 | 8.585E-02 | 6.632E-02 | 4.380E-02 | NOT IDENT. |
| EU-154  | -4.881E-02 | 1.202E-01 | 9.880E-02 | 6.131E-02 | NOT IDENT. |
| EU-155  | 4.271E-02  | 1.066E-01 | 9.585E-02 | 5.439E-02 | FAIL ABUN  |
| TB-160  | -2.294E-02 | 1.342E-01 | 1.122E-01 | 6.845E-02 | FAIL ABUN  |
| HO-166M | -1.950E-02 | 5.654E-02 | 4.768E-02 | 2.885E-02 | FAIL ABUN  |
| TM-171  | 1.087E+00  | 3.337E+01 | 3.039E+01 | 1.702E+01 | NOT IDENT. |
| LU-176  | -5.441E-03 | 2.501E-02 | 1.910E-02 | 1.276E-02 | FAIL ABUN  |
| LU-177  | 2.661E+00  | 1.722E+00 | 9.964E-01 | 8.784E-01 | FAIL ABUN  |
| LU-177M | 8.141E-02  | 1.986E-01 | 1.553E-01 | 1.013E-01 | FAIL ABUN  |
| HF-181  | 7.232E-03  | 4.049E-02 | 3.486E-02 | 2.066E-02 | NOT IDENT. |
| W-181   | -3.120E-01 | 4.564E-01 | 4.001E-01 | 2.328E-01 | NOT IDENT. |
| TA-182  | 4.074E-02  | 2.160E-01 | 1.886E-01 | 1.102E-01 | FAIL ABUN  |
| RE-183  | -7.233E-02 | 1.086E-01 | 9.072E-02 | 5.541E-02 | FAIL ABUN  |
| RE-184  | 1.560E-01  | 2.178E-01 | 2.010E-01 | 1.111E-01 | NOT IDENT. |
| OS-185  | -6.443E-03 | 3.763E-02 | 3.247E-02 | 1.920E-02 | NOT IDENT. |
| RE-188  | 1.205E-01  | 1.579E-01 | 1.408E-01 | 8.055E-02 | NOT IDENT. |
| W-188   | 3.316E+00  | 7.713E+00 | 6.205E+00 | 3.935E+00 | NOT IDENT. |
| IR-192  | 3.533E-02  | 3.088E-02 | 2.884E-02 | 1.575E-02 | FAIL ABUN  |
| AU-195  | 3.181E-01  | 2.404E-01 | 2.035E-01 | 1.227E-01 | FAIL ABUN  |
| TL-200  | 1.672E+01  | 3.813E+02 | 0.000E+00 | 1.945E+02 | SHORT HLIF |
| TL-201  | -9.451E-01 | 6.428E+00 | 5.484E+00 | 3.280E+00 | NOT IDENT. |
| TL-202  | 6.612E-02  | 6.577E-02 | 6.006E-02 | 3.356E-02 | NOT IDENT. |
| HG-203  | 1.498E-02  | 4.040E-02 | 3.250E-02 | 2.061E-02 | NOT IDENT. |
| BI-207  | 3.310E-03  | 6.109E-02 | 5.123E-02 | 3.117E-02 | FAIL ABUN  |
| TL-207  | 1.781E-01  | 6.850E-01 | 5.401E-01 | 3.495E-01 | FAIL ABUN  |
| PO-209  | 1.049E+00  | 7.290E+00 | 6.271E+00 | 3.719E+00 | NOT IDENT. |
| BI-210  | 1.175E+00  | 9.184E+00 | 8.530E+00 | 4.686E+00 | NOT IDENT. |
| PB-210  | 1.175E+00  | 9.184E+00 | 8.530E+00 | 4.686E+00 | NOT IDENT. |
| PO-210  | 1.175E+00  | 9.184E+00 | 8.530E+00 | 4.685E+00 | NOT IDENT. |
| PB-211  | 2.089E-01  | 9.919E-01 | 7.592E-01 | 5.061E-01 | NOT IDENT. |
| PO-215  | 1.781E-01  | 6.850E-01 | 5.401E-01 | 3.495E-01 | FAIL ABUN  |
| RN-219  | 1.119E-01  | 3.991E-01 | 3.503E-01 | 2.036E-01 | FAIL ABUN  |
| RN-220  | -9.322E+00 | 2.415E+01 | 1.960E+01 | 1.232E+01 | NOT IDENT. |
| RA-223  | 1.781E-01  | 6.850E-01 | 5.401E-01 | 3.495E-01 | FAIL ABUN  |
| AC-227  | -1.558E-01 | 3.523E-01 | 3.078E-01 | 1.798E-01 | FAIL ABUN  |
| TH-227  | -1.558E-01 | 3.526E-01 | 3.078E-01 | 1.799E-01 | FAIL ABUN  |
| TH-229  | -9.992E-02 | 4.862E-01 | 4.091E-01 | 2.481E-01 | FAIL ABUN  |
| PA-231  | 7.855E-02  | 1.349E+00 | 1.200E+00 | 6.881E-01 | FAIL ABUN  |
| TH-231  | 1.781E-01  | 6.850E-01 | 5.401E-01 | 3.495E-01 | FAIL ABUN  |
| U-231   | -1.456E-01 | 1.117E+00 | 8.858E-01 | 5.698E-01 | FAIL ABUN  |
| PA-233  | -1.801E-02 | 5.680E-02 | 4.911E-02 | 2.898E-02 | FAIL ABUN  |
| PA-234  | -3.681E-01 | 3.357E-01 | 2.493E-01 | 1.713E-01 | FAIL ABUN  |
| PA-234M | 8.778E+00  | 5.077E+00 | 4.235E+00 | 2.590E+00 | FAIL ABUN  |
| TH-234  | 4.841E-01  | 1.673E+00 | 1.542E+00 | 8.536E-01 | FAIL ABUN  |
| U-235   | -1.626E-02 | 2.034E-01 | 1.760E-01 | 1.038E-01 | FAIL ABUN  |
| NP-236  | 2.700E-02  | 7.797E-02 | 6.816E-02 | 3.978E-02 | NOT IDENT. |
| U-238   | 4.841E-01  | 1.673E+00 | 1.542E+00 | 8.536E-01 | FAIL ABUN  |
| NP-239  | -1.101E-01 | 1.818E-01 | 1.557E-01 | 9.273E-02 | FAIL ABUN  |
| AM-241  | 3.717E-03  | 2.146E-01 | 1.965E-01 | 1.095E-01 | NOT IDENT. |
| CM-243  | 6.341E-02  | 9.469E-02 | 8.603E-02 | 4.831E-02 | FAIL ABUN  |
| AM-246  | 8.130E-02  | 1.629E-01 | 1.417E-01 | 8.312E-02 | NOT IDENT. |
| CM-247  | 1.531E-02  | 3.523E-02 | 3.123E-02 | 1.797E-02 | FAIL ABUN  |
| CF-249  | 4.176E-03  | 3.790E-02 | 3.303E-02 | 1.934E-02 | NOT IDENT. |
| CF-251  | -3.633E-02 | 1.232E-01 | 1.039E-01 | 6.284E-02 | NOT IDENT. |

\*\*\*\*\*  
 \* GEL Laboratories LLC \*  
 \* 2040 SAVAGE ROAD \*  
 \* CHARLESTON , SC 29417 \*  
 \* GAMMA SPECTROSCOPY BACKGROUND REPORT \*  
 \*\*\*\*\*

| ENERGY | MDA COUNTS |
|--------|------------|
| 46.50  | 230.4369   |
| 46.50  | 230.4369   |
| 46.50  | 230.4369   |
| 48.70  | 223.3482   |
| 49.72  | 208.4999   |
| 51.35  | 206.0057   |
| 52.39  | 231.7794   |
| 52.97  | 227.8041   |
| 53.15  | 225.3077   |
| 53.44  | 232.4517   |
| 54.07  | 208.4333   |
| 56.28  | 221.9541   |
| 56.28  | 221.9560   |
| 57.37  | 0.0000     |
| 57.53  | 266.6962   |
| 57.53  | 266.6977   |
| 57.60  | 257.9420   |
| 57.98  | 255.5536   |
| 57.98  | 255.5536   |
| 59.32  | 252.0176   |
| 59.32  | 252.0176   |
| 59.40  | 252.0691   |
| 59.54  | 253.9285   |
| 59.72  | 238.9973   |
| 60.01  | 249.8037   |
| 61.10  | 296.6830   |
| 61.14  | 296.7128   |
| 61.30  | 296.8326   |
| 63.00  | 282.9162   |
| 63.29  | 279.5457   |
| 63.29  | 279.5457   |
| 63.58  | 272.5947   |
| 64.28  | 271.2695   |
| 65.12  | 316.6767   |
| 65.20  | 316.7377   |
| 65.20  | 316.7377   |
| 66.05  | 324.5765   |
| 66.72  | 299.8775   |
| 66.83  | 299.9571   |
| 66.91  | 291.0052   |
| 67.20  | 292.1056   |
| 67.20  | 292.1056   |
| 67.75  | 315.9556   |
| 67.85  | 316.0304   |
| 68.90  | 306.8481   |
| 68.90  | 306.8481   |
| 69.30  | 312.5685   |
| 69.67  | 327.3472   |
| 70.82  | 319.1167   |
| 70.82  | 319.1167   |
| 70.83  | 319.1239   |
| 72.80  | 332.8773   |
| 72.87  | 332.9292   |
| 72.87  | 332.9292   |
| 74.67  | 318.2122   |
| 74.81  | 318.3110   |
| 74.81  | 318.3110   |
| 74.81  | 318.3110   |
| 74.81  | 318.3110   |
| 74.81  | 318.3110   |
| 74.81  | 318.3110   |
| 74.81  | 318.3110   |
| 74.97  | 318.4222   |
| 75.28  | 318.6393   |
| 75.70  | 318.9323   |
| 77.11  | 319.9083   |
| 77.11  | 319.9083   |

|        |          |
|--------|----------|
| 77.11  | 319.9083 |
| 77.11  | 319.9083 |
| 77.11  | 319.9083 |
| 77.11  | 319.9083 |
| 77.11  | 319.9083 |
| 78.38  | 320.7802 |
| 79.62  | 321.6255 |
| 79.80  | 321.7473 |
| 79.80  | 321.7473 |
| 80.11  | 321.9574 |
| 80.18  | 322.0041 |
| 80.30  | 322.0844 |
| 80.30  | 322.0844 |
| 80.57  | 314.8382 |
| 81.00  | 349.9795 |
| 81.07  | 350.0293 |
| 81.07  | 350.0293 |
| 81.07  | 350.0293 |
| 81.07  | 350.0293 |
| 82.60  | 332.0226 |
| 83.37  | 241.0010 |
| 83.78  | 252.4232 |
| 83.78  | 252.4232 |
| 83.78  | 252.4232 |
| 83.78  | 252.4232 |
| 84.21  | 297.5589 |
| 84.90  | 295.1651 |
| 85.43  | 326.4341 |
| 86.29  | 389.0157 |
| 86.50  | 389.1779 |
| 86.54  | 389.2094 |
| 86.59  | 389.2473 |
| 86.72  | 379.4736 |
| 86.79  | 379.5250 |
| 86.94  | 379.6399 |
| 87.30  | 379.9128 |
| 87.30  | 379.9128 |
| 87.30  | 379.9128 |
| 87.30  | 379.9128 |
| 87.30  | 379.9128 |
| 87.30  | 379.9128 |
| 87.57  | 367.3984 |
| 87.88  | 367.6225 |
| 88.03  | 367.7316 |
| 88.36  | 367.9716 |
| 88.47  | 368.0510 |
| 89.95  | 369.1162 |
| 91.11  | 283.1505 |
| 92.29  | 283.7927 |
| 92.38  | 283.8413 |
| 92.38  | 283.8413 |
| 93.35  | 284.3651 |
| 94.00  | 284.7158 |
| 94.67  | 285.0711 |
| 94.67  | 285.0741 |
| 94.90  | 285.1971 |
| 94.90  | 285.1971 |
| 94.90  | 285.1971 |
| 94.90  | 285.1971 |
| 95.87  | 300.0724 |
| 95.87  | 300.0724 |
| 96.73  | 336.5035 |
| 97.43  | 308.1393 |
| 98.44  | 255.3355 |
| 98.44  | 255.3355 |
| 98.88  | 249.7659 |
| 99.55  | 255.5636 |
| 99.55  | 255.5636 |
| 99.86  | 252.6212 |
| 100.00 | 252.6851 |
| 100.10 | 252.7331 |
| 103.18 | 309.4142 |
| 103.76 | 274.7781 |
| 105.00 | 259.8079 |
| 105.31 | 292.0776 |
| 108.00 | 317.8936 |
| 109.28 | 282.3193 |

|        |          |
|--------|----------|
| 111.00 | 303.7900 |
| 111.00 | 303.7900 |
| 111.76 | 297.2859 |
| 112.95 | 301.8242 |
| 115.19 | 263.3428 |
| 116.30 | 297.5433 |
| 117.00 | 290.9315 |
| 117.00 | 290.9315 |
| 117.66 | 296.2130 |
| 121.11 | 286.8599 |
| 121.62 | 327.1048 |
| 121.78 | 293.1669 |
| 122.06 | 293.2966 |
| 122.32 | 290.4130 |
| 122.32 | 290.4130 |
| 122.32 | 290.4130 |
| 122.32 | 290.4130 |
| 123.07 | 253.6589 |
| 127.23 | 292.1320 |
| 129.76 | 265.9100 |
| 131.20 | 281.7146 |
| 133.02 | 291.6411 |
| 133.54 | 282.3941 |
| 135.34 | 278.8541 |
| 136.00 | 271.9665 |
| 136.25 | 275.1350 |
| 136.48 | 282.3887 |
| 140.51 | 281.9800 |
| 140.51 | 0.0000   |
| 142.18 | 267.1781 |
| 142.65 | 267.3546 |
| 143.76 | 302.9252 |
| 144.24 | 284.5085 |
| 144.24 | 284.5085 |
| 144.24 | 284.5085 |
| 144.24 | 284.5085 |
| 145.22 | 266.2521 |
| 145.44 | 279.8053 |
| 147.16 | 289.8246 |
| 152.43 | 267.8542 |
| 152.70 | 262.7197 |
| 153.22 | 256.6190 |
| 154.21 | 260.1043 |
| 154.21 | 260.1043 |
| 154.21 | 260.1043 |
| 154.21 | 260.1043 |
| 155.03 | 241.4925 |
| 156.02 | 277.5566 |
| 158.56 | 250.0067 |
| 159.00 | 0.0000   |
| 159.00 | 233.2635 |
| 160.31 | 271.7266 |
| 161.27 | 243.4836 |
| 162.32 | 301.0566 |
| 162.64 | 297.9994 |
| 163.35 | 249.4461 |
| 163.89 | 222.0008 |
| 165.85 | 289.6447 |
| 167.43 | 257.1486 |
| 171.28 | 261.6080 |
| 171.86 | 251.0673 |
| 172.10 | 251.1411 |
| 176.55 | 264.3874 |
| 176.60 | 264.4048 |
| 181.06 | 260.4053 |
| 184.41 | 251.6388 |
| 185.71 | 267.2983 |
| 186.00 | 267.3880 |
| 190.27 | 240.2018 |
| 192.34 | 261.6635 |
| 193.63 | 244.4317 |
| 197.04 | 252.0074 |
| 198.01 | 243.4314 |
| 198.60 | 234.7325 |
| 200.40 | 251.8466 |
| 201.83 | 271.1368 |
| 202.84 | 262.5399 |
| 205.31 | 276.0784 |



|        |          |
|--------|----------|
| 208.36 | 222.7151 |
| 208.81 | 222.8224 |
| 209.75 | 223.0491 |
| 209.75 | 223.0491 |
| 210.97 | 213.8009 |
| 215.65 | 208.6613 |
| 216.55 | 213.3748 |
| 218.09 | 228.4213 |
| 222.10 | 204.3915 |
| 223.80 | 202.4735 |
| 226.40 | 223.5426 |
| 227.00 | 208.8423 |
| 227.08 | 222.5548 |
| 227.20 | 222.5826 |
| 228.16 | 219.3711 |
| 228.18 | 219.3750 |
| 228.18 | 219.3750 |
| 231.56 | 0.0000   |
| 235.69 | 241.7487 |
| 236.00 | 248.7305 |
| 236.00 | 248.7305 |
| 238.63 | 217.0480 |
| 238.63 | 217.0480 |
| 238.63 | 217.0480 |
| 238.63 | 217.0480 |
| 239.00 | 217.1264 |
| 240.98 | 217.5452 |
| 241.98 | 217.7575 |
| 241.98 | 217.7575 |
| 241.98 | 217.7575 |
| 244.69 | 193.3591 |
| 245.39 | 191.7447 |
| 247.94 | 179.3988 |
| 248.90 | 181.8937 |
| 249.79 | 188.1742 |
| 252.40 | 167.5797 |
| 252.85 | 172.0398 |
| 252.85 | 172.0398 |
| 254.15 | 0.0000   |
| 256.20 | 188.4264 |
| 256.20 | 188.4264 |
| 260.50 | 182.1046 |
| 260.90 | 182.1706 |
| 262.80 | 163.8849 |
| 264.65 | 186.9339 |
| 268.24 | 138.1634 |
| 268.79 | 143.9324 |
| 269.46 | 151.1483 |
| 269.46 | 151.1483 |
| 269.46 | 151.1483 |
| 269.46 | 151.1483 |
| 271.23 | 165.1326 |
| 273.65 | 132.3906 |
| 276.40 | 145.8629 |
| 277.35 | 164.2326 |
| 277.60 | 172.3477 |
| 277.60 | 172.3477 |
| 278.00 | 167.9165 |
| 278.60 | 136.5602 |
| 279.20 | 149.5762 |
| 279.53 | 142.4261 |
| 280.46 | 143.9819 |
| 281.68 | 135.4853 |
| 283.67 | 144.3799 |
| 284.30 | 144.4604 |
| 285.00 | 164.4210 |
| 285.90 | 171.7816 |
| 286.10 | 173.6191 |
| 286.10 | 173.6191 |
| 287.40 | 157.5176 |
| 288.45 | 0.0000   |
| 290.67 | 156.8663 |
| 290.80 | 156.8821 |
| 291.72 | 180.2632 |
| 293.26 | 0.0000   |
| 293.70 | 167.4603 |
| 295.21 | 158.9229 |
| 295.21 | 158.9229 |

|        |          |
|--------|----------|
| 295.21 | 158.9229 |
| 295.96 | 145.8936 |
| 296.50 | 145.9570 |
| 297.23 | 146.0474 |
| 298.57 | 146.2085 |
| 299.80 | 131.7217 |
| 299.80 | 131.7217 |
| 300.09 | 131.7546 |
| 300.09 | 131.7546 |
| 300.09 | 131.7546 |
| 300.09 | 131.7546 |
| 300.12 | 131.7568 |
| 301.29 | 131.8843 |
| 302.84 | 123.2478 |
| 303.76 | 126.2789 |
| 303.91 | 118.9510 |
| 304.40 | 129.2822 |
| 304.40 | 129.2822 |
| 304.84 | 129.3295 |
| 306.84 | 136.9003 |
| 308.46 | 128.9728 |
| 311.98 | 133.9573 |
| 316.51 | 110.3368 |
| 318.01 | 138.3165 |
| 319.02 | 144.9289 |
| 319.41 | 154.2673 |
| 320.08 | 151.5590 |
| 323.87 | 134.2903 |
| 323.87 | 134.2903 |
| 323.87 | 134.2903 |
| 323.87 | 134.2903 |
| 325.23 | 146.3827 |
| 328.77 | 164.7583 |
| 333.44 | 146.5594 |
| 334.20 | 153.4134 |
| 334.20 | 153.4134 |
| 334.30 | 153.4233 |
| 338.28 | 120.6953 |
| 338.28 | 120.6953 |
| 338.28 | 120.6953 |
| 338.28 | 120.6953 |
| 338.32 | 120.6992 |
| 338.32 | 120.6992 |
| 338.32 | 120.6992 |
| 340.50 | 129.9658 |
| 340.57 | 129.9721 |
| 344.27 | 133.5515 |
| 345.85 | 135.2891 |
| 350.59 | 0.0000   |
| 351.07 | 137.0808 |
| 351.92 | 140.0241 |
| 351.92 | 140.0241 |
| 351.92 | 140.0241 |
| 355.39 | 0.0000   |
| 356.01 | 110.0602 |
| 364.48 | 123.0371 |
| 366.43 | 118.3943 |
| 367.43 | 113.6625 |
| 367.94 | 0.0000   |
| 369.80 | 107.0993 |
| 374.96 | 120.0758 |
| 383.85 | 128.6122 |
| 387.95 | 116.2709 |
| 388.63 | 122.1886 |
| 391.69 | 106.7696 |
| 391.69 | 106.7696 |
| 392.90 | 96.0725  |
| 398.62 | 115.1397 |
| 400.65 | 115.2951 |
| 401.10 | 116.3147 |
| 401.81 | 115.3843 |
| 402.60 | 109.5231 |
| 404.84 | 107.5117 |
| 410.95 | 125.4029 |
| 411.60 | 123.8688 |
| 413.65 | 116.0818 |
| 414.70 | 114.0403 |
| 415.30 | 129.6237 |

|        |          |
|--------|----------|
| 415.76 | 128.3819 |
| 417.63 | 0.0000   |
| 418.52 | 109.6677 |
| 423.70 | 111.0322 |
| 427.08 | 101.2450 |
| 427.89 | 100.2945 |
| 432.53 | 79.4641  |
| 433.93 | 79.5328  |
| 439.47 | 86.8779  |
| 439.56 | 86.8831  |
| 439.89 | 78.8177  |
| 443.98 | 104.3406 |
| 444.90 | 72.9789  |
| 445.03 | 72.9844  |
| 445.03 | 72.9844  |
| 445.03 | 72.9844  |
| 445.03 | 72.9844  |
| 453.90 | 92.7426  |
| 463.38 | 85.2744  |
| 468.07 | 85.5118  |
| 473.00 | 77.3071  |
| 475.06 | 95.9758  |
| 475.35 | 85.6697  |
| 476.78 | 78.5095  |
| 477.59 | 84.7477  |
| 477.96 | 94.0701  |
| 482.03 | 88.0739  |
| 484.57 | 98.5790  |
| 487.03 | 84.1702  |
| 490.36 | 0.0000   |
| 492.35 | 93.8054  |
| 497.08 | 81.5146  |
| 507.63 | 0.0000   |
| 510.53 | 0.0000   |
| 510.84 | 84.2462  |
| 511.00 | 84.2542  |
| 511.85 | 84.2932  |
| 511.85 | 84.2932  |
| 513.99 | 94.5191  |
| 513.99 | 94.5191  |
| 520.41 | 98.4492  |
| 520.65 | 102.6984 |
| 527.90 | 106.2866 |
| 528.96 | 0.0000   |
| 529.64 | 105.3235 |
| 529.87 | 0.0000   |
| 531.02 | 81.9770  |
| 537.32 | 98.2750  |
| 543.00 | 77.1416  |
| 546.56 | 0.0000   |
| 549.76 | 78.4893  |
| 552.65 | 88.2986  |
| 555.20 | 80.8662  |
| 563.23 | 63.8777  |
| 563.90 | 70.3975  |
| 568.70 | 83.5960  |
| 569.32 | 72.7639  |
| 569.50 | 69.5117  |
| 569.67 | 76.0349  |
| 573.80 | 93.6085  |
| 574.00 | 96.8847  |
| 574.64 | 89.2921  |
| 578.91 | 75.0778  |
| 579.30 | 0.0000   |
| 583.14 | 74.3605  |
| 585.48 | 70.0684  |
| 591.81 | 68.0906  |
| 592.07 | 72.4916  |
| 593.00 | 74.7236  |
| 595.88 | 79.2290  |
| 600.56 | 92.6440  |
| 602.52 | 0.0000   |
| 602.71 | 80.9648  |
| 602.71 | 80.9648  |
| 603.60 | 72.4587  |
| 604.41 | 90.1664  |
| 604.70 | 88.4106  |
| 609.31 | 78.6378  |

|        |         |
|--------|---------|
| 609.31 | 78.6378 |
| 609.31 | 78.6378 |
| 609.31 | 78.6378 |
| 610.33 | 78.6768 |
| 612.46 | 74.5418 |
| 614.37 | 76.3859 |
| 618.01 | 53.3848 |
| 621.84 | 64.6216 |
| 621.84 | 64.6216 |
| 631.29 | 86.1715 |
| 633.02 | 96.3222 |
| 633.10 | 96.3248 |
| 634.78 | 75.1031 |
| 635.90 | 70.6558 |
| 636.97 | 80.7891 |
| 645.85 | 70.3028 |
| 646.12 | 65.8052 |
| 656.30 | 75.4679 |
| 657.75 | 81.5581 |
| 657.90 | 0.0000  |
| 661.65 | 81.7009 |
| 661.65 | 81.7009 |
| 664.57 | 0.0000  |
| 666.33 | 69.7431 |
| 666.33 | 69.7431 |
| 675.00 | 81.2755 |
| 677.61 | 65.8266 |
| 685.20 | 64.2100 |
| 692.80 | 65.3422 |
| 695.00 | 83.8284 |
| 696.49 | 82.0393 |
| 696.49 | 82.0393 |
| 697.00 | 78.3698 |
| 697.49 | 88.5305 |
| 698.33 | 83.9484 |
| 698.50 | 79.3421 |
| 699.00 | 74.7450 |
| 702.63 | 87.8008 |
| 706.10 | 75.8980 |
| 706.58 | 0.0000  |
| 706.67 | 71.2870 |
| 709.31 | 75.0753 |
| 711.68 | 72.3671 |
| 713.82 | 65.9315 |
| 717.42 | 72.5423 |
| 720.50 | 69.1768 |
| 721.93 | 0.0000  |
| 722.20 | 82.3165 |
| 722.78 | 85.4452 |
| 722.78 | 85.4452 |
| 722.89 | 85.4474 |
| 722.95 | 85.4496 |
| 723.30 | 82.3553 |
| 724.18 | 77.7222 |
| 727.18 | 70.9717 |
| 733.00 | 54.6049 |
| 735.90 | 67.4789 |
| 739.58 | 47.8698 |
| 742.81 | 50.7529 |
| 744.21 | 61.1263 |
| 747.13 | 46.1349 |
| 751.79 | 75.4648 |
| 752.31 | 71.7064 |
| 753.82 | 58.5322 |
| 755.35 | 62.3471 |
| 756.15 | 63.3130 |
| 756.87 | 68.0572 |
| 763.93 | 67.9346 |
| 765.79 | 90.1201 |
| 766.42 | 90.1410 |
| 766.84 | 82.2487 |
| 776.49 | 80.9762 |
| 778.00 | 73.3981 |
| 778.57 | 75.3220 |
| 778.89 | 81.0530 |
| 783.80 | 71.6547 |
| 785.46 | 79.6672 |
| 792.07 | 28.7542 |

|         |          |
|---------|----------|
| 795.84  | 54.3936  |
| 796.30  | 54.4033  |
| 798.80  | 76.8789  |
| 801.93  | 68.4184  |
| 805.60  | 58.7728  |
| 810.29  | 78.1820  |
| 810.76  | 70.4728  |
| 815.85  | 57.0684  |
| 817.79  | 73.5656  |
| 818.51  | 68.7449  |
| 819.60  | 61.9922  |
| 826.30  | 64.0906  |
| 828.27  | 0.0000   |
| 831.60  | 79.7858  |
| 831.96  | 69.0915  |
| 834.83  | 75.0111  |
| 836.80  | 0.0000   |
| 846.75  | 51.8587  |
| 848.13  | 53.8439  |
| 856.28  | 0.0000   |
| 856.80  | 45.8304  |
| 860.37  | 51.1342  |
| 867.32  | 36.1475  |
| 867.82  | 39.4404  |
| 871.10  | 61.6989  |
| 873.19  | 47.4199  |
| 874.81  | 41.5160  |
| 875.33  | 0.0000   |
| 876.40  | 49.4519  |
| 879.36  | 54.4548  |
| 880.27  | 51.5011  |
| 880.51  | 51.5061  |
| 881.50  | 54.4965  |
| 883.24  | 49.5728  |
| 884.67  | 58.5261  |
| 889.25  | 57.6276  |
| 896.60  | 52.7956  |
| 898.02  | 44.8495  |
| 899.00  | 57.8258  |
| 903.28  | 68.8956  |
| 911.07  | 71.0849  |
| 911.07  | 71.0849  |
| 911.07  | 71.0849  |
| 919.63  | 58.2407  |
| 920.93  | 56.2570  |
| 925.00  | 63.3784  |
| 925.24  | 57.3465  |
| 926.50  | 53.3455  |
| 935.52  | 54.5194  |
| 937.48  | 69.7092  |
| 944.10  | 62.7780  |
| 946.00  | 77.0020  |
| 949.00  | 57.8099  |
| 962.29  | 72.7644  |
| 964.01  | 69.6513  |
| 966.15  | 67.9997  |
| 968.20  | 127.5879 |
| 969.11  | 103.1206 |
| 969.11  | 103.1206 |
| 969.11  | 103.1206 |
| 977.42  | 52.2127  |
| 980.50  | 42.0180  |
| 983.50  | 58.4723  |
| 989.30  | 60.6378  |
| 996.32  | 39.4863  |
| 1001.03 | 60.1790  |
| 1001.68 | 55.0326  |
| 1004.76 | 44.7584  |
| 1021.30 | 0.0000   |
| 1024.50 | 0.0000   |
| 1034.80 | 57.3499  |
| 1036.00 | 69.8887  |
| 1037.82 | 51.1414  |
| 1038.57 | 51.1533  |
| 1038.76 | 0.0000   |
| 1045.16 | 67.9961  |
| 1046.59 | 58.6059  |
| 1048.07 | 57.5862  |

|         |         |
|---------|---------|
| 1050.47 | 46.1033 |
| 1050.47 | 46.1033 |
| 1062.04 | 65.1938 |
| 1063.62 | 67.3313 |
| 1076.63 | 60.2035 |
| 1077.35 | 57.0480 |
| 1078.86 | 59.1883 |
| 1085.78 | 59.3113 |
| 1099.22 | 71.2464 |
| 1112.02 | 53.3691 |
| 1112.84 | 51.8585 |
| 1115.52 | 46.3019 |
| 1120.29 | 51.3586 |
| 1120.29 | 51.3586 |
| 1120.29 | 51.3586 |
| 1120.29 | 51.3586 |
| 1120.51 | 51.3633 |
| 1121.28 | 51.3750 |
| 1124.00 | 0.0000  |
| 1129.67 | 59.0095 |
| 1131.51 | 0.0000  |
| 1147.95 | 0.0000  |
| 1167.94 | 70.5066 |
| 1173.22 | 84.7336 |
| 1175.09 | 54.3457 |
| 1177.93 | 72.8821 |
| 1189.05 | 79.6548 |
| 1204.90 | 72.3325 |
| 1205.75 | 0.0000  |
| 1213.00 | 82.3792 |
| 1221.42 | 74.3126 |
| 1230.97 | 76.3468 |
| 1235.34 | 90.2480 |
| 1236.41 | 0.0000  |
| 1238.25 | 84.7900 |
| 1246.25 | 69.2719 |
| 1260.41 | 0.0000  |
| 1271.85 | 53.0038 |
| 1274.45 | 48.3882 |
| 1274.54 | 52.1104 |
| 1291.56 | 49.5387 |
| 1298.22 | 0.0000  |
| 1312.09 | 30.0690 |
| 1325.50 | 39.6006 |
| 1325.50 | 39.6006 |
| 1332.49 | 35.8933 |
| 1333.61 | 34.9585 |
| 1360.21 | 31.3873 |
| 1362.66 | 0.0000  |
| 1365.15 | 26.6647 |
| 1368.21 | 31.4504 |
| 1368.53 | 0.0000  |
| 1376.25 | 28.6475 |
| 1384.27 | 28.7048 |
| 1394.10 | 20.1412 |
| 1395.20 | 24.9442 |
| 1407.95 | 26.9461 |
| 1434.06 | 15.4941 |
| 1436.60 | 21.3170 |
| 1457.56 | 0.0000  |
| 1460.81 | 16.5670 |
| 1489.15 | 17.6572 |
| 1509.49 | 11.8262 |
| 1596.49 | 40.1921 |
| 1620.62 | 16.1608 |
| 1678.03 | 0.0000  |
| 1691.02 | 13.3269 |
| 1691.02 | 13.3269 |
| 1706.46 | 0.0000  |
| 1750.46 | 0.0000  |
| 1764.49 | 8.3245  |
| 1764.49 | 8.3245  |
| 1764.49 | 8.3245  |
| 1764.49 | 8.3245  |
| 1770.23 | 3.5717  |
| 1771.40 | 35.4277 |
| 1791.20 | 0.0000  |
| 1808.65 | 11.5461 |

1836.01

5.2763

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G244630003

|                             |            |      |
|-----------------------------|------------|------|
| Total Uranium Activity      | 1.4326E+00 | ug/g |
| Total Uranium Counting Unc. | 4.9784E+00 | ug/g |
| Total Uranium Tpu           | 2.5400E-06 | ug/g |
| Total Uranium Mda           | 4.5896E+00 | ug/g |



```

*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON ,SC 29417                *
*               GROSS GAMMA REPORT                  *
*
*****
*
*   BATCH ID      : 941639                        SAMPLE ID   : G244630003
*   ANALYST       : MXR1                          DETECTOR    : GAM04
*   SAMPLE DATE   : 8-JAN-2010 12:00:00.00        COUNT TIME   : 0 02:00:00.00
*   ANALYSIS DATE : 23-JAN-2010 11:45:37.43        SAMPLE ALQT  : 133.250 GRAM
*
*****

```

```

GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.044E+01
GROSS GAMMA ERROR (pCi/GRAM )   : 1.447E+00
GROSS GAMMA MDA (pCi/GRAM )     : 3.129E+00
GROSS GAMMA DLC (pCi/GRAM )     : 1.511E+00

```

## VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 13:47:02.18

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630004.CNF;1
Sample date        : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 11:46:07
Sample ID          : G244630004      Sample quantity   : 1.40650E+02 GRAM
Detector name      : GAM06           Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00   Elapsed real time: 0 02:00:01.52  0.0%
Energy tolerance   : 1.50000 keV     Analyst Initials : MXR1
Abundance limit    : 75.00000        Sensitivity      : 5.00000
Batch ID           : 941639          Detector SN#     :
Matrix Spike ID    :                 LCS ID            : 1032-A
*****

```

| Pk | It | Energy   | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | Fit      |
|----|----|----------|------|-------|------|---------|------|----|----------|------|----------|
| 1  | 0  | 62.81*   | 132  | 644   | 0.98 | 125.63  | 122  | 9  | 1.83E-02 | 36.4 |          |
| 2  | 1  | 74.53*   | 493  | 592   | 1.38 | 149.06  | 141  | 18 | 6.85E-02 | 9.8  | 5.32E+00 |
| 3  | 1  | 76.90*   | 720  | 514   | 1.17 | 153.80  | 141  | 18 | 9.99E-02 | 6.7  |          |
| 4  | 0  | 87.00    | 269  | 524   | 1.32 | 173.99  | 171  | 7  | 3.73E-02 | 15.4 |          |
| 5  | 0  | 93.27*   | 244  | 1083  | 1.36 | 186.54  | 180  | 12 | 3.39E-02 | 28.6 |          |
| 6  | 0  | 128.90   | 109  | 364   | 0.86 | 257.80  | 254  | 8  | 1.51E-02 | 31.8 |          |
| 7  | 0  | 185.43*  | 336  | 580   | 1.38 | 370.85  | 364  | 15 | 4.66E-02 | 16.8 |          |
| 8  | 0  | 209.01   | 113  | 428   | 1.14 | 418.03  | 413  | 11 | 1.57E-02 | 36.5 |          |
| 9  | 2  | 238.40*  | 1469 | 219   | 1.19 | 476.80  | 469  | 22 | 2.04E-01 | 3.1  | 1.65E+00 |
| 10 | 2  | 241.44   | 303  | 333   | 1.77 | 482.87  | 469  | 22 | 4.21E-02 | 14.5 |          |
| 11 | 0  | 269.66   | 160  | 273   | 0.78 | 539.31  | 533  | 12 | 2.22E-02 | 22.1 |          |
| 12 | 1  | 295.02   | 425  | 173   | 1.39 | 590.04  | 585  | 22 | 5.91E-02 | 7.1  | 2.39E+00 |
| 13 | 1  | 300.15*  | 125  | 198   | 1.67 | 600.30  | 585  | 22 | 1.74E-02 | 23.1 |          |
| 14 | 0  | 327.68   | 70   | 152   | 1.06 | 655.37  | 652  | 9  | 9.68E-03 | 34.0 |          |
| 15 | 0  | 338.00*  | 229  | 210   | 1.17 | 676.00  | 671  | 10 | 3.18E-02 | 13.9 |          |
| 16 | 0  | 351.79*  | 684  | 207   | 1.24 | 703.59  | 699  | 12 | 9.50E-02 | 5.8  |          |
| 17 | 0  | 462.88   | 115  | 121   | 1.27 | 925.75  | 919  | 12 | 1.59E-02 | 21.5 |          |
| 18 | 0  | 510.69*  | 118  | 189   | 1.93 | 1021.37 | 1013 | 18 | 1.64E-02 | 31.5 |          |
| 19 | 0  | 582.81*  | 424  | 141   | 1.13 | 1165.61 | 1160 | 13 | 5.89E-02 | 7.6  |          |
| 20 | 0  | 608.98*  | 508  | 156   | 1.33 | 1217.96 | 1210 | 16 | 7.06E-02 | 7.1  |          |
| 21 | 0  | 661.37   | 298  | 115   | 1.62 | 1322.74 | 1314 | 16 | 4.14E-02 | 9.9  |          |
| 22 | 0  | 727.17   | 97   | 77    | 1.44 | 1454.34 | 1449 | 11 | 1.35E-02 | 20.2 |          |
| 23 | 0  | 795.21   | 54   | 86    | 1.35 | 1590.42 | 1583 | 15 | 7.52E-03 | 39.7 |          |
| 24 | 0  | 861.52   | 66   | 97    | 0.82 | 1723.05 | 1713 | 17 | 9.19E-03 | 36.9 |          |
| 25 | 0  | 911.01*  | 279  | 52    | 1.96 | 1822.01 | 1815 | 15 | 3.88E-02 | 8.4  |          |
| 26 | 0  | 933.23   | 38   | 47    | 1.58 | 1866.45 | 1860 | 12 | 5.29E-03 | 39.8 |          |
| 27 | 4  | 964.63   | 61   | 25    | 1.88 | 1929.26 | 1926 | 20 | 8.44E-03 | 19.2 | 1.76E+00 |
| 28 | 4  | 969.00   | 145  | 50    | 2.16 | 1938.00 | 1926 | 20 | 2.01E-02 | 13.3 |          |
| 29 | 0  | 1120.28  | 140  | 77    | 2.61 | 2240.57 | 2232 | 19 | 1.94E-02 | 17.2 |          |
| 30 | 0  | 1460.52* | 1143 | 27    | 2.01 | 2921.03 | 2914 | 15 | 1.59E-01 | 3.1  |          |
| 31 | 0  | 1589.43  | 50   | 23    | 4.70 | 3178.85 | 3166 | 30 | 6.91E-03 | 31.2 |          |
| 32 | 0  | 1764.95  | 87   | 9     | 2.53 | 3529.90 | 3522 | 17 | 1.20E-02 | 13.2 |          |

Flag: "\*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 23-JAN-2010 13:47:05

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630004.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 8-JAN-2010 12:00:00   Acquisition date : 23-JAN-2010 11:46:07
Sample ID        : G244630004             Sample quantity  : 140.65 GRAM
Sample type      : SOLID                   Sample geometry   :
Detector name    : GAMMA6                 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00          Elapsed real time: 0 02:00:01.52    0.0%
Peak Width (FWHM): 3.00                   Confidence level  : 5.00 %
Energy tolerance : 1.50 keV               Half life ratio   : 8.00
Errors propagated: Yes                     Systematic Error  : 0.00 %
Efficiency type  : Empirical               Efficiencies at   : Peak Energy
Abundance limit  : 75.00                  WTM error limit   : 3.00
  
```

Full Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| K-40    | +         | 1460.81      | *   | 2.971E+01           | 2.709E+00 | 6.743E-01      | 4.460E-02 | 44.067  |
| CD-109  | +         | 88.03        | *   | 3.830E+00           | 1.238E+00 | 1.960E+00      | 1.935E-01 | 1.954   |
| SN-126  | +         | 64.28        |     | 1.361E+00           | 1.013E+00 | 1.066E+00      | 1.641E-01 | 1.277   |
|         | +         | 86.94        |     | 1.565E+00           | 8.106E-01 | 7.695E-01      | 3.202E-01 | 2.034   |
|         | +         | 87.57        | *   | 3.765E-01           | 1.217E-01 | 1.805E-01      | 1.777E-02 | 2.086   |
| CS-135  | +         | 268.24       | *   | 6.691E-01           | 3.009E-01 | 3.070E-01      | 2.386E-02 | 2.179   |
| BA-137M | +         | 661.65       | *   | 4.565E-01           | 9.343E-02 | 6.688E-02      | 3.303E-03 | 6.826   |
| CS-137  | +         | 661.65       | *   | 4.826E-01           | 9.880E-02 | 7.070E-02      | 3.512E-03 | 6.826   |
| TL-208  |           | 277.35       |     | 3.061E-01           | 4.739E-01 | 7.670E-01      | 8.168E-02 | 0.399   |
|         | +         | 510.84       |     | 6.058E-01           | 3.862E-01 | 2.490E-01      | 2.498E-02 | 2.433   |
|         | +         | 583.14       | *   | 6.229E-01           | 1.026E-01 | 7.018E-02      | 4.436E-03 | 8.875   |
|         | +         | 860.37       |     | 9.221E-01           | 6.843E-01 | 5.470E-01      | 4.183E-02 | 1.686   |
| BI-211  |           | 72.87        |     | 1.907E+01           | 4.421E+00 | 7.519E+00      | 6.751E-01 | 2.536   |
|         | +         | 351.07       | *   | 4.351E+00           | 5.796E-01 | 4.144E-01      | 2.675E-02 | 10.500  |
| PB-212  | +         | 74.81        |     | 3.008E+00           | 7.075E-01 | 6.567E-01      | 8.538E-02 | 4.580   |
|         | +         | 77.11        |     | 2.464E+00           | 3.981E-01 | 3.704E-01      | 3.382E-02 | 6.654   |
|         | +         | 87.30        |     | 1.741E+00           | 5.894E-01 | 8.572E-01      | 1.201E-01 | 2.031   |
|         | +         | 238.63       | *   | 2.013E+00           | 1.946E-01 | 1.050E-01      | 7.739E-03 | 19.173  |
|         | +         | 300.09       |     | 2.665E+00           | 1.252E+00 | 1.427E+00      | 1.194E-01 | 1.868   |
| PO-212  | +         | 74.81        |     | 3.008E+00           | 7.075E-01 | 6.567E-01      | 8.538E-02 | 4.580   |
|         | +         | 77.11        |     | 2.464E+00           | 3.981E-01 | 3.704E-01      | 3.382E-02 | 6.654   |
|         | +         | 87.30        |     | 1.741E+00           | 5.894E-01 | 8.572E-01      | 1.201E-01 | 2.031   |
|         |           | 115.19       |     | -1.686E+00          | 4.303E+00 | 6.992E+00      | 4.614E-01 | -0.241  |
|         | +         | 238.63       | *   | 2.013E+00           | 1.946E-01 | 1.050E-01      | 7.739E-03 | 19.173  |
|         | +         | 300.09       |     | 2.665E+00           | 1.252E+00 | 1.427E+00      | 1.194E-01 | 1.868   |
| BI-214  | +         | 609.31       | *   | 1.409E+00           | 2.257E-01 | 1.270E-01      | 9.374E-03 | 11.088  |
|         | +         | 1120.29      |     | 2.036E+00           | 7.260E-01 | 5.263E-01      | 4.807E-02 | 3.869   |
|         | +         | 1764.49      |     | 1.739E+00           | 4.715E-01 | 3.051E-01      | 1.786E-02 | 5.700   |
| PB-214  | +         | 74.81        |     | 5.183E+00           | 1.183E+00 | 1.132E+00      | 1.322E-01 | 4.580   |
|         | +         | 77.11        |     | 4.225E+00           | 7.545E-01 | 6.349E-01      | 7.550E-02 | 6.654   |
|         | +         | 87.30        |     | 2.983E+00           | 9.916E-01 | 1.469E+00      | 1.833E-01 | 2.031   |
|         | +         | 241.98       |     | 2.499E+00           | 7.518E-01 | 6.323E-01      | 5.131E-02 | 3.952   |
|         | +         | 295.21       |     | 1.590E+00           | 2.652E-01 | 2.499E-01      | 2.160E-02 | 6.362   |
|         | +         | 351.92       | *   | 1.514E+00           | 2.165E-01 | 1.345E-01      | 1.116E-02 | 11.255  |

----- Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PO-214  | +         | 74.81        |     | 5.183E+00           | 1.183E+00 | 1.132E+00      | 1.322E-01 | 4.580   |
|         | +         | 77.11        |     | 4.225E+00           | 7.545E-01 | 6.349E-01      | 7.550E-02 | 6.654   |
|         | +         | 87.30        |     | 2.983E+00           | 9.916E-01 | 1.469E+00      | 1.833E-01 | 2.031   |
|         | +         | 241.98       |     | 2.499E+00           | 7.518E-01 | 6.323E-01      | 5.131E-02 | 3.952   |
|         | +         | 295.21       |     | 1.590E+00           | 2.652E-01 | 2.499E-01      | 2.160E-02 | 6.362   |
|         | +         | 351.92       | *   | 1.514E+00           | 2.165E-01 | 1.345E-01      | 1.116E-02 | 11.255  |
| PO-216  | +         | 74.81        |     | 3.008E+00           | 7.075E-01 | 6.567E-01      | 8.538E-02 | 4.580   |
|         | +         | 77.11        |     | 2.464E+00           | 3.981E-01 | 3.704E-01      | 3.382E-02 | 6.654   |
|         | +         | 87.30        |     | 1.741E+00           | 5.894E-01 | 8.572E-01      | 1.201E-01 | 2.031   |
|         | +         | 238.63       | *   | 2.013E+00           | 1.946E-01 | 1.050E-01      | 7.739E-03 | 19.173  |
|         | +         | 300.09       |     | 2.665E+00           | 1.252E+00 | 1.427E+00      | 1.194E-01 | 1.868   |
|         | +         | 74.81        |     | 5.183E+00           | 1.183E+00 | 1.132E+00      | 1.322E-01 | 4.580   |
| PO-218  | +         | 77.11        |     | 4.225E+00           | 7.545E-01 | 6.349E-01      | 7.550E-02 | 6.654   |
|         | +         | 87.30        |     | 2.983E+00           | 9.916E-01 | 1.469E+00      | 1.833E-01 | 2.031   |
|         | +         | 241.98       |     | 2.499E+00           | 7.518E-01 | 6.323E-01      | 5.131E-02 | 3.952   |
|         | +         | 295.21       |     | 1.590E+00           | 2.652E-01 | 2.499E-01      | 2.160E-02 | 6.362   |
|         | +         | 351.92       | *   | 1.514E+00           | 2.165E-01 | 1.345E-01      | 1.116E-02 | 11.255  |
|         | +         | 240.98       | *   | 4.739E+00           | 1.401E+00 | 1.195E+00      | 7.003E-02 | 3.966   |
| RA-224  | +         | 609.31       | *   | 1.409E+00           | 2.257E-01 | 1.270E-01      | 9.374E-03 | 11.088  |
| RA-226  | +         | 1120.29      |     | 2.036E+00           | 7.260E-01 | 5.263E-01      | 4.807E-02 | 3.869   |
|         | +         | 1764.49      |     | 1.739E+00           | 4.715E-01 | 3.051E-01      | 1.786E-02 | 5.700   |
|         | +         | 338.32       |     | 1.605E+00           | 7.926E-01 | 4.572E-01      | 1.864E-01 | 3.510   |
| AC-228  | +         | 911.07       | *   | 1.840E+00           | 3.614E-01 | 2.468E-01      | 2.521E-02 | 7.455   |
|         | +         | 969.11       |     | 1.686E+00           | 5.903E-01 | 4.420E-01      | 1.008E-01 | 3.815   |
|         | +         | 338.32       |     | 1.605E+00           | 7.926E-01 | 4.572E-01      | 1.864E-01 | 3.510   |
| RA-228  | +         | 911.07       | *   | 1.840E+00           | 3.614E-01 | 2.468E-01      | 2.521E-02 | 7.455   |
|         | +         | 969.11       |     | 1.686E+00           | 5.903E-01 | 4.420E-01      | 1.008E-01 | 3.815   |
|         | +         | 74.81        |     | 3.053E+00           | 6.599E-01 | 6.666E-01      | 6.070E-02 | 4.580   |
| TH-228  | +         | 77.11        |     | 2.502E+00           | 4.041E-01 | 3.760E-01      | 3.432E-02 | 6.654   |
|         | +         | 87.30        |     | 1.768E+00           | 5.715E-01 | 8.701E-01      | 8.543E-02 | 2.031   |
|         | +         | 238.63       | *   | 2.043E+00           | 1.975E-01 | 1.066E-01      | 7.855E-03 | 19.173  |
| TH-230  | +         | 300.09       |     | 2.706E+00           | 2.027E+00 | 1.448E+00      | 8.539E-01 | 1.868   |
|         | +         | 609.31       | *   | 1.408E+00           | 2.257E-01 | 1.270E-01      | 9.374E-03 | 11.088  |
|         | +         | 1120.29      |     | 2.036E+00           | 7.260E-01 | 5.263E-01      | 4.807E-02 | 3.869   |
| TH-232  | +         | 1764.49      |     | 1.739E+00           | 4.715E-01 | 3.051E-01      | 1.786E-02 | 5.700   |
|         | +         | 338.32       |     | 1.605E+00           | 4.572E-01 | 4.572E-01      | 2.689E-02 | 3.510   |
|         | +         | 911.07       | *   | 1.840E+00           | 3.614E-01 | 2.468E-01      | 2.521E-02 | 7.455   |
| TH-234  | +         | 969.11       |     | 1.686E+00           | 5.903E-01 | 4.420E-01      | 1.008E-01 | 3.815   |
|         | +         | 63.29        | *   | 3.438E+00           | 2.579E+00 | 2.822E+00      | 5.131E-01 | 1.218   |
|         | +         | 92.38        |     | 2.190E+00           | 1.313E+00 | 1.029E+00      | 1.884E-01 | 2.129   |
| U-234   | +         | 609.31       | *   | 1.408E+00           | 2.257E-01 | 1.270E-01      | 9.374E-03 | 11.088  |
|         | +         | 1120.29      |     | 2.036E+00           | 7.260E-01 | 5.263E-01      | 4.807E-02 | 3.869   |
|         | +         | 1764.49      |     | 1.739E+00           | 4.715E-01 | 3.051E-01      | 1.786E-02 | 5.700   |
| NP-237  | +         | 86.50        | *   | 1.106E+00           | 4.241E-01 | 5.311E-01      | 1.212E-01 | 2.082   |
|         | +         | 95.87        |     | 1.171E+00           | 1.261E+00 | 1.864E+00      | 4.588E-01 | 0.628   |
| U-238   | +         | 63.29        | *   | 3.438E+00           | 2.579E+00 | 2.822E+00      | 5.131E-01 | 1.218   |
|         | +         | 92.38        |     | 2.190E+00           | 1.266E+00 | 1.029E+00      | 9.351E-02 | 2.129   |
| AM-243  | +         | 74.67        | *   | 4.877E-01           | 1.052E-01 | 1.068E-01      | 9.649E-03 | 4.565   |
|         | +         | 86.72        |     | 4.146E+01           | 1.341E+01 | 2.013E+01      | 1.966E+00 | 2.060   |

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 117.66       |     | -1.037E+00          | 4.577E+00 | 7.475E+00      | 4.792E-01 | -0.139  |
|         |           | 142.18       |     | 7.669E+00           | 2.170E+01 | 3.552E+01      | 2.028E+00 | 0.216   |
| ANH-511 | +         | 511.00       | *   | 1.308E-01           | 8.271E-02 | 5.379E-02      | 3.007E-03 | 2.433   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| BE-7    |           | 477.59       | *   | 2.413E-01           | 3.699E-01 | 6.341E-01           | 4.189E-02 | 0.380   |
| NA-22   |           | 1274.54      | *   | -7.734E-04          | 5.076E-02 | 8.260E-02           | 5.100E-03 | -0.009  |
| NA-24   |           | 1368.53      | *   | -2.249E-01          | 5.076E-02 | Half-Life too short |           |         |
| AL-26   |           | 1129.67      |     | -3.528E-01          | 2.415E+00 | 3.489E+00           | 2.173E-01 | -0.101  |
|         |           | 1808.65      | *   | -5.497E-03          | 2.853E-02 | 4.514E-02           | 2.593E-03 | -0.122  |
| TI-44   |           | 67.85        |     | -9.894E-03          | 9.011E-02 | 9.544E-02           | 8.517E-03 | -0.104  |
|         | +         | 78.38        | *   | 4.548E-01           | 7.346E-02 | 9.499E-02           | 8.732E-03 | 4.788   |
| SC-46   |           | 889.25       | *   | -9.906E-03          | 4.611E-02 | 7.542E-02           | 5.406E-03 | -0.131  |
|         | +         | 1120.51      |     | 3.482E-01           | 1.220E-01 | 1.551E-01           | 9.756E-03 | 2.245   |
| V-48    |           | 944.10       |     | 3.910E-01           | 9.966E-01 | 1.712E+00           | 1.222E-01 | 0.228   |
|         |           | 983.50       | *   | -3.482E-02          | 8.649E-02 | 1.383E-01           | 9.680E-03 | -0.252  |
|         |           | 1312.09      |     | 1.239E-02           | 9.242E-02 | 1.526E-01           | 9.523E-03 | 0.081   |
| CR-51   |           | 320.08       | *   | 5.008E-02           | 4.379E-01 | 7.317E-01           | 4.821E-02 | 0.068   |
| MN-52   |           | 744.21       |     | 4.146E-01           | 2.763E-01 | 4.970E-01           | 2.834E-02 | 0.834   |
|         |           | 848.13       |     | -3.136E+00          | 6.753E+00 | 1.078E+01           | 7.264E-01 | -0.291  |
|         |           | 935.52       |     | 4.203E-01           | 3.188E-01 | 5.273E-01           | 3.778E-02 | 0.797   |
|         |           | 1246.25      |     | 1.509E+00           | 8.448E+00 | 1.401E+01           | 8.541E-01 | 0.108   |
|         |           | 1333.61      |     | 4.958E+00           | 5.801E+00 | 1.027E+01           | 6.449E-01 | 0.483   |
|         |           | 1434.06      | *   | 1.015E-01           | 2.435E-01 | 4.181E-01           | 2.631E-02 | 0.243   |
| MN-54   |           | 834.83       | *   | 6.301E-04           | 4.454E-02 | 7.456E-02           | 4.921E-03 | 0.008   |
| CO-56   |           | 846.75       | *   | 9.265E-03           | 4.026E-02 | 6.865E-02           | 4.615E-03 | 0.135   |
|         |           | 977.42       |     | 1.041E+00           | 3.741E+00 | 5.915E+00           | 4.156E-01 | 0.176   |
|         |           | 1037.82      |     | -2.843E-01          | 3.511E-01 | 5.328E-01           | 3.911E-02 | -0.534  |
|         |           | 1175.09      |     | -1.376E+00          | 3.282E+00 | 4.634E+00           | 2.744E-01 | -0.297  |
|         |           | 1238.25      |     | 1.492E-01           | 1.048E-01 | 1.890E-01           | 1.215E-02 | 0.789   |
|         |           | 1360.21      |     | 1.240E+00           | 1.182E+00 | 2.150E+00           | 1.353E-01 | 0.577   |
|         |           | 1771.40      |     | 8.178E-02           | 2.407E-01 | 3.770E-01           | 2.201E-02 | 0.217   |
| CO-57   |           | 122.06       | *   | 1.780E-02           | 3.121E-02 | 5.229E-02           | 3.194E-03 | 0.340   |
|         |           | 136.48       |     | -4.511E-02          | 2.553E-01 | 4.158E-01           | 2.794E-02 | -0.109  |
| CO-58   |           | 810.76       | *   | -3.800E-02          | 4.103E-02 | 6.283E-02           | 4.011E-03 | -0.605  |
| FE-59   |           | 142.65       |     | 6.828E-01           | 3.328E+00 | 5.422E+00           | 3.092E-01 | 0.126   |
|         |           | 192.34       |     | 6.383E-01           | 1.284E+00 | 1.864E+00           | 2.182E-01 | 0.342   |
|         |           | 1099.22      | *   | -1.211E-01          | 1.126E-01 | 1.667E-01           | 1.223E-02 | -0.727  |
|         |           | 1291.56      |     | -8.329E-02          | 1.424E-01 | 2.166E-01           | 1.676E-02 | -0.385  |
| CO-60   |           | 1173.22      |     | 2.776E-02           | 5.976E-02 | 1.014E-01           | 5.997E-03 | 0.274   |
|         |           | 1332.49      | *   | 2.058E-05           | 4.696E-02 | 7.584E-02           | 4.764E-03 | 0.000   |
| ZN-65   |           | 1115.52      | *   | -6.894E-02          | 1.290E-01 | 1.697E-01           | 1.075E-02 | -0.406  |
| GE-68   |           | 1077.35      | *   | -9.055E-01          | 1.500E+00 | 2.332E+00           | 1.528E-01 | -0.388  |
| AS-73   |           | 53.44        | *   | 7.838E-01           | 1.191E+00 | 2.037E+00           | 1.863E-01 | 0.385   |
| AS-74   |           | 595.88       | *   | -6.324E-02          | 1.045E-01 | 1.622E-01           | 8.624E-03 | -0.390  |
|         |           | 634.78       |     | -5.711E-02          | 4.164E-01 | 6.682E-01           | 3.415E-02 | -0.085  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| SE-75   |           | 66.05        |     | 9.846E-03           | 6.801E+00 | 9.996E+00      | 1.070E+00 | 0.001   |
|         |           | 96.73        |     | 6.134E-01           | 1.018E+00 | 1.516E+00      | 2.050E-01 | 0.405   |
|         |           | 121.11       |     | 1.171E-01           | 1.646E-01 | 2.769E-01      | 2.621E-02 | 0.423   |
|         |           | 136.00       |     | -2.056E-02          | 4.816E-02 | 7.773E-02      | 4.581E-03 | -0.265  |
|         |           | 198.60       |     | -2.144E+00          | 2.288E+00 | 3.446E+00      | 2.405E-01 | -0.622  |
|         |           | 264.65       | *   | -9.107E-03          | 6.280E-02 | 8.661E-02      | 5.195E-03 | -0.105  |
|         |           | 279.53       |     | -5.312E-02          | 1.320E-01 | 2.148E-01      | 1.380E-02 | -0.247  |
|         |           | 303.91       |     | 1.206E+00           | 2.777E+00 | 4.110E+00      | 3.964E-01 | 0.293   |
|         |           | 400.65       |     | 2.217E-01           | 2.916E-01 | 5.039E-01      | 4.514E-02 | 0.440   |
| BR-77   | +         | 87.88        |     | 7.976E+02           | 2.579E+02 | 4.174E+02      | 4.120E+01 | 1.911   |
|         |           | 200.40       |     | -3.080E+01          | 1.966E+02 | 3.158E+02      | 1.779E+01 | -0.098  |
|         | +         | 239.00       |     | 3.115E+02           | 2.667E+01 | 4.288E+01      | 2.509E+00 | 7.265   |
|         |           | 249.79       |     | 4.532E+01           | 7.644E+01 | 1.259E+02      | 7.424E+00 | 0.360   |
|         |           | 281.68       |     | -7.968E+01          | 1.025E+02 | 1.668E+02      | 9.956E+00 | -0.478  |
|         |           | 297.23       |     | 2.762E+02           | 6.975E+01 | 1.302E+02      | 7.778E+00 | 2.121   |
|         |           | 303.76       |     | 9.761E+01           | 2.280E+02 | 3.375E+02      | 2.014E+01 | 0.289   |
|         |           | 439.47       |     | -6.255E+01          | 1.693E+02 | 2.738E+02      | 1.540E+01 | -0.228  |
|         |           | 484.57       |     | 2.352E+02           | 2.622E+02 | 4.554E+02      | 2.561E+01 | 0.516   |
|         |           | 520.65       | *   | -2.476E-01          | 1.148E+01 | 1.879E+01      | 1.047E+00 | -0.013  |
|         |           | 574.64       |     | -3.863E+01          | 2.497E+02 | 4.030E+02      | 2.180E+01 | -0.096  |
|         |           | 578.91       |     | -1.783E+01          | 1.170E+02 | 1.624E+02      | 8.756E+00 | -0.110  |
|         |           | 585.48       |     | 1.411E+03           | 2.973E+02 | 5.351E+02      | 2.870E+01 | 2.637   |
|         |           | 755.35       |     | 1.991E+01           | 2.084E+02 | 3.373E+02      | 1.959E+01 | 0.059   |
|         |           | 817.79       |     | -5.049E+01          | 1.374E+02 | 2.226E+02      | 1.431E+01 | -0.227  |
| SR-82   |           | 698.33       |     | -1.602E+01          | 4.068E+01 | 6.361E+01      | 3.353E+00 | -0.252  |
|         |           | 776.49       | *   | -2.378E-01          | 4.312E-01 | 6.926E-01      | 4.167E-02 | -0.343  |
|         |           | 1395.20      |     | -4.249E+00          | 1.233E+01 | 1.901E+01      | 1.197E+00 | -0.224  |
| RB-83   |           | 520.41       | *   | -4.344E-03          | 7.845E-02 | 1.281E-01      | 7.139E-03 | -0.034  |
|         |           | 529.64       |     | -1.172E-01          | 1.203E-01 | 1.824E-01      | 1.013E-02 | -0.642  |
|         |           | 552.65       |     | 7.915E-02           | 2.363E-01 | 3.952E-01      | 2.168E-02 | 0.200   |
| RB-84   |           | 881.50       | *   | 9.386E-02           | 8.366E-02 | 1.512E-01      | 1.071E-02 | 0.621   |
| KR-85   |           | 513.99       | *   | 1.640E+01           | 9.518E+00 | 1.544E+01      | 8.621E-01 | 1.063   |
| SR-85   |           | 513.99       | *   | 8.398E-02           | 4.874E-02 | 7.904E-02      | 4.414E-03 | 1.063   |
| RB-86   |           | 1076.63      | *   | -5.970E-02          | 9.316E-01 | 1.526E+00      | 1.001E-01 | -0.039  |
| Y-88    |           | 898.02       |     | -3.918E-02          | 4.924E-02 | 7.630E-02      | 5.578E-03 | -0.514  |
|         |           | 1836.01      | *   | 1.660E-02           | 3.674E-02 | 6.576E-02      | 3.737E-03 | 0.252   |
| ZR-88   |           | 392.90       | *   | -2.099E-03          | 3.608E-02 | 5.978E-02      | 3.317E-03 | -0.035  |
| Y-91    |           | 1204.90      | *   | -2.648E+01          | 2.246E+01 | 3.275E+01      | 1.964E+00 | -0.809  |
| NB-94   |           | 702.63       | *   | -8.682E-05          | 3.805E-02 | 6.137E-02      | 3.260E-03 | -0.001  |
|         |           | 871.10       |     | -3.924E-03          | 4.159E-02 | 6.885E-02      | 4.803E-03 | -0.057  |
| NB-95   |           | 765.79       | *   | 5.495E-02           | 5.404E-02 | 9.296E-02      | 5.495E-03 | 0.591   |
| NB-95M  |           | 235.69       | *   | 7.446E-01           | 1.934E-01 | 3.107E-01      | 2.348E-02 | 2.397   |
| ZR-95   |           | 724.18       |     | 2.225E-01           | 1.297E-01 | 2.107E-01      | 1.394E-02 | 1.056   |
|         |           | 756.15       | *   | -1.753E-02          | 9.277E-02 | 1.468E-01      | 1.035E-02 | -0.119  |
| NB-97   |           | 657.90       | *   | 1.616E-02           | 9.277E-02 | Half-Life      | too short |         |
|         |           | 1024.50      |     | 7.809E+00           | 9.277E-02 | Half-Life      | too short |         |
| ZR-97   |           | 254.15       |     | -6.669E+00          | 9.277E-02 | Half-Life      | too short |         |
|         |           | 355.39       |     | 1.506E+00           | 9.277E-02 | Half-Life      | too short |         |
|         |           | 507.63       | *   | 4.884E+00           | 9.277E-02 | Half-Life      | too short |         |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         | 602.52    |              |     | 1.198E+00           | 9.277E-02 | Half-Life      | too short |         |
|         | 1021.30   |              |     | -5.327E+00          | 9.277E-02 | Half-Life      | too short |         |
|         | 1147.95   |              |     | 1.260E+00           | 9.277E-02 | Half-Life      | too short |         |
|         | 1362.66   |              |     | 9.686E-01           | 9.277E-02 | Half-Life      | too short |         |
|         | 1750.46   |              |     | 3.312E+00           | 9.277E-02 | Half-Life      | too short |         |
| MO-99   | 140.51    |              |     | -2.417E+01          | 3.165E+01 | 4.932E+01      | 1.328E+01 | -0.490  |
|         | 181.06    |              |     | 1.737E+01           | 2.214E+01 | 3.248E+01      | 5.534E+00 | 0.535   |
|         | 366.43    |              |     | -3.882E+01          | 9.522E+01 | 1.552E+02      | 8.901E+00 | -0.250  |
|         | 739.58    | *            |     | -1.155E+01          | 1.342E+01 | 1.978E+01      | 2.714E+00 | -0.584  |
|         | 778.00    |              |     | -3.252E+01          | 3.837E+01 | 6.012E+01      | 3.626E+00 | -0.541  |
| TC-99M  | 140.51    | *            |     | -2.557E+10          | 3.837E+01 | Half-Life      | too short |         |
| RH-101  | 127.23    |              |     | 2.275E-02           | 4.451E-02 | 6.560E-02      | 3.917E-03 | 0.347   |
|         | 198.01    | *            |     | -1.999E-02          | 4.161E-02 | 6.399E-02      | 3.595E-03 | -0.312  |
|         | 325.23    |              |     | -6.803E-02          | 2.898E-01 | 4.156E-01      | 2.463E-02 | -0.164  |
| RH-102  | 418.52    |              |     | 5.753E-02           | 3.431E-01 | 5.740E-01      | 3.215E-02 | 0.100   |
|         | 475.06    | *            |     | -9.348E-03          | 3.491E-02 | 5.652E-02      | 3.183E-03 | -0.165  |
|         | 631.29    |              |     | -4.434E-02          | 6.211E-02 | 9.473E-02      | 4.861E-03 | -0.468  |
|         | 697.49    |              |     | -3.377E-02          | 9.239E-02 | 1.448E-01      | 7.623E-03 | -0.233  |
|         | 766.84    |              |     | 1.364E-01           | 1.412E-01 | 2.416E-01      | 1.430E-02 | 0.565   |
|         | 1046.59   |              |     | 2.814E-02           | 1.159E-01 | 1.961E-01      | 1.317E-02 | 0.144   |
|         | 1112.84   |              |     | 3.237E-02           | 3.122E-01 | 4.463E-01      | 2.829E-02 | 0.073   |
| RU-103  | 497.08    | *            |     | -1.145E-03          | 4.511E-02 | 7.400E-02      | 9.294E-03 | -0.015  |
|         | 610.33    | +            |     | 1.518E+01           | 3.161E+00 | 3.380E+00      | 5.144E-01 | 4.490   |
| RH-106  | 511.85    | +            |     | 6.534E-01           | 4.130E-01 | 4.875E-01      | 2.725E-02 | 1.340   |
|         | 621.84    | *            |     | 2.428E-01           | 3.655E-01 | 6.223E-01      | 7.123E-02 | 0.390   |
|         | 1050.47   |              |     | -1.566E+00          | 2.413E+00 | 3.706E+00      | 2.483E-01 | -0.422  |
| RU-106  | 511.85    | +            |     | 6.534E-01           | 4.130E-01 | 4.875E-01      | 2.725E-02 | 1.340   |
|         | 621.84    | *            |     | 2.428E-01           | 3.646E-01 | 6.223E-01      | 3.223E-02 | 0.390   |
|         | 1050.47   |              |     | -1.566E+00          | 2.413E+00 | 3.706E+00      | 2.483E-01 | -0.422  |
| AG-108M | 433.93    | *            |     | -1.027E-02          | 4.088E-02 | 6.665E-02      | 4.087E-03 | -0.154  |
|         | 614.37    |              |     | -1.606E-03          | 5.058E-02 | 7.076E-02      | 4.081E-03 | -0.023  |
|         | 722.95    |              |     | 6.324E-02           | 5.165E-02 | 8.188E-02      | 4.926E-03 | 0.772   |
| AG-110M | 657.75    | *            |     | -2.072E-03          | 5.044E-02 | 7.016E-02      | 3.787E-03 | -0.030  |
|         | 677.61    |              |     | 2.072E-01           | 3.434E-01 | 5.828E-01      | 3.196E-02 | 0.355   |
|         | 706.67    |              |     | -8.308E-02          | 2.377E-01 | 3.720E-01      | 2.129E-02 | -0.223  |
|         | 763.93    |              |     | -2.178E-01          | 2.186E-01 | 3.236E-01      | 2.020E-02 | -0.673  |
|         | 884.67    |              |     | -1.920E-02          | 5.838E-02 | 9.459E-02      | 7.049E-03 | -0.203  |
|         | 937.48    |              |     | -4.572E-02          | 1.352E-01 | 1.839E-01      | 1.385E-02 | -0.249  |
|         | 1384.27   |              |     | -2.619E-02          | 1.779E-01 | 2.825E-01      | 1.872E-02 | -0.093  |
| IN-111  | 171.28    |              |     | -5.717E-02          | 1.168E+00 | 1.896E+00      | 1.031E-01 | -0.030  |
|         | 245.39    | *            |     | 1.759E-01           | 1.385E+00 | 1.953E+00      | 1.148E-01 | 0.090   |
| IN-113M | 391.69    | *            |     | -7.032E-03          | 5.239E-02 | 8.643E-02      | 5.144E-03 | -0.081  |
| SN-113  | 391.69    | *            |     | -7.032E-03          | 5.239E-02 | 8.643E-02      | 5.144E-03 | -0.081  |
| IN-114M | 190.27    | *            |     | -9.154E-02          | 2.495E-01 | 3.460E-01      | 1.925E-02 | -0.265  |
| CD-115  | 260.90    |              |     | -5.968E+01          | 1.533E+02 | 2.404E+02      | 1.426E+01 | -0.248  |
|         | 492.35    |              |     | -1.416E+01          | 3.941E+01 | 6.315E+01      | 3.547E+00 | -0.224  |
|         | 527.90    | *            |     | 3.539E+00           | 1.148E+01 | 1.924E+01      | 1.069E+00 | 0.184   |
| SN-117M | 156.02    |              |     | -1.932E+00          | 2.759E+00 | 4.383E+00      | 2.422E-01 | -0.441  |
|         | 158.56    | *            |     | -1.558E-02          | 6.505E-02 | 1.051E-01      | 5.773E-03 | -0.148  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| SB-122  | 563.90    | *            |     | -3.088E-01          | 2.358E+00 | 3.814E+00      | 2.078E-01 | -0.081  |
|         | 692.80    |              |     | 3.639E+01           | 5.368E+01 | 9.083E+01      | 4.742E+00 | 0.401   |
| I-123   | 159.00    | *            |     | -5.567E+00          | 5.368E+01 | Half-Life      | too short |         |
|         | 528.96    |              |     | -1.838E+02          | 5.368E+01 | Half-Life      | too short |         |
| TE-123M | 159.00    | *            |     | -3.226E-02          | 3.455E-02 | 5.429E-02      | 3.024E-03 | -0.594  |
| I-124   | 602.71    | *            |     | 1.015E-01           | 8.790E-01 | 1.250E+00      | 6.607E-02 | 0.081   |
|         | 722.78    |              |     | 6.406E+00           | 5.276E+00 | 8.360E+00      | 4.598E-01 | 0.766   |
|         | 1325.50   |              |     | 2.150E+01           | 3.517E+01 | 6.155E+01      | 3.858E+00 | 0.349   |
|         | 1376.25   |              |     | 2.913E+01           | 3.433E+01 | 6.105E+01      | 3.843E+00 | 0.477   |
|         | 1509.49   |              |     | 2.077E+01           | 1.773E+01 | 3.299E+01      | 2.064E+00 | 0.630   |
|         | 1691.02   |              |     | 1.878E+00           | 3.887E+00 | 7.003E+00      | 4.212E-01 | 0.268   |
| SB-124  | 602.71    |              |     | 6.017E-03           | 5.210E-02 | 7.409E-02      | 3.918E-03 | 0.081   |
|         | 645.85    |              |     | 4.239E-01           | 6.110E-01 | 1.041E+00      | 6.124E-02 | 0.407   |
|         | 709.31    |              |     | 1.702E-01           | 3.060E+00 | 4.957E+00      | 2.664E-01 | 0.034   |
|         | 713.82    |              |     | 4.766E-01           | 1.815E+00 | 2.991E+00      | 2.990E-01 | 0.159   |
|         | 722.78    |              |     | 5.503E-01           | 4.534E-01 | 7.183E-01      | 4.157E-02 | 0.766   |
| +       | 968.20    |              |     | 1.733E+01           | 4.764E+00 | 7.973E+00      | 5.628E-01 | 2.174   |
|         | 1045.16   |              |     | 2.027E+00           | 2.535E+00 | 4.509E+00      | 3.033E-01 | 0.450   |
|         | 1325.50   |              |     | 1.973E+00           | 3.227E+00 | 5.648E+00      | 3.540E-01 | 0.349   |
|         | 1368.21   |              |     | -1.144E+00          | 1.936E+00 | 2.869E+00      | 3.477E-01 | -0.399  |
|         | 1436.60   |              |     | -2.705E+00          | 4.389E+00 | 6.452E+00      | 4.061E-01 | -0.419  |
|         | 1691.02   | *            |     | 3.806E-02           | 7.877E-02 | 1.419E-01      | 9.215E-03 | 0.268   |
| SB-125  | 427.89    | *            |     | 1.203E-01           | 1.155E-01 | 2.016E-01      | 1.183E-02 | 0.596   |
| +       | 463.38    |              |     | 1.145E+00           | 4.975E-01 | 6.650E-01      | 4.404E-02 | 1.721   |
|         | 600.56    |              |     | 3.597E-01           | 2.077E-01 | 3.630E-01      | 2.279E-02 | 0.991   |
|         | 635.90    |              |     | 3.060E-02           | 3.168E-01 | 5.179E-01      | 3.215E-02 | 0.059   |
| TE-125M | 109.28    | *            |     | -1.290E+01          | 1.128E+01 | 1.779E+01      | 1.617E+00 | -0.725  |
| I-126   | 388.63    |              |     | 2.962E-02           | 2.457E-01 | 4.112E-01      | 2.291E-02 | 0.072   |
|         | 666.33    | *            |     | -3.878E-02          | 2.419E-01 | 3.315E-01      | 1.651E-02 | -0.117  |
|         | 753.82    |              |     | 2.096E+00           | 1.819E+00 | 3.179E+00      | 1.842E-01 | 0.659   |
| SB-126  | 223.80    |              |     | 2.577E+00           | 4.991E+00 | 8.203E+00      | 4.738E-01 | 0.314   |
|         | 278.60    |              |     | 1.979E+00           | 2.940E+00 | 5.004E+00      | 2.985E-01 | 0.396   |
| +       | 296.50    |              |     | 1.572E+01           | 2.431E+00 | 4.060E+00      | 2.425E-01 | 3.871   |
|         | 414.70    |              |     | -7.042E-02          | 9.212E-02 | 1.461E-01      | 8.172E-03 | -0.482  |
|         | 415.30    |              |     | -5.176E+00          | 7.628E+00 | 1.215E+01      | 6.802E-01 | -0.426  |
|         | 555.20    |              |     | -2.942E+00          | 4.881E+00 | 7.637E+00      | 4.184E-01 | -0.385  |
|         | 573.80    |              |     | 1.007E-01           | 1.247E+00 | 2.045E+00      | 1.107E-01 | 0.049   |
|         | 593.00    |              |     | -1.995E-01          | 1.043E+00 | 1.674E+00      | 8.921E-02 | -0.119  |
|         | 656.30    |              |     | -1.834E+00          | 4.679E+00 | 6.250E+00      | 3.109E-01 | -0.293  |
|         | 666.33    |              |     | -1.620E-02          | 1.011E-01 | 1.385E-01      | 6.897E-03 | -0.117  |
|         | 675.00    |              |     | -1.624E+00          | 2.356E+00 | 3.592E+00      | 1.817E-01 | -0.452  |
|         | 695.00    |              |     | 1.785E-02           | 9.693E-02 | 1.586E-01      | 8.311E-03 | 0.113   |
|         | 697.00    |              |     | -1.863E-02          | 3.247E-01 | 5.217E-01      | 2.744E-02 | -0.036  |
|         | 720.50    | *            |     | 3.338E-02           | 1.833E-01 | 2.722E-01      | 1.491E-02 | 0.123   |
|         | 856.80    |              |     | 5.340E-01           | 6.443E-01 | 1.009E+00      | 6.891E-02 | 0.529   |
|         | 989.30    |              |     | 1.871E-01           | 1.536E+00 | 2.570E+00      | 1.794E-01 | 0.073   |
|         | 1034.80   |              |     | 1.990E+00           | 1.029E+01 | 1.728E+01      | 1.171E+00 | 0.115   |
|         | 1213.00   |              |     | -3.574E+00          | 5.960E+00 | 9.267E+00      | 5.577E-01 | -0.386  |
| SB-127  | 61.10     |              |     | 1.785E+02           | 8.551E+01 | 1.328E+02      | 1.528E+01 | 1.344   |



---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         | 252.40    |              |     | 1.612E+00           | 5.071E+00 | 8.179E+00      | 3.398E+00 | 0.197   |
|         | 290.80    |              |     | -2.002E+01          | 2.718E+01 | 3.783E+01      | 3.489E+00 | -0.529  |
|         | 411.60    |              |     | 2.319E+01           | 1.507E+01 | 2.636E+01      | 3.759E+00 | 0.880   |
|         | 444.90    |              |     | 1.246E+01           | 1.146E+01 | 2.002E+01      | 2.134E+00 | 0.622   |
|         | 473.00    |              |     | -4.911E-02          | 1.958E+00 | 3.220E+00      | 3.558E-01 | -0.015  |
|         | 543.00    |              |     | -1.150E+01          | 1.812E+01 | 2.811E+01      | 3.583E+00 | -0.409  |
|         | 603.60    |              |     | 3.362E+00           | 1.523E+01 | 2.188E+01      | 2.286E+00 | 0.154   |
|         | 685.20    | *            |     | -5.543E-01          | 1.604E+00 | 2.518E+00      | 2.266E-01 | -0.220  |
|         | 698.50    |              |     | -4.769E+00          | 1.753E+01 | 2.766E+01      | 3.940E+00 | -0.172  |
|         | 722.20    |              |     | 3.205E+01           | 3.761E+01 | 5.724E+01      | 5.107E+00 | 0.560   |
|         | 783.80    |              |     | 6.670E+00           | 4.144E+00 | 7.624E+00      | 8.215E-01 | 0.875   |
| XE-127  | 57.60     |              |     | -8.471E+00          | 9.044E+00 | 1.354E+01      | 1.246E+00 | -0.626  |
|         | 145.22    |              |     | 7.755E-01           | 8.424E-01 | 1.419E+00      | 8.041E-02 | 0.546   |
|         | 172.10    |              |     | 2.960E-02           | 1.446E-01 | 2.370E-01      | 1.290E-02 | 0.125   |
|         | 202.84    | *            |     | 4.458E-02           | 6.382E-02 | 9.830E-02      | 5.553E-03 | 0.454   |
|         | 374.96    |              |     | -6.555E-02          | 2.339E-01 | 3.837E-01      | 2.178E-02 | -0.171  |
| I-131   | 80.18     |              |     | -9.632E+00          | 6.459E+00 | 8.807E+00      | 8.228E-01 | -1.094  |
|         | 284.30    |              |     | -2.010E-01          | 1.724E+00 | 2.890E+00      | 1.908E-01 | -0.070  |
|         | 364.48    | *            |     | -6.447E-02          | 1.349E-01 | 2.191E-01      | 1.408E-02 | -0.294  |
|         | 636.97    |              |     | -3.573E-01          | 1.847E+00 | 2.952E+00      | 1.734E-01 | -0.121  |
|         | 722.89    |              |     | 1.050E+01           | 8.599E+00 | 1.363E+01      | 7.613E-01 | 0.770   |
| TE-132  | 49.72     |              |     | -1.823E+01          | 2.764E+01 | 4.542E+01      | 4.934E+00 | -0.401  |
|         | 111.76    |              |     | 8.678E+00           | 3.486E+01 | 5.794E+01      | 5.500E+00 | 0.150   |
|         | 116.30    |              |     | -2.490E+01          | 3.290E+01 | 5.265E+01      | 4.861E+00 | -0.473  |
|         | 228.16    | *            |     | 1.293E-02           | 8.366E-01 | 1.346E+00      | 1.930E-01 | 0.010   |
| BA-133  | 53.15     |              |     | 1.378E+00           | 5.108E+00 | 8.654E+00      | 7.900E-01 | 0.159   |
|         | 79.62     |              |     | -9.681E-01          | 1.781E+00 | 2.542E+00      | 3.965E-01 | -0.381  |
|         | 81.00     |              |     | -2.782E-01          | 1.464E-01 | 1.878E-01      | 3.057E-02 | -1.482  |
|         | 276.40    |              |     | 4.241E-01           | 4.810E-01 | 7.691E-01      | 1.003E-01 | 0.551   |
|         | 302.84    |              |     | 6.438E-02           | 1.901E-01 | 2.843E-01      | 3.339E-02 | 0.226   |
|         | 356.01    | *            |     | -6.520E-03          | 5.423E-02 | 7.794E-02      | 9.009E-03 | -0.084  |
|         | 383.85    |              |     | -8.533E-04          | 3.550E-01 | 5.906E-01      | 6.362E-02 | -0.001  |
| I-133   | 510.53    | +            |     | 1.203E+00           | 3.550E-01 | Half-Life      | too short |         |
|         | 529.87    | *            |     | -6.603E-03          | 3.550E-01 | Half-Life      | too short |         |
|         | 706.58    |              |     | -1.513E-01          | 3.550E-01 | Half-Life      | too short |         |
|         | 856.28    |              |     | 4.407E-01           | 3.550E-01 | Half-Life      | too short |         |
|         | 875.33    |              |     | 4.515E-03           | 3.550E-01 | Half-Life      | too short |         |
|         | 1236.41   |              |     | 4.108E-01           | 3.550E-01 | Half-Life      | too short |         |
|         | 1298.22   |              |     | 1.989E-01           | 3.550E-01 | Half-Life      | too short |         |
| CS-134  | 475.35    |              |     | 9.593E-02           | 2.226E+00 | 3.676E+00      | 2.070E-01 | 0.026   |
|         | 563.23    |              |     | -3.261E-01          | 4.309E-01 | 6.650E-01      | 3.711E-02 | -0.490  |
|         | 569.32    |              |     | 7.375E-02           | 2.436E-01 | 4.002E-01      | 2.246E-02 | 0.184   |
|         | 604.70    |              |     | 8.834E-03           | 4.674E-02 | 6.689E-02      | 3.553E-03 | 0.132   |
|         | 795.84    | +            | *   | 1.155E-01           | 9.209E-02 | 1.068E-01      | 6.720E-03 | 1.082   |
|         | 801.93    |              |     | -4.050E-01          | 5.265E-01 | 6.952E-01      | 4.403E-02 | -0.583  |
|         | 1038.57   |              |     | -4.110E+00          | 4.365E+00 | 6.522E+00      | 4.409E-01 | -0.630  |
|         | 1167.94   |              |     | 4.112E-01           | 3.157E+00 | 5.229E+00      | 3.114E-01 | 0.079   |
|         | 1365.15   |              |     | -6.346E-01          | 1.494E+00 | 2.292E+00      | 1.564E-01 | -0.277  |
| I-135   | 288.45    |              |     | -9.978E+09          | 1.494E+00 | Half-Life      | too short |         |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 417.63       |     | -6.344E+08          | 1.494E+00 | Half-Life      | too short |         |
|         |           | 546.56       |     | -2.988E+09          | 1.494E+00 | Half-Life      | too short |         |
|         |           | 836.80       |     | 1.440E+10           | 1.494E+00 | Half-Life      | too short |         |
|         |           | 1038.76      |     | -8.886E+09          | 1.494E+00 | Half-Life      | too short |         |
|         |           | 1124.00      |     | 1.257E+10           | 1.494E+00 | Half-Life      | too short |         |
|         |           | 1131.51      |     | 3.750E+09           | 1.494E+00 | Half-Life      | too short |         |
|         |           | 1260.41      | *   | 7.366E+08           | 1.494E+00 | Half-Life      | too short |         |
|         |           | 1457.56      |     | 6.025E+11           | 1.494E+00 | Half-Life      | too short |         |
|         |           | 1678.03      |     | -1.537E+09          | 1.494E+00 | Half-Life      | too short |         |
|         |           | 1706.46      |     | 8.004E+09           | 1.494E+00 | Half-Life      | too short |         |
|         |           | 1791.20      |     | 2.339E+08           | 1.494E+00 | Half-Life      | too short |         |
| CS-136  |           | 66.91        |     | -1.539E-01          | 1.298E+00 | 1.607E+00      | 2.508E-01 | -0.096  |
|         | +         | 86.29        |     | 4.881E+00           | 1.645E+00 | 2.515E+00      | 3.425E-01 | 1.941   |
|         |           | 153.22       |     | 9.169E-01           | 8.070E-01 | 1.365E+00      | 9.597E-02 | 0.672   |
|         |           | 163.89       |     | 2.270E+00           | 1.312E+00 | 2.253E+00      | 1.568E-01 | 1.008   |
|         |           | 176.55       |     | -2.913E-01          | 4.511E-01 | 7.139E-01      | 4.445E-02 | -0.408  |
|         |           | 273.65       |     | -7.358E-01          | 6.716E-01 | 8.480E-01      | 5.727E-02 | -0.868  |
|         |           | 340.57       |     | 2.915E-01           | 1.792E-01 | 2.851E-01      | 1.778E-02 | 1.022   |
|         |           | 818.51       |     | -5.443E-02          | 8.098E-02 | 1.275E-01      | 8.217E-03 | -0.427  |
|         |           | 1048.07      | *   | -4.726E-02          | 1.113E-01 | 1.755E-01      | 1.259E-02 | -0.269  |
|         |           | 1235.34      |     | 1.743E-01           | 7.094E-01 | 1.180E+00      | 1.197E-01 | 0.148   |
| CE-139  |           | 165.85       | *   | -7.947E-03          | 3.711E-02 | 5.994E-02      | 3.241E-03 | -0.133  |
| BA-140  |           | 162.64       |     | 1.759E-01           | 9.350E-01 | 1.533E+00      | 9.520E-02 | 0.115   |
|         |           | 304.84       |     | 5.886E-01           | 1.666E+00 | 2.443E+00      | 6.675E-01 | 0.241   |
|         |           | 423.70       |     | -7.163E-01          | 2.280E+00 | 3.688E+00      | 1.171E+00 | -0.194  |
|         |           | 537.32       | *   | 1.296E-02           | 3.089E-01 | 5.071E-01      | 1.647E-01 | 0.026   |
| LA-140  | +         | 328.77       |     | 5.982E-01           | 4.084E-01 | 6.133E-01      | 4.049E-02 | 0.975   |
|         |           | 432.53       |     | -1.067E+00          | 2.627E+00 | 4.247E+00      | 2.652E-01 | -0.251  |
|         |           | 487.03       |     | 7.334E-02           | 1.610E-01 | 2.726E-01      | 1.747E-02 | 0.269   |
|         |           | 751.79       |     | 1.177E-01           | 2.185E+00 | 3.526E+00      | 2.495E-01 | 0.033   |
|         |           | 815.85       |     | 1.199E-01           | 3.301E-01 | 5.702E-01      | 4.385E-02 | 0.210   |
|         |           | 867.82       |     | -7.648E-01          | 1.921E+00 | 2.628E+00      | 1.971E-01 | -0.291  |
|         |           | 919.63       |     | -9.568E-01          | 2.947E+00 | 4.502E+00      | 4.295E-01 | -0.213  |
|         |           | 925.24       |     | 2.495E-01           | 1.180E+00 | 1.867E+00      | 1.462E-01 | 0.134   |
|         |           | 1596.49      | *   | -2.580E-02          | 9.356E-02 | 1.242E-01      | 7.661E-03 | -0.208  |
| CE-141  |           | 145.44       | *   | 5.209E-02           | 7.640E-02 | 1.278E-01      | 7.538E-03 | 0.408   |
| CE-143  |           | 57.37        |     | -1.794E-03          | 7.640E-02 | Half-Life      | too short |         |
|         |           | 231.56       |     | -7.610E-04          | 7.640E-02 | Half-Life      | too short |         |
|         |           | 293.26       | *   | 1.172E-03           | 7.640E-02 | Half-Life      | too short |         |
|         | +         | 350.59       |     | 3.236E-02           | 7.640E-02 | Half-Life      | too short |         |
|         |           | 490.36       |     | -7.922E-04          | 7.640E-02 | Half-Life      | too short |         |
|         |           | 664.57       |     | 4.606E-03           | 7.640E-02 | Half-Life      | too short |         |
|         |           | 721.93       |     | 1.197E-03           | 7.640E-02 | Half-Life      | too short |         |
| CE-144  |           | 80.11        |     | -4.417E+00          | 3.006E+00 | 4.105E+00      | 3.813E-01 | -1.076  |
|         |           | 133.54       | *   | 1.092E-01           | 2.823E-01 | 4.128E-01      | 5.870E-02 | 0.265   |
| PM-144  |           | 476.78       |     | 1.384E-02           | 7.811E-02 | 1.301E-01      | 8.849E-03 | 0.106   |
|         |           | 618.01       |     | 1.162E-02           | 3.683E-02 | 6.127E-02      | 3.426E-03 | 0.190   |
|         |           | 696.49       | *   | 1.384E-03           | 4.204E-02 | 6.802E-02      | 3.577E-03 | 0.020   |
|         |           | 778.57       |     | -1.224E+00          | 2.577E+00 | 4.163E+00      | 2.515E-01 | -0.294  |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PR-144  | 696.49    | *            |     | 9.381E-02           | 2.849E+00 | 4.609E+00      | 2.422E-01 | 0.020   |
|         | 1489.15   |              |     | -6.155E+00          | 1.099E+01 | 1.570E+01      | 9.844E-01 | -0.392  |
| PM-146  | 453.90    | *            |     | 5.858E-02           | 5.082E-02 | 8.937E-02      | 7.606E-03 | 0.655   |
|         | 633.02    |              |     | 8.202E-02           | 1.569E+00 | 2.557E+00      | 9.390E-01 | 0.032   |
|         | 735.90    |              |     | 7.148E-02           | 1.708E-01 | 2.829E-01      | 7.879E-02 | 0.253   |
|         | 747.13    |              |     | -7.919E-02          | 1.176E-01 | 1.780E-01      | 2.220E-02 | -0.445  |
| ND-147  | 91.11     |              |     | 1.013E+00           | 6.054E-01 | 7.023E-01      | 6.999E-02 | 1.442   |
|         | 319.41    |              |     | 9.359E-02           | 3.897E+00 | 6.483E+00      | 3.854E-01 | 0.014   |
|         | 439.89    |              |     | -2.342E+00          | 7.018E+00 | 1.137E+01      | 6.400E-01 | -0.206  |
|         | 531.02    | *            |     | -3.107E-01          | 6.413E-01 | 1.011E+00      | 1.356E-01 | -0.307  |
| PM-149  | 285.90    | *            |     | 8.790E+01           | 1.017E+02 | 1.766E+02      | 2.516E+01 | 0.498   |
| EU-152  | 121.78    |              |     | 6.824E-02           | 9.127E-02 | 1.536E-01      | 1.206E-02 | 0.444   |
|         | 244.69    |              |     | 2.861E-01           | 4.450E-01 | 6.478E-01      | 3.807E-02 | 0.442   |
|         | 344.27    | *            |     | 7.637E-03           | 1.288E-01 | 2.041E-01      | 1.345E-02 | 0.037   |
|         | 443.98    |              |     | 2.278E-01           | 1.173E+00 | 1.961E+00      | 1.104E-01 | 0.116   |
|         | 778.89    |              |     | -1.174E-01          | 2.996E-01 | 4.874E-01      | 2.943E-02 | -0.241  |
|         | 867.32    |              |     | -4.239E-01          | 1.129E+00 | 1.548E+00      | 1.074E-01 | -0.274  |
| +       | 964.01    |              |     | 8.132E-01           | 3.174E-01 | 6.706E-01      | 4.744E-02 | 1.213   |
|         | 1085.78   |              |     | 5.537E-02           | 4.616E-01 | 7.684E-01      | 4.999E-02 | 0.072   |
|         | 1112.02   |              |     | 8.481E-02           | 4.508E-01 | 6.509E-01      | 4.129E-02 | 0.130   |
|         | 1407.95   |              |     | -2.843E-02          | 2.217E-01 | 3.530E-01      | 2.223E-02 | -0.081  |
| GD-153  | 69.67     |              |     | -1.239E+00          | 2.337E+00 | 3.347E+00      | 2.988E-01 | -0.370  |
|         | 83.37     |              |     | 2.139E+01           | 2.021E+01 | 3.060E+01      | 2.908E+00 | 0.699   |
|         | 97.43     | *            |     | 3.499E-02           | 1.054E-01 | 1.556E-01      | 1.301E-02 | 0.225   |
|         | 103.18    |              |     | 6.193E-03           | 1.274E-01 | 2.110E-01      | 1.621E-02 | 0.029   |
| EU-154  | 123.07    |              |     | -1.189E-02          | 6.588E-02 | 1.039E-01      | 9.949E-03 | -0.114  |
|         | 247.94    |              |     | -1.588E-01          | 4.999E-01 | 6.832E-01      | 6.555E-02 | -0.232  |
|         | 591.81    |              |     | 6.589E-02           | 7.066E-01 | 1.159E+00      | 1.102E-01 | 0.057   |
|         | 723.30    |              |     | 2.481E-01           | 2.255E-01 | 3.514E-01      | 2.404E-02 | 0.706   |
|         | 756.87    |              |     | -1.997E-01          | 9.930E-01 | 1.569E+00      | 1.593E-01 | -0.127  |
|         | 873.19    |              |     | 2.685E-01           | 3.692E-01 | 6.479E-01      | 7.232E-02 | 0.414   |
|         | 996.32    |              |     | -4.729E-01          | 4.739E-01 | 7.072E-01      | 1.204E-01 | -0.669  |
|         | 1004.76   |              |     | -3.586E-01          | 2.687E-01 | 3.884E-01      | 4.055E-02 | -0.923  |
|         | 1274.45   | *            |     | 6.654E-03           | 1.427E-01 | 2.336E-01      | 2.236E-02 | 0.028   |
| EU-155  | 48.70     |              |     | -2.242E+00          | 3.548E+00 | 5.843E+00      | 4.893E-01 | -0.384  |
|         | 60.01     |              |     | 9.030E+00           | 7.420E+00 | 1.143E+01      | 1.047E+00 | 0.790   |
| +       | 86.54     |              |     | 4.534E-01           | 1.467E-01 | 2.314E-01      | 2.274E-02 | 1.960   |
|         | 105.31    | *            |     | 7.763E-02           | 1.315E-01 | 2.211E-01      | 1.677E-02 | 0.351   |
| TB-160  | 86.79     | +            |     | 1.210E+00           | 3.912E-01 | 6.117E-01      | 5.978E-02 | 1.978   |
|         | 197.04    |              |     | -6.132E-01          | 7.060E-01 | 1.067E+00      | 5.985E-02 | -0.575  |
|         | 215.65    |              |     | -1.980E-01          | 9.449E-01 | 1.455E+00      | 8.338E-02 | -0.136  |
|         | 298.57    |              |     | 1.437E-01           | 1.335E-01 | 2.302E-01      | 1.375E-02 | 0.624   |
|         | 879.36    | *            |     | 3.728E-03           | 1.730E-01 | 2.890E-01      | 2.041E-02 | 0.013   |
|         | 962.29    |              |     | 1.511E+00           | 6.774E-01 | 1.189E+00      | 8.414E-02 | 1.271   |
|         | 966.15    |              |     | 1.254E+00           | 3.135E-01 | 6.093E-01      | 4.305E-02 | 2.059   |
|         | 1177.93   |              |     | -1.646E-01          | 4.540E-01 | 7.208E-01      | 4.274E-02 | -0.228  |
|         | 1271.85   |              |     | 4.426E-01           | 7.948E-01 | 1.369E+00      | 8.428E-02 | 0.323   |
| HO-166M | 80.57     |              |     | -7.460E-01          | 3.898E-01 | 5.182E-01      | 4.828E-02 | -1.439  |
| +       | 184.41    |              |     | 2.400E-01           | 8.188E-02 | 8.694E-02      | 4.803E-03 | 2.761   |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| TM-171  |           | 280.46       |     | -1.203E-01          | 1.009E-01 | 1.609E-01      | 9.603E-03 | -0.748  |
|         |           | 410.95       |     | 6.479E-01           | 3.059E-01 | 5.577E-01      | 3.117E-02 | 1.162   |
|         |           | 711.68       | *   | -9.245E-04          | 6.838E-02 | 1.101E-01      | 5.941E-03 | -0.008  |
|         |           | 752.31       |     | 1.654E-01           | 3.501E-01 | 5.831E-01      | 3.371E-02 | 0.284   |
|         |           | 810.29       |     | -5.874E-02          | 6.169E-02 | 9.420E-02      | 5.983E-03 | -0.624  |
|         |           | 51.35        |     | -1.403E+01          | 4.419E+01 | 7.355E+01      | 6.596E+00 | -0.191  |
|         |           | 52.39        |     | 8.418E+00           | 2.272E+01 | 3.861E+01      | 3.505E+00 | 0.218   |
|         |           | 59.40        |     | 2.574E+01           | 3.973E+01 | 6.016E+01      | 5.529E+00 | 0.428   |
|         |           | 66.72        | *   | -1.737E+00          | 4.297E+01 | 5.887E+01      | 5.259E+00 | -0.030  |
|         |           | 88.36        |     | 8.930E-01           | 2.887E-01 | 4.681E-01      | 4.591E-02 | 1.908   |
| LU-176  | +         | 201.83       |     | 7.672E-03           | 3.594E-02 | 5.855E-02      | 3.304E-03 | 0.131   |
|         |           | 306.84       | *   | 6.675E-04           | 3.172E-02 | 4.862E-02      | 2.900E-03 | 0.014   |
|         |           | 401.10       |     | 9.692E-01           | 7.832E+00 | 1.309E+01      | 7.291E-01 | 0.074   |
| LU-177  |           | 112.95       |     | 7.353E-01           | 1.932E+00 | 3.224E+00      | 2.185E-01 | 0.228   |
|         | +         | 208.36       | *   | 2.708E+00           | 1.985E+00 | 2.346E+00      | 1.334E-01 | 1.154   |
| LU-177M |           | 52.97        |     | 5.847E-01           | 2.294E+00 | 3.884E+00      | 3.542E-01 | 0.151   |
|         |           | 54.07        |     | 9.761E-01           | 1.209E+00 | 2.076E+00      | 1.903E-01 | 0.470   |
| HF-181  |           | 61.30        |     | 4.374E+00           | 2.289E+00 | 3.573E+00      | 3.249E-01 | 1.224   |
|         |           | 121.62       |     | 4.654E-01           | 4.609E-01 | 7.827E-01      | 4.794E-02 | 0.595   |
|         |           | 147.16       |     | -6.714E-01          | 8.027E-01 | 1.272E+00      | 7.174E-02 | -0.528  |
|         |           | 171.86       |     | 6.799E-02           | 5.820E-01 | 9.505E-01      | 5.171E-02 | 0.072   |
|         |           | 218.09       |     | 3.134E-01           | 1.043E+00 | 1.701E+00      | 9.769E-02 | 0.184   |
|         | +         | 268.79       |     | 3.360E+00           | 1.502E+00 | 1.849E+00      | 1.100E-01 | 1.818   |
|         |           | 319.02       |     | 2.996E-02           | 3.101E-01 | 5.178E-01      | 3.078E-02 | 0.058   |
|         |           | 367.43       |     | -3.672E-01          | 1.064E+00 | 1.739E+00      | 9.965E-02 | -0.211  |
|         |           | 413.65       | *   | -2.658E-01          | 2.288E-01 | 3.551E-01      | 1.986E-02 | -0.748  |
|         |           | 56.28        |     | -8.101E-01          | 1.314E+00 | 2.159E+00      | 1.988E-01 | -0.375  |
|         |           | 57.53        |     | -8.602E-01          | 7.672E-01 | 1.139E+00      | 1.048E-01 | -0.756  |
|         |           | 65.20        |     | 6.361E-01           | 1.354E+00 | 2.026E+00      | 1.815E-01 | 0.314   |
|         |           | 133.02       |     | 2.794E-02           | 9.055E-02 | 1.321E-01      | 7.739E-03 | 0.211   |
|         |           | 136.25       |     | -2.187E-01          | 5.631E-01 | 9.101E-01      | 5.280E-02 | -0.240  |
|         |           | 345.85       |     | -2.063E-01          | 2.667E-01 | 3.859E-01      | 2.257E-02 | -0.535  |
| W-181   |           | 482.03       | *   | -4.338E-02          | 5.125E-02 | 7.960E-02      | 4.479E-03 | -0.545  |
|         |           | 56.28        |     | -3.163E-01          | 5.149E-01 | 8.465E-01      | 7.793E-02 | -0.374  |
|         |           | 57.53        |     | -3.377E-01          | 3.009E-01 | 4.466E-01      | 4.111E-02 | -0.756  |
| TA-182  |           | 65.20        | *   | 2.476E-01           | 5.269E-01 | 7.884E-01      | 7.062E-02 | 0.314   |
|         |           | 67.75        |     | -2.025E-02          | 2.151E-01 | 2.281E-01      | 2.036E-02 | -0.089  |
|         |           | 100.10       |     | 5.959E-02           | 2.103E-01 | 3.511E-01      | 2.818E-02 | 0.170   |
|         |           | 152.43       |     | 6.310E-01           | 4.195E-01 | 7.176E-01      | 3.997E-02 | 0.879   |
| RE-183  |           | 222.10       |     | -8.783E-02          | 4.305E-01 | 6.871E-01      | 3.962E-02 | -0.128  |
|         |           | 1001.68      |     | 1.926E+00           | 2.526E+00 | 4.386E+00      | 3.039E-01 | 0.439   |
|         | +         | 1121.28      |     | 9.620E-01           | 3.370E-01 | 4.282E-01      | 2.691E-02 | 2.246   |
|         |           | 1189.05      |     | 1.135E-01           | 3.942E-01 | 6.600E-01      | 3.932E-02 | 0.172   |
|         |           | 1221.42      | *   | -2.059E-01          | 2.568E-01 | 3.925E-01      | 2.370E-02 | -0.524  |
|         |           | 1230.97      |     | -1.569E-01          | 6.026E-01 | 9.639E-01      | 5.843E-02 | -0.163  |
|         |           | 57.98        |     | -2.455E-01          | 3.117E-01 | 4.441E-01      | 4.087E-02 | -0.553  |
|         |           | 59.32        |     | 1.018E-01           | 1.632E-01 | 2.470E-01      | 2.270E-02 | 0.412   |
|         |           | 67.20        |     | 1.301E-02           | 3.309E-01 | 4.134E-01      | 3.691E-02 | 0.031   |
|         |           | 162.32       | *   | 1.553E-02           | 1.376E-01 | 2.250E-01      | 1.226E-02 | 0.069   |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Activity Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|---------------------|-----------|----------------|-----------|---------|
| RE-184  | +         | 208.81       |              | 2.464E+00           | 1.806E+00 | 2.142E+00      | 1.218E-01 | 1.150   |
|         |           | 291.72       |              | 2.423E-02           | 1.216E+00 | 1.785E+00      | 1.067E-01 | 0.014   |
|         |           | 57.98        |              | -9.054E-01          | 1.149E+00 | 1.638E+00      | 1.507E-01 | -0.553  |
|         |           | 59.32        |              | 3.749E-01           | 6.014E-01 | 9.100E-01      | 8.365E-02 | 0.412   |
|         |           | 67.20        |              | 4.796E-02           | 1.220E+00 | 1.524E+00      | 1.361E-01 | 0.031   |
|         |           | 161.27       |              | -1.187E-02          | 4.335E-01 | 7.057E-01      | 3.853E-02 | -0.017  |
|         |           | 216.55       |              | 5.517E-02           | 3.239E-01 | 5.258E-01      | 3.015E-02 | 0.105   |
|         |           | 252.85       | *            | -6.978E-02          | 2.780E-01 | 4.395E-01      | 2.596E-02 | -0.159  |
|         |           | 318.01       |              | 2.219E-01           | 5.268E-01 | 8.931E-01      | 5.310E-02 | 0.248   |
|         |           | 792.07       |              | 1.172E+00           | 1.317E+00 | 2.080E+00      | 1.283E-01 | 0.563   |
| OS-185  |           | 903.28       |              | 1.542E-02           | 1.302E+00 | 1.946E+00      | 1.410E-01 | 0.008   |
|         |           | 920.93       |              | -3.741E-01          | 4.553E-01 | 6.912E-01      | 4.980E-02 | -0.541  |
|         |           | 59.72        |              | 4.621E-01           | 4.401E-01 | 6.751E-01      | 6.195E-02 | 0.685   |
|         |           | 61.14        |              | 4.131E-01           | 2.495E-01 | 3.876E-01      | 3.527E-02 | 1.066   |
|         |           | 69.30        |              | -1.927E-01          | 4.185E-01 | 6.012E-01      | 5.366E-02 | -0.320  |
|         |           | 592.07       |              | 8.483E-01           | 2.791E+00 | 4.653E+00      | 2.482E-01 | 0.182   |
|         |           | 646.12       | *            | 1.997E-02           | 5.200E-02 | 8.672E-02      | 4.372E-03 | 0.230   |
|         |           | 717.42       |              | -4.811E-01          | 1.029E+00 | 1.589E+00      | 8.661E-02 | -0.303  |
|         |           | 874.81       |              | 1.093E-01           | 7.334E-01 | 1.237E+00      | 8.678E-02 | 0.088   |
|         |           | 880.27       |              | 4.271E-01           | 9.628E-01 | 1.659E+00      | 1.173E-01 | 0.257   |
| RE-188  |           | 155.03       | *            | 2.921E-02           | 2.124E-01 | 3.483E-01      | 1.929E-02 | 0.084   |
|         |           | 477.96       |              | 9.579E-01           | 3.607E+00 | 6.040E+00      | 3.400E-01 | 0.159   |
| W-188   | +         | 633.10       |              | 1.460E-01           | 3.166E+00 | 5.157E+00      | 2.641E-01 | 0.028   |
|         |           | 63.58        |              | 1.380E+02           | 1.012E+02 | 1.211E+02      | 1.090E+01 | 1.139   |
| IR-192  | +         | 227.08       |              | 4.673E+00           | 1.589E+01 | 2.587E+01      | 1.499E+00 | 0.181   |
|         |           | 290.67       | *            | -6.921E+00          | 9.611E+00 | 1.341E+01      | 8.011E-01 | -0.516  |
| AU-195  | +         | 295.96       |              | 1.211E+00           | 1.877E-01 | 3.222E-01      | 1.954E-02 | 3.758   |
|         |           | 308.46       |              | 2.515E-02           | 1.096E-01 | 1.861E-01      | 1.122E-02 | 0.135   |
|         |           | 316.51       | *            | 2.035E-02           | 3.951E-02 | 6.792E-02      | 4.060E-03 | 0.300   |
|         |           | 468.07       |              | 6.856E-03           | 8.625E-02 | 1.241E-01      | 8.121E-03 | 0.055   |
|         |           | 604.41       |              | 1.776E-02           | 6.255E-01 | 8.815E-01      | 9.777E-02 | 0.020   |
|         |           | 612.46       |              | 1.580E+00           | 9.548E-01 | 1.541E+00      | 1.102E-01 | 1.025   |
| TL-200  |           | 65.12        |              | 1.419E-01           | 2.451E-01 | 3.682E-01      | 3.299E-02 | 0.385   |
|         |           | 66.83        |              | -5.750E-03          | 1.419E-01 | 1.944E-01      | 1.736E-02 | -0.030  |
|         | +         | 75.70        |              | 1.577E+00           | 3.404E-01 | 5.803E-01      | 5.263E-02 | 2.718   |
| TL-201  |           | 98.88        | *            | 4.243E-02           | 2.903E-01 | 4.477E-01      | 3.660E-02 | 0.095   |
|         | +         | 129.76       |              | 6.314E+00           | 4.033E+00 | 5.870E+00      | 3.475E-01 | 1.076   |
|         |           | 367.94       | *            | -2.228E-05          | 4.033E+00 | Half-Life      | too short |         |
|         |           | 579.30       |              | 1.317E-03           | 4.033E+00 | Half-Life      | too short |         |
| TL-202  |           | 828.27       |              | 4.900E-04           | 4.033E+00 | Half-Life      | too short |         |
|         |           | 1205.75      |              | -1.445E-03          | 4.033E+00 | Half-Life      | too short |         |
|         |           | 68.90        |              | -4.850E+00          | 7.052E+00 | 9.344E+00      | 8.337E-01 | -0.519  |
|         |           | 70.82        |              | 2.273E+00           | 3.649E+00 | 5.465E+00      | 4.885E-01 | 0.416   |
| TL-202  |           | 80.30        |              | -1.068E+01          | 6.904E+00 | 9.384E+00      | 8.727E-01 | -1.138  |
|         |           | 135.34       |              | -8.386E+00          | 3.015E+01 | 4.894E+01      | 2.847E+00 | -0.171  |
|         |           | 167.43       | *            | -3.781E+00          | 8.289E+00 | 1.325E+01      | 7.173E-01 | -0.285  |
|         |           | 68.90        |              | -4.457E-01          | 6.482E-01 | 8.588E-01      | 7.662E-02 | -0.519  |
| TL-202  |           | 70.82        |              | 2.083E-01           | 3.345E-01 | 5.009E-01      | 4.477E-02 | 0.416   |
|         |           | 80.30        |              | -9.788E-01          | 6.330E-01 | 8.603E-01      | 8.001E-02 | -1.138  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| HG-203  | 439.56    | *            |     | -3.029E-02          | 8.449E-02 | 1.367E-01      | 7.692E-03 | -0.222  |
|         | 70.83     |              |     | 9.208E-01           | 1.461E+00 | 2.183E+00      | 3.015E-01 | 0.422   |
|         | 72.87     |              |     | 3.786E+00           | 9.559E-01 | 1.493E+00      | 2.006E-01 | 2.536   |
|         | 82.60     |              |     | 4.687E-01           | 1.808E+00 | 2.263E+00      | 3.231E-01 | 0.207   |
| BI-207  | 279.20    | *            |     | 1.021E-02           | 4.923E-02 | 8.227E-02      | 5.196E-03 | 0.124   |
|         | 72.80     |              |     | 1.066E+00           | 2.530E-01 | 4.333E-01      | 3.890E-02 | 2.459   |
|         | 74.97     |              | +   | 8.754E-01           | 1.889E-01 | 2.966E-01      | 2.682E-02 | 2.951   |
|         | 84.90     |              |     | 6.298E-01           | 2.687E-01 | 4.164E-01      | 4.005E-02 | 1.513   |
| TL-207  | 569.67    |              |     | 1.019E-02           | 3.739E-02 | 6.129E-02      | 3.327E-03 | 0.166   |
|         | 1063.62   | *            |     | -8.874E-03          | 6.075E-02 | 9.879E-02      | 6.550E-03 | -0.090  |
|         | 1770.23   |              |     | 2.873E-01           | 5.022E-01 | 8.288E-01      | 4.841E-02 | 0.347   |
|         | 81.07     |              |     | -6.090E-01          | 3.126E-01 | 4.147E-01      | 3.877E-02 | -1.468  |
|         | 83.78     |              |     | 2.030E-01           | 1.706E-01 | 2.593E-01      | 2.472E-02 | 0.783   |
|         | 94.90     |              |     | 5.762E-01           | 3.173E-01 | 4.904E-01      | 4.269E-02 | 1.175   |
|         | 122.32    |              |     | 6.329E-01           | 2.158E+00 | 3.583E+00      | 2.491E-01 | 0.177   |
|         | 144.24    |              |     | 7.362E-01           | 8.389E-01 | 1.395E+00      | 9.954E-02 | 0.528   |
|         | 154.21    |              |     | 4.971E-01           | 4.843E-01 | 8.170E-01      | 5.560E-02 | 0.608   |
|         | 269.46    |              | +   | 7.872E-01           | 3.521E-01 | 4.373E-01      | 2.714E-02 | 1.800   |
|         | 323.87    | *            |     | -4.765E-01          | 8.613E-01 | 1.201E+00      | 1.989E-01 | -0.397  |
|         | 338.28    |              | +   | 6.701E+00           | 1.998E+00 | 2.854E+00      | 3.019E-01 | 2.348   |
| PO-209  | 445.03    |              |     | 2.991E+00           | 2.731E+00 | 4.775E+00      | 4.859E-01 | 0.626   |
|         | 260.50    |              |     | 1.867E+00           | 1.186E+01 | 1.911E+01      | 1.133E+00 | 0.098   |
|         | 262.80    |              |     | 1.495E+01           | 3.592E+01 | 5.426E+01      | 3.221E+00 | 0.275   |
|         | 896.60    | *            |     | 2.261E-01           | 8.862E+00 | 1.479E+01      | 1.072E+00 | 0.015   |
| BI-210  | 46.50     | *            |     | 8.307E-02           | 5.355E+00 | 8.900E+00      | 7.328E-01 | 0.009   |
| PB-210  | 46.50     | *            |     | 8.307E-02           | 5.355E+00 | 8.900E+00      | 7.328E-01 | 0.009   |
| PO-210  | 46.50     | *            |     | 8.307E-02           | 5.355E+00 | 8.900E+00      | 6.429E-01 | 0.009   |
| PB-211  | 404.84    | *            |     | -1.299E+00          | 1.391E+00 | 1.757E+00      | 1.095E+00 | -0.740  |
|         | 427.08    |              |     | 3.160E+00           | 3.191E+00 | 4.465E+00      | 2.759E+00 | 0.708   |
|         | 831.96    |              |     | -6.382E-01          | 1.457E+00 | 2.260E+00      | 1.410E+00 | -0.282  |
|         | 727.18    | *            | +   | 1.234E+00           | 5.058E-01 | 7.719E-01      | 5.805E-02 | 1.598   |
|         | 785.46    |              |     | 2.736E+00           | 2.077E+00 | 3.790E+00      | 2.314E-01 | 0.722   |
| PO-215  | 1620.62   |              |     | 9.298E-01           | 1.280E+00 | 2.368E+00      | 1.452E-01 | 0.393   |
|         | 81.07     |              |     | -6.090E-01          | 3.126E-01 | 4.147E-01      | 3.877E-02 | -1.468  |
|         | 83.78     |              |     | 2.030E-01           | 1.706E-01 | 2.593E-01      | 2.472E-02 | 0.783   |
|         | 94.90     |              |     | 5.762E-01           | 3.173E-01 | 4.904E-01      | 4.269E-02 | 1.175   |
|         | 122.32    |              |     | 6.329E-01           | 2.158E+00 | 3.583E+00      | 2.491E-01 | 0.177   |
|         | 144.24    |              |     | 7.362E-01           | 8.389E-01 | 1.395E+00      | 9.954E-02 | 0.528   |
|         | 154.21    |              |     | 4.971E-01           | 4.843E-01 | 8.170E-01      | 5.560E-02 | 0.608   |
|         | 269.46    |              | +   | 7.872E-01           | 3.521E-01 | 4.373E-01      | 2.714E-02 | 1.800   |
|         | 323.87    | *            |     | -4.765E-01          | 8.613E-01 | 1.201E+00      | 1.989E-01 | -0.397  |
|         | 338.28    |              | +   | 6.701E+00           | 1.998E+00 | 2.854E+00      | 3.019E-01 | 2.348   |
|         | 445.03    |              |     | 2.991E+00           | 2.731E+00 | 4.775E+00      | 4.859E-01 | 0.626   |
|         | 271.23    |              |     | 6.270E-01           | 3.645E-01 | 5.470E-01      | 4.494E-02 | 1.146   |
| RN-219  | 401.81    | *            |     | -3.470E-02          | 4.850E-01 | 8.020E-01      | 1.083E-01 | -0.043  |
| RN-220  | 549.76    | *            |     | 4.766E+00           | 3.097E+01 | 5.118E+01      | 2.813E+00 | 0.093   |
| RA-223  | 81.07     |              |     | -6.090E-01          | 3.126E-01 | 4.147E-01      | 3.877E-02 | -1.468  |
|         | 83.78     |              |     | 2.030E-01           | 1.706E-01 | 2.593E-01      | 2.472E-02 | 0.783   |
|         | 94.90     |              |     | 5.762E-01           | 3.173E-01 | 4.904E-01      | 4.269E-02 | 1.175   |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| AC-227  |           | 122.32       |     | 6.329E-01           | 2.158E+00 | 3.583E+00      | 2.491E-01 | 0.177   |
|         |           | 144.24       |     | 7.362E-01           | 8.389E-01 | 1.395E+00      | 9.954E-02 | 0.528   |
|         |           | 154.21       |     | 4.971E-01           | 4.843E-01 | 8.170E-01      | 5.560E-02 | 0.608   |
|         | +         | 269.46       |     | 7.872E-01           | 3.521E-01 | 4.373E-01      | 2.714E-02 | 1.800   |
|         |           | 323.87       | *   | -4.765E-01          | 8.613E-01 | 1.201E+00      | 1.989E-01 | -0.397  |
|         | +         | 338.28       |     | 6.701E+00           | 1.998E+00 | 2.854E+00      | 3.019E-01 | 2.348   |
|         |           | 445.03       |     | 2.991E+00           | 2.731E+00 | 4.775E+00      | 4.859E-01 | 0.626   |
|         |           | 79.80        |     | -1.471E+00          | 2.266E+00 | 3.198E+00      | 6.962E-01 | -0.460  |
|         |           | 236.00       |     | 2.629E+00           | 4.729E-01 | 6.937E-01      | 7.266E-02 | 3.789   |
|         |           | 256.20       | *   | 7.796E-02           | 4.456E-01 | 7.193E-01      | 1.008E-01 | 0.108   |
|         |           | 286.10       |     | 1.728E+00           | 1.759E+00 | 3.073E+00      | 3.580E-01 | 0.562   |
|         | +         | 299.80       |     | 4.940E+00           | 2.422E+00 | 3.011E+00      | 4.923E-01 | 1.640   |
| TH-227  |           | 304.40       |     | 1.206E+00           | 2.486E+00 | 3.682E+00      | 6.391E-01 | 0.327   |
|         |           | 334.20       |     | 5.260E-01           | 3.503E+00 | 4.527E+00      | 8.314E-01 | 0.116   |
|         |           | 79.80        |     | -1.471E+00          | 2.266E+00 | 3.198E+00      | 7.049E-01 | -0.460  |
|         | +         | 94.00        |     | 8.464E+00           | 5.176E+00 | 4.808E+00      | 1.051E+00 | 1.760   |
|         |           | 236.00       |     | 2.629E+00           | 4.526E-01 | 6.937E-01      | 6.300E-02 | 3.789   |
|         |           | 256.20       | *   | 7.796E-02           | 4.457E-01 | 7.193E-01      | 1.219E-01 | 0.108   |
|         |           | 286.10       |     | 1.728E+00           | 2.460E+00 | 3.073E+00      | 3.079E+00 | 0.562   |
|         | +         | 299.80       |     | 4.940E+00           | 2.422E+00 | 3.011E+00      | 4.923E-01 | 1.640   |
|         |           | 304.40       |     | 1.206E+00           | 2.486E+00 | 3.682E+00      | 6.391E-01 | 0.327   |
|         |           | 334.20       |     | 5.260E-01           | 3.503E+00 | 4.527E+00      | 8.314E-01 | 0.116   |
|         |           | 85.43        |     | 8.991E-01           | 2.793E-01 | 4.337E-01      | 4.190E-02 | 2.073   |
|         | +         | 88.47        |     | 5.140E-01           | 1.662E-01 | 2.673E-01      | 2.616E-02 | 1.923   |
| TH-229  |           | 100.00       |     | 7.277E-02           | 2.189E-01 | 3.659E-01      | 2.942E-02 | 0.199   |
|         |           | 193.63       | *   | -2.465E-02          | 6.118E-01 | 9.887E-01      | 5.524E-02 | -0.025  |
|         |           | 210.97       |     | 1.897E+00           | 1.066E+00 | 1.637E+00      | 9.332E-02 | 1.159   |
|         |           | 283.67       | *   | -7.453E-01          | 1.793E+00 | 2.962E+00      | 4.103E-01 | -0.252  |
|         | +         | 301.29       |     | 1.976E+00           | 9.368E-01 | 1.245E+00      | 1.313E-01 | 1.587   |
|         |           | 81.07        |     | -6.090E-01          | 3.126E-01 | 4.147E-01      | 3.877E-02 | -1.468  |
|         |           | 83.78        |     | 2.030E-01           | 1.706E-01 | 2.593E-01      | 2.472E-02 | 0.783   |
|         |           | 94.90        |     | 5.762E-01           | 3.173E-01 | 4.904E-01      | 4.269E-02 | 1.175   |
|         |           | 122.32       |     | 6.329E-01           | 2.158E+00 | 3.583E+00      | 2.491E-01 | 0.177   |
|         |           | 144.24       |     | 7.362E-01           | 8.389E-01 | 1.395E+00      | 9.954E-02 | 0.528   |
|         |           | 154.21       |     | 4.971E-01           | 4.843E-01 | 8.170E-01      | 5.560E-02 | 0.608   |
|         | +         | 269.46       |     | 7.872E-01           | 3.521E-01 | 4.373E-01      | 2.714E-02 | 1.800   |
| U-231   |           | 323.87       | *   | -4.765E-01          | 8.613E-01 | 1.201E+00      | 1.989E-01 | -0.397  |
|         | +         | 338.28       |     | 6.701E+00           | 1.998E+00 | 2.854E+00      | 3.019E-01 | 2.348   |
|         |           | 445.03       |     | 2.991E+00           | 2.731E+00 | 4.775E+00      | 4.859E-01 | 0.626   |
|         |           | 84.21        |     | 1.031E+01           | 7.156E+00 | 1.094E+01      | 1.047E+00 | 0.942   |
|         | +         | 92.29        |     | 8.185E+00           | 4.731E+00 | 5.095E+00      | 4.639E-01 | 1.607   |
|         |           | 95.87        | *   | 1.300E+00           | 1.367E+00 | 2.068E+00      | 1.772E-01 | 0.628   |
|         |           | 108.00       |     | -3.588E+00          | 2.469E+00 | 3.854E+00      | 2.777E-01 | -0.931  |
|         | +         | 75.28        |     | 2.555E+01           | 6.397E+00 | 9.141E+00      | 1.426E+00 | 2.795   |
|         | +         | 86.59        |     | 7.371E+00           | 3.031E+00 | 3.753E+00      | 1.021E+00 | 1.964   |
|         | +         | 300.12       |     | 1.377E+00           | 6.632E-01 | 8.513E-01      | 1.150E-01 | 1.618   |
|         |           | 311.98       | *   | -1.043E-02          | 7.360E-02 | 1.227E-01      | 7.739E-03 | -0.085  |
|         |           | 340.50       |     | 1.665E+00           | 9.599E-01 | 1.425E+00      | 3.276E-01 | 1.169   |
| PA-233  |           | 398.62       |     | 5.130E-01           | 2.405E+00 | 4.037E+00      | 1.042E+00 | 0.127   |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PA-234  | +         | 415.76       |     | -1.324E+00          | 2.035E+00 | 3.220E+00      | 6.610E-01 | -0.411  |
|         | +         | 63.00        |     | 4.007E+00           | 2.984E+00 | 3.698E+00      | 5.817E-01 | 1.084   |
|         | +         | 94.67        |     | 7.547E-01           | 4.414E-01 | 3.678E-01      | 4.592E-02 | 2.052   |
|         |           | 98.44        |     | 2.050E-02           | 1.236E-01 | 1.804E-01      | 1.005E-01 | 0.114   |
|         |           | 99.86        |     | 2.213E-01           | 5.556E-01 | 9.308E-01      | 7.498E-02 | 0.238   |
|         |           | 111.00       |     | 1.516E-01           | 2.215E-01 | 3.726E-01      | 4.082E-02 | 0.407   |
|         |           | 131.20       |     | 8.250E-02           | 1.429E-01 | 2.112E-01      | 1.244E-02 | 0.391   |
|         |           | 152.70       |     | 6.728E-01           | 4.111E-01 | 6.864E-01      | 1.079E-01 | 0.980   |
|         | +         | 186.00       |     | 8.642E+00           | 3.925E+00 | 3.107E+00      | 9.478E-01 | 2.781   |
|         |           | 226.40       |     | -5.382E-02          | 5.087E-01 | 8.147E-01      | 9.415E-02 | -0.066  |
|         |           | 227.20       |     | 1.481E-01           | 5.370E-01 | 8.738E-01      | 5.063E-02 | 0.170   |
|         |           | 248.90       |     | 2.020E-01           | 1.070E+00 | 1.598E+00      | 3.437E-01 | 0.126   |
|         | +         | 293.70       |     | 7.631E+00           | 1.644E+00 | 2.025E+00      | 3.269E-01 | 3.769   |
|         |           | 369.80       |     | 4.861E-01           | 9.888E-01 | 1.683E+00      | 3.501E-01 | 0.289   |
|         |           | 568.70       |     | 5.982E-01           | 1.227E+00 | 2.040E+00      | 1.108E-01 | 0.293   |
|         |           | 569.50       |     | 1.129E-01           | 3.333E-01 | 5.488E-01      | 2.979E-02 | 0.206   |
|         |           | 574.00       |     | -1.164E-01          | 1.829E+00 | 2.970E+00      | 1.607E-01 | -0.039  |
|         |           | 699.00       |     | -3.170E-01          | 8.450E-01 | 1.320E+00      | 2.352E-01 | -0.240  |
|         |           | 706.10       |     | -8.782E-02          | 1.166E+00 | 1.867E+00      | 8.228E-01 | -0.047  |
|         |           | 733.00       |     | 2.479E-01           | 5.020E-01 | 7.336E-01      | 1.556E-01 | 0.338   |
|         |           | 742.81       |     | 1.010E+00           | 1.760E+00 | 2.747E+00      | 1.838E+00 | 0.368   |
|         | +         | 796.30       |     | 2.245E+00           | 1.880E+00 | 2.057E+00      | 5.428E-01 | 1.091   |
|         |           | 805.60       |     | 3.362E-01           | 1.079E+00 | 1.845E+00      | 5.550E-01 | 0.182   |
|         |           | 819.60       |     | -9.611E-01          | 1.427E+00 | 2.174E+00      | 8.172E-01 | -0.442  |
|         |           | 826.30       |     | 5.136E-01           | 1.017E+00 | 1.722E+00      | 7.643E-01 | 0.298   |
|         |           | 831.60       |     | -4.784E-01          | 7.530E-01 | 1.175E+00      | 3.445E-01 | -0.407  |
|         |           | 876.40       |     | -2.501E-01          | 1.085E+00 | 1.725E+00      | 1.772E+00 | -0.145  |
|         |           | 880.51       |     | 1.641E-01           | 3.470E-01 | 5.994E-01      | 4.241E-02 | 0.274   |
|         |           | 883.24       |     | 1.334E-02           | 3.396E-01 | 5.676E-01      | 3.806E-01 | 0.024   |
|         |           | 899.00       |     | -4.788E-01          | 1.007E+00 | 1.573E+00      | 6.836E-01 | -0.304  |
|         |           | 925.00       |     | -2.662E-01          | 1.270E+00 | 1.907E+00      | 1.372E-01 | -0.140  |
|         |           | 926.50       |     | 2.438E-01           | 1.934E-01 | 3.149E-01      | 7.819E-02 | 0.774   |
|         |           | 946.00       | *   | 1.556E-01           | 3.424E-01 | 5.889E-01      | 1.068E-01 | 0.264   |
|         |           | 949.00       |     | 2.701E-01           | 4.995E-01 | 8.676E-01      | 6.180E-02 | 0.311   |
|         |           | 980.50       |     | 1.917E-01           | 8.938E-01 | 1.507E+00      | 1.057E-01 | 0.127   |
|         |           | 1394.10      |     | -8.092E-02          | 1.237E+00 | 1.982E+00      | 1.285E+00 | -0.041  |
| PA-234M |           | 766.42       |     | 1.685E+01           | 1.677E+01 | 2.514E+01      | 1.266E+01 | 0.670   |
|         |           | 1001.03      | *   | 3.548E+00           | 5.818E+00 | 9.984E+00      | 8.533E-01 | 0.355   |
| U-235   |           | 89.95        |     | -2.499E+00          | 2.536E+00 | 2.385E+00      | 7.423E-01 | -1.048  |
|         | +         | 93.35        |     | 2.633E+00           | 1.676E+00 | 1.606E+00      | 4.518E-01 | 1.639   |
|         |           | 105.00       |     | 8.905E-01           | 1.308E+00 | 2.165E+00      | 6.394E-01 | 0.411   |
|         |           | 143.76       | *   | 2.430E-01           | 2.612E-01 | 4.311E-01      | 7.012E-02 | 0.564   |
|         |           | 163.35       |     | 8.383E-01           | 5.970E-01 | 9.901E-01      | 1.769E-01 | 0.847   |
|         | +         | 185.71       |     | 3.201E-01           | 1.092E-01 | 1.153E-01      | 6.380E-03 | 2.776   |
|         |           | 205.31       |     | -1.709E-01          | 7.598E-01 | 1.058E+00      | 1.898E-01 | -0.162  |
| NP-236  | +         | 94.67        |     | 5.724E-01           | 3.308E-01 | 2.793E-01      | 2.441E-02 | 2.049   |
|         |           | 98.44        |     | 1.548E-02           | 9.307E-02 | 1.363E-01      | 1.122E-02 | 0.114   |
|         |           | 111.00       |     | 1.147E-01           | 1.673E-01 | 2.819E-01      | 1.956E-02 | 0.407   |
|         |           | 160.31       | *   | -4.305E-02          | 9.778E-02 | 1.567E-01      | 8.576E-03 | -0.275  |



---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| NP-239  |           | 99.55        |     | 1.557E-01           | 1.902E-01 | 3.125E-01      | 2.529E-02 | 0.498   |
|         |           | 117.00       | *   | -2.149E-02          | 2.311E-01 | 3.793E-01      | 2.450E-02 | -0.057  |
|         | +         | 209.75       |     | 1.946E+00           | 1.427E+00 | 1.713E+00      | 9.755E-02 | 1.136   |
|         |           | 228.18       |     | 4.569E-03           | 2.811E-01 | 4.524E-01      | 2.624E-02 | 0.010   |
|         |           | 277.60       |     | 1.157E-01           | 2.289E-01 | 3.687E-01      | 2.199E-02 | 0.314   |
|         |           | 334.30       |     | 2.903E-01           | 1.984E+00 | 2.564E+00      | 1.512E-01 | 0.113   |
| AM-241  |           | 59.54        | *   | 1.901E-01           | 2.319E-01 | 3.530E-01      | 3.451E-02 | 0.538   |
| CM-243  |           | 99.55        |     | 1.602E-01           | 1.957E-01 | 3.216E-01      | 2.603E-02 | 0.498   |
|         |           | 103.76       | *   | 1.009E-01           | 1.179E-01 | 1.999E-01      | 1.523E-02 | 0.505   |
|         |           | 117.00       |     | -2.211E-02          | 2.377E-01 | 3.902E-01      | 2.521E-02 | -0.057  |
|         | +         | 209.75       |     | 1.918E+00           | 1.406E+00 | 1.689E+00      | 9.616E-02 | 1.136   |
|         |           | 228.18       |     | 4.617E-03           | 2.841E-01 | 4.572E-01      | 2.651E-02 | 0.010   |
|         |           | 277.60       |     | 1.166E-01           | 2.308E-01 | 3.717E-01      | 2.217E-02 | 0.314   |
| AM-246  |           | 798.80       |     | -1.010E-01          | 1.701E-01 | 2.274E-01      | 1.418E-02 | -0.444  |
|         |           | 1036.00      |     | -4.905E-02          | 3.390E-01 | 5.521E-01      | 3.740E-02 | -0.089  |
|         |           | 1062.04      |     | -1.071E-01          | 2.681E-01 | 4.255E-01      | 2.825E-02 | -0.252  |
|         |           | 1078.86      | *   | 2.579E-02           | 1.720E-01 | 2.870E-01      | 1.879E-02 | 0.090   |
| CM-247  |           | 278.00       |     | 6.362E-01           | 8.940E-01 | 1.524E+00      | 9.091E-02 | 0.417   |
|         |           | 287.40       |     | -9.761E-02          | 1.408E+00 | 2.365E+00      | 1.412E-01 | -0.041  |
|         |           | 402.60       | *   | 1.436E-02           | 4.215E-02 | 7.133E-02      | 3.974E-03 | 0.201   |
| CF-249  |           | 252.85       |     | -2.620E-01          | 1.044E+00 | 1.650E+00      | 9.746E-02 | -0.159  |
|         |           | 333.44       |     | 1.540E-02           | 3.384E-01 | 3.333E-01      | 1.967E-02 | 0.046   |
|         |           | 387.95       | *   | 1.122E-02           | 4.932E-02 | 8.298E-02      | 4.628E-03 | 0.135   |
| CF-251  |           | 176.60       | *   | -1.003E-01          | 1.566E-01 | 2.480E-01      | 1.357E-02 | -0.404  |
|         |           | 227.00       |     | 6.494E-02           | 4.810E-01 | 7.781E-01      | 4.508E-02 | 0.083   |
|         |           | 285.00       |     | 9.593E-01           | 1.988E+00 | 3.421E+00      | 2.043E-01 | 0.280   |

## VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630004      *
* Acquisition date   : 23-JAN-2010 11:46:07 Detector SN#                   *
* Detector ID        : GAM06 Sensitivity : 5.000                          *
* Geometry           : CAN Energy tolerance: 1.500                        *
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000             *
* Elapsed real time  : 0 02:00:01.52 Half life ratio : 8.000              *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G244630004 Analyst initials: MXR1                 *
* Batch Number       : 941639 Sample Quantity : 1.4065E+02 GRAM          *
* Recovery           : 1.00000 Carrier Weight : 0.00000                  *
*****
*                                     QC DATA                               *
*
* Standard Weight    : 0.00000                                             *
* CALIB. DATE/TIME   : 4-FEB-2009 13:05:54 MS Isotope :                   *
* MSD DPM             : 0.000 MSD Isotope :                               *
* LCS DPM             : 0.000 LCS Isotope :                               *
* LCSD DPM            : 0.000 LCSD Isotope :                               *
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act error | MDA<br>(pCi/GRAM ) |           |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 2.971E+01               | 2.655E+00 | 6.770E-01          | 0.000E+00 |
| CD-109  | 3.830E+00               | 1.214E+00 | 2.084E+00          | 0.000E+00 |
| SN-126  | 3.765E-01               | 1.193E-01 | 1.920E-01          | 0.000E+00 |
| CS-135  | 6.691E-01               | 2.949E-01 | 3.193E-01          | 0.000E+00 |
| BA-137M | 4.565E-01               | 9.156E-02 | 6.829E-02          | 0.000E+00 |
| CS-137  | 4.826E-01               | 9.682E-02 | 7.219E-02          | 0.000E+00 |
| TL-208  | 6.229E-01               | 1.006E-01 | 7.185E-02          | 0.000E+00 |
| BI-211  | 4.351E+00               | 5.680E-01 | 4.287E-01          | 0.000E+00 |
| PB-212  | 2.013E+00               | 1.907E-01 | 1.094E-01          | 0.000E+00 |
| PO-212  | 2.013E+00               | 1.907E-01 | 1.094E-01          | 0.000E+00 |
| BI-214  | 1.409E+00               | 2.212E-01 | 1.299E-01          | 0.000E+00 |
| PB-214  | 1.514E+00               | 2.122E-01 | 1.391E-01          | 0.000E+00 |
| PO-214  | 1.514E+00               | 2.122E-01 | 1.391E-01          | 0.000E+00 |
| PO-216  | 2.013E+00               | 1.907E-01 | 1.094E-01          | 0.000E+00 |
| PO-218  | 1.514E+00               | 2.122E-01 | 1.391E-01          | 0.000E+00 |
| RA-224  | 4.739E+00               | 1.373E+00 | 1.245E+00          | 0.000E+00 |
| RA-226  | 1.409E+00               | 2.212E-01 | 1.299E-01          | 0.000E+00 |
| AC-228  | 1.840E+00               | 3.541E-01 | 2.503E-01          | 0.000E+00 |
| RA-228  | 1.840E+00               | 3.541E-01 | 2.503E-01          | 0.000E+00 |
| TH-228  | 2.043E+00               | 1.935E-01 | 1.111E-01          | 0.000E+00 |
| TH-230  | 1.408E+00               | 2.212E-01 | 1.299E-01          | 0.000E+00 |
| TH-232  | 1.840E+00               | 3.541E-01 | 2.503E-01          | 0.000E+00 |
| TH-234  | 3.438E+00               | 2.528E+00 | 3.020E+00          | 0.000E+00 |
| U-234   | 1.408E+00               | 2.212E-01 | 1.299E-01          | 0.000E+00 |
| NP-237  | 1.106E+00               | 4.156E-01 | 5.649E-01          | 0.000E+00 |
| U-238   | 3.438E+00               | 2.528E+00 | 3.020E+00          | 0.000E+00 |
| AM-243  | 4.877E-01               | 1.031E-01 | 1.139E-01          | 0.000E+00 |
| ANH-511 | 1.308E-01               | 8.106E-02 | 5.522E-02          | 0.000E+00 |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L. Act error<br>) Ided | MDA<br>(pCi/GRAM ) |
|---------|-------------------------------------|--------------------------|--------------------|
|---------|-------------------------------------|--------------------------|--------------------|

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| BE-7    | 2.413E-01  | 3.625E-01 | 6.519E-01 | 0.000E+00 | NOT IDENT. |
| NA-22   | -7.734E-04 | 4.975E-02 | 8.317E-02 | 0.000E+00 | NOT IDENT. |
| NA-24   | 0.000E+00  | 6.818E+05 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| AL-26   | -5.497E-03 | 2.796E-02 | 4.511E-02 | 0.000E+00 | NOT IDENT. |
| TI-44   | 0.000E+00  | 7.199E-02 | 1.012E-01 | 0.000E+00 | FAIL ABUN  |
| SC-46   | -9.906E-03 | 4.518E-02 | 7.653E-02 | 0.000E+00 | FAIL ABUN  |
| V-48    | -3.482E-02 | 8.476E-02 | 1.400E-01 | 0.000E+00 | NOT IDENT. |
| CR-51   | 5.008E-02  | 4.292E-01 | 7.583E-01 | 0.000E+00 | NOT IDENT. |
| MN-52   | 1.015E-01  | 2.386E-01 | 4.199E-01 | 0.000E+00 | NOT IDENT. |
| MN-54   | 6.301E-04  | 4.365E-02 | 7.575E-02 | 0.000E+00 | NOT IDENT. |
| CO-56   | 9.265E-03  | 3.945E-02 | 6.973E-02 | 0.000E+00 | NOT IDENT. |
| CO-57   | 1.780E-02  | 3.059E-02 | 5.525E-02 | 0.000E+00 | NOT IDENT. |
| CO-58   | -3.800E-02 | 4.021E-02 | 6.388E-02 | 0.000E+00 | NOT IDENT. |
| FE-59   | -1.211E-01 | 1.104E-01 | 1.683E-01 | 0.000E+00 | NOT IDENT. |
| CO-60   | 2.058E-05  | 4.602E-02 | 7.629E-02 | 0.000E+00 | NOT IDENT. |
| ZN-65   | -6.894E-02 | 1.264E-01 | 1.714E-01 | 0.000E+00 | NOT IDENT. |
| GE-68   | -9.055E-01 | 1.470E+00 | 2.356E+00 | 0.000E+00 | NOT IDENT. |
| AS-73   | 7.838E-01  | 1.167E+00 | 2.187E+00 | 0.000E+00 | NOT IDENT. |
| AS-74   | -6.324E-02 | 1.024E-01 | 1.659E-01 | 0.000E+00 | NOT IDENT. |
| SE-75   | -9.107E-03 | 6.154E-02 | 9.010E-02 | 0.000E+00 | NOT IDENT. |
| BR-77   | -2.476E-01 | 1.125E+01 | 1.928E+01 | 0.000E+00 | FAIL ABUN  |
| SR-82   | -2.378E-01 | 4.226E-01 | 7.048E-01 | 0.000E+00 | NOT IDENT. |
| RB-83   | -4.344E-03 | 7.688E-02 | 1.315E-01 | 0.000E+00 | NOT IDENT. |
| RB-84   | 9.386E-02  | 8.199E-02 | 1.535E-01 | 0.000E+00 | NOT IDENT. |
| KR-85   | 0.000E+00  | 9.328E+00 | 1.584E+01 | 0.000E+00 | NOT IDENT. |
| SR-85   | 0.000E+00  | 4.776E-02 | 8.112E-02 | 0.000E+00 | NOT IDENT. |
| RB-86   | -5.970E-02 | 9.129E-01 | 1.542E+00 | 0.000E+00 | NOT IDENT. |
| Y-88    | 1.660E-02  | 3.601E-02 | 6.570E-02 | 0.000E+00 | NOT IDENT. |
| ZR-88   | -2.099E-03 | 3.536E-02 | 6.169E-02 | 0.000E+00 | NOT IDENT. |
| Y-91    | -2.648E+01 | 2.202E+01 | 3.301E+01 | 0.000E+00 | NOT IDENT. |
| NB-94   | -8.682E-05 | 3.729E-02 | 6.258E-02 | 0.000E+00 | NOT IDENT. |
| NB-95   | 5.495E-02  | 5.295E-02 | 9.462E-02 | 0.000E+00 | NOT IDENT. |
| NB-95M  | 0.000E+00  | 1.896E-01 | 3.239E-01 | 0.000E+00 | NOT IDENT. |
| ZR-95   | -1.753E-02 | 9.092E-02 | 1.495E-01 | 0.000E+00 | NOT IDENT. |
| NB-97   | 0.000E+00  | 1.230E+05 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| ZR-97   | 0.000E+00  | 2.086E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| MO-99   | -1.155E+01 | 1.315E+01 | 2.015E+01 | 0.000E+00 | NOT IDENT. |
| TC-99M  | 0.000E+00  | 3.287E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | -1.999E-02 | 4.078E-02 | 6.696E-02 | 0.000E+00 | NOT IDENT. |
| RH-102  | -9.348E-03 | 3.421E-02 | 5.811E-02 | 0.000E+00 | NOT IDENT. |
| RU-103  | -1.145E-03 | 4.421E-02 | 7.601E-02 | 0.000E+00 | FAIL ABUN  |
| RH-106  | 2.428E-01  | 3.582E-01 | 6.362E-01 | 0.000E+00 | FAIL ABUN  |
| RU-106  | 2.428E-01  | 3.574E-01 | 6.362E-01 | 0.000E+00 | FAIL ABUN  |
| AG-108M | -1.027E-02 | 4.006E-02 | 6.864E-02 | 0.000E+00 | NOT IDENT. |
| AG-110M | -2.072E-03 | 4.943E-02 | 7.164E-02 | 0.000E+00 | NOT IDENT. |
| IN-111  | 1.759E-01  | 1.357E+00 | 2.035E+00 | 0.000E+00 | NOT IDENT. |
| IN-113M | -7.032E-03 | 5.134E-02 | 8.921E-02 | 0.000E+00 | NOT IDENT. |
| SN-113  | -7.032E-03 | 5.134E-02 | 8.921E-02 | 0.000E+00 | NOT IDENT. |
| IN-114M | -9.154E-02 | 2.445E-01 | 3.623E-01 | 0.000E+00 | NOT IDENT. |
| CD-115  | 3.539E+00  | 1.125E+01 | 1.973E+01 | 0.000E+00 | NOT IDENT. |
| SN-117M | -1.558E-02 | 6.374E-02 | 1.105E-01 | 0.000E+00 | NOT IDENT. |
| SB-122  | -3.088E-01 | 2.310E+00 | 3.907E+00 | 0.000E+00 | NOT IDENT. |
| I-123   | 0.000E+00  | 5.843E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TE-123M | -3.226E-02 | 3.386E-02 | 5.706E-02 | 0.000E+00 | NOT IDENT. |
| I-124   | 1.015E-01  | 8.615E-01 | 1.279E+00 | 0.000E+00 | NOT IDENT. |
| SB-124  | 3.806E-02  | 7.720E-02 | 1.420E-01 | 0.000E+00 | FAIL ABUN  |
| SB-125  | 1.203E-01  | 1.132E-01 | 2.077E-01 | 0.000E+00 | FAIL ABUN  |
| TE-125M | -1.290E+01 | 1.106E+01 | 1.884E+01 | 0.000E+00 | NOT IDENT. |
| I-126   | -3.878E-02 | 2.371E-01 | 3.384E-01 | 0.000E+00 | NOT IDENT. |
| SB-126  | 3.338E-02  | 1.796E-01 | 2.774E-01 | 0.000E+00 | FAIL ABUN  |
| SB-127  | -5.543E-01 | 1.572E+00 | 2.569E+00 | 0.000E+00 | NOT IDENT. |
| XE-127  | 4.458E-02  | 6.255E-02 | 1.028E-01 | 0.000E+00 | NOT IDENT. |
| I-131   | -6.447E-02 | 1.322E-01 | 2.265E-01 | 0.000E+00 | NOT IDENT. |
| TE-132  | 1.293E-02  | 8.199E-01 | 1.405E+00 | 0.000E+00 | NOT IDENT. |
| BA-133  | -6.520E-03 | 5.314E-02 | 8.060E-02 | 0.000E+00 | NOT IDENT. |
| I-133   | 0.000E+00  | 6.178E+03 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-134  | 0.000E+00  | 9.025E-02 | 1.086E-01 | 0.000E+00 | FAIL ABUN  |
| I-135   | 0.000E+00  | 4.643E+15 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-136  | -4.726E-02 | 1.091E-01 | 1.774E-01 | 0.000E+00 | FAIL ABUN  |
| CE-139  | -7.947E-03 | 3.637E-02 | 6.294E-02 | 0.000E+00 | NOT IDENT. |
| BA-140  | 1.296E-02  | 3.027E-01 | 5.200E-01 | 0.000E+00 | NOT IDENT. |
| LA-140  | -2.580E-02 | 9.169E-02 | 1.244E-01 | 0.000E+00 | FAIL ABUN  |
| CE-141  | 5.209E-02  | 7.487E-02 | 1.345E-01 | 0.000E+00 | NOT IDENT. |
| CE-143  | 0.000E+00  | 3.145E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CE-144  | 1.092E-01  | 2.766E-01 | 4.353E-01 | 0.000E+00 | NOT IDENT. |
| PM-144  | 1.384E-03  | 4.120E-02 | 6.938E-02 | 0.000E+00 | NOT IDENT. |
| PR-144  | 9.381E-02  | 2.792E+00 | 4.701E+00 | 0.000E+00 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PM-146  | 5.858E-02  | 4.981E-02 | 9.196E-02 | 0.000E+00 | NOT IDENT. |
| ND-147  | -3.107E-01 | 6.284E-01 | 1.037E+00 | 0.000E+00 | NOT IDENT. |
| PM-149  | 8.790E+01  | 9.969E+01 | 1.835E+02 | 0.000E+00 | NOT IDENT. |
| EU-152  | 7.637E-03  | 1.262E-01 | 2.112E-01 | 0.000E+00 | FAIL ABUN  |
| GD-153  | 3.499E-02  | 1.033E-01 | 1.651E-01 | 0.000E+00 | NOT IDENT. |
| EU-154  | 6.654E-03  | 1.398E-01 | 2.352E-01 | 0.000E+00 | NOT IDENT. |
| EU-155  | 7.763E-02  | 1.288E-01 | 2.343E-01 | 0.000E+00 | FAIL ABUN  |
| TB-160  | 3.728E-03  | 1.696E-01 | 2.933E-01 | 0.000E+00 | FAIL ABUN  |
| HO-166M | -9.245E-04 | 6.701E-02 | 1.122E-01 | 0.000E+00 | FAIL ABUN  |
| TM-171  | -1.737E+00 | 4.211E+01 | 6.292E+01 | 0.000E+00 | NOT IDENT. |
| LU-176  | 6.675E-04  | 3.109E-02 | 5.043E-02 | 0.000E+00 | FAIL ABUN  |
| LU-177  | 0.000E+00  | 1.946E+00 | 2.453E+00 | 0.000E+00 | FAIL ABUN  |
| LU-177M | -2.658E-01 | 2.242E-01 | 3.661E-01 | 0.000E+00 | FAIL ABUN  |
| HF-181  | -4.338E-02 | 5.023E-02 | 8.181E-02 | 0.000E+00 | NOT IDENT. |
| W-181   | 2.476E-01  | 5.163E-01 | 8.431E-01 | 0.000E+00 | NOT IDENT. |
| TA-182  | -2.059E-01 | 2.517E-01 | 3.956E-01 | 0.000E+00 | FAIL ABUN  |
| RE-183  | 1.553E-02  | 1.348E-01 | 2.364E-01 | 0.000E+00 | FAIL ABUN  |
| RE-184  | -6.978E-02 | 2.724E-01 | 4.577E-01 | 0.000E+00 | NOT IDENT. |
| OS-185  | 1.997E-02  | 5.096E-02 | 8.858E-02 | 0.000E+00 | NOT IDENT. |
| RE-188  | 2.921E-02  | 2.082E-01 | 3.662E-01 | 0.000E+00 | NOT IDENT. |
| W-188   | -6.921E+00 | 9.419E+00 | 1.393E+01 | 0.000E+00 | FAIL ABUN  |
| IR-192  | 2.035E-02  | 3.872E-02 | 7.041E-02 | 0.000E+00 | FAIL ABUN  |
| AU-195  | 4.243E-02  | 2.845E-01 | 4.750E-01 | 0.000E+00 | FAIL ABUN  |
| TL-200  | 0.000E+00  | 4.745E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TL-201  | -3.781E+00 | 8.123E+00 | 1.391E+01 | 0.000E+00 | NOT IDENT. |
| TL-202  | -3.029E-02 | 8.280E-02 | 1.408E-01 | 0.000E+00 | NOT IDENT. |
| HG-203  | 1.021E-02  | 4.825E-02 | 8.550E-02 | 0.000E+00 | NOT IDENT. |
| BI-207  | -8.874E-03 | 5.953E-02 | 9.986E-02 | 0.000E+00 | FAIL ABUN  |
| TL-207  | -4.765E-01 | 8.441E-01 | 1.244E+00 | 0.000E+00 | FAIL ABUN  |
| PO-209  | 2.261E-01  | 8.685E+00 | 1.500E+01 | 0.000E+00 | NOT IDENT. |
| BI-210  | 8.307E-02  | 5.248E+00 | 9.578E+00 | 0.000E+00 | NOT IDENT. |
| PB-210  | 8.307E-02  | 5.248E+00 | 9.578E+00 | 0.000E+00 | NOT IDENT. |
| PO-210  | 8.307E-02  | 5.248E+00 | 9.578E+00 | 0.000E+00 | NOT IDENT. |
| PB-211  | -1.299E+00 | 1.363E+00 | 1.812E+00 | 0.000E+00 | NOT IDENT. |
| BI-212  | 0.000E+00  | 4.957E-01 | 7.866E-01 | 0.000E+00 | FAIL ABUN  |
| PO-215  | -4.765E-01 | 8.441E-01 | 1.244E+00 | 0.000E+00 | FAIL ABUN  |
| RN-219  | -3.470E-02 | 4.753E-01 | 8.273E-01 | 0.000E+00 | NOT IDENT. |
| RN-220  | 4.766E+00  | 3.035E+01 | 5.246E+01 | 0.000E+00 | NOT IDENT. |
| RA-223  | -4.765E-01 | 8.441E-01 | 1.244E+00 | 0.000E+00 | FAIL ABUN  |
| AC-227  | 7.796E-02  | 4.367E-01 | 7.488E-01 | 0.000E+00 | FAIL ABUN  |
| TH-227  | 7.796E-02  | 4.367E-01 | 7.488E-01 | 0.000E+00 | FAIL ABUN  |
| TH-229  | -2.465E-02 | 5.996E-01 | 1.035E+00 | 0.000E+00 | FAIL ABUN  |
| PA-231  | -7.453E-01 | 1.757E+00 | 3.077E+00 | 0.000E+00 | FAIL ABUN  |
| TH-231  | -4.765E-01 | 8.441E-01 | 1.244E+00 | 0.000E+00 | FAIL ABUN  |
| U-231   | 1.300E+00  | 1.340E+00 | 2.196E+00 | 0.000E+00 | FAIL ABUN  |
| PA-233  | -1.043E-02 | 7.212E-02 | 1.272E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234  | 1.556E-01  | 3.355E-01 | 5.968E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234M | 3.548E+00  | 5.701E+00 | 1.011E+01 | 0.000E+00 | NOT IDENT. |
| U-235   | 2.430E-01  | 2.560E-01 | 4.540E-01 | 0.000E+00 | FAIL ABUN  |
| NP-236  | -4.305E-02 | 9.582E-02 | 1.647E-01 | 0.000E+00 | FAIL ABUN  |
| NP-239  | -2.149E-02 | 2.264E-01 | 4.010E-01 | 0.000E+00 | FAIL ABUN  |
| AM-241  | 1.901E-01  | 2.272E-01 | 3.781E-01 | 0.000E+00 | NOT IDENT. |
| CM-243  | 1.009E-01  | 1.156E-01 | 2.118E-01 | 0.000E+00 | FAIL ABUN  |
| AM-246  | 2.579E-02  | 1.686E-01 | 2.900E-01 | 0.000E+00 | NOT IDENT. |
| CM-247  | 1.436E-02  | 4.131E-02 | 7.358E-02 | 0.000E+00 | NOT IDENT. |
| CF-249  | 1.122E-02  | 4.833E-02 | 8.566E-02 | 0.000E+00 | NOT IDENT. |
| CF-251  | -1.003E-01 | 1.535E-01 | 2.601E-01 | 0.000E+00 | NOT IDENT. |

VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 13:47:03.19

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630004.CNF;1
Sample date        : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 11:46:07
Sample ID          : G244630004           Sample quantity  : 1.40650E+02 GRAM
Detector name      : GAM06                Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00        Elapsed real time: 0 02:00:01.52  0.0%
Energy tolerance   : 1.50000 keV          Analyst Initials : MXR1
Abundance limit    : 75.00000             Sensitivity       : 5.00000
Batch ID           : 941639               Detector SN#      :
Matrix Spike ID    :                     LCS ID           : 1032-A
*****

```

Nuclide Line Activity Report

Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| K-40    | 1460.81 | 1143  | 10.67* | 9.625E-01 | 2.971E+01               | 2.971E+01              | 9.12              |
| CD-109  | 88.03   | 269   | 3.72*  | 5.144E+00 | 3.745E+00               | 3.830E+00              | 32.34             |
| SN-126  | 64.28   | 132   | 9.60   | 2.690E+00 | 1.361E+00               | 1.361E+00              | 74.40             |
|         | 86.94   | 269   | 8.90   | 5.144E+00 | 1.565E+00               | 1.565E+00              | 51.79             |
|         | 87.57   | 269   | 37.00* | 5.144E+00 | 3.765E-01               | 3.765E-01              | 32.34             |
| CS-135  | 268.24  | 160   | 16.00* | 3.983E+00 | 6.691E-01               | 6.691E-01              | 44.97             |
| BA-137M | 661.65  | 298   | 89.98* | 1.939E+00 | 4.561E-01               | 4.565E-01              | 20.46             |
| CS-137  | 661.65  | 298   | 85.12* | 1.939E+00 | 4.822E-01               | 4.826E-01              | 20.47             |
| TL-208  | 277.35  | ----- | 6.80   | 3.899E+00 | -----                   | Line Not Found         | -----             |
|         | 510.84  | 118   | 21.60  | 2.407E+00 | 6.058E-01               | 6.058E-01              | 63.76             |
|         | 583.14  | 424   | 84.20* | 2.158E+00 | 6.229E-01               | 6.229E-01              | 16.48             |
|         | 860.37  | 66    | 12.46  | 1.537E+00 | 9.221E-01               | 9.221E-01              | 74.21             |
| BI-211  | 72.87   | ----- | 1.27   | 3.913E+00 | -----                   | Line Not Found         | -----             |
|         | 351.07  | 684   | 12.94* | 3.242E+00 | 4.351E+00               | 4.351E+00              | 13.32             |
| PB-212  | 74.81   | 493   | 10.70  | 4.090E+00 | 3.008E+00               | 3.008E+00              | 23.52             |
|         | 77.11   | 720   | 18.00  | 4.329E+00 | 2.464E+00               | 2.464E+00              | 16.15             |
|         | 87.30   | 269   | 8.00   | 5.144E+00 | 1.741E+00               | 1.741E+00              | 33.85             |
|         | 238.63  | 1469  | 44.60* | 4.367E+00 | 2.013E+00               | 2.013E+00              | 9.67              |
|         | 300.09  | 125   | 3.41   | 3.669E+00 | 2.665E+00               | 2.665E+00              | 46.98             |
| PO-212  | 74.81   | 493   | 10.70  | 4.090E+00 | 3.008E+00               | 3.008E+00              | 23.52             |
|         | 77.11   | 720   | 18.00  | 4.329E+00 | 2.464E+00               | 2.464E+00              | 16.15             |
|         | 87.30   | 269   | 8.00   | 5.144E+00 | 1.741E+00               | 1.741E+00              | 33.85             |
|         | 115.19  | ----- | 0.60   | 6.030E+00 | -----                   | Line Not Found         | -----             |
|         | 238.63  | 1469  | 44.60* | 4.367E+00 | 2.013E+00               | 2.013E+00              | 9.67              |
|         | 300.09  | 125   | 3.41   | 3.669E+00 | 2.665E+00               | 2.665E+00              | 46.98             |
| BI-214  | 609.31  | 508   | 46.30* | 2.080E+00 | 1.408E+00               | 1.409E+00              | 16.02             |
|         | 1120.29 | 140   | 15.10  | 1.211E+00 | 2.036E+00               | 2.036E+00              | 35.66             |
|         | 1764.49 | 87    | 15.80  | 8.402E-01 | 1.739E+00               | 1.739E+00              | 27.12             |
| PB-214  | 74.81   | 493   | 6.21   | 4.090E+00 | 5.183E+00               | 5.183E+00              | 22.82             |
|         | 77.11   | 720   | 10.50  | 4.329E+00 | 4.225E+00               | 4.225E+00              | 17.86             |
|         | 87.30   | 269   | 4.67   | 5.144E+00 | 2.983E+00               | 2.983E+00              | 33.24             |
|         | 241.98  | 303   | 7.49   | 4.327E+00 | 2.499E+00               | 2.499E+00              | 30.08             |

Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| PO-214  | 295.21  | 425   | 19.20  | 3.718E+00 | 1.590E+00               | 1.590E+00              | 16.68             |
|         | 351.92  | 684   | 37.20* | 3.242E+00 | 1.514E+00               | 1.514E+00              | 14.31             |
|         | 74.81   | 493   | 6.21   | 4.090E+00 | 5.183E+00               | 5.183E+00              | 22.82             |
|         | 77.11   | 720   | 10.50  | 4.329E+00 | 4.225E+00               | 4.225E+00              | 17.86             |
|         | 87.30   | 269   | 4.67   | 5.144E+00 | 2.983E+00               | 2.983E+00              | 33.24             |
| PO-216  | 241.98  | 303   | 7.49   | 4.327E+00 | 2.499E+00               | 2.499E+00              | 30.08             |
|         | 295.21  | 425   | 19.20  | 3.718E+00 | 1.590E+00               | 1.590E+00              | 16.68             |
|         | 351.92  | 684   | 37.20* | 3.242E+00 | 1.514E+00               | 1.514E+00              | 14.31             |
|         | 74.81   | 493   | 10.70  | 4.090E+00 | 3.008E+00               | 3.008E+00              | 23.52             |
|         | 77.11   | 720   | 18.00  | 4.329E+00 | 2.464E+00               | 2.464E+00              | 16.15             |
| PO-218  | 87.30   | 269   | 8.00   | 5.144E+00 | 1.741E+00               | 1.741E+00              | 33.85             |
|         | 238.63  | 1469  | 44.60* | 4.367E+00 | 2.013E+00               | 2.013E+00              | 9.67              |
|         | 300.09  | 125   | 3.41   | 3.669E+00 | 2.665E+00               | 2.665E+00              | 46.98             |
|         | 74.81   | 493   | 6.21   | 4.090E+00 | 5.183E+00               | 5.183E+00              | 22.82             |
|         | 77.11   | 720   | 10.50  | 4.329E+00 | 4.225E+00               | 4.225E+00              | 17.86             |
| RA-224  | 87.30   | 269   | 4.67   | 5.144E+00 | 2.983E+00               | 2.983E+00              | 33.24             |
|         | 241.98  | 303   | 7.49   | 4.327E+00 | 2.499E+00               | 2.499E+00              | 30.08             |
|         | 295.21  | 425   | 19.20  | 3.718E+00 | 1.590E+00               | 1.590E+00              | 16.68             |
|         | 351.92  | 684   | 37.20* | 3.242E+00 | 1.514E+00               | 1.514E+00              | 14.31             |
|         | 240.98  | 303   | 3.95*  | 4.327E+00 | 4.739E+00               | 4.739E+00              | 29.56             |
| RA-226  | 609.31  | 508   | 46.30* | 2.080E+00 | 1.408E+00               | 1.408E+00              | 16.02             |
|         | 1120.29 | 140   | 15.10  | 1.211E+00 | 2.036E+00               | 2.036E+00              | 35.66             |
|         | 1764.49 | 87    | 15.80  | 8.402E-01 | 1.739E+00               | 1.739E+00              | 27.12             |
|         | 338.32  | 229   | 11.40  | 3.345E+00 | 1.605E+00               | 1.605E+00              | 49.39             |
|         | 911.07  | 279   | 27.70* | 1.461E+00 | 1.840E+00               | 1.840E+00              | 19.64             |
| AC-228  | 969.11  | 145   | 16.60  | 1.382E+00 | 1.686E+00               | 1.686E+00              | 35.01             |
|         | 338.32  | 229   | 11.40  | 3.345E+00 | 1.605E+00               | 1.605E+00              | 49.39             |
|         | 911.07  | 279   | 27.70* | 1.461E+00 | 1.840E+00               | 1.840E+00              | 19.64             |
|         | 969.11  | 145   | 16.60  | 1.382E+00 | 1.686E+00               | 1.686E+00              | 35.01             |
|         | 74.81   | 493   | 10.70  | 4.090E+00 | 3.008E+00               | 3.008E+00              | 21.61             |
| TH-228  | 77.11   | 720   | 18.00  | 4.329E+00 | 2.464E+00               | 2.502E+00              | 16.15             |
|         | 87.30   | 269   | 8.00   | 5.144E+00 | 1.741E+00               | 1.768E+00              | 32.34             |
|         | 238.63  | 1469  | 44.60* | 4.367E+00 | 2.013E+00               | 2.043E+00              | 9.67              |
|         | 300.09  | 125   | 3.41   | 3.669E+00 | 2.665E+00               | 2.706E+00              | 74.91             |
|         | 609.31  | 508   | 46.30* | 2.080E+00 | 1.408E+00               | 1.408E+00              | 16.02             |
| TH-230  | 1120.29 | 140   | 15.10  | 1.211E+00 | 2.036E+00               | 2.036E+00              | 35.66             |
|         | 1764.49 | 87    | 15.80  | 8.402E-01 | 1.739E+00               | 1.739E+00              | 27.12             |
|         | 338.32  | 229   | 11.40  | 3.345E+00 | 1.605E+00               | 1.605E+00              | 28.49             |
|         | 911.07  | 279   | 27.70* | 1.461E+00 | 1.840E+00               | 1.840E+00              | 19.64             |
|         | 969.11  | 145   | 16.60  | 1.382E+00 | 1.686E+00               | 1.686E+00              | 35.01             |
| TH-232  | 63.29   | 132   | 3.80*  | 2.690E+00 | 3.438E+00               | 3.438E+00              | 75.03             |
|         | 92.38   | 244   | 5.41   | 5.496E+00 | 2.190E+00               | 2.190E+00              | 59.94             |
|         | 609.31  | 508   | 46.30* | 2.080E+00 | 1.408E+00               | 1.408E+00              | 16.02             |
|         | 1120.29 | 140   | 15.10  | 1.211E+00 | 2.036E+00               | 2.036E+00              | 35.66             |
|         | 1764.49 | 87    | 15.80  | 8.402E-01 | 1.739E+00               | 1.739E+00              | 27.12             |
| TH-234  | 86.50   | 269   | 12.60* | 5.144E+00 | 1.106E+00               | 1.106E+00              | 38.36             |
|         | 95.87   | ----- | 2.60   | 5.611E+00 | -----                   | Line Not Found         | -----             |
|         | 63.29   | 132   | 3.80*  | 2.690E+00 | 3.438E+00               | 3.438E+00              | 75.03             |
|         | 92.38   | 244   | 5.41   | 5.496E+00 | 2.190E+00               | 2.190E+00              | 57.80             |
|         |         |       |        |           |                         |                        |                   |

Nuclide Type:

| Nuclide | Energy | Area  | %Abn    | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|--------|-------|---------|-----------|-------------------------|------------------------|-------------------|
| AM-243  | 74.67  | 493   | 66.00*  | 4.090E+00 | 4.877E-01               | 4.877E-01              | 21.58             |
|         | 86.72  | 269   | 0.34    | 5.144E+00 | 4.146E+01               | 4.146E+01              | 32.34             |
|         | 117.66 | ----- | 0.55    | 6.042E+00 | -----                   | Line Not Found         | -----             |
|         | 142.18 | ----- | 0.13    | 5.887E+00 | -----                   | Line Not Found         | -----             |
| ANH-511 | 511.00 | 118   | 100.00* | 2.407E+00 | 1.308E-01               | 1.308E-01              | 63.21             |

Flag: "\*" = Keyline

Summary of Nuclide Activity  
Sample ID : G244630004

Page : 4  
Acquisition date : 23-JAN-2010 11:46:07

Total number of lines in spectrum 32  
Number of unidentified lines 2  
Number of lines tentatively identified by NID 30 93.75%

Nuclide Type :

| Nuclide          | Hlife     | Decay | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | Decay Corr<br>2-Sigma Error | 2-Sigma<br>%Error | Flags |
|------------------|-----------|-------|-------------------------|------------------------|-----------------------------|-------------------|-------|
| K-40             | 1.28E+09Y | 1.00  | 2.971E+01               | 2.971E+01              | 0.271E+01                   | 9.12              |       |
| CD-109           | 464.00D   | 1.02  | 3.745E+00               | 3.830E+00              | 1.238E+00                   | 32.34             |       |
| SN-126           | 1.00E+05Y | 1.00  | 3.765E-01               | 3.765E-01              | 1.217E-01                   | 32.34             |       |
| CS-135           | 2.30E+06Y | 1.00  | 6.691E-01               | 6.691E-01              | 3.009E-01                   | 44.97             |       |
| BA-137M          | 30.17Y    | 1.00  | 4.561E-01               | 4.565E-01              | 0.934E-01                   | 20.46             |       |
| CS-137           | 30.17Y    | 1.00  | 4.822E-01               | 4.826E-01              | 0.988E-01                   | 20.47             |       |
| TL-208           | 1.41E+10Y | 1.00  | 6.229E-01               | 6.229E-01              | 1.026E-01                   | 16.48             |       |
| BI-211           | 7.04E+08Y | 1.00  | 4.351E+00               | 4.351E+00              | 0.580E+00                   | 13.32             |       |
| PB-212           | 1.41E+10Y | 1.00  | 2.013E+00               | 2.013E+00              | 0.195E+00                   | 9.67              |       |
| PO-212           | 1.41E+10Y | 1.00  | 2.013E+00               | 2.013E+00              | 0.195E+00                   | 9.67              |       |
| BI-214           | 1600.00Y  | 1.00  | 1.408E+00               | 1.409E+00              | 0.226E+00                   | 16.02             |       |
| PB-214           | 1600.00Y  | 1.00  | 1.514E+00               | 1.514E+00              | 0.217E+00                   | 14.31             |       |
| PO-214           | 1600.00Y  | 1.00  | 1.514E+00               | 1.514E+00              | 0.217E+00                   | 14.31             |       |
| PO-216           | 1.41E+10Y | 1.00  | 2.013E+00               | 2.013E+00              | 0.195E+00                   | 9.67              |       |
| PO-218           | 1600.00Y  | 1.00  | 1.514E+00               | 1.514E+00              | 0.217E+00                   | 14.31             |       |
| RA-224           | 1.41E+10Y | 1.00  | 4.739E+00               | 4.739E+00              | 1.401E+00                   | 29.56             |       |
| RA-226           | 1600.00Y  | 1.00  | 1.408E+00               | 1.409E+00              | 0.226E+00                   | 16.02             |       |
| AC-228           | 1.41E+10Y | 1.00  | 1.840E+00               | 1.840E+00              | 0.361E+00                   | 19.64             |       |
| RA-228           | 1.41E+10Y | 1.00  | 1.840E+00               | 1.840E+00              | 0.361E+00                   | 19.64             |       |
| TH-228           | 1.91Y     | 1.02  | 2.013E+00               | 2.043E+00              | 0.197E+00                   | 9.67              |       |
| TH-230           | 4.47E+09Y | 1.00  | 1.408E+00               | 1.408E+00              | 0.226E+00                   | 16.02             |       |
| TH-232           | 1.41E+10Y | 1.00  | 1.840E+00               | 1.840E+00              | 0.361E+00                   | 19.64             |       |
| TH-234           | 4.47E+09Y | 1.00  | 3.438E+00               | 3.438E+00              | 2.579E+00                   | 75.03             |       |
| U-234            | 4.47E+09Y | 1.00  | 1.408E+00               | 1.408E+00              | 0.226E+00                   | 16.02             |       |
| NP-237           | 2.14E+06Y | 1.00  | 1.106E+00               | 1.106E+00              | 0.424E+00                   | 38.36             |       |
| U-238            | 4.47E+09Y | 1.00  | 3.438E+00               | 3.438E+00              | 2.579E+00                   | 75.03             |       |
| AM-243           | 7380.00Y  | 1.00  | 4.877E-01               | 4.877E-01              | 1.052E-01                   | 21.58             |       |
| ANH-511          | 1.00E+09Y | 1.00  | 1.308E-01               | 1.308E-01              | 0.827E-01                   | 63.21             |       |
| Total Activity : |           |       | 7.750E+01               | 7.762E+01              |                             |                   |       |

Grand Total Activity : 7.750E+01 7.762E+01

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit



Unidentified Energy Lines  
Sample ID : G244630004

Page : 5  
Acquisition date : 23-JAN-2010 11:46:07

| It | Energy  | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | %Eff     | Flags |
|----|---------|------|-------|------|---------|------|----|----------|------|----------|-------|
| 0  | 128.90  | 109  | 364   | 0.86 | 257.80  | 254  | 8  | 1.51E-02 | 63.6 | 6.02E+00 | T     |
| 0  | 185.43  | 336  | 580   | 1.38 | 370.85  | 364  | 15 | 4.66E-02 | 33.7 | 5.18E+00 | T     |
| 0  | 209.01  | 113  | 428   | 1.14 | 418.03  | 413  | 11 | 1.57E-02 | 73.1 | 4.79E+00 | T     |
| 0  | 327.68  | 70   | 152   | 1.06 | 655.37  | 652  | 9  | 9.68E-03 | 68.0 | 3.43E+00 | T     |
| 0  | 462.88  | 115  | 121   | 1.27 | 925.75  | 919  | 12 | 1.59E-02 | 42.9 | 2.61E+00 | T     |
| 0  | 727.17  | 97   | 77    | 1.44 | 1454.34 | 1449 | 11 | 1.35E-02 | 40.3 | 1.79E+00 | T     |
| 0  | 795.21  | 54   | 86    | 1.35 | 1590.42 | 1583 | 15 | 7.52E-03 | 79.5 | 1.65E+00 | T     |
| 0  | 933.23  | 38   | 47    | 1.58 | 1866.45 | 1860 | 12 | 5.29E-03 | 79.5 | 1.43E+00 |       |
| 4  | 964.63  | 61   | 25    | 1.88 | 1929.26 | 1926 | 20 | 8.44E-03 | 38.4 | 1.39E+00 | T     |
| 0  | 1589.43 | 50   | 23    | 4.70 | 3178.85 | 3166 | 30 | 6.91E-03 | 62.5 | 9.02E-01 |       |

Flags: "T" = Tentatively associated

# VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 13:47:10.22

```

*****
*                                     GEL Laboratories LLC
*                                     2040 Savage Road
*                                     Charleston, SC 29414
*****
*
*                               DETECTOR DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630004.CNF;1
* Acquisition date   : 23-JAN-2010 11:46:07   Detector SN#      :
* Detector ID        : GAM06                   Sensitivity       : 5.00000
* Geometry           : CAN                     Energy tolerance: 1.50000
* Elapsed live time  : 0 02:00:00.00           Abundance limit  : 75.00000
* Elapsed real time  : 0 02:00:01.52           Half life ratio  : 8.00000
*****
*
*                               SAMPLE DATA
*
* Sample date        : 8-JAN-2010 12:00:00.   Nuclide Library : SOLID
* Sample ID          : G244630004             Analyst initials: MXR1
* Batch Number       : 941639                 Sample Quantity : 1.40650E+02 GRAM
*****
*
*                               QC DATA
*
* CALIB. DATE/TIME   : 4-FEB-2009 13:05:54.47MS Isotope      :
* MSD ID             :                          MSD Isotope   :
* LCS ID             : 1032-A                   LCS Isotope       :
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| K-40    | 2.971E+01              | 2.709E+00 | 6.743E-01         | 4.460E-02 | 44.067  |
| CD-109  | 3.830E+00              | 1.238E+00 | 1.960E+00         | 1.935E-01 | 1.954   |
| SN-126  | 3.765E-01              | 1.217E-01 | 1.805E-01         | 1.777E-02 | 2.086   |
| CS-135  | 6.691E-01              | 3.009E-01 | 3.070E-01         | 2.386E-02 | 2.179   |
| BA-137M | 4.565E-01              | 9.343E-02 | 6.688E-02         | 3.303E-03 | 6.826   |
| CS-137  | 4.826E-01              | 9.880E-02 | 7.070E-02         | 3.512E-03 | 6.826   |
| TL-208  | 6.229E-01              | 1.026E-01 | 7.018E-02         | 4.436E-03 | 8.875   |
| BI-211  | 4.351E+00              | 5.796E-01 | 4.144E-01         | 2.675E-02 | 10.500  |
| PB-212  | 2.013E+00              | 1.946E-01 | 1.050E-01         | 7.739E-03 | 19.173  |
| PO-212  | 2.013E+00              | 1.946E-01 | 1.050E-01         | 7.739E-03 | 19.173  |
| BI-214  | 1.409E+00              | 2.257E-01 | 1.270E-01         | 9.374E-03 | 11.088  |
| PB-214  | 1.514E+00              | 2.165E-01 | 1.345E-01         | 1.116E-02 | 11.255  |
| PO-214  | 1.514E+00              | 2.165E-01 | 1.345E-01         | 1.116E-02 | 11.255  |
| PO-216  | 2.013E+00              | 1.946E-01 | 1.050E-01         | 7.739E-03 | 19.173  |
| PO-218  | 1.514E+00              | 2.165E-01 | 1.345E-01         | 1.116E-02 | 11.255  |
| RA-224  | 4.739E+00              | 1.401E+00 | 1.195E+00         | 7.003E-02 | 3.966   |
| RA-226  | 1.409E+00              | 2.257E-01 | 1.270E-01         | 9.374E-03 | 11.088  |
| AC-228  | 1.840E+00              | 3.614E-01 | 2.468E-01         | 2.521E-02 | 7.455   |

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| RA-228  | 1.840E+00              | 3.614E-01 | 2.468E-01         | 2.521E-02 | 7.455   |
| TH-228  | 2.043E+00              | 1.975E-01 | 1.066E-01         | 7.855E-03 | 19.173  |
| TH-230  | 1.408E+00              | 2.257E-01 | 1.270E-01         | 9.374E-03 | 11.088  |
| TH-232  | 1.840E+00              | 3.614E-01 | 2.468E-01         | 2.521E-02 | 7.455   |
| TH-234  | 3.438E+00              | 2.579E+00 | 2.822E+00         | 5.131E-01 | 1.218   |
| U-234   | 1.408E+00              | 2.257E-01 | 1.270E-01         | 9.374E-03 | 11.088  |
| NP-237  | 1.106E+00              | 4.241E-01 | 5.311E-01         | 1.212E-01 | 2.082   |
| U-238   | 3.438E+00              | 2.579E+00 | 2.822E+00         | 5.131E-01 | 1.218   |
| AM-243  | 4.877E-01              | 1.052E-01 | 1.068E-01         | 9.649E-03 | 4.565   |
| ANH-511 | 1.308E-01              | 8.271E-02 | 5.379E-02         | 3.007E-03 | 2.433   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| BE-7    | 2.413E-01                          |              | 3.699E-01 | 6.341E-01         | 4.189E-02 | 0.380   |
| NA-22   | -7.734E-04                         |              | 5.076E-02 | 8.260E-02         | 5.100E-03 | -0.009  |
| NA-24   | -2.249E-01                         |              | 3.479E-01 | Half-Life         | too short |         |
| AL-26   | -5.497E-03                         |              | 2.853E-02 | 4.514E-02         | 2.593E-03 | -0.122  |
| TI-44   | 4.548E-01                          | +            | 7.346E-02 | 9.499E-02         | 8.732E-03 | 4.788   |
| SC-46   | -9.906E-03                         |              | 4.611E-02 | 7.542E-02         | 5.406E-03 | -0.131  |
| V-48    | -3.482E-02                         |              | 8.649E-02 | 1.383E-01         | 9.680E-03 | -0.252  |
| CR-51   | 5.008E-02                          |              | 4.379E-01 | 7.317E-01         | 4.821E-02 | 0.068   |
| MN-52   | 1.015E-01                          |              | 2.435E-01 | 4.181E-01         | 2.631E-02 | 0.243   |
| MN-54   | 6.301E-04                          |              | 4.454E-02 | 7.456E-02         | 4.921E-03 | 0.008   |
| CO-56   | 9.265E-03                          |              | 4.026E-02 | 6.865E-02         | 4.615E-03 | 0.135   |
| CO-57   | 1.780E-02                          |              | 3.121E-02 | 5.229E-02         | 3.194E-03 | 0.340   |
| CO-58   | -3.800E-02                         |              | 4.103E-02 | 6.283E-02         | 4.011E-03 | -0.605  |
| FE-59   | -1.211E-01                         |              | 1.126E-01 | 1.667E-01         | 1.223E-02 | -0.727  |
| CO-60   | 2.058E-05                          |              | 4.696E-02 | 7.584E-02         | 4.764E-03 | 0.000   |
| ZN-65   | -6.894E-02                         |              | 1.290E-01 | 1.697E-01         | 1.075E-02 | -0.406  |
| GE-68   | -9.055E-01                         |              | 1.500E+00 | 2.332E+00         | 1.528E-01 | -0.388  |
| AS-73   | 7.838E-01                          |              | 1.191E+00 | 2.037E+00         | 1.863E-01 | 0.385   |
| AS-74   | -6.324E-02                         |              | 1.045E-01 | 1.622E-01         | 8.624E-03 | -0.390  |
| SE-75   | -9.107E-03                         |              | 6.280E-02 | 8.661E-02         | 5.195E-03 | -0.105  |
| BR-77   | -2.476E-01                         |              | 1.148E+01 | 1.879E+01         | 1.047E+00 | -0.013  |
| SR-82   | -2.378E-01                         |              | 4.312E-01 | 6.926E-01         | 4.167E-02 | -0.343  |
| RB-83   | -4.344E-03                         |              | 7.845E-02 | 1.281E-01         | 7.139E-03 | -0.034  |
| RB-84   | 9.386E-02                          |              | 8.366E-02 | 1.512E-01         | 1.071E-02 | 0.621   |
| KR-85   | 1.640E+01                          |              | 9.518E+00 | 1.544E+01         | 8.621E-01 | 1.063   |
| SR-85   | 8.398E-02                          |              | 4.874E-02 | 7.904E-02         | 4.414E-03 | 1.063   |
| RB-86   | -5.970E-02                         |              | 9.316E-01 | 1.526E+00         | 1.001E-01 | -0.039  |
| Y-88    | 1.660E-02                          |              | 3.674E-02 | 6.576E-02         | 3.737E-03 | 0.252   |
| ZR-88   | -2.099E-03                         |              | 3.608E-02 | 5.978E-02         | 3.317E-03 | -0.035  |
| Y-91    | -2.648E+01                         |              | 2.246E+01 | 3.275E+01         | 1.964E+00 | -0.809  |
| NB-94   | -8.682E-05                         |              | 3.805E-02 | 6.137E-02         | 3.260E-03 | -0.001  |
| NB-95   | 5.495E-02                          |              | 5.404E-02 | 9.296E-02         | 5.495E-03 | 0.591   |
| NB-95M  | 7.446E-01                          |              | 1.934E-01 | 3.107E-01         | 2.348E-02 | 2.397   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| ZR-95   | -1.753E-02                         |              | 9.277E-02 | 1.468E-01           | 1.035E-02 | -0.119  |
| NB-97   | 1.616E-02                          |              | 6.274E-02 | Half-Life too short |           |         |
| ZR-97   | 4.884E+00                          |              | 1.065E+00 | Half-Life too short |           |         |
| MO-99   | -1.155E+01                         |              | 1.342E+01 | 1.978E+01           | 2.714E+00 | -0.584  |
| TC-99M  | -2.557E+10                         |              | 1.677E+10 | Half-Life too short |           |         |
| RH-101  | -1.999E-02                         |              | 4.161E-02 | 6.399E-02           | 3.595E-03 | -0.312  |
| RH-102  | -9.348E-03                         |              | 3.491E-02 | 5.652E-02           | 3.183E-03 | -0.165  |
| RU-103  | -1.145E-03                         |              | 4.511E-02 | 7.400E-02           | 9.294E-03 | -0.015  |
| RH-106  | 2.428E-01                          |              | 3.655E-01 | 6.223E-01           | 7.123E-02 | 0.390   |
| RU-106  | 2.428E-01                          |              | 3.646E-01 | 6.223E-01           | 3.227E-02 | 0.390   |
| AG-108M | -1.027E-02                         |              | 4.088E-02 | 6.665E-02           | 4.087E-03 | -0.154  |
| AG-110M | -2.072E-03                         |              | 5.044E-02 | 7.016E-02           | 3.787E-03 | -0.030  |
| IN-111  | 1.759E-01                          |              | 1.385E+00 | 1.953E+00           | 1.148E-01 | 0.090   |
| IN-113M | -7.032E-03                         |              | 5.239E-02 | 8.643E-02           | 5.144E-03 | -0.081  |
| SN-113  | -7.032E-03                         |              | 5.239E-02 | 8.643E-02           | 5.144E-03 | -0.081  |
| IN-114M | -9.154E-02                         |              | 2.495E-01 | 3.460E-01           | 1.925E-02 | -0.265  |
| CD-115  | 3.539E+00                          |              | 1.148E+01 | 1.924E+01           | 1.069E+00 | 0.184   |
| SN-117M | -1.558E-02                         |              | 6.505E-02 | 1.051E-01           | 5.773E-03 | -0.148  |
| SB-122  | -3.088E-01                         |              | 2.358E+00 | 3.814E+00           | 2.078E-01 | -0.081  |
| I-123   | -5.567E+00                         |              | 2.981E+00 | Half-Life too short |           |         |
| TE-123M | -3.226E-02                         |              | 3.455E-02 | 5.429E-02           | 3.024E-03 | -0.594  |
| I-124   | 1.015E-01                          |              | 8.790E-01 | 1.250E+00           | 6.607E-02 | 0.081   |
| SB-124  | 3.806E-02                          |              | 7.877E-02 | 1.419E-01           | 9.215E-03 | 0.268   |
| SB-125  | 1.203E-01                          |              | 1.155E-01 | 2.016E-01           | 1.183E-02 | 0.596   |
| TE-125M | -1.290E+01                         |              | 1.128E+01 | 1.779E+01           | 1.617E+00 | -0.725  |
| I-126   | -3.878E-02                         |              | 2.419E-01 | 3.315E-01           | 1.651E-02 | -0.117  |
| SB-126  | 3.338E-02                          |              | 1.833E-01 | 2.722E-01           | 1.491E-02 | 0.123   |
| SB-127  | -5.543E-01                         |              | 1.604E+00 | 2.518E+00           | 2.266E-01 | -0.220  |
| XE-127  | 4.458E-02                          |              | 6.382E-02 | 9.830E-02           | 5.553E-03 | 0.454   |
| I-131   | -6.447E-02                         |              | 1.349E-01 | 2.191E-01           | 1.408E-02 | -0.294  |
| TE-132  | 1.293E-02                          |              | 8.366E-01 | 1.346E+00           | 1.930E-01 | 0.010   |
| BA-133  | -6.520E-03                         |              | 5.423E-02 | 7.794E-02           | 9.009E-03 | -0.084  |
| I-133   | -6.603E-03                         |              | 3.152E-03 | Half-Life too short |           |         |
| CS-134  | 1.155E-01                          | +            | 9.209E-02 | 1.068E-01           | 6.720E-03 | 1.082   |
| I-135   | 7.366E+08                          |              | 2.369E+09 | Half-Life too short |           |         |
| CS-136  | -4.726E-02                         |              | 1.113E-01 | 1.755E-01           | 1.259E-02 | -0.269  |
| CE-139  | -7.947E-03                         |              | 3.711E-02 | 5.994E-02           | 3.241E-03 | -0.133  |
| BA-140  | 1.296E-02                          |              | 3.089E-01 | 5.071E-01           | 1.647E-01 | 0.026   |
| LA-140  | -2.580E-02                         |              | 9.356E-02 | 1.242E-01           | 7.661E-03 | -0.208  |
| CE-141  | 5.209E-02                          |              | 7.640E-02 | 1.278E-01           | 7.538E-03 | 0.408   |
| CE-143  | 1.172E-03                          |              | 1.604E-04 | Half-Life too short |           |         |
| CE-144  | 1.092E-01                          |              | 2.823E-01 | 4.128E-01           | 5.870E-02 | 0.265   |
| PM-144  | 1.384E-03                          |              | 4.204E-02 | 6.802E-02           | 3.577E-03 | 0.020   |
| PR-144  | 9.381E-02                          |              | 2.849E+00 | 4.609E+00           | 2.422E-01 | 0.020   |
| PM-146  | 5.858E-02                          |              | 5.082E-02 | 8.937E-02           | 7.606E-03 | 0.655   |
| ND-147  | -3.107E-01                         |              | 6.413E-01 | 1.011E+00           | 1.356E-01 | -0.307  |
| PM-149  | 8.790E+01                          |              | 1.017E+02 | 1.766E+02           | 2.516E+01 | 0.498   |
| EU-152  | 7.637E-03                          |              | 1.288E-01 | 2.041E-01           | 1.345E-02 | 0.037   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| GD-153  | 3.499E-02                          |              | 1.054E-01 | 1.556E-01           | 1.301E-02 | 0.225   |
| EU-154  | 6.654E-03                          |              | 1.427E-01 | 2.336E-01           | 2.236E-02 | 0.028   |
| EU-155  | 7.763E-02                          |              | 1.315E-01 | 2.211E-01           | 1.677E-02 | 0.351   |
| TB-160  | 3.728E-03                          |              | 1.730E-01 | 2.890E-01           | 2.041E-02 | 0.013   |
| HO-166M | -9.245E-04                         |              | 6.838E-02 | 1.101E-01           | 5.941E-03 | -0.008  |
| TM-171  | -1.737E+00                         |              | 4.297E+01 | 5.887E+01           | 5.259E+00 | -0.030  |
| LU-176  | 6.675E-04                          |              | 3.172E-02 | 4.862E-02           | 2.900E-03 | 0.014   |
| LU-177  | 2.708E+00                          | +            | 1.985E+00 | 2.346E+00           | 1.334E-01 | 1.154   |
| LU-177M | -2.658E-01                         |              | 2.288E-01 | 3.551E-01           | 1.986E-02 | -0.748  |
| HF-181  | -4.338E-02                         |              | 5.125E-02 | 7.960E-02           | 4.479E-03 | -0.545  |
| W-181   | 2.476E-01                          |              | 5.269E-01 | 7.884E-01           | 7.062E-02 | 0.314   |
| TA-182  | -2.059E-01                         |              | 2.568E-01 | 3.925E-01           | 2.370E-02 | -0.524  |
| RE-183  | 1.553E-02                          |              | 1.376E-01 | 2.250E-01           | 1.226E-02 | 0.069   |
| RE-184  | -6.978E-02                         |              | 2.780E-01 | 4.395E-01           | 2.596E-02 | -0.159  |
| OS-185  | 1.997E-02                          |              | 5.200E-02 | 8.672E-02           | 4.372E-03 | 0.230   |
| RE-188  | 2.921E-02                          |              | 2.124E-01 | 3.483E-01           | 1.929E-02 | 0.084   |
| W-188   | -6.921E+00                         |              | 9.611E+00 | 1.341E+01           | 8.011E-01 | -0.516  |
| IR-192  | 2.035E-02                          |              | 3.951E-02 | 6.792E-02           | 4.060E-03 | 0.300   |
| AU-195  | 4.243E-02                          |              | 2.903E-01 | 4.477E-01           | 3.660E-02 | 0.095   |
| TL-200  | -2.228E-05                         |              | 2.421E-04 | Half-Life too short |           |         |
| TL-201  | -3.781E+00                         |              | 8.289E+00 | 1.325E+01           | 7.173E-01 | -0.285  |
| TL-202  | -3.029E-02                         |              | 8.449E-02 | 1.367E-01           | 7.692E-03 | -0.222  |
| HG-203  | 1.021E-02                          |              | 4.923E-02 | 8.227E-02           | 5.196E-03 | 0.124   |
| BI-207  | -8.874E-03                         |              | 6.075E-02 | 9.879E-02           | 6.550E-03 | -0.090  |
| TL-207  | -4.765E-01                         |              | 8.613E-01 | 1.201E+00           | 1.989E-01 | -0.397  |
| PO-209  | 2.261E-01                          |              | 8.862E+00 | 1.479E+01           | 1.072E+00 | 0.015   |
| BI-210  | 8.307E-02                          |              | 5.355E+00 | 8.900E+00           | 7.328E-01 | 0.009   |
| PB-210  | 8.307E-02                          |              | 5.355E+00 | 8.900E+00           | 7.328E-01 | 0.009   |
| PO-210  | 8.307E-02                          |              | 5.355E+00 | 8.900E+00           | 6.429E-01 | 0.009   |
| PB-211  | -1.299E+00                         |              | 1.391E+00 | 1.757E+00           | 1.095E+00 | -0.740  |
| BI-212  | 1.234E+00                          | +            | 5.058E-01 | 7.719E-01           | 5.805E-02 | 1.598   |
| PO-215  | -4.765E-01                         |              | 8.613E-01 | 1.201E+00           | 1.989E-01 | -0.397  |
| RN-219  | -3.470E-02                         |              | 4.850E-01 | 8.020E-01           | 1.083E-01 | -0.043  |
| RN-220  | 4.766E+00                          |              | 3.097E+01 | 5.118E+01           | 2.813E+00 | 0.093   |
| RA-223  | -4.765E-01                         |              | 8.613E-01 | 1.201E+00           | 1.989E-01 | -0.397  |
| AC-227  | 7.796E-02                          |              | 4.456E-01 | 7.193E-01           | 1.008E-01 | 0.108   |
| TH-227  | 7.796E-02                          |              | 4.457E-01 | 7.193E-01           | 1.219E-01 | 0.108   |
| TH-229  | -2.465E-02                         |              | 6.118E-01 | 9.887E-01           | 5.524E-02 | -0.025  |
| PA-231  | -7.453E-01                         |              | 1.793E+00 | 2.962E+00           | 4.103E-01 | -0.252  |
| TH-231  | -4.765E-01                         |              | 8.613E-01 | 1.201E+00           | 1.989E-01 | -0.397  |
| U-231   | 1.300E+00                          |              | 1.367E+00 | 2.068E+00           | 1.772E-01 | 0.628   |
| PA-233  | -1.043E-02                         |              | 7.360E-02 | 1.227E-01           | 7.739E-03 | -0.085  |
| PA-234  | 1.556E-01                          |              | 3.424E-01 | 5.889E-01           | 1.068E-01 | 0.264   |
| PA-234M | 3.548E+00                          |              | 5.818E+00 | 9.984E+00           | 8.533E-01 | 0.355   |
| U-235   | 2.430E-01                          |              | 2.612E-01 | 4.311E-01           | 7.012E-02 | 0.564   |
| NP-236  | -4.305E-02                         |              | 9.778E-02 | 1.567E-01           | 8.576E-03 | -0.275  |
| NP-239  | -2.149E-02                         |              | 2.311E-01 | 3.793E-01           | 2.450E-02 | -0.057  |
| AM-241  | 1.901E-01                          |              | 2.319E-01 | 3.530E-01           | 3.451E-02 | 0.538   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| CM-243  | 1.009E-01                          |              | 1.179E-01 | 1.999E-01         | 1.523E-02 | 0.505   |
| AM-246  | 2.579E-02                          |              | 1.720E-01 | 2.870E-01         | 1.879E-02 | 0.090   |
| CM-247  | 1.436E-02                          |              | 4.215E-02 | 7.133E-02         | 3.974E-03 | 0.201   |
| CF-249  | 1.122E-02                          |              | 4.932E-02 | 8.298E-02         | 4.628E-03 | 0.135   |
| CF-251  | -1.003E-01                         |              | 1.566E-01 | 2.480E-01         | 1.357E-02 | -0.404  |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC
*                                     2040 Savage Road
*                                     Charleston, SC 29414
*****
*
*                               DETECTOR DATA
*
* Configuration      : SYS$SYSROOT:[ALPHA.ARCHIVE.GAMMA]G244630004
* Acquisition date   : 23-JAN-2010 11:46:07 Detector SN#
* Detector ID        : GAM06 Sensitivity      : 5.000
* Geometry           : CAN Energy tolerance: 1.500
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 02:00:01.52 Half life ratio : 8.000
*****
*
*                               SAMPLE DATA
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID
* Sample ID          : G244630004 Analyst initials: MXR1
* Batch Number       : 941639 Sample Quantity : 1.4065E+02 GRAM
* Recovery           : 1.00000 Carrier Weight : 0.00000
*****
*
*                               QC DATA
*
* CALIB. DATE/TIME   : 4-FEB-2009 13:05:54 MS Isotope
* MSD DPM             : 0.000 MSD Isotope
* LCS DPM             : 0.000 LCS Isotope
* LCSD DPM            : 0.000 LCSD Isotope
*****

```

## Combined Activity-MDA Report

### ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act Error | DLC<br>(pCi/GRAM ) | TPU       |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 2.971E+01               | 2.655E+00 | 3.387E-01          | 1.354E+00 |
| CD-109  | 3.830E+00               | 1.214E+00 | 1.043E+00          | 6.192E-01 |
| SN-126  | 3.765E-01               | 1.193E-01 | 9.604E-02          | 6.087E-02 |
| CS-135  | 6.691E-01               | 2.949E-01 | 1.598E-01          | 1.504E-01 |
| BA-137M | 4.565E-01               | 9.156E-02 | 3.416E-02          | 4.671E-02 |
| CS-137  | 4.826E-01               | 9.682E-02 | 3.612E-02          | 4.940E-02 |
| TL-208  | 6.229E-01               | 1.006E-01 | 3.595E-02          | 5.131E-02 |
| BI-211  | 4.351E+00               | 5.680E-01 | 2.145E-01          | 2.898E-01 |
| PB-212  | 2.013E+00               | 1.907E-01 | 5.476E-02          | 9.728E-02 |
| PO-212  | 2.013E+00               | 1.907E-01 | 5.476E-02          | 9.728E-02 |
| BI-214  | 1.409E+00               | 2.212E-01 | 6.500E-02          | 1.128E-01 |
| PB-214  | 1.514E+00               | 2.122E-01 | 6.959E-02          | 1.083E-01 |
| PO-214  | 1.514E+00               | 2.122E-01 | 6.959E-02          | 1.083E-01 |
| PO-216  | 2.013E+00               | 1.907E-01 | 5.476E-02          | 9.728E-02 |
| PO-218  | 1.514E+00               | 2.122E-01 | 6.959E-02          | 1.083E-01 |
| RA-224  | 4.739E+00               | 1.373E+00 | 6.231E-01          | 7.003E-01 |
| RA-226  | 1.409E+00               | 2.212E-01 | 6.500E-02          | 1.128E-01 |
| AC-228  | 1.840E+00               | 3.541E-01 | 1.252E-01          | 1.807E-01 |
| RA-228  | 1.840E+00               | 3.541E-01 | 1.252E-01          | 1.807E-01 |
| TH-228  | 2.043E+00               | 1.935E-01 | 5.558E-02          | 9.874E-02 |
| TH-230  | 1.408E+00               | 2.212E-01 | 6.500E-02          | 1.128E-01 |
| TH-232  | 1.840E+00               | 3.541E-01 | 1.252E-01          | 1.807E-01 |
| TH-234  | 3.438E+00               | 2.528E+00 | 1.511E+00          | 1.290E+00 |
| U-234   | 1.408E+00               | 2.212E-01 | 6.500E-02          | 1.128E-01 |
| NP-237  | 1.106E+00               | 4.156E-01 | 2.826E-01          | 2.120E-01 |
| U-238   | 3.438E+00               | 2.528E+00 | 1.511E+00          | 1.290E+00 |
| AM-243  | 4.877E-01               | 1.031E-01 | 5.701E-02          | 5.262E-02 |
| ANH-511 | 1.308E-01               | 8.106E-02 | 2.763E-02          | 4.136E-02 |

### ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L Act error | DLC<br>(pCi/GRAM ) | TPU |
|---------|-------------------------------------|---------------|--------------------|-----|
|---------|-------------------------------------|---------------|--------------------|-----|

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| BE-7    | 2.413E-01  | 3.625E-01 | 3.261E-01 | 1.849E-01 | NOT IDENT. |
| NA-22   | -7.734E-04 | 4.975E-02 | 4.161E-02 | 2.538E-02 | NOT IDENT. |
| NA-24   | -2.249E+05 | 6.818E+05 | 0.000E+00 | 3.479E+05 | SHORT HLIF |
| AL-26   | -5.497E-03 | 2.796E-02 | 2.257E-02 | 1.426E-02 | NOT IDENT. |
| TI-44   | 4.548E-01  | 7.199E-02 | 5.064E-02 | 3.673E-02 | FAIL ABUN  |
| SC-46   | -9.906E-03 | 4.518E-02 | 3.829E-02 | 2.305E-02 | FAIL ABUN  |
| V-48    | -3.482E-02 | 8.476E-02 | 7.003E-02 | 4.325E-02 | NOT IDENT. |
| CR-51   | 5.008E-02  | 4.292E-01 | 3.794E-01 | 2.190E-01 | NOT IDENT. |
| MN-52   | 1.015E-01  | 2.386E-01 | 2.101E-01 | 1.217E-01 | NOT IDENT. |
| MN-54   | 6.301E-04  | 4.365E-02 | 3.790E-02 | 2.227E-02 | NOT IDENT. |
| CO-56   | 9.265E-03  | 3.945E-02 | 3.488E-02 | 2.013E-02 | NOT IDENT. |
| CO-57   | 1.780E-02  | 3.059E-02 | 2.764E-02 | 1.561E-02 | NOT IDENT. |
| CO-58   | -3.800E-02 | 4.021E-02 | 3.196E-02 | 2.051E-02 | NOT IDENT. |
| FE-59   | -1.211E-01 | 1.104E-01 | 8.422E-02 | 5.630E-02 | NOT IDENT. |
| CO-60   | 2.058E-05  | 4.602E-02 | 3.817E-02 | 2.348E-02 | NOT IDENT. |
| ZN-65   | -6.894E-02 | 1.264E-01 | 8.575E-02 | 6.448E-02 | NOT IDENT. |
| GE-68   | -9.055E-01 | 1.470E+00 | 1.179E+00 | 7.498E-01 | NOT IDENT. |
| AS-73   | 7.838E-01  | 1.167E+00 | 1.094E+00 | 5.953E-01 | NOT IDENT. |
| AS-74   | -6.324E-02 | 1.024E-01 | 8.302E-02 | 5.227E-02 | NOT IDENT. |
| SE-75   | -9.107E-03 | 6.154E-02 | 4.508E-02 | 3.140E-02 | NOT IDENT. |
| BR-77   | -2.476E-01 | 1.125E+01 | 9.644E+00 | 5.738E+00 | FAIL ABUN  |
| SR-82   | -2.378E-01 | 4.226E-01 | 3.526E-01 | 2.156E-01 | NOT IDENT. |
| RB-83   | -4.344E-03 | 7.688E-02 | 6.577E-02 | 3.922E-02 | NOT IDENT. |
| RB-84   | 9.386E-02  | 8.199E-02 | 7.678E-02 | 4.183E-02 | NOT IDENT. |
| KR-85   | 1.640E+01  | 9.328E+00 | 7.926E+00 | 4.759E+00 | NOT IDENT. |
| SR-85   | 8.398E-02  | 4.776E-02 | 4.059E-02 | 2.437E-02 | NOT IDENT. |
| RB-86   | -5.970E-02 | 9.129E-01 | 7.713E-01 | 4.658E-01 | NOT IDENT. |
| Y-88    | 1.660E-02  | 3.601E-02 | 3.287E-02 | 1.837E-02 | NOT IDENT. |
| ZR-88   | -2.099E-03 | 3.536E-02 | 3.086E-02 | 1.804E-02 | NOT IDENT. |
| Y-91    | -2.648E+01 | 2.202E+01 | 1.652E+01 | 1.123E+01 | NOT IDENT. |
| NB-94   | -8.682E-05 | 3.729E-02 | 3.131E-02 | 1.903E-02 | NOT IDENT. |
| NB-95   | 5.495E-02  | 5.295E-02 | 4.734E-02 | 2.702E-02 | NOT IDENT. |
| NB-95M  | 7.446E-01  | 1.896E-01 | 1.621E-01 | 9.672E-02 | NOT IDENT. |
| ZR-95   | -1.753E-02 | 9.092E-02 | 7.478E-02 | 4.639E-02 | NOT IDENT. |
| NB-97   | 1.616E+04  | 1.230E+05 | 0.000E+00 | 6.274E+04 | SHORT HLIF |
| ZR-97   | 4.884E+06  | 2.086E+06 | 0.000E+00 | 1.065E+06 | SHORT HLIF |
| MO-99   | -1.155E+01 | 1.315E+01 | 1.008E+01 | 6.710E+00 | NOT IDENT. |
| TC-99M  | -2.557E+16 | 3.287E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | -1.999E-02 | 4.078E-02 | 3.350E-02 | 2.081E-02 | NOT IDENT. |
| RH-102  | -9.348E-03 | 3.421E-02 | 2.907E-02 | 1.746E-02 | NOT IDENT. |
| RU-103  | -1.145E-03 | 4.421E-02 | 3.803E-02 | 2.255E-02 | FAIL ABUN  |
| RH-106  | 2.428E-01  | 3.582E-01 | 3.183E-01 | 1.827E-01 | FAIL ABUN  |
| RU-106  | 2.428E-01  | 3.574E-01 | 3.183E-01 | 1.823E-01 | FAIL ABUN  |
| AG-108M | -1.027E-02 | 4.006E-02 | 3.434E-02 | 2.044E-02 | NOT IDENT. |
| AG-110M | -2.072E-03 | 4.943E-02 | 3.584E-02 | 2.522E-02 | NOT IDENT. |
| IN-111  | 1.759E-01  | 1.357E+00 | 1.018E+00 | 6.925E-01 | NOT IDENT. |
| IN-113M | -7.032E-03 | 5.134E-02 | 4.463E-02 | 2.619E-02 | NOT IDENT. |
| SN-113  | -7.032E-03 | 5.134E-02 | 4.463E-02 | 2.619E-02 | NOT IDENT. |
| IN-114M | -9.154E-02 | 2.445E-01 | 1.813E-01 | 1.248E-01 | NOT IDENT. |
| CD-115  | 3.539E+00  | 1.125E+01 | 9.872E+00 | 5.741E+00 | NOT IDENT. |
| SN-117M | -1.558E-02 | 6.374E-02 | 5.526E-02 | 3.252E-02 | NOT IDENT. |
| SB-122  | -3.088E-01 | 2.310E+00 | 1.955E+00 | 1.179E+00 | NOT IDENT. |
| I-123   | -5.567E+06 | 5.843E+06 | 0.000E+00 | 2.981E+06 | SHORT HLIF |
| TE-123M | -3.226E-02 | 3.386E-02 | 2.854E-02 | 1.728E-02 | NOT IDENT. |
| I-124   | 1.015E-01  | 8.615E-01 | 6.398E-01 | 4.395E-01 | NOT IDENT. |
| SB-124  | 3.806E-02  | 7.720E-02 | 7.106E-02 | 3.939E-02 | FAIL ABUN  |
| SB-125  | 1.203E-01  | 1.132E-01 | 1.039E-01 | 5.774E-02 | FAIL ABUN  |
| TE-125M | -1.290E+01 | 1.106E+01 | 9.425E+00 | 5.640E+00 | NOT IDENT. |
| I-126   | -3.878E-02 | 2.371E-01 | 1.693E-01 | 1.210E-01 | NOT IDENT. |
| SB-126  | 3.338E-02  | 1.796E-01 | 1.388E-01 | 9.165E-02 | FAIL ABUN  |
| SB-127  | -5.543E-01 | 1.572E+00 | 1.285E+00 | 8.020E-01 | NOT IDENT. |
| XE-127  | 4.458E-02  | 6.255E-02 | 5.144E-02 | 3.191E-02 | NOT IDENT. |
| I-131   | -6.447E-02 | 1.322E-01 | 1.133E-01 | 6.746E-02 | NOT IDENT. |
| TE-132  | 1.293E-02  | 8.199E-01 | 7.029E-01 | 4.183E-01 | NOT IDENT. |
| BA-133  | -6.520E-03 | 5.314E-02 | 4.032E-02 | 2.711E-02 | NOT IDENT. |
| I-133   | -6.603E+03 | 6.178E+03 | 0.000E+00 | 3.152E+03 | SHORT HLIF |
| CS-134  | 1.155E-01  | 9.025E-02 | 5.433E-02 | 4.604E-02 | FAIL ABUN  |
| I-135   | 7.366E+14  | 4.643E+15 | 0.000E+00 | 2.369E+15 | SHORT HLIF |
| CS-136  | -4.726E-02 | 1.091E-01 | 8.877E-02 | 5.566E-02 | FAIL ABUN  |
| CE-139  | -7.947E-03 | 3.637E-02 | 3.149E-02 | 1.856E-02 | NOT IDENT. |
| BA-140  | 1.296E-02  | 3.027E-01 | 2.602E-01 | 1.545E-01 | NOT IDENT. |
| LA-140  | -2.580E-02 | 9.169E-02 | 6.225E-02 | 4.678E-02 | FAIL ABUN  |
| CE-141  | 5.209E-02  | 7.487E-02 | 6.730E-02 | 3.820E-02 | NOT IDENT. |
| CE-143  | 1.172E+03  | 3.145E+02 | 0.000E+00 | 1.604E+02 | SHORT HLIF |
| CE-144  | 1.092E-01  | 2.766E-01 | 2.178E-01 | 1.411E-01 | NOT IDENT. |
| PM-144  | 1.384E-03  | 4.120E-02 | 3.471E-02 | 2.102E-02 | NOT IDENT. |
| PR-144  | 9.381E-02  | 2.792E+00 | 2.352E+00 | 1.424E+00 | NOT IDENT. |



|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PM-146  | 5.858E-02  | 4.981E-02 | 4.601E-02 | 2.541E-02 | NOT IDENT. |
| ND-147  | -3.107E-01 | 6.284E-01 | 5.188E-01 | 3.206E-01 | NOT IDENT. |
| PM-149  | 8.790E+01  | 9.969E+01 | 9.179E+01 | 5.086E+01 | NOT IDENT. |
| EU-152  | 7.637E-03  | 1.262E-01 | 1.057E-01 | 6.441E-02 | FAIL ABUN  |
| GD-153  | 3.499E-02  | 1.033E-01 | 8.262E-02 | 5.272E-02 | NOT IDENT. |
| EU-154  | 6.654E-03  | 1.398E-01 | 1.177E-01 | 7.133E-02 | NOT IDENT. |
| EU-155  | 7.763E-02  | 1.288E-01 | 1.172E-01 | 6.573E-02 | FAIL ABUN  |
| TB-160  | 3.728E-03  | 1.696E-01 | 1.467E-01 | 8.651E-02 | FAIL ABUN  |
| HO-166M | -9.245E-04 | 6.701E-02 | 5.616E-02 | 3.419E-02 | FAIL ABUN  |
| TM-171  | -1.737E+00 | 4.211E+01 | 3.148E+01 | 2.148E+01 | NOT IDENT. |
| LU-176  | 6.675E-04  | 3.109E-02 | 2.523E-02 | 1.586E-02 | FAIL ABUN  |
| LU-177  | 2.708E+00  | 1.946E+00 | 1.227E+00 | 9.926E-01 | FAIL ABUN  |
| LU-177M | -2.658E-01 | 2.242E-01 | 1.832E-01 | 1.144E-01 | FAIL ABUN  |
| HF-181  | -4.338E-02 | 5.023E-02 | 4.093E-02 | 2.563E-02 | NOT IDENT. |
| W-181   | 2.476E-01  | 5.163E-01 | 4.218E-01 | 2.634E-01 | NOT IDENT. |
| TA-182  | -2.059E-01 | 2.517E-01 | 1.979E-01 | 1.284E-01 | FAIL ABUN  |
| RE-183  | 1.553E-02  | 1.348E-01 | 1.183E-01 | 6.878E-02 | FAIL ABUN  |
| RE-184  | -6.978E-02 | 2.724E-01 | 2.290E-01 | 1.390E-01 | NOT IDENT. |
| OS-185  | 1.997E-02  | 5.096E-02 | 4.432E-02 | 2.600E-02 | NOT IDENT. |
| RE-188  | 2.921E-02  | 2.082E-01 | 1.832E-01 | 1.062E-01 | NOT IDENT. |
| W-188   | -6.921E+00 | 9.419E+00 | 6.967E+00 | 4.806E+00 | FAIL ABUN  |
| IR-192  | 2.035E-02  | 3.872E-02 | 3.522E-02 | 1.976E-02 | FAIL ABUN  |
| AU-195  | 4.243E-02  | 2.845E-01 | 2.376E-01 | 1.451E-01 | FAIL ABUN  |
| TL-200  | -2.228E+01 | 4.745E+02 | 0.000E+00 | 2.421E+02 | SHORT HLIF |
| TL-201  | -3.781E+00 | 8.123E+00 | 6.961E+00 | 4.145E+00 | NOT IDENT. |
| TL-202  | -3.029E-02 | 8.280E-02 | 7.044E-02 | 4.225E-02 | NOT IDENT. |
| HG-203  | 1.021E-02  | 4.825E-02 | 4.278E-02 | 2.461E-02 | NOT IDENT. |
| BI-207  | -8.874E-03 | 5.953E-02 | 4.996E-02 | 3.037E-02 | FAIL ABUN  |
| TL-207  | -4.765E-01 | 8.441E-01 | 6.224E-01 | 4.307E-01 | FAIL ABUN  |
| PO-209  | 2.261E-01  | 8.685E+00 | 7.506E+00 | 4.431E+00 | NOT IDENT. |
| BI-210  | 8.307E-02  | 5.248E+00 | 4.792E+00 | 2.677E+00 | NOT IDENT. |
| PB-210  | 8.307E-02  | 5.248E+00 | 4.792E+00 | 2.677E+00 | NOT IDENT. |
| PO-210  | 8.307E-02  | 5.248E+00 | 4.792E+00 | 2.677E+00 | NOT IDENT. |
| PB-211  | -1.299E+00 | 1.363E+00 | 9.065E-01 | 6.954E-01 | NOT IDENT. |
| BI-212  | 1.234E+00  | 4.957E-01 | 3.935E-01 | 2.529E-01 | FAIL ABUN  |
| PO-215  | -4.765E-01 | 8.441E-01 | 6.224E-01 | 4.307E-01 | FAIL ABUN  |
| RN-219  | -3.470E-02 | 4.753E-01 | 4.139E-01 | 2.425E-01 | NOT IDENT. |
| RN-220  | 4.766E+00  | 3.035E+01 | 2.624E+01 | 1.548E+01 | NOT IDENT. |
| RA-223  | -4.765E-01 | 8.441E-01 | 6.224E-01 | 4.307E-01 | FAIL ABUN  |
| AC-227  | 7.796E-02  | 4.367E-01 | 3.746E-01 | 2.228E-01 | FAIL ABUN  |
| TH-227  | 7.796E-02  | 4.367E-01 | 3.746E-01 | 2.228E-01 | FAIL ABUN  |
| TH-229  | -2.465E-02 | 5.996E-01 | 5.179E-01 | 3.059E-01 | FAIL ABUN  |
| PA-231  | -7.453E-01 | 1.757E+00 | 1.539E+00 | 8.967E-01 | FAIL ABUN  |
| TH-231  | -4.765E-01 | 8.441E-01 | 6.224E-01 | 4.307E-01 | FAIL ABUN  |
| U-231   | 1.300E+00  | 1.340E+00 | 1.098E+00 | 6.835E-01 | FAIL ABUN  |
| PA-233  | -1.043E-02 | 7.212E-02 | 6.365E-02 | 3.680E-02 | FAIL ABUN  |
| PA-234  | 1.556E-01  | 3.355E-01 | 2.986E-01 | 1.712E-01 | FAIL ABUN  |
| PA-234M | 3.548E+00  | 5.701E+00 | 5.056E+00 | 2.909E+00 | NOT IDENT. |
| U-235   | 2.430E-01  | 2.560E-01 | 2.271E-01 | 1.306E-01 | FAIL ABUN  |
| NP-236  | -4.305E-02 | 9.582E-02 | 8.240E-02 | 4.889E-02 | FAIL ABUN  |
| NP-239  | -2.149E-02 | 2.264E-01 | 2.006E-01 | 1.155E-01 | FAIL ABUN  |
| AM-241  | 1.901E-01  | 2.272E-01 | 1.892E-01 | 1.159E-01 | NOT IDENT. |
| CM-243  | 1.009E-01  | 1.156E-01 | 1.060E-01 | 5.896E-02 | FAIL ABUN  |
| AM-246  | 2.579E-02  | 1.686E-01 | 1.451E-01 | 8.601E-02 | NOT IDENT. |
| CM-247  | 1.436E-02  | 4.131E-02 | 3.681E-02 | 2.108E-02 | NOT IDENT. |
| CF-249  | 1.122E-02  | 4.833E-02 | 4.286E-02 | 2.466E-02 | NOT IDENT. |
| CF-251  | -1.003E-01 | 1.535E-01 | 1.301E-01 | 7.830E-02 | NOT IDENT. |

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 SAVAGE ROAD                          *
*                                     CHARLESTON , SC 29417                     *
*                                     GAMMA SPECTROSCOPY BACKGROUND REPORT      *
*****

```

| ENERGY | MDA COUNTS |
|--------|------------|
|--------|------------|

|       |          |
|-------|----------|
| 46.50 | 414.6739 |
| 46.50 | 414.6739 |
| 46.50 | 414.6739 |
| 48.70 | 439.9031 |
| 49.72 | 454.3266 |
| 51.35 | 448.3261 |
| 52.39 | 439.0843 |
| 52.97 | 434.0338 |
| 53.15 | 442.3924 |
| 53.44 | 439.8650 |
| 54.07 | 431.1757 |
| 56.28 | 497.0658 |
| 56.28 | 497.0679 |
| 57.37 | 0.0000   |
| 57.53 | 536.4379 |
| 57.53 | 536.4390 |
| 57.60 | 525.4488 |
| 57.98 | 524.7871 |
| 57.98 | 524.7871 |
| 59.32 | 474.2038 |
| 59.32 | 474.2038 |
| 59.40 | 474.2636 |
| 59.54 | 474.3684 |
| 59.72 | 470.0690 |
| 60.01 | 470.2834 |
| 61.10 | 469.6037 |
| 61.14 | 506.6700 |
| 61.30 | 506.7963 |
| 63.00 | 565.5106 |
| 63.29 | 565.7598 |
| 63.29 | 565.7598 |
| 63.58 | 568.0548 |
| 64.28 | 564.1905 |
| 65.12 | 533.6022 |
| 65.20 | 533.6656 |
| 65.20 | 533.6656 |
| 66.05 | 534.3430 |
| 66.72 | 545.3279 |
| 66.83 | 545.4193 |
| 66.91 | 552.9562 |
| 67.20 | 540.7319 |
| 67.20 | 540.7319 |
| 67.75 | 564.8583 |
| 67.85 | 564.9413 |
| 68.90 | 597.6553 |
| 68.90 | 597.6553 |
| 69.30 | 580.3795 |
| 69.67 | 586.6933 |
| 70.82 | 548.5782 |
| 70.82 | 548.5782 |
| 70.83 | 548.5872 |
| 72.80 | 542.5796 |
| 72.87 | 542.6323 |
| 72.87 | 542.6323 |
| 74.67 | 543.9902 |
| 74.81 | 544.0957 |
| 74.81 | 544.0957 |
| 74.81 | 544.0957 |
| 74.81 | 544.0957 |
| 74.81 | 544.0957 |
| 74.81 | 544.0957 |
| 74.81 | 544.0957 |
| 74.97 | 544.2144 |
| 75.28 | 544.4473 |
| 75.70 | 544.7593 |
| 77.11 | 545.8052 |
| 77.11 | 545.8052 |

|        |          |
|--------|----------|
| 77.11  | 545.8052 |
| 77.11  | 545.8052 |
| 77.11  | 545.8052 |
| 77.11  | 545.8052 |
| 77.11  | 545.8052 |
| 78.38  | 554.3326 |
| 79.62  | 611.5337 |
| 79.80  | 611.6785 |
| 79.80  | 611.6785 |
| 80.11  | 674.3420 |
| 80.18  | 674.4042 |
| 80.30  | 674.5096 |
| 80.30  | 674.5096 |
| 80.57  | 699.1205 |
| 81.00  | 708.6595 |
| 81.07  | 708.7249 |
| 81.07  | 708.7249 |
| 81.07  | 708.7249 |
| 81.07  | 708.7249 |
| 82.60  | 600.6927 |
| 83.37  | 562.5611 |
| 83.78  | 552.1533 |
| 83.78  | 552.1533 |
| 83.78  | 552.1533 |
| 83.78  | 552.1533 |
| 84.21  | 541.7471 |
| 84.90  | 554.4782 |
| 85.43  | 564.0480 |
| 86.29  | 675.1411 |
| 86.50  | 759.7362 |
| 86.54  | 759.7725 |
| 86.59  | 759.8208 |
| 86.72  | 780.4176 |
| 86.79  | 780.4828 |
| 86.94  | 804.6906 |
| 87.30  | 814.2733 |
| 87.30  | 814.2733 |
| 87.30  | 814.2733 |
| 87.30  | 814.2733 |
| 87.30  | 814.2733 |
| 87.30  | 814.2733 |
| 87.30  | 814.2733 |
| 87.57  | 777.6630 |
| 87.88  | 895.5831 |
| 88.03  | 895.7502 |
| 88.36  | 896.1164 |
| 88.47  | 896.2408 |
| 89.95  | 897.8834 |
| 91.11  | 810.4047 |
| 92.29  | 597.7262 |
| 92.38  | 597.7922 |
| 92.38  | 597.7922 |
| 93.35  | 598.4932 |
| 94.00  | 464.7107 |
| 94.67  | 463.5294 |
| 94.67  | 463.5321 |
| 94.90  | 472.9641 |
| 94.90  | 472.9641 |
| 94.90  | 472.9641 |
| 94.90  | 472.9641 |
| 95.87  | 416.0674 |
| 95.87  | 416.0674 |
| 96.73  | 424.2614 |
| 97.43  | 432.3864 |
| 98.44  | 432.8954 |
| 98.44  | 432.8971 |
| 98.88  | 442.7252 |
| 99.55  | 403.1625 |
| 99.55  | 403.1625 |
| 99.86  | 424.0563 |
| 100.00 | 424.1243 |
| 100.10 | 424.1758 |
| 103.18 | 444.2617 |
| 103.76 | 420.0729 |
| 105.00 | 424.5810 |
| 105.31 | 432.5751 |
| 108.00 | 497.8158 |
| 109.28 | 477.8252 |

|        |          |
|--------|----------|
| 111.00 | 410.6140 |
| 111.00 | 410.6140 |
| 111.76 | 433.6713 |
| 112.95 | 425.3235 |
| 115.19 | 441.2111 |
| 116.30 | 456.6168 |
| 117.00 | 425.1640 |
| 117.00 | 425.1640 |
| 117.66 | 419.4935 |
| 121.11 | 386.0758 |
| 121.62 | 386.2781 |
| 121.78 | 406.3060 |
| 122.06 | 406.4225 |
| 122.32 | 414.5203 |
| 122.32 | 414.5203 |
| 122.32 | 414.5203 |
| 122.32 | 414.5203 |
| 123.07 | 428.4030 |
| 127.23 | 427.2130 |
| 129.76 | 410.5712 |
| 131.20 | 396.6390 |
| 133.02 | 411.8754 |
| 133.54 | 404.0039 |
| 135.34 | 429.9967 |
| 136.00 | 435.3278 |
| 136.25 | 437.4580 |
| 136.48 | 424.3865 |
| 140.51 | 454.4687 |
| 140.51 | 0.0000   |
| 142.18 | 417.4980 |
| 142.65 | 421.7543 |
| 143.76 | 396.6926 |
| 144.24 | 397.8880 |
| 144.24 | 397.8880 |
| 144.24 | 397.8880 |
| 144.24 | 397.8880 |
| 145.22 | 399.2661 |
| 145.44 | 406.4961 |
| 147.16 | 454.1895 |
| 152.43 | 383.3671 |
| 152.70 | 367.0096 |
| 153.22 | 386.7202 |
| 154.21 | 380.8794 |
| 154.21 | 380.8794 |
| 154.21 | 380.8794 |
| 154.21 | 380.8794 |
| 155.03 | 418.2415 |
| 156.02 | 427.8833 |
| 158.56 | 381.2970 |
| 159.00 | 0.0000   |
| 159.00 | 413.4857 |
| 160.31 | 407.7433 |
| 161.27 | 391.5082 |
| 162.32 | 409.4804 |
| 162.64 | 406.4811 |
| 163.35 | 352.7728 |
| 163.89 | 344.6306 |
| 165.85 | 406.5479 |
| 167.43 | 391.4678 |
| 171.28 | 357.2067 |
| 171.86 | 356.3340 |
| 172.10 | 356.4042 |
| 176.55 | 391.2641 |
| 176.60 | 391.2784 |
| 181.06 | 325.0914 |
| 184.41 | 356.7732 |
| 185.71 | 357.1368 |
| 186.00 | 357.2193 |
| 190.27 | 357.9788 |
| 192.34 | 321.1616 |
| 193.63 | 342.3142 |
| 197.04 | 365.5811 |
| 198.01 | 357.3151 |
| 198.60 | 374.5443 |
| 200.40 | 367.5707 |
| 201.83 | 360.4716 |
| 202.84 | 351.1075 |
| 205.31 | 392.9256 |

|        |          |
|--------|----------|
| 208.36 | 404.1185 |
| 208.81 | 363.3954 |
| 209.75 | 320.1757 |
| 209.75 | 320.1757 |
| 210.97 | 310.1199 |
| 215.65 | 323.5067 |
| 216.55 | 311.3569 |
| 218.09 | 306.2839 |
| 222.10 | 322.3399 |
| 223.80 | 302.0752 |
| 226.40 | 324.3869 |
| 227.00 | 312.5421 |
| 227.08 | 303.8472 |
| 227.20 | 303.8727 |
| 228.16 | 308.4301 |
| 228.18 | 308.4344 |
| 228.18 | 308.4344 |
| 231.56 | 0.0000   |
| 235.69 | 287.4384 |
| 236.00 | 301.5228 |
| 236.00 | 301.5228 |
| 238.63 | 271.1004 |
| 238.63 | 271.1004 |
| 238.63 | 271.1004 |
| 238.63 | 271.1004 |
| 239.00 | 271.1663 |
| 240.98 | 271.5225 |
| 241.98 | 271.7015 |
| 241.98 | 271.7015 |
| 241.98 | 271.7015 |
| 244.69 | 245.0757 |
| 245.39 | 246.9517 |
| 247.94 | 252.6607 |
| 248.90 | 240.1474 |
| 249.79 | 226.6492 |
| 252.40 | 224.8144 |
| 252.85 | 241.4961 |
| 252.85 | 241.4961 |
| 254.15 | 0.0000   |
| 256.20 | 220.9174 |
| 256.20 | 220.9174 |
| 260.50 | 240.4391 |
| 260.90 | 247.1823 |
| 262.80 | 234.8398 |
| 264.65 | 246.4189 |
| 268.24 | 250.5439 |
| 268.79 | 243.9161 |
| 269.46 | 244.0159 |
| 269.46 | 244.0159 |
| 269.46 | 244.0159 |
| 269.46 | 244.0159 |
| 271.23 | 240.2480 |
| 273.65 | 296.2628 |
| 276.40 | 235.0910 |
| 277.35 | 230.5656 |
| 277.60 | 235.0995 |
| 277.60 | 235.0995 |
| 278.00 | 225.0305 |
| 278.60 | 226.0103 |
| 279.20 | 236.0015 |
| 279.53 | 250.4613 |
| 280.46 | 267.7278 |
| 281.68 | 251.6858 |
| 283.67 | 231.2094 |
| 284.30 | 222.2618 |
| 285.00 | 197.9474 |
| 285.90 | 193.5326 |
| 286.10 | 188.1268 |
| 286.10 | 188.1268 |
| 287.40 | 211.8054 |
| 288.45 | 0.0000   |
| 290.67 | 228.2327 |
| 290.80 | 228.2480 |
| 291.72 | 216.2718 |
| 293.26 | 0.0000   |
| 293.70 | 180.1826 |
| 295.21 | 206.4032 |
| 295.21 | 206.4032 |

|        |          |
|--------|----------|
| 295.21 | 206.4032 |
| 295.96 | 206.4946 |
| 296.50 | 206.5584 |
| 297.23 | 206.6443 |
| 298.57 | 206.8022 |
| 299.80 | 206.9491 |
| 299.80 | 206.9491 |
| 300.09 | 206.9823 |
| 300.09 | 206.9823 |
| 300.09 | 206.9823 |
| 300.09 | 206.9823 |
| 300.12 | 206.9851 |
| 301.29 | 208.3402 |
| 302.84 | 203.9580 |
| 303.76 | 188.8356 |
| 303.91 | 188.8507 |
| 304.40 | 185.8569 |
| 304.40 | 185.8569 |
| 304.84 | 182.8540 |
| 306.84 | 198.7525 |
| 308.46 | 184.1437 |
| 311.98 | 190.0120 |
| 316.51 | 173.0027 |
| 318.01 | 173.1473 |
| 319.02 | 187.9853 |
| 319.41 | 184.3384 |
| 320.08 | 181.6406 |
| 323.87 | 192.4871 |
| 323.87 | 192.4871 |
| 323.87 | 192.4871 |
| 323.87 | 192.4871 |
| 325.23 | 192.6270 |
| 328.77 | 191.4517 |
| 333.44 | 195.0242 |
| 334.20 | 192.7810 |
| 334.20 | 192.7810 |
| 334.30 | 192.7911 |
| 338.28 | 197.0758 |
| 338.28 | 197.0758 |
| 338.28 | 197.0758 |
| 338.28 | 197.0758 |
| 338.32 | 197.0784 |
| 338.32 | 197.0784 |
| 338.32 | 197.0784 |
| 340.50 | 201.9666 |
| 340.57 | 201.9718 |
| 344.27 | 203.1416 |
| 345.85 | 223.0025 |
| 350.59 | 0.0000   |
| 351.07 | 196.8263 |
| 351.92 | 170.6561 |
| 351.92 | 170.6561 |
| 351.92 | 170.6561 |
| 355.39 | 0.0000   |
| 356.01 | 150.3398 |
| 364.48 | 169.8552 |
| 366.43 | 162.4657 |
| 367.43 | 164.4355 |
| 367.94 | 0.0000   |
| 369.80 | 143.8137 |
| 374.96 | 165.0472 |
| 383.85 | 156.2364 |
| 387.95 | 167.0447 |
| 388.63 | 162.3239 |
| 391.69 | 155.8668 |
| 391.69 | 155.8668 |
| 392.90 | 153.0859 |
| 398.62 | 140.0688 |
| 400.65 | 128.6789 |
| 401.10 | 147.9167 |
| 401.81 | 152.7697 |
| 402.60 | 136.4861 |
| 404.84 | 182.8124 |
| 410.95 | 130.2605 |
| 411.60 | 137.0564 |
| 413.65 | 200.9465 |
| 414.70 | 172.0464 |
| 415.30 | 168.2269 |

|        |          |
|--------|----------|
| 415.76 | 165.3619 |
| 417.63 | 0.0000   |
| 418.52 | 142.3309 |
| 423.70 | 149.4582 |
| 427.08 | 126.3580 |
| 427.89 | 135.1551 |
| 432.53 | 164.6657 |
| 433.93 | 153.0673 |
| 439.47 | 148.5562 |
| 439.56 | 148.5618 |
| 439.89 | 144.6740 |
| 443.98 | 136.1189 |
| 444.90 | 113.6409 |
| 445.03 | 113.6480 |
| 445.03 | 113.6480 |
| 445.03 | 113.6480 |
| 445.03 | 113.6480 |
| 453.90 | 105.2328 |
| 463.38 | 110.2681 |
| 468.07 | 113.7843 |
| 473.00 | 123.9349 |
| 475.06 | 128.0095 |
| 475.35 | 117.1084 |
| 476.78 | 113.2054 |
| 477.59 | 104.3040 |
| 477.96 | 114.2546 |
| 482.03 | 136.3411 |
| 484.57 | 104.6039 |
| 487.03 | 108.6993 |
| 490.36 | 0.0000   |
| 492.35 | 109.9342 |
| 497.08 | 101.1332 |
| 507.63 | 0.0000   |
| 510.53 | 0.0000   |
| 510.84 | 108.7376 |
| 511.00 | 108.7442 |
| 511.85 | 108.7818 |
| 511.85 | 108.7818 |
| 513.99 | 102.4882 |
| 513.99 | 102.4882 |
| 520.41 | 101.0620 |
| 520.65 | 101.0718 |
| 527.90 | 88.1810  |
| 528.96 | 0.0000   |
| 529.64 | 112.5826 |
| 529.87 | 0.0000   |
| 531.02 | 106.5535 |
| 537.32 | 107.8271 |
| 543.00 | 100.9239 |
| 546.56 | 0.0000   |
| 549.76 | 101.1825 |
| 552.65 | 99.2450  |
| 555.20 | 119.8222 |
| 563.23 | 119.1521 |
| 563.90 | 106.8539 |
| 568.70 | 100.8663 |
| 569.32 | 105.0082 |
| 569.50 | 101.9270 |
| 569.67 | 101.9318 |
| 573.80 | 106.2112 |
| 574.00 | 111.3750 |
| 574.64 | 115.5273 |
| 578.91 | 115.3607 |
| 579.30 | 0.0000   |
| 583.14 | 105.5361 |
| 585.48 | 107.0065 |
| 591.81 | 89.2586  |
| 592.07 | 80.9631  |
| 593.00 | 91.3730  |
| 595.88 | 101.8592 |
| 600.56 | 67.6724  |
| 602.52 | 0.0000   |
| 602.71 | 102.4530 |
| 602.71 | 102.4530 |
| 603.60 | 102.4866 |
| 604.41 | 111.2031 |
| 604.70 | 111.2135 |
| 609.31 | 97.1210  |

|        |          |
|--------|----------|
| 609.31 | 97.1210  |
| 609.31 | 97.1210  |
| 609.31 | 97.1210  |
| 610.33 | 95.7621  |
| 612.46 | 85.3792  |
| 614.37 | 94.1550  |
| 618.01 | 85.8938  |
| 621.84 | 77.6151  |
| 621.84 | 77.6151  |
| 631.29 | 91.5475  |
| 633.02 | 81.0718  |
| 633.10 | 81.0737  |
| 634.78 | 89.5488  |
| 635.90 | 85.3664  |
| 636.97 | 94.8867  |
| 645.85 | 83.5383  |
| 646.12 | 87.7761  |
| 656.30 | 99.0391  |
| 657.75 | 100.8563 |
| 657.90 | 0.0000   |
| 661.65 | 88.2301  |
| 661.65 | 88.2301  |
| 664.57 | 0.0000   |
| 666.33 | 90.4951  |
| 666.33 | 90.4951  |
| 675.00 | 96.0886  |
| 677.61 | 68.3875  |
| 685.20 | 92.1204  |
| 692.80 | 93.4188  |
| 695.00 | 98.8573  |
| 696.49 | 95.6793  |
| 696.49 | 95.6793  |
| 697.00 | 96.7698  |
| 697.49 | 98.9359  |
| 698.33 | 98.9606  |
| 698.50 | 94.6645  |
| 699.00 | 95.7554  |
| 702.63 | 82.9385  |
| 706.10 | 79.7939  |
| 706.58 | 0.0000   |
| 706.67 | 86.2793  |
| 709.31 | 74.4782  |
| 711.68 | 76.6942  |
| 713.82 | 70.2590  |
| 717.42 | 83.3239  |
| 720.50 | 78.9155  |
| 721.93 | 0.0000   |
| 722.20 | 68.6361  |
| 722.78 | 59.6151  |
| 722.78 | 59.6151  |
| 722.89 | 59.6178  |
| 722.95 | 59.6191  |
| 723.30 | 66.8532  |
| 724.18 | 72.2933  |
| 727.18 | 93.3444  |
| 733.00 | 70.6764  |
| 735.90 | 67.4750  |
| 739.58 | 88.2497  |
| 742.81 | 70.8875  |
| 744.21 | 57.8251  |
| 747.13 | 99.3735  |
| 751.79 | 90.7630  |
| 752.31 | 84.2150  |
| 753.82 | 71.1239  |
| 755.35 | 93.0497  |
| 756.15 | 97.4524  |
| 756.87 | 94.1885  |
| 763.93 | 120.7261 |
| 765.79 | 87.8496  |
| 766.42 | 87.8652  |
| 766.84 | 95.5662  |
| 776.49 | 83.5370  |
| 778.00 | 90.0028  |
| 778.57 | 79.9128  |
| 778.89 | 79.9199  |
| 783.80 | 60.7162  |
| 785.46 | 67.1885  |
| 792.07 | 71.1380  |



|         |         |
|---------|---------|
| 795.84  | 56.3126 |
| 796.30  | 52.2312 |
| 798.80  | 71.2762 |
| 801.93  | 77.6819 |
| 805.60  | 61.0989 |
| 810.29  | 69.5236 |
| 810.76  | 69.5328 |
| 815.85  | 51.9930 |
| 817.79  | 64.0979 |
| 818.51  | 70.6145 |
| 819.60  | 73.4244 |
| 826.30  | 69.8380 |
| 828.27  | 0.0000  |
| 831.60  | 86.7277 |
| 831.96  | 81.1412 |
| 834.83  | 84.0070 |
| 836.80  | 0.0000  |
| 846.75  | 52.4430 |
| 848.13  | 58.0846 |
| 856.28  | 0.0000  |
| 856.80  | 67.6128 |
| 860.37  | 71.4386 |
| 867.32  | 72.6494 |
| 867.82  | 75.8882 |
| 871.10  | 73.5313 |
| 873.19  | 65.0834 |
| 874.81  | 74.5495 |
| 875.33  | 0.0000  |
| 876.40  | 80.2443 |
| 879.36  | 74.6395 |
| 880.27  | 68.9885 |
| 880.51  | 68.0479 |
| 881.50  | 55.7758 |
| 883.24  | 67.1504 |
| 884.67  | 70.9610 |
| 889.25  | 69.1534 |
| 896.60  | 68.3394 |
| 898.02  | 77.8593 |
| 899.00  | 73.1306 |
| 903.28  | 68.4595 |
| 911.07  | 64.7876 |
| 911.07  | 64.7876 |
| 911.07  | 64.7876 |
| 919.63  | 51.5632 |
| 920.93  | 55.4016 |
| 925.00  | 48.4473 |
| 925.24  | 42.0754 |
| 926.50  | 27.8776 |
| 935.52  | 46.0225 |
| 937.48  | 55.9117 |
| 944.10  | 53.8102 |
| 946.00  | 54.7978 |
| 949.00  | 52.9153 |
| 962.29  | 46.3350 |
| 964.01  | 52.9766 |
| 966.15  | 66.6711 |
| 968.20  | 66.7048 |
| 969.11  | 66.7202 |
| 969.11  | 66.7202 |
| 969.11  | 66.7202 |
| 977.42  | 59.4291 |
| 980.50  | 63.9993 |
| 983.50  | 71.8110 |
| 989.30  | 65.1107 |
| 996.32  | 86.6388 |
| 1001.03 | 63.3483 |
| 1001.68 | 59.4586 |
| 1004.76 | 87.7917 |
| 1021.30 | 0.0000  |
| 1024.50 | 0.0000  |
| 1034.80 | 56.9875 |
| 1036.00 | 57.0017 |
| 1037.82 | 63.9103 |
| 1038.57 | 64.9043 |
| 1038.76 | 0.0000  |
| 1045.16 | 38.4128 |
| 1046.59 | 42.3666 |
| 1048.07 | 51.2510 |

|         |         |
|---------|---------|
| 1050.47 | 54.2391 |
| 1050.47 | 54.2391 |
| 1062.04 | 64.2753 |
| 1063.62 | 60.3422 |
| 1076.63 | 61.5156 |
| 1077.35 | 69.4645 |
| 1078.86 | 61.5459 |
| 1085.78 | 56.6730 |
| 1099.22 | 79.7852 |
| 1112.02 | 66.8708 |
| 1112.84 | 65.1694 |
| 1115.52 | 80.6501 |
| 1120.29 | 60.1245 |
| 1120.29 | 60.1245 |
| 1120.29 | 60.1245 |
| 1120.29 | 60.1245 |
| 1120.51 | 60.1270 |
| 1121.28 | 60.1367 |
| 1124.00 | 0.0000  |
| 1129.67 | 75.3113 |
| 1131.51 | 0.0000  |
| 1147.95 | 0.0000  |
| 1167.94 | 72.9082 |
| 1173.22 | 77.0483 |
| 1175.09 | 75.0509 |
| 1177.93 | 79.1553 |
| 1189.05 | 75.2767 |
| 1204.90 | 84.7157 |
| 1205.75 | 0.0000  |
| 1213.00 | 90.9954 |
| 1221.42 | 98.3281 |
| 1230.97 | 89.2869 |
| 1235.34 | 82.1777 |
| 1236.41 | 0.0000  |
| 1238.25 | 61.6699 |
| 1246.25 | 61.7725 |
| 1260.41 | 0.0000  |
| 1271.85 | 41.3981 |
| 1274.45 | 50.7386 |
| 1274.54 | 50.7406 |
| 1291.56 | 51.9531 |
| 1298.22 | 0.0000  |
| 1312.09 | 40.6901 |
| 1325.50 | 26.1525 |
| 1325.50 | 26.1525 |
| 1332.49 | 37.7124 |
| 1333.61 | 28.2898 |
| 1360.21 | 26.3306 |
| 1362.66 | 0.0000  |
| 1365.15 | 39.0054 |
| 1368.21 | 33.7552 |
| 1368.53 | 0.0000  |
| 1376.25 | 29.5814 |
| 1384.27 | 30.6851 |
| 1394.10 | 25.4414 |
| 1395.20 | 31.8091 |
| 1407.95 | 36.1361 |
| 1434.06 | 20.2926 |
| 1436.60 | 33.1242 |
| 1457.56 | 0.0000  |
| 1460.81 | 31.1264 |
| 1489.15 | 18.3406 |
| 1509.49 | 18.4070 |
| 1596.49 | 18.1389 |
| 1620.62 | 13.2461 |
| 1678.03 | 0.0000  |
| 1691.02 | 11.4873 |
| 1691.02 | 11.4873 |
| 1706.46 | 0.0000  |
| 1750.46 | 0.0000  |
| 1764.49 | 10.6551 |
| 1764.49 | 10.6551 |
| 1764.49 | 10.6551 |
| 1764.49 | 10.6551 |
| 1770.23 | 8.4833  |
| 1771.40 | 8.4848  |
| 1791.20 | 0.0000  |
| 1808.65 | 10.7291 |

1836.01

10.7744

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G244630004

|                             |            |      |
|-----------------------------|------------|------|
| Total Uranium Activity      | 1.0340E+01 | ug/g |
| Total Uranium Counting Unc. | 7.5211E+00 | ug/g |
| Total Uranium Tpu           | 3.8373E-06 | ug/g |
| Total Uranium Mda           | 4.4956E+00 | ug/g |

```

*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON ,SC 29417               *
*               GROSS GAMMA REPORT                 *
*
*****
*
*  BATCH ID      : 941639                          SAMPLE ID   : G244630004
*  ANALYST       : MXR1                             DETECTOR    : GAM06
*  SAMPLE DATE   : 8-JAN-2010 12:00:00.00          COUNT TIME   : 0 02:00:00.00
*  ANALYSIS DATE : 23-JAN-2010 11:46:07.08          SAMPLE ALQT  : 140.650 GRAM
*
*****

```

```

GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.089E+01
GROSS GAMMA ERROR  (pCi/GRAM )  : 1.569E+00
GROSS GAMMA MDA    (pCi/GRAM )  : 4.202E+00
GROSS GAMMA DLC    (pCi/GRAM )  : 2.048E+00

```

VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 13:48:04.23

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630005.CNF;1
Sample date        : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 11:46:35
Sample ID          : G244630005      Sample quantity   : 1.28540E+02 GRAM
Detector name      : GAM07           Detector geometry: CAN
Elapsed live time   : 0 02:00:00.00   Elapsed real time: 0 02:00:01.55  0.0%
Energy tolerance    : 1.50000 keV     Analyst Initials : MXR1
Abundance limit     : 75.00000         Sensitivity       : 5.00000
Batch ID           : 941639           Detector SN#      :
Matrix Spike ID     :                  LCS ID           : 1032-A
*****

```

| Pk | It | Energy   | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err  | Fit      |
|----|----|----------|------|-------|------|---------|------|----|----------|-------|----------|
| 1  | 0  | 47.07*   | 29   | 501   | 0.72 | 93.80   | 89   | 8  | 4.06E-03 | 139.6 |          |
| 2  | 0  | 62.99*   | 138  | 652   | 0.99 | 125.63  | 122  | 8  | 1.92E-02 | 33.9  |          |
| 3  | 2  | 74.85*   | 660  | 697   | 1.22 | 149.34  | 144  | 22 | 9.16E-02 | 7.7   | 1.08E+00 |
| 4  | 2  | 77.15*   | 996  | 544   | 1.02 | 153.94  | 144  | 22 | 1.38E-01 | 5.0   |          |
| 5  | 5  | 84.26*   | 164  | 465   | 1.39 | 168.17  | 165  | 13 | 2.28E-02 | 22.3  | 1.23E+00 |
| 6  | 5  | 87.27*   | 341  | 543   | 1.12 | 174.18  | 165  | 13 | 4.74E-02 | 12.7  |          |
| 7  | 0  | 89.93    | 139  | 474   | 0.95 | 179.50  | 177  | 6  | 1.93E-02 | 26.4  |          |
| 8  | 0  | 92.95*   | 432  | 533   | 1.59 | 185.55  | 182  | 8  | 6.00E-02 | 10.8  |          |
| 9  | 0  | 129.66   | 75   | 603   | 1.09 | 258.95  | 253  | 11 | 1.05E-02 | 64.2  |          |
| 10 | 0  | 186.04*  | 264  | 477   | 1.34 | 371.69  | 367  | 10 | 3.66E-02 | 17.0  |          |
| 11 | 0  | 209.52   | 203  | 323   | 1.00 | 418.64  | 414  | 10 | 2.81E-02 | 18.2  |          |
| 12 | 0  | 238.68*  | 1611 | 331   | 1.08 | 476.96  | 474  | 7  | 2.24E-01 | 3.2   |          |
| 13 | 0  | 241.85   | 323  | 246   | 1.58 | 483.29  | 481  | 6  | 4.48E-02 | 9.7   |          |
| 14 | 0  | 269.93   | 200  | 317   | 1.30 | 539.43  | 533  | 14 | 2.78E-02 | 20.1  |          |
| 15 | 1  | 295.34*  | 555  | 181   | 1.31 | 590.26  | 585  | 21 | 7.71E-02 | 6.0   | 8.38E-01 |
| 16 | 1  | 300.24   | 134  | 159   | 1.36 | 600.06  | 585  | 21 | 1.86E-02 | 18.9  |          |
| 17 | 0  | 328.03   | 96   | 167   | 0.93 | 655.63  | 651  | 9  | 1.34E-02 | 26.2  |          |
| 18 | 0  | 338.34*  | 369  | 158   | 1.26 | 676.23  | 672  | 9  | 5.12E-02 | 8.2   |          |
| 19 | 0  | 352.03*  | 867  | 223   | 1.31 | 703.62  | 698  | 11 | 1.20E-01 | 4.8   |          |
| 20 | 0  | 462.18   | 97   | 141   | 1.02 | 923.88  | 918  | 12 | 1.35E-02 | 26.5  |          |
| 21 | 0  | 511.29*  | 131  | 155   | 2.12 | 1022.09 | 1015 | 15 | 1.82E-02 | 25.4  |          |
| 22 | 0  | 583.26*  | 548  | 92    | 1.28 | 1165.99 | 1160 | 13 | 7.62E-02 | 5.7   |          |
| 23 | 0  | 609.44*  | 618  | 111   | 1.36 | 1218.35 | 1212 | 13 | 8.59E-02 | 5.4   |          |
| 24 | 0  | 727.21*  | 138  | 111   | 1.58 | 1453.85 | 1447 | 16 | 1.92E-02 | 19.1  |          |
| 25 | 0  | 768.37   | 64   | 60    | 1.19 | 1536.16 | 1532 | 10 | 8.84E-03 | 26.3  |          |
| 26 | 0  | 773.55   | 53   | 77    | 1.46 | 1546.53 | 1541 | 14 | 7.36E-03 | 37.7  |          |
| 27 | 0  | 796.95   | 128  | 119   | 9.03 | 1593.32 | 1580 | 28 | 1.77E-02 | 25.8  |          |
| 28 | 0  | 860.40*  | 96   | 61    | 1.31 | 1720.20 | 1713 | 15 | 1.34E-02 | 21.0  |          |
| 29 | 0  | 911.24   | 415  | 67    | 1.63 | 1821.88 | 1815 | 14 | 5.77E-02 | 6.4   |          |
| 30 | 1  | 964.67   | 64   | 61    | 1.98 | 1928.72 | 1922 | 24 | 8.83E-03 | 29.7  | 1.78E+00 |
| 31 | 1  | 969.15   | 197  | 64    | 1.98 | 1937.69 | 1922 | 24 | 2.73E-02 | 11.0  |          |
| 32 | 0  | 1121.08* | 138  | 127   | 1.83 | 2241.52 | 2233 | 19 | 1.92E-02 | 21.6  |          |
| 33 | 0  | 1378.69  | 36   | 30    | 0.71 | 2756.70 | 2750 | 14 | 4.96E-03 | 38.5  |          |
| 34 | 0  | 1409.26  | 31   | 30    | 1.32 | 2817.82 | 2811 | 14 | 4.34E-03 | 41.9  |          |
| 35 | 0  | 1461.10* | 1635 | 28    | 2.10 | 2921.50 | 2912 | 19 | 2.27E-01 | 2.6   |          |
| 36 | 0  | 1594.14  | 15   | 24    | 1.33 | 3187.56 | 3181 | 9  | 2.07E-03 | 68.7  |          |
| 37 | 0  | 1764.86* | 113  | 8     | 2.33 | 3528.99 | 3522 | 15 | 1.57E-02 | 11.2  |          |

Flag: "\*" = Peak area was modified by background subtraction

## VMS Nuclide Identification Report V3.1 Generated 23-JAN-2010 13:48:07

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630005.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 8-JAN-2010 12:00:00   Acquisition date : 23-JAN-2010 11:46:35
Sample ID        : G244630005             Sample quantity  : 128.54 GRAM
Sample type       : SOLID                  Sample geometry   :
Detector name     : GAMMA7                 Detector geometry: CAN
Elapsed live time : 0 02:00:00.00          Elapsed real time: 0 02:00:01.55    0.0%
Peak Width (FWHM): 3.00                   Confidence level  : 5.00 %
Energy tolerance  : 1.50 keV               Half life ratio   : 8.00
Errors propagated: Yes                     Systematic Error  : 0.00 %
Efficiency type   : Empirical              Efficiencies at   : Peak Energy
Abundance limit   : 75.00                  WTM error limit   : 3.00

```

## Full Combined Activity-MDA Report

## ---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| K-40    | +         | 1460.81      | *   | 3.962E+01           | 3.979E+00 | 5.586E-01      | 4.797E-02 | 70.932  |
| CD-109  | +         | 88.03        | *   | 4.009E+00           | 1.082E+00 | 1.115E+00      | 1.051E-01 | 3.594   |
| SN-126  | +         | 64.28        |     | 8.822E-01           | 6.120E-01 | 6.731E-01      | 9.762E-02 | 1.311   |
|         | +         | 86.94        |     | 1.639E+00           | 7.967E-01 | 5.154E-01      | 2.139E-01 | 3.179   |
|         | +         | 87.57        | *   | 3.941E-01           | 1.064E-01 | 1.099E-01      | 1.030E-02 | 3.587   |
| TL-208  |           | 277.35       |     | 3.137E-01           | 4.325E-01 | 7.153E-01      | 8.758E-02 | 0.439   |
|         | +         | 510.84       |     | 6.431E-01           | 3.361E-01 | 2.255E-01      | 2.747E-02 | 2.852   |
|         | +         | 583.14       | *   | 7.681E-01           | 1.141E-01 | 5.895E-02      | 5.638E-03 | 13.031  |
|         | +         | 860.37       |     | 1.267E+00           | 5.466E-01 | 5.066E-01      | 4.953E-02 | 2.500   |
| BI-210  | +         | 46.50        | *   | 9.741E-01           | 2.720E+00 | 3.020E+00      | 2.833E-01 | 0.323   |
| PB-210  | +         | 46.50        | *   | 9.741E-01           | 2.720E+00 | 3.020E+00      | 2.833E-01 | 0.323   |
| PO-210  | +         | 46.50        | *   | 9.741E-01           | 2.720E+00 | 3.020E+00      | 2.570E-01 | 0.323   |
| BI-211  |           | 72.87        |     | 6.201E+00           | 3.199E+00 | 4.973E+00      | 3.925E-01 | 1.247   |
|         | +         | 351.07       | *   | 5.316E+00           | 6.989E-01 | 3.793E-01      | 3.403E-02 | 14.016  |
| PB-212  | +         | 74.81        |     | 2.964E+00           | 5.869E-01 | 5.280E-01      | 6.513E-02 | 5.614   |
|         | +         | 77.11        |     | 2.581E+00           | 3.349E-01 | 3.053E-01      | 2.520E-02 | 8.455   |
|         | +         | 87.30        |     | 1.823E+00           | 5.246E-01 | 5.723E-01      | 7.830E-02 | 3.185   |
|         | +         | 238.63       | *   | 2.149E+00           | 2.462E-01 | 1.250E-01      | 1.196E-02 | 17.187  |
|         | +         | 300.09       |     | 2.765E+00           | 1.081E+00 | 1.241E+00      | 1.287E-01 | 2.229   |
| PO-212  | +         | 74.81        |     | 2.964E+00           | 5.869E-01 | 5.280E-01      | 6.513E-02 | 5.614   |
|         | +         | 77.11        |     | 2.581E+00           | 3.349E-01 | 3.053E-01      | 2.520E-02 | 8.455   |
|         | +         | 87.30        |     | 1.823E+00           | 5.246E-01 | 5.723E-01      | 7.830E-02 | 3.185   |
|         | +         | 115.19       |     | 6.516E-01           | 3.734E+00 | 6.061E+00      | 5.220E-01 | 0.108   |
|         | +         | 238.63       | *   | 2.149E+00           | 2.462E-01 | 1.250E-01      | 1.196E-02 | 17.187  |
|         | +         | 300.09       |     | 2.765E+00           | 1.081E+00 | 1.241E+00      | 1.287E-01 | 2.229   |
| BI-214  | +         | 609.31       | *   | 1.632E+00           | 2.445E-01 | 1.261E-01      | 1.305E-02 | 12.942  |
|         | +         | 1120.29      |     | 1.889E+00           | 8.407E-01 | 5.619E-01      | 6.033E-02 | 3.361   |
|         | +         | 1764.49      |     | 2.129E+00           | 5.083E-01 | 2.803E-01      | 2.305E-02 | 7.595   |
| PB-214  | +         | 74.81        |     | 5.108E+00           | 9.684E-01 | 9.098E-01      | 9.953E-02 | 5.614   |
|         | +         | 77.11        |     | 4.425E+00           | 6.659E-01 | 5.234E-01      | 5.879E-02 | 8.455   |
|         | +         | 87.30        |     | 3.123E+00           | 8.764E-01 | 9.804E-01      | 1.187E-01 | 3.185   |
|         | +         | 241.98       |     | 2.586E+00           | 5.656E-01 | 7.220E-01      | 7.328E-02 | 3.581   |
|         | +         | 295.21       |     | 2.009E+00           | 3.207E-01 | 2.172E-01      | 2.299E-02 | 9.249   |
|         | +         | 351.92       | *   | 1.849E+00           | 2.616E-01 | 1.322E-01      | 1.372E-02 | 13.986  |

## ---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PO-214  | +         | 74.81        |     | 5.108E+00           | 9.684E-01 | 9.098E-01      | 9.953E-02 | 5.614   |
|         | +         | 77.11        |     | 4.425E+00           | 6.659E-01 | 5.234E-01      | 5.879E-02 | 8.455   |
|         | +         | 87.30        |     | 3.123E+00           | 8.764E-01 | 9.804E-01      | 1.187E-01 | 3.185   |
|         | +         | 241.98       |     | 2.586E+00           | 5.656E-01 | 7.220E-01      | 7.328E-02 | 3.581   |
|         | +         | 295.21       |     | 2.009E+00           | 3.207E-01 | 2.172E-01      | 2.299E-02 | 9.249   |
| PO-216  | +         | 351.92       | *   | 1.849E+00           | 2.616E-01 | 1.322E-01      | 1.372E-02 | 13.986  |
|         | +         | 74.81        |     | 2.964E+00           | 5.869E-01 | 5.280E-01      | 6.513E-02 | 5.614   |
|         | +         | 77.11        |     | 2.581E+00           | 3.349E-01 | 3.053E-01      | 2.520E-02 | 8.455   |
|         | +         | 87.30        |     | 1.823E+00           | 5.246E-01 | 5.723E-01      | 7.830E-02 | 3.185   |
|         | +         | 238.63       | *   | 2.149E+00           | 2.462E-01 | 1.250E-01      | 1.196E-02 | 17.187  |
| PO-218  | +         | 300.09       |     | 2.765E+00           | 1.081E+00 | 1.241E+00      | 1.287E-01 | 2.229   |
|         | +         | 74.81        |     | 5.108E+00           | 9.684E-01 | 9.098E-01      | 9.953E-02 | 5.614   |
|         | +         | 77.11        |     | 4.425E+00           | 6.659E-01 | 5.234E-01      | 5.879E-02 | 8.455   |
|         | +         | 87.30        |     | 3.123E+00           | 8.764E-01 | 9.804E-01      | 1.187E-01 | 3.185   |
|         | +         | 241.98       |     | 2.586E+00           | 5.656E-01 | 7.220E-01      | 7.328E-02 | 3.581   |
| RA-224  | +         | 295.21       |     | 2.009E+00           | 3.207E-01 | 2.172E-01      | 2.299E-02 | 9.249   |
|         | +         | 351.92       | *   | 1.849E+00           | 2.616E-01 | 1.322E-01      | 1.372E-02 | 13.986  |
|         | +         | 240.98       | *   | 4.903E+00           | 1.037E+00 | 1.507E+00      | 1.274E-01 | 3.254   |
|         | +         | 609.31       | *   | 1.632E+00           | 2.445E-01 | 1.261E-01      | 1.305E-02 | 12.942  |
|         | +         | 1120.29      |     | 1.889E+00           | 8.407E-01 | 5.619E-01      | 6.033E-02 | 3.361   |
| AC-228  | +         | 1764.49      |     | 2.129E+00           | 5.083E-01 | 2.803E-01      | 2.305E-02 | 7.595   |
|         | +         | 338.32       |     | 2.489E+00           | 1.105E+00 | 4.131E-01      | 1.704E-01 | 6.025   |
|         | +         | 911.07       | *   | 2.582E+00           | 4.483E-01 | 2.342E-01      | 2.728E-02 | 11.025  |
|         | +         | 969.11       |     | 2.153E+00           | 6.920E-01 | 4.165E-01      | 9.785E-02 | 5.169   |
|         | +         | 338.32       |     | 2.489E+00           | 1.105E+00 | 4.131E-01      | 1.704E-01 | 6.025   |
| RA-228  | +         | 911.07       | *   | 2.582E+00           | 4.483E-01 | 2.342E-01      | 2.728E-02 | 11.025  |
|         | +         | 969.11       |     | 2.153E+00           | 6.920E-01 | 4.165E-01      | 9.785E-02 | 5.169   |
|         | +         | 74.81        |     | 3.009E+00           | 5.262E-01 | 5.359E-01      | 4.356E-02 | 5.614   |
|         | +         | 77.11        |     | 2.620E+00           | 3.400E-01 | 3.099E-01      | 2.558E-02 | 8.455   |
|         | +         | 87.30        |     | 1.850E+00           | 4.993E-01 | 5.809E-01      | 5.424E-02 | 3.185   |
| TH-228  | +         | 238.63       | *   | 2.181E+00           | 2.499E-01 | 1.269E-01      | 1.214E-02 | 17.187  |
|         | +         | 300.09       |     | 2.806E+00           | 1.971E+00 | 1.259E+00      | 7.463E-01 | 2.229   |
|         | +         | 609.31       | *   | 1.632E+00           | 2.445E-01 | 1.261E-01      | 1.305E-02 | 12.942  |
|         | +         | 1120.29      |     | 1.889E+00           | 8.407E-01 | 5.619E-01      | 6.033E-02 | 3.361   |
|         | +         | 1764.49      |     | 2.129E+00           | 5.083E-01 | 2.803E-01      | 2.305E-02 | 7.595   |
| TH-232  | +         | 338.32       |     | 2.489E+00           | 4.602E-01 | 4.131E-01      | 3.536E-02 | 6.025   |
|         | +         | 911.07       | *   | 2.582E+00           | 4.483E-01 | 2.342E-01      | 2.728E-02 | 11.025  |
|         | +         | 969.11       |     | 2.153E+00           | 6.920E-01 | 4.165E-01      | 9.785E-02 | 5.169   |
|         | +         | 63.29        | *   | 2.229E+00           | 1.561E+00 | 1.678E+00      | 2.920E-01 | 1.328   |
|         | +         | 92.38        |     | 3.323E+00           | 9.408E-01 | 6.574E-01      | 1.206E-01 | 5.055   |
| U-234   | +         | 609.31       | *   | 1.632E+00           | 2.445E-01 | 1.261E-01      | 1.305E-02 | 12.942  |
|         | +         | 1120.29      |     | 1.889E+00           | 8.407E-01 | 5.619E-01      | 6.033E-02 | 3.361   |
|         | +         | 1764.49      |     | 2.129E+00           | 5.083E-01 | 2.803E-01      | 2.305E-02 | 7.595   |
|         | +         | 86.50        | *   | 1.157E+00           | 3.932E-01 | 3.649E-01      | 8.250E-02 | 3.172   |
|         | +         | 95.87        |     | -1.775E-01          | 1.014E+00 | 1.456E+00      | 3.608E-01 | -0.122  |
| U-238   | +         | 63.29        | *   | 2.229E+00           | 1.561E+00 | 1.678E+00      | 2.920E-01 | 1.328   |
|         | +         | 92.38        |     | 3.323E+00           | 7.785E-01 | 6.574E-01      | 6.022E-02 | 5.055   |
|         | +         | 74.67        | *   | 4.806E-01           | 8.388E-02 | 8.576E-02      | 6.893E-03 | 5.604   |
|         | +         | 86.72        |     | 4.340E+01           | 1.171E+01 | 1.367E+01      | 1.267E+00 | 3.176   |



---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 117.66       |     | -3.231E+00          | 4.002E+00 | 6.218E+00      | 5.348E-01 | -0.520  |
|         |           | 142.18       |     | -2.279E+00          | 1.864E+01 | 2.960E+01      | 2.443E+00 | -0.077  |
| ANH-511 | +         | 511.00       | *   | 1.389E-01           | 7.167E-02 | 4.873E-02      | 4.330E-03 | 2.851   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| BE-7    |           | 477.59       | *   | 4.938E-02           | 3.725E-01 | 6.025E-01           | 5.686E-02 | 0.082   |
| NA-22   |           | 1274.54      | *   | 2.566E-02           | 4.497E-02 | 7.844E-02           | 6.439E-03 | 0.327   |
| NA-24   |           | 1368.53      | *   | -8.042E-01          | 4.497E-02 | Half-Life too short |           |         |
| AL-26   |           | 1129.67      |     | 6.409E-01           | 2.292E+00 | 3.400E+00           | 2.856E-01 | 0.189   |
|         |           | 1808.65      | *   | 2.331E-03           | 2.643E-02 | 4.491E-02           | 3.662E-03 | 0.052   |
| TI-44   |           | 67.85        |     | -2.555E-02          | 4.168E-02 | 6.360E-02           | 4.798E-03 | -0.402  |
|         | +         | 78.38        | *   | 4.764E-01           | 6.181E-02 | 7.812E-02           | 6.540E-03 | 6.098   |
| SC-46   |           | 889.25       | *   | 7.266E-03           | 4.371E-02 | 7.202E-02           | 6.600E-03 | 0.101   |
|         | +         | 1120.51      |     | 3.230E-01           | 1.422E-01 | 1.545E-01           | 1.306E-02 | 2.091   |
| V-48    |           | 944.10       |     | 5.237E-01           | 1.035E+00 | 1.746E+00           | 1.587E-01 | 0.300   |
|         |           | 983.50       | *   | -4.062E-02          | 8.235E-02 | 1.263E-01           | 1.137E-02 | -0.322  |
|         |           | 1312.09      |     | 2.793E-02           | 9.159E-02 | 1.555E-01           | 1.275E-02 | 0.180   |
| CR-51   |           | 320.08       | *   | -9.339E-02          | 4.157E-01 | 6.754E-01           | 6.103E-02 | -0.138  |
| MN-52   |           | 744.21       |     | -1.274E-01          | 2.613E-01 | 4.126E-01           | 3.745E-02 | -0.309  |
|         |           | 848.13       |     | 2.809E+00           | 7.598E+00 | 1.276E+01           | 1.171E+00 | 0.220   |
|         |           | 935.52       |     | 5.508E-01           | 3.170E-01 | 5.745E-01           | 5.231E-02 | 0.959   |
|         |           | 1246.25      |     | -4.406E+00          | 8.407E+00 | 1.331E+01           | 1.090E+00 | -0.331  |
|         |           | 1333.61      |     | 3.701E+00           | 5.451E+00 | 9.616E+00           | 7.879E-01 | 0.385   |
|         |           | 1434.06      | *   | 2.425E-02           | 2.774E-01 | 4.588E-01           | 3.815E-02 | 0.053   |
| MN-54   |           | 834.83       | *   | 3.426E-02           | 4.174E-02 | 7.231E-02           | 6.638E-03 | 0.474   |
| CO-56   |           | 846.75       | *   | -7.080E-03          | 4.488E-02 | 7.213E-02           | 6.622E-03 | -0.098  |
|         |           | 977.42       |     | 3.637E+00           | 3.792E+00 | 6.282E+00           | 5.665E-01 | 0.579   |
|         |           | 1037.82      |     | 6.157E-02           | 3.569E-01 | 6.073E-01           | 5.634E-02 | 0.101   |
|         |           | 1175.09      |     | 2.210E+00           | 2.539E+00 | 4.501E+00           | 3.664E-01 | 0.491   |
|         |           | 1238.25      |     | 1.716E-01           | 1.145E-01 | 2.059E-01           | 1.740E-02 | 0.834   |
|         |           | 1360.21      |     | 1.299E-01           | 1.055E+00 | 1.760E+00           | 1.449E-01 | 0.074   |
|         |           | 1771.40      |     | -1.842E-01          | 2.424E-01 | 2.565E-01           | 2.106E-02 | -0.718  |
| CO-57   |           | 122.06       | *   | 2.014E-03           | 2.671E-02 | 4.308E-02           | 3.706E-03 | 0.047   |
|         |           | 136.48       |     | 6.008E-02           | 2.281E-01 | 3.687E-01           | 3.319E-02 | 0.163   |
| CO-58   |           | 810.76       | *   | -2.738E-02          | 4.453E-02 | 6.885E-02           | 6.326E-03 | -0.398  |
| FE-59   |           | 142.65       |     | -4.579E-01          | 2.965E+00 | 4.632E+00           | 3.820E-01 | -0.099  |
|         |           | 192.34       |     | -9.933E-01          | 9.848E-01 | 1.584E+00           | 2.080E-01 | -0.627  |
|         |           | 1099.22      | *   | 5.583E-02           | 1.132E-01 | 1.959E-01           | 1.815E-02 | 0.285   |
|         |           | 1291.56      |     | -6.100E-02          | 1.383E-01 | 2.180E-01           | 2.053E-02 | -0.280  |
| CO-60   |           | 1173.22      |     | -1.578E-02          | 5.318E-02 | 8.636E-02           | 7.028E-03 | -0.183  |
|         |           | 1332.49      | *   | 2.585E-04           | 4.349E-02 | 7.165E-02           | 5.870E-03 | 0.004   |
| ZN-65   |           | 1115.52      | *   | 2.432E-02           | 1.206E-01 | 1.775E-01           | 1.506E-02 | 0.137   |
| GE-68   |           | 1077.35      | *   | -8.952E-02          | 1.339E+00 | 2.228E+00           | 1.930E-01 | -0.040  |
| AS-73   |           | 53.44        | *   | 1.462E-01           | 5.676E-01 | 9.424E-01           | 7.077E-02 | 0.155   |
| AS-74   |           | 595.88       | *   | 3.036E-02           | 9.541E-02 | 1.629E-01           | 1.460E-02 | 0.186   |
|         |           | 634.78       |     | 3.485E-01           | 3.869E-01 | 6.824E-01           | 6.084E-02 | 0.511   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|-----------|---------------------|-----------|---------|
| SE-75   |           | 66.05        | -1.530E+00   | 4.499E+00 | 6.512E+00           | 6.178E-01 | -0.235  |
|         |           | 96.73        | -7.109E-01   | 8.643E-01 | 1.194E+00           | 1.654E-01 | -0.595  |
|         |           | 121.11       | 5.568E-02    | 1.401E-01 | 2.289E-01           | 2.564E-02 | 0.243   |
|         |           | 136.00       | 3.361E-03    | 4.317E-02 | 6.928E-02           | 5.824E-03 | 0.049   |
|         |           | 198.60       | -1.642E+00   | 1.887E+00 | 3.067E+00           | 2.819E-01 | -0.535  |
|         |           | 264.65       | * 1.273E-03  | 4.960E-02 | 7.264E-02           | 6.203E-03 | 0.018   |
|         |           | 279.53       | 6.470E-02    | 1.191E-01 | 2.022E-01           | 1.783E-02 | 0.320   |
|         |           | 303.91       | 6.955E-01    | 2.427E+00 | 3.588E+00           | 4.102E-01 | 0.194   |
|         |           | 400.65       | 1.998E-01    | 2.845E-01 | 4.798E-01           | 5.245E-02 | 0.416   |
| BR-77   | +         | 87.88        | 8.351E+02    | 2.253E+02 | 3.251E+02           | 3.058E+01 | 2.569   |
|         | +         | 200.40       | 9.489E+01    | 1.658E+02 | 2.854E+02           | 2.347E+01 | 0.332   |
|         |           | 239.00       | 3.326E+02    | 3.507E+01 | 4.347E+01           | 3.673E+00 | 7.652   |
|         |           | 249.79       | -3.318E+01   | 6.558E+01 | 1.066E+02           | 9.040E+00 | -0.311  |
|         |           | 281.68       | -1.085E+02   | 9.648E+01 | 1.504E+02           | 1.278E+01 | -0.721  |
|         |           | 297.23       | 4.251E+02    | 7.855E+01 | 1.381E+02           | 1.180E+01 | 3.078   |
|         |           | 303.76       | 6.004E+01    | 1.995E+02 | 2.954E+02           | 2.529E+01 | 0.203   |
|         |           | 439.47       | 2.952E+01    | 1.593E+02 | 2.599E+02           | 2.239E+01 | 0.114   |
|         |           | 484.57       | 8.608E+01    | 2.409E+02 | 3.958E+02           | 3.486E+01 | 0.217   |
|         |           | 520.65       | * -2.371E+00 | 1.052E+01 | 1.745E+01           | 1.555E+00 | -0.136  |
|         |           | 574.64       | 2.225E+01    | 2.167E+02 | 3.654E+02           | 3.277E+01 | 0.061   |
|         |           | 578.91       | 1.513E+01    | 9.203E+01 | 1.363E+02           | 1.223E+01 | 0.111   |
|         |           | 585.48       | 2.022E+03    | 3.370E+02 | 5.757E+02           | 5.163E+01 | 3.511   |
|         |           | 755.35       | 8.579E+01    | 1.815E+02 | 3.088E+02           | 2.810E+01 | 0.278   |
|         |           | 817.79       | 2.451E+02    | 1.384E+02 | 2.569E+02           | 2.356E+01 | 0.954   |
| SR-82   |           | 698.33       | 1.543E+01    | 3.834E+01 | 6.510E+01           | 5.838E+00 | 0.237   |
|         |           | 776.49       | * 3.453E-01  | 4.512E-01 | 6.978E-01           | 6.372E-02 | 0.495   |
|         |           | 1395.20      | -1.451E+00   | 1.266E+01 | 2.049E+01           | 1.696E+00 | -0.071  |
| RB-83   |           | 520.41       | * -2.511E-02 | 7.141E-02 | 1.174E-01           | 1.046E-02 | -0.214  |
|         |           | 529.64       | -1.321E-01   | 1.118E-01 | 1.718E-01           | 1.533E-02 | -0.769  |
|         |           | 552.65       | 2.523E-01    | 2.168E-01 | 3.890E-01           | 3.484E-02 | 0.649   |
| RB-84   |           | 881.50       | * 1.374E-02  | 7.498E-02 | 1.239E-01           | 1.136E-02 | 0.111   |
| KR-85   |           | 513.99       | * 2.000E+01  | 8.742E+00 | 1.491E+01           | 1.326E+00 | 1.342   |
| SR-85   |           | 513.99       | * 1.024E-01  | 4.476E-02 | 7.634E-02           | 6.788E-03 | 1.342   |
| RB-86   |           | 1076.63      | * 1.594E-01  | 8.585E-01 | 1.460E+00           | 1.265E-01 | 0.109   |
| Y-88    |           | 898.02       | 2.531E-02    | 4.688E-02 | 7.958E-02           | 7.318E-03 | 0.318   |
|         |           | 1836.01      | * 1.493E-02  | 2.962E-02 | 5.443E-02           | 4.418E-03 | 0.274   |
| ZR-88   |           | 392.90       | * -1.245E-02 | 3.542E-02 | 5.628E-02           | 4.688E-03 | -0.221  |
| Y-91    |           | 1204.90      | * 1.098E+00  | 2.331E+01 | 3.882E+01           | 3.171E+00 | 0.028   |
| NB-94   |           | 702.63       | * -1.342E-02 | 3.800E-02 | 6.115E-02           | 5.490E-03 | -0.220  |
|         |           | 871.10       | -2.917E-02   | 3.687E-02 | 5.515E-02           | 5.061E-03 | -0.529  |
| NB-95   |           | 765.79       | * 6.962E-02  | 5.416E-02 | 8.654E-02           | 7.889E-03 | 0.804   |
| NB-95M  |           | 235.69       | * 7.613E-02  | 1.466E-01 | 2.219E-01           | 2.154E-02 | 0.343   |
| ZR-95   |           | 724.18       | 7.843E-02    | 1.135E-01 | 1.737E-01           | 1.693E-02 | 0.452   |
|         |           | 756.15       | * 2.109E-02  | 8.209E-02 | 1.375E-01           | 1.365E-02 | 0.153   |
| NB-97   |           | 657.90       | * -3.997E-02 | 8.209E-02 | Half-Life too short |           |         |
|         |           | 1024.50      | -7.700E-01   | 8.209E-02 | Half-Life too short |           |         |
| ZR-97   |           | 254.15       | 2.845E+00    | 8.209E-02 | Half-Life too short |           |         |
|         |           | 355.39       | 2.165E+00    | 8.209E-02 | Half-Life too short |           |         |
|         |           | 507.63       | * 3.305E-01  | 8.209E-02 | Half-Life too short |           |         |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         | 602.52    |              |     | 1.231E+00           | 8.209E-02 | Half-Life      | too short |         |
|         | 1021.30   |              |     | 2.508E+00           | 8.209E-02 | Half-Life      | too short |         |
|         | 1147.95   |              |     | -3.118E+00          | 8.209E-02 | Half-Life      | too short |         |
|         | 1362.66   |              |     | 4.881E+00           | 8.209E-02 | Half-Life      | too short |         |
|         | 1750.46   |              |     | -3.254E-01          | 8.209E-02 | Half-Life      | too short |         |
| MO-99   | 140.51    |              |     | -3.935E+01          | 2.972E+01 | 4.156E+01      | 1.147E+01 | -0.947  |
|         | 181.06    |              |     | 1.466E+00           | 1.964E+01 | 2.953E+01      | 5.323E+00 | 0.050   |
|         | 366.43    |              |     | 7.836E+01           | 8.903E+01 | 1.524E+02      | 1.291E+01 | 0.514   |
|         | 739.58    | *            |     | 5.655E+00           | 1.220E+01 | 2.077E+01      | 3.207E+00 | 0.272   |
|         | 778.00    |              |     | -1.954E+01          | 4.300E+01 | 5.769E+01      | 5.269E+00 | -0.339  |
| TC-99M  | 140.51    | *            |     | -4.165E+10          | 4.300E+01 | Half-Life      | too short |         |
| RH-101  | 127.23    |              |     | 9.509E-03           | 3.885E-02 | 5.620E-02      | 4.773E-03 | 0.169   |
|         | 198.01    | *            |     | -1.576E-02          | 3.425E-02 | 5.675E-02      | 4.655E-03 | -0.278  |
|         | 325.23    |              |     | 2.427E-02           | 2.636E-01 | 3.825E-01      | 3.280E-02 | 0.063   |
| RH-102  | 418.52    |              |     | 2.322E-02           | 3.409E-01 | 5.536E-01      | 4.704E-02 | 0.042   |
|         | 475.06    | *            |     | 4.161E-03           | 3.437E-02 | 5.556E-02      | 4.874E-03 | 0.075   |
|         | 631.29    |              |     | -2.692E-02          | 5.991E-02 | 9.633E-02      | 8.594E-03 | -0.279  |
|         | 697.49    |              |     | 9.493E-03           | 8.808E-02 | 1.467E-01      | 1.315E-02 | 0.065   |
|         | 766.84    |              |     | 2.202E-01           | 1.461E-01 | 2.354E-01      | 2.146E-02 | 0.935   |
|         | 1046.59   |              |     | 9.613E-03           | 1.312E-01 | 2.215E-01      | 1.948E-02 | 0.043   |
|         | 1112.84   |              |     | -1.197E-01          | 3.268E-01 | 4.514E-01      | 3.833E-02 | -0.265  |
| RU-103  | 497.08    | *            |     | -7.631E-03          | 4.471E-02 | 7.053E-02      | 1.009E-02 | -0.108  |
|         | 610.33    | +            |     | 1.759E+01           | 3.524E+00 | 3.508E+00      | 5.914E-01 | 5.013   |
| RH-106  | 511.85    | +            |     | 6.937E-01           | 3.579E-01 | 4.765E-01      | 4.235E-02 | 1.456   |
|         | 621.84    | *            |     | 3.574E-02           | 3.392E-01 | 5.693E-01      | 7.722E-02 | 0.063   |
|         | 1050.47   |              |     | 3.566E-01           | 2.580E+00 | 4.376E+00      | 3.842E-01 | 0.081   |
| RU-106  | 511.85    | +            |     | 6.937E-01           | 3.579E-01 | 4.765E-01      | 4.235E-02 | 1.456   |
|         | 621.84    | *            |     | 3.574E-02           | 3.391E-01 | 5.693E-01      | 5.088E-02 | 0.063   |
|         | 1050.47   |              |     | 3.566E-01           | 2.580E+00 | 4.376E+00      | 3.842E-01 | 0.081   |
| AG-108M | 433.93    | *            |     | 1.521E-03           | 3.546E-02 | 5.738E-02      | 5.123E-03 | 0.027   |
|         | 614.37    |              |     | -3.500E-03          | 4.419E-02 | 6.348E-02      | 5.887E-03 | -0.055  |
|         | 722.95    |              |     | 3.762E-02           | 4.612E-02 | 7.201E-02      | 6.736E-03 | 0.522   |
| AG-110M | 657.75    | *            |     | -1.493E-02          | 3.680E-02 | 5.914E-02      | 5.388E-03 | -0.252  |
|         | 677.61    |              |     | 2.002E-01           | 3.575E-01 | 6.143E-01      | 5.614E-02 | 0.326   |
|         | 706.67    |              |     | -1.502E-01          | 2.345E-01 | 3.680E-01      | 3.393E-02 | -0.408  |
|         | 763.93    |              |     | 1.775E-01           | 1.965E-01 | 3.067E-01      | 2.866E-02 | 0.579   |
|         | 884.67    |              |     | 1.945E-02           | 5.602E-02 | 9.375E-02      | 8.839E-03 | 0.207   |
|         | 937.48    |              |     | -1.056E-01          | 1.408E-01 | 2.127E-01      | 1.999E-02 | -0.497  |
|         | 1384.27   |              |     | 8.472E-02           | 1.886E-01 | 2.877E-01      | 2.450E-02 | 0.294   |
| IN-111  | 171.28    |              |     | -1.472E-01          | 1.036E+00 | 1.627E+00      | 1.295E-01 | -0.090  |
|         | 245.39    | *            |     | 9.082E-01           | 1.148E+00 | 1.770E+00      | 1.499E-01 | 0.513   |
| IN-113M | 391.69    | *            |     | -3.021E-03          | 5.093E-02 | 8.243E-02      | 7.086E-03 | -0.037  |
| SN-113  | 391.69    | *            |     | -3.021E-03          | 5.093E-02 | 8.243E-02      | 7.086E-03 | -0.037  |
| IN-114M | 190.27    | *            |     | 5.444E-02           | 2.075E-01 | 3.141E-01      | 2.556E-02 | 0.173   |
| CD-115  | 260.90    |              |     | -6.601E+00          | 1.293E+02 | 2.146E+02      | 1.823E+01 | -0.031  |
|         | 492.35    |              |     | 4.730E+00           | 3.819E+01 | 6.166E+01      | 5.446E+00 | 0.077   |
|         | 527.90    | *            |     | 2.560E+00           | 1.107E+01 | 1.892E+01      | 1.688E+00 | 0.135   |
| SN-117M | 156.02    |              |     | 1.145E+00           | 2.496E+00 | 4.039E+00      | 3.254E-01 | 0.283   |
|         | 158.56    | *            |     | -4.908E-02          | 6.027E-02 | 9.203E-02      | 7.379E-03 | -0.533  |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| SB-122  | 563.90    | *            |     | 2.228E+00           | 2.156E+00 | 3.839E+00           | 3.441E-01 | 0.581   |
|         | 692.80    |              |     | 2.082E+01           | 4.805E+01 | 8.180E+01           | 7.321E+00 | 0.254   |
| I-123   | 159.00    | *            |     | -4.795E+00          | 4.805E+01 | Half-Life too short |           |         |
|         | 528.96    |              |     | -2.202E+02          | 4.805E+01 | Half-Life too short |           |         |
| TE-123M | 159.00    | *            |     | -2.777E-02          | 3.166E-02 | 4.819E-02           | 3.888E-03 | -0.576  |
| I-124   | 602.71    | *            |     | 1.035E-01           | 8.625E-01 | 1.265E+00           | 1.134E-01 | 0.082   |
|         | 722.78    |              |     | 3.789E+00           | 4.712E+00 | 7.351E+00           | 6.638E-01 | 0.515   |
|         | 1325.50   |              |     | -5.577E+00          | 3.786E+01 | 6.137E+01           | 5.029E+00 | -0.091  |
|         | 1376.25   |              |     | 4.631E+01           | 4.183E+01 | 6.790E+01           | 5.605E+00 | 0.682   |
|         | 1509.49   |              |     | 1.242E+01           | 1.615E+01 | 2.899E+01           | 2.424E+00 | 0.428   |
|         | 1691.02   |              |     | -6.966E-01          | 4.142E+00 | 6.480E+00           | 5.383E-01 | -0.108  |
| SB-124  | 602.71    |              |     | 6.134E-03           | 5.111E-02 | 7.498E-02           | 6.719E-03 | 0.082   |
|         | 645.85    |              |     | 1.741E-01           | 5.739E-01 | 9.732E-01           | 9.142E-02 | 0.179   |
|         | 709.31    |              |     | 1.457E+00           | 3.106E+00 | 5.297E+00           | 4.765E-01 | 0.275   |
|         | 713.82    |              |     | 1.331E-01           | 1.797E+00 | 2.982E+00           | 3.673E-01 | 0.045   |
|         | 722.78    |              |     | 3.255E-01           | 4.048E-01 | 6.315E-01           | 5.815E-02 | 0.515   |
| +       | 968.20    |              |     | 2.213E+01           | 5.251E+00 | 8.667E+00           | 7.835E-01 | 2.553   |
|         | 1045.16   |              |     | 9.473E-01           | 2.867E+00 | 4.933E+00           | 4.341E-01 | 0.192   |
|         | 1325.50   |              |     | -5.117E-01          | 3.474E+00 | 5.631E+00           | 4.614E-01 | -0.091  |
|         | 1368.21   |              |     | -2.117E+00          | 1.880E+00 | 2.582E+00           | 3.418E-01 | -0.820  |
|         | 1436.60   |              |     | 3.241E+00           | 4.319E+00 | 7.693E+00           | 6.399E-01 | 0.421   |
|         | 1691.02   | *            |     | -1.412E-02          | 8.393E-02 | 1.313E-01           | 1.137E-02 | -0.108  |
| SB-125  | 427.89    | *            |     | -1.137E-02          | 1.039E-01 | 1.666E-01           | 1.453E-02 | -0.068  |
| +       | 463.38    |              |     | 9.287E-01           | 4.991E-01 | 6.198E-01           | 5.822E-02 | 1.498   |
|         | 600.56    |              |     | -1.750E-02          | 1.997E-01 | 3.316E-01           | 3.175E-02 | -0.053  |
|         | 635.90    |              |     | 2.136E-02           | 3.007E-01 | 5.028E-01           | 4.820E-02 | 0.042   |
| TE-125M | 109.28    | *            |     | -1.049E+00          | 9.823E+00 | 1.569E+01           | 1.626E+00 | -0.067  |
| I-126   | 388.63    |              |     | 3.190E-02           | 2.217E-01 | 3.634E-01           | 3.032E-02 | 0.088   |
|         | 666.33    | *            |     | 1.803E-01           | 2.125E-01 | 3.708E-01           | 3.287E-02 | 0.486   |
|         | 753.82    |              |     | 1.733E+00           | 1.666E+00 | 2.939E+00           | 2.673E-01 | 0.590   |
| SB-126  | 223.80    |              |     | 3.876E+00           | 4.232E+00 | 7.341E+00           | 6.153E-01 | 0.528   |
|         | 278.60    |              |     | 2.925E+00           | 2.768E+00 | 4.784E+00           | 4.061E-01 | 0.611   |
| +       | 296.50    |              |     | 1.986E+01           | 2.917E+00 | 4.374E+00           | 3.738E-01 | 4.541   |
|         | 414.70    |              |     | 2.157E-02           | 8.490E-02 | 1.395E-01           | 1.182E-02 | 0.155   |
|         | 415.30    |              |     | 1.970E+00           | 7.146E+00 | 1.176E+01           | 9.966E-01 | 0.168   |
|         | 555.20    |              |     | -6.339E-02          | 4.100E+00 | 6.874E+00           | 6.158E-01 | -0.009  |
|         | 573.80    |              |     | 7.096E-01           | 1.104E+00 | 1.924E+00           | 1.726E-01 | 0.369   |
|         | 593.00    |              |     | -4.669E-01          | 9.439E-01 | 1.518E+00           | 1.361E-01 | -0.308  |
|         | 656.30    |              |     | 9.673E-01           | 3.480E+00 | 5.895E+00           | 5.225E-01 | 0.164   |
|         | 666.33    |              |     | 7.531E-02           | 8.878E-02 | 1.549E-01           | 1.373E-02 | 0.486   |
|         | 675.00    |              |     | 2.805E-01           | 2.301E+00 | 3.844E+00           | 3.419E-01 | 0.073   |
|         | 695.00    |              |     | -2.889E-02          | 9.016E-02 | 1.457E-01           | 1.305E-02 | -0.198  |
|         | 697.00    |              |     | 1.038E-02           | 3.063E-01 | 5.074E-01           | 4.548E-02 | 0.020   |
|         | 720.50    | *            |     | 2.791E-03           | 1.660E-01 | 2.377E-01           | 2.145E-02 | 0.012   |
|         | 856.80    |              |     | 8.250E-02           | 5.516E-01 | 7.913E-01           | 7.264E-02 | 0.104   |
|         | 989.30    |              |     | -8.643E-01          | 1.484E+00 | 2.254E+00           | 2.025E-01 | -0.384  |
|         | 1034.80   |              |     | -4.899E+00          | 9.753E+00 | 1.565E+01           | 1.384E+00 | -0.313  |
|         | 1213.00   |              |     | -5.651E-01          | 5.924E+00 | 9.762E+00           | 7.978E-01 | -0.058  |
| SB-127  | 61.10     |              |     | 1.726E+01           | 4.720E+01 | 7.093E+01           | 7.153E+00 | 0.243   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         | 252.40    |              |     | 1.924E+00           | 4.475E+00 | 7.487E+00      | 3.144E+00 | 0.257   |
|         | 290.80    |              |     | -1.753E+01          | 2.530E+01 | 3.480E+01      | 3.847E+00 | -0.504  |
|         | 411.60    |              |     | -5.595E-01          | 1.422E+01 | 2.297E+01      | 3.586E+00 | -0.024  |
|         | 444.90    |              |     | 2.079E+00           | 1.112E+01 | 1.812E+01      | 2.267E+00 | 0.115   |
|         | 473.00    |              |     | 8.335E-01           | 1.873E+00 | 3.093E+00      | 3.999E-01 | 0.269   |
|         | 543.00    |              |     | 1.047E+01           | 1.876E+01 | 3.202E+01      | 4.663E+00 | 0.327   |
|         | 603.60    |              |     | 1.190E+01           | 1.410E+01 | 2.194E+01      | 2.788E+00 | 0.543   |
|         | 685.20    | *            |     | 4.748E-01           | 1.516E+00 | 2.563E+00      | 2.968E-01 | 0.185   |
|         | 698.50    |              |     | 3.605E+00           | 1.695E+01 | 2.840E+01      | 4.540E+00 | 0.127   |
|         | 722.20    |              |     | -1.464E+00          | 3.330E+01 | 4.733E+01      | 5.416E+00 | -0.031  |
|         | 783.80    |              |     | 3.718E+00           | 3.906E+00 | 6.826E+00      | 8.704E-01 | 0.545   |
| XE-127  | 57.60     |              |     | -9.292E-01          | 4.417E+00 | 7.217E+00      | 5.232E-01 | -0.129  |
|         | 145.22    |              |     | -1.184E-01          | 7.636E-01 | 1.192E+00      | 9.782E-02 | -0.099  |
|         | 172.10    |              |     | 3.813E-02           | 1.269E-01 | 2.034E-01      | 1.621E-02 | 0.187   |
|         | 202.84    | *            |     | -3.528E-03          | 4.975E-02 | 8.364E-02      | 6.893E-03 | -0.042  |
|         | 374.96    |              |     | 3.479E-02           | 2.068E-01 | 3.404E-01      | 2.869E-02 | 0.102   |
| I-131   | 80.18     |              |     | -9.031E+00          | 4.996E+00 | 6.675E+00      | 5.743E-01 | -1.353  |
|         | 284.30    |              |     | -4.876E-01          | 1.617E+00 | 2.637E+00      | 2.363E-01 | -0.185  |
|         | 364.48    | *            |     | -2.506E-03          | 1.254E-01 | 2.043E-01      | 1.829E-02 | -0.012  |
|         | 636.97    |              |     | -1.447E+00          | 1.694E+00 | 2.629E+00      | 2.465E-01 | -0.550  |
|         | 722.89    |              |     | 6.234E+00           | 7.679E+00 | 1.199E+01      | 1.089E+00 | 0.520   |
| TE-132  | 49.72     |              |     | -6.175E+00          | 1.221E+01 | 1.775E+01      | 1.826E+00 | -0.348  |
|         | 111.76    |              |     | -8.483E-01          | 2.983E+01 | 4.811E+01      | 5.214E+00 | -0.018  |
|         | 116.30    |              |     | 3.019E+01           | 2.785E+01 | 4.649E+01      | 5.026E+00 | 0.649   |
|         | 228.16    | *            |     | 4.699E-01           | 7.438E-01 | 1.271E+00      | 1.980E-01 | 0.370   |
| BA-133  | 53.15     |              |     | 1.110E+00           | 2.448E+00 | 4.091E+00      | 3.082E-01 | 0.271   |
|         | 79.62     |              |     | -2.378E+00          | 1.448E+00 | 1.910E+00      | 2.894E-01 | -1.245  |
|         | 81.00     |              |     | -1.995E-01          | 1.113E-01 | 1.440E-01      | 2.287E-02 | -1.385  |
|         | 276.40    |              |     | 2.977E-01           | 4.491E-01 | 7.122E-01      | 1.023E-01 | 0.418   |
|         | 302.84    |              |     | -5.067E-02          | 1.726E-01 | 2.443E-01      | 3.237E-02 | -0.207  |
|         | 356.01    | *            |     | 2.303E-02           | 5.402E-02 | 7.983E-02      | 1.048E-02 | 0.289   |
|         | 383.85    |              |     | 1.255E-01           | 3.104E-01 | 5.175E-01      | 6.436E-02 | 0.243   |
| I-133   | 510.53    | +            |     | 1.277E+00           | 3.104E-01 | Half-Life      | too short |         |
|         | 529.87    | *            |     | -5.321E-03          | 3.104E-01 | Half-Life      | too short |         |
|         | 706.58    |              |     | -2.601E-01          | 3.104E-01 | Half-Life      | too short |         |
|         | 856.28    |              |     | 2.219E-01           | 3.104E-01 | Half-Life      | too short |         |
|         | 875.33    |              |     | 4.000E-02           | 3.104E-01 | Half-Life      | too short |         |
|         | 1236.41   |              |     | 8.994E-01           | 3.104E-01 | Half-Life      | too short |         |
|         | 1298.22   |              |     | 1.987E-01           | 3.104E-01 | Half-Life      | too short |         |
| CS-134  | 475.35    |              |     | 1.104E+00           | 2.190E+00 | 3.630E+00      | 3.185E-01 | 0.304   |
|         | 563.23    |              |     | 4.576E-01           | 3.924E-01 | 7.029E-01      | 6.356E-02 | 0.651   |
|         | 569.32    |              |     | -2.430E-01          | 2.135E-01 | 3.258E-01      | 2.958E-02 | -0.746  |
|         | 604.70    |              |     | 1.370E-02           | 4.168E-02 | 6.230E-02      | 5.594E-03 | 0.220   |
|         | 795.84    | +            | *   | 2.579E-01           | 1.350E-01 | 1.021E-01      | 9.404E-03 | 2.526   |
|         | 801.93    |              |     | -2.248E-01          | 5.496E-01 | 7.416E-01      | 6.827E-02 | -0.303  |
|         | 1038.57   |              |     | 4.006E-01           | 4.479E+00 | 7.572E+00      | 6.683E-01 | 0.053   |
|         | 1167.94   |              |     | 8.094E-01           | 2.974E+00 | 5.050E+00      | 4.126E-01 | 0.160   |
|         | 1365.15   |              |     | 1.371E+00           | 1.279E+00 | 2.365E+00      | 2.046E-01 | 0.580   |
| CS-135  | 268.24    | *            |     | 2.898E-01           | 1.837E-01 | 2.926E-01      | 2.885E-02 | 0.990   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|---------------------|-----------|----------------|-----------|---------|
| I-135   | 288.45    |              |              | 9.355E+09           | 1.837E-01 | Half-Life      | too short |         |
|         | 417.63    |              |              | -1.696E+09          | 1.837E-01 | Half-Life      | too short |         |
|         | 546.56    |              |              | -5.081E+09          | 1.837E-01 | Half-Life      | too short |         |
|         | 836.80    |              |              | 9.542E+09           | 1.837E-01 | Half-Life      | too short |         |
|         | 1038.76   |              |              | 3.447E+08           | 1.837E-01 | Half-Life      | too short |         |
|         | 1124.00   |              |              | 5.920E+10           | 1.837E-01 | Half-Life      | too short |         |
|         | 1131.51   |              |              | -2.413E+09          | 1.837E-01 | Half-Life      | too short |         |
|         | 1260.41   | *            |              | 1.818E+09           | 1.837E-01 | Half-Life      | too short |         |
|         | 1457.56   |              |              | 3.808E+11           | 1.837E-01 | Half-Life      | too short |         |
|         | 1678.03   |              |              | -3.122E+09          | 1.837E-01 | Half-Life      | too short |         |
|         | 1706.46   |              |              | -9.725E+09          | 1.837E-01 | Half-Life      | too short |         |
|         | 1791.20   |              |              | 2.128E+09           | 1.837E-01 | Half-Life      | too short |         |
| CS-136  | 66.91     |              |              | -2.712E-01          | 7.273E-01 | 1.049E+00      | 1.557E-01 | -0.258  |
|         | 86.29     | +            |              | 5.109E+00           | 1.462E+00 | 2.001E+00      | 2.652E-01 | 2.554   |
|         | 153.22    |              |              | 4.708E-01           | 7.453E-01 | 1.213E+00      | 1.112E-01 | 0.388   |
|         | 163.89    |              |              | 2.150E-01           | 1.195E+00 | 1.907E+00      | 1.727E-01 | 0.113   |
|         | 176.55    |              |              | -6.748E-02          | 3.763E-01 | 6.342E-01      | 5.418E-02 | -0.106  |
|         | 273.65    |              |              | -7.627E-01          | 5.950E-01 | 7.928E-01      | 7.191E-02 | -0.962  |
|         | 340.57    |              |              | 5.056E-01           | 1.744E-01 | 2.871E-01      | 2.529E-02 | 1.761   |
|         | 818.51    |              |              | 9.156E-02           | 7.842E-02 | 1.404E-01      | 1.289E-02 | 0.652   |
|         | 1048.07   | *            |              | -3.237E-02          | 1.241E-01 | 2.038E-01      | 1.864E-02 | -0.159  |
|         | 1235.34   |              |              | 6.089E-01           | 7.458E-01 | 1.295E+00      | 1.494E-01 | 0.470   |
| BA-137M | 661.65    | *            |              | -3.669E-02          | 3.934E-02 | 6.051E-02      | 5.355E-03 | -0.606  |
|         | 661.65    | *            |              | -3.878E-02          | 4.158E-02 | 6.397E-02      | 5.671E-03 | -0.606  |
| CE-139  | 165.85    | *            |              | -1.831E-02          | 3.324E-02 | 5.130E-02      | 4.058E-03 | -0.357  |
| BA-140  | 162.64    |              |              | 8.229E-01           | 8.282E-01 | 1.364E+00      | 1.159E-01 | 0.603   |
|         | 304.84    |              |              | 4.816E-01           | 1.500E+00 | 2.215E+00      | 6.203E-01 | 0.217   |
| LA-140  | 423.70    |              |              | -1.135E+00          | 2.239E+00 | 3.452E+00      | 1.118E+00 | -0.329  |
|         | 537.32    | *            |              | 1.126E-02           | 2.804E-01 | 4.728E-01      | 1.571E-01 | 0.024   |
|         | 328.77    | +            |              | 7.976E-01           | 4.247E-01 | 6.052E-01      | 5.482E-02 | 1.318   |
|         | 432.53    |              |              | 4.407E-01           | 2.266E+00 | 3.705E+00      | 3.334E-01 | 0.119   |
|         | 487.03    |              |              | -1.356E-01          | 1.566E-01 | 2.338E-01      | 2.183E-02 | -0.580  |
|         | 751.79    |              |              | -1.055E+00          | 1.999E+00 | 3.149E+00      | 3.140E-01 | -0.335  |
|         | 815.85    |              |              | -1.066E-02          | 3.535E-01 | 5.760E-01      | 5.824E-02 | -0.019  |
|         | 867.82    |              |              | -4.035E-01          | 1.680E+00 | 2.404E+00      | 2.309E-01 | -0.168  |
|         | 919.63    |              |              | 8.852E-01           | 3.226E+00 | 5.214E+00      | 5.770E-01 | 0.170   |
|         | 925.24    |              |              | -2.418E-01          | 1.308E+00 | 2.081E+00      | 2.005E-01 | -0.116  |
|         | 1596.49   | *            |              | 7.809E-02           | 9.046E-02 | 1.510E-01      | 1.263E-02 | 0.517   |
| CE-141  | 145.44    | *            |              | -2.508E-02          | 6.805E-02 | 1.068E-01      | 8.939E-03 | -0.235  |
| CE-143  | 57.37     |              |              | -4.765E-04          | 6.805E-02 | Half-Life      | too short |         |
|         | 231.56    |              |              | -1.052E-03          | 6.805E-02 | Half-Life      | too short |         |
|         | 293.26    | *            |              | 8.086E-04           | 6.805E-02 | Half-Life      | too short |         |
|         | 350.59    | +            |              | 3.954E-02           | 6.805E-02 | Half-Life      | too short |         |
|         | 490.36    |              |              | 2.147E-03           | 6.805E-02 | Half-Life      | too short |         |
|         | 664.57    |              |              | 1.089E-03           | 6.805E-02 | Half-Life      | too short |         |
|         | 721.93    |              |              | -3.959E-04          | 6.805E-02 | Half-Life      | too short |         |
| CE-144  | 80.11     |              |              | -4.228E+00          | 2.323E+00 | 3.102E+00      | 2.649E-01 | -1.363  |
| PM-144  | 133.54    | *            |              | 9.452E-02           | 2.500E-01 | 3.629E-01      | 5.602E-02 | 0.261   |
|         | 476.78    |              |              | -9.288E-03          | 7.939E-02 | 1.262E-01      | 1.209E-02 | -0.074  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 618.01       |     | -9.998E-03          | 3.339E-02 | 5.439E-02      | 4.989E-03 | -0.184  |
|         |           | 696.49       | *   | 3.393E-04           | 3.994E-02 | 6.605E-02      | 5.921E-03 | 0.005   |
|         |           | 778.57       |     | -1.889E+00          | 2.987E+00 | 3.909E+00      | 3.572E-01 | -0.483  |
| PR-144  |           | 696.49       | *   | 2.299E-02           | 2.706E+00 | 4.476E+00      | 4.011E-01 | 0.005   |
|         |           | 1489.15      |     | 4.907E-01           | 1.211E+01 | 1.988E+01      | 1.660E+00 | 0.025   |
| PM-146  |           | 453.90       | *   | 4.018E-02           | 4.790E-02 | 8.117E-02      | 8.746E-03 | 0.495   |
|         |           | 633.02       |     | 1.013E+00           | 1.558E+00 | 2.634E+00      | 9.864E-01 | 0.385   |
|         |           | 735.90       |     | 1.344E-02           | 1.716E-01 | 2.683E-01      | 7.711E-02 | 0.050   |
|         |           | 747.13       |     | 3.476E-02           | 1.030E-01 | 1.736E-01      | 2.487E-02 | 0.200   |
| ND-147  | +         | 91.11        |     | 5.390E-01           | 2.892E-01 | 5.009E-01      | 4.957E-02 | 1.076   |
|         |           | 319.41       |     | 6.563E-01           | 3.686E+00 | 6.119E+00      | 5.248E-01 | 0.107   |
|         |           | 439.89       |     | 1.415E+00           | 6.635E+00 | 1.084E+01      | 9.344E-01 | 0.130   |
|         |           | 531.02       | *   | -7.111E-01          | 6.046E-01 | 9.193E-01      | 1.391E-01 | -0.774  |
| PM-149  |           | 285.90       | *   | 3.912E+01           | 9.682E+01 | 1.631E+02      | 2.525E+01 | 0.240   |
| EU-152  |           | 121.78       |     | 1.332E-02           | 7.714E-02 | 1.249E-01      | 1.238E-02 | 0.107   |
|         |           | 244.69       |     | 9.854E-02           | 3.827E-01 | 5.714E-01      | 4.839E-02 | 0.172   |
|         |           | 344.27       | *   | -5.488E-02          | 1.148E-01 | 1.762E-01      | 1.597E-02 | -0.312  |
|         |           | 443.98       |     | 5.531E-01           | 1.111E+00 | 1.846E+00      | 1.594E-01 | 0.300   |
|         |           | 778.89       |     | -2.559E-01          | 3.425E-01 | 4.405E-01      | 4.024E-02 | -0.581  |
|         |           | 867.32       |     | 4.224E-01           | 1.015E+00 | 1.504E+00      | 1.380E-01 | 0.281   |
|         | +         | 964.01       |     | 8.014E-01           | 4.810E-01 | 7.083E-01      | 6.410E-02 | 1.131   |
|         |           | 1085.78      |     | 1.368E-01           | 4.447E-01 | 7.629E-01      | 6.580E-02 | 0.179   |
|         |           | 1112.02      |     | -1.787E-01          | 4.182E-01 | 6.215E-01      | 5.280E-02 | -0.288  |
|         | +         | 1407.95      |     | 3.796E-01           | 3.198E-01 | 4.327E-01      | 3.587E-02 | 0.877   |
| GD-153  |           | 69.67        |     | 2.109E-01           | 1.591E+00 | 2.355E+00      | 1.804E-01 | 0.090   |
|         | +         | 83.37        |     | 3.393E+01           | 1.544E+01 | 2.436E+01      | 2.164E+00 | 1.393   |
|         |           | 97.43        | *   | -1.091E-01          | 9.097E-02 | 1.233E-01      | 1.103E-02 | -0.885  |
|         |           | 103.18       |     | -1.884E-01          | 1.103E-01 | 1.649E-01      | 1.447E-02 | -1.143  |
| EU-154  |           | 123.07       |     | -9.042E-03          | 5.543E-02 | 8.850E-02      | 1.003E-02 | -0.102  |
|         |           | 247.94       |     | -9.522E-02          | 3.708E-01 | 6.108E-01      | 6.944E-02 | -0.156  |
|         |           | 591.81       |     | -8.238E-02          | 6.082E-01 | 1.006E+00      | 1.200E-01 | -0.082  |
|         |           | 723.30       |     | 1.572E-01           | 1.952E-01 | 3.041E-01      | 3.011E-02 | 0.517   |
|         |           | 756.87       |     | 2.366E-01           | 8.850E-01 | 1.483E+00      | 1.828E-01 | 0.160   |
|         |           | 873.19       |     | 2.679E-01           | 2.972E-01 | 5.227E-01      | 6.608E-02 | 0.513   |
|         |           | 996.32       |     | 4.503E-01           | 4.514E-01 | 7.763E-01      | 1.392E-01 | 0.580   |
|         |           | 1004.76      |     | 2.037E-01           | 2.543E-01 | 4.357E-01      | 5.176E-02 | 0.467   |
|         |           | 1274.45      | *   | 6.720E-02           | 1.265E-01 | 2.197E-01      | 2.415E-02 | 0.306   |
| EU-155  |           | 48.70        |     | 2.499E-01           | 1.484E+00 | 2.236E+00      | 1.810E-01 | 0.112   |
|         |           | 60.01        |     | 2.716E+00           | 4.032E+00 | 6.145E+00      | 4.425E-01 | 0.442   |
|         | +         | 86.54        |     | 4.747E-01           | 1.282E-01 | 1.866E-01      | 1.740E-02 | 2.544   |
|         |           | 105.31       | *   | 1.024E-01           | 1.116E-01 | 1.862E-01      | 1.645E-02 | 0.550   |
| TB-160  | +         | 86.79        |     | 1.266E+00           | 3.418E-01 | 5.011E-01      | 4.648E-02 | 2.527   |
|         |           | 197.04       |     | -7.820E-02          | 5.737E-01 | 9.633E-01      | 7.894E-02 | -0.081  |
|         |           | 215.65       |     | -1.444E-01          | 7.859E-01 | 1.267E+00      | 1.056E-01 | -0.114  |
|         |           | 298.57       |     | 3.094E-01           | 1.273E-01 | 2.285E-01      | 1.954E-02 | 1.354   |
|         |           | 879.36       | *   | -7.253E-02          | 1.484E-01 | 2.294E-01      | 2.104E-02 | -0.316  |
|         |           | 962.29       |     | 1.235E+00           | 6.967E-01 | 1.167E+00      | 1.056E-01 | 1.058   |
|         | +         | 966.15       |     | 5.496E-01           | 3.299E-01 | 5.856E-01      | 5.297E-02 | 0.939   |
|         |           | 1177.93      |     | -1.931E-01          | 4.261E-01 | 6.827E-01      | 5.558E-02 | -0.283  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| HO-166M | 1271.85   |              |     | 2.106E-01           | 7.479E-01 | 1.270E+00      | 1.041E-01 | 0.166   |
|         | 80.57     |              |     | -5.263E-01          | 2.984E-01 | 3.998E-01      | 3.433E-02 | -1.316  |
|         | 184.41    |              |     | 9.139E-02           | 4.580E-02 | 7.410E-02      | 5.990E-03 | 1.233   |
|         | 280.46    |              |     | -1.080E-01          | 9.733E-02 | 1.522E-01      | 1.292E-02 | -0.710  |
|         | 410.95    |              |     | 2.077E-01           | 2.866E-01 | 4.827E-01      | 4.079E-02 | 0.430   |
|         | 711.68    | *            |     | 3.979E-02           | 6.790E-02 | 1.167E-01      | 1.051E-02 | 0.341   |
|         | 752.31    |              |     | -2.143E-01          | 3.244E-01 | 5.053E-01      | 4.595E-02 | -0.424  |
| TM-171  | 810.29    |              |     | -1.068E-02          | 6.627E-02 | 1.069E-01      | 9.795E-03 | -0.100  |
|         | 51.35     |              |     | -4.972E+00          | 2.013E+01 | 3.164E+01      | 2.443E+00 | -0.157  |
|         | 52.39     |              |     | 7.797E+00           | 1.037E+01 | 1.765E+01      | 1.343E+00 | 0.442   |
|         | 59.40     |              |     | 1.715E+01           | 2.173E+01 | 3.327E+01      | 2.392E+00 | 0.515   |
|         | 66.72     | *            |     | 5.141E+00           | 2.604E+01 | 3.852E+01      | 2.881E+00 | 0.133   |
| LU-176  | 88.36     |              |     | 9.348E-01           | 2.523E-01 | 3.711E-01      | 3.487E-02 | 2.519   |
|         | 201.83    |              |     | 1.117E-02           | 3.004E-02 | 5.134E-02      | 4.227E-03 | 0.218   |
|         | 306.84    | *            |     | 1.910E-02           | 2.706E-02 | 4.481E-02      | 3.839E-03 | 0.426   |
| LU-177  | 401.10    |              |     | -2.110E+00          | 7.602E+00 | 1.212E+01      | 1.016E+00 | -0.174  |
|         | 112.95    |              |     | -1.410E+00          | 1.686E+00 | 2.625E+00      | 2.265E-01 | -0.537  |
| LU-177M | 208.36    | *            |     | 4.728E+00           | 1.767E+00 | 2.260E+00      | 1.872E-01 | 2.092   |
|         | 52.97     |              |     | 8.212E-01           | 1.098E+00 | 1.851E+00      | 1.398E-01 | 0.444   |
|         | 54.07     |              |     | 2.286E-01           | 5.944E-01 | 9.905E-01      | 7.386E-02 | 0.231   |
|         | 61.30     |              |     | 5.734E-01           | 1.252E+00 | 1.889E+00      | 1.368E-01 | 0.304   |
|         | 121.62    |              |     | 4.678E-02           | 3.944E-01 | 6.374E-01      | 5.478E-02 | 0.073   |
|         | 147.16    |              |     | -1.969E-01          | 7.066E-01 | 1.113E+00      | 9.103E-02 | -0.177  |
|         | 171.86    |              |     | 1.489E-01           | 5.122E-01 | 8.206E-01      | 6.536E-02 | 0.181   |
|         | 218.09    |              |     | -7.780E-02          | 8.644E-01 | 1.446E+00      | 1.207E-01 | -0.054  |
|         | 268.79    |              |     | 4.090E+00           | 1.679E+00 | 1.642E+00      | 1.396E-01 | 2.491   |
|         | 319.02    |              |     | 8.734E-02           | 2.914E-01 | 4.867E-01      | 4.174E-02 | 0.179   |
|         | 367.43    |              |     | 8.188E-01           | 9.561E-01 | 1.637E+00      | 1.386E-01 | 0.500   |
|         | 413.65    | *            |     | -1.162E-01          | 2.079E-01 | 3.248E-01      | 2.750E-02 | -0.358  |
|         | 56.28     |              |     | -7.313E-01          | 6.950E-01 | 1.101E+00      | 8.051E-02 | -0.664  |
|         | 57.53     |              |     | -9.881E-02          | 3.708E-01 | 6.046E-01      | 4.384E-02 | -0.163  |
| HF-181  | 65.20     |              |     | 3.440E-01           | 8.670E-01 | 1.293E+00      | 9.571E-02 | 0.266   |
|         | 133.02    |              |     | -1.227E-02          | 8.057E-02 | 1.139E-01      | 9.558E-03 | -0.108  |
|         | 136.25    |              |     | -2.221E-02          | 5.032E-01 | 8.035E-01      | 6.703E-02 | -0.028  |
|         | 345.85    |              |     | -2.322E-02          | 2.343E-01 | 3.525E-01      | 3.011E-02 | -0.066  |
|         | 482.03    | *            |     | -3.268E-02          | 4.804E-02 | 7.295E-02      | 6.418E-03 | -0.448  |
|         | 56.28     |              |     | -2.863E-01          | 2.724E-01 | 4.317E-01      | 3.156E-02 | -0.663  |
|         | 57.53     |              |     | -3.900E-02          | 1.454E-01 | 2.371E-01      | 1.720E-02 | -0.164  |
| W-181   | 65.20     | *            |     | 1.339E-01           | 3.374E-01 | 5.034E-01      | 3.725E-02 | 0.266   |
|         | 67.75     |              |     | -6.031E-02          | 9.935E-02 | 1.516E-01      | 1.143E-02 | -0.398  |
| TA-182  | 100.10    |              |     | 1.864E-01           | 1.818E-01 | 3.047E-01      | 2.698E-02 | 0.612   |
|         | 152.43    |              |     | -7.198E-02          | 3.787E-01 | 5.976E-01      | 4.845E-02 | -0.120  |
|         | 222.10    |              |     | 7.370E-02           | 3.694E-01 | 6.248E-01      | 5.231E-02 | 0.118   |
|         | 1001.68   |              |     | 9.957E-01           | 2.486E+00 | 4.131E+00      | 3.698E-01 | 0.241   |
|         | 1121.28   |              |     | 8.923E-01           | 3.928E-01 | 4.323E-01      | 3.651E-02 | 2.064   |
|         | 1189.05   |              |     | 7.939E-02           | 3.668E-01 | 6.193E-01      | 5.049E-02 | 0.128   |
|         | 1221.42   | *            |     | -5.662E-02          | 2.477E-01 | 4.040E-01      | 3.304E-02 | -0.140  |
|         | 1230.97   |              |     | -2.665E-01          | 5.942E-01 | 9.527E-01      | 7.797E-02 | -0.280  |
| RE-183  | 57.98     |              |     | -6.582E-03          | 1.541E-01 | 2.418E-01      | 1.749E-02 | -0.027  |



---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-------------------------|-----------|----------------|-----------|---------|
| RE-184  |           | 59.32        | 6.785E-02               | 8.941E-02 | 1.367E-01      | 9.834E-03 | 0.496   |
|         |           | 67.20        | -1.154E-02              | 1.855E-01 | 2.715E-01      | 2.038E-02 | -0.043  |
|         |           | 162.32 *     | 1.239E-01               | 1.218E-01 | 2.008E-01      | 1.599E-02 | 0.617   |
|         | +         | 208.81       | 4.301E+00               | 1.607E+00 | 2.040E+00      | 1.691E-01 | 2.108   |
|         |           | 291.72       | -3.201E-01              | 1.110E+00 | 1.578E+00      | 1.347E-01 | -0.203  |
|         |           | 57.98        | -2.427E-02              | 5.681E-01 | 8.918E-01      | 6.451E-02 | -0.027  |
|         |           | 59.32        | 2.500E-01               | 3.294E-01 | 5.038E-01      | 3.623E-02 | 0.496   |
|         |           | 67.20        | -4.255E-02              | 6.839E-01 | 1.001E+00      | 7.513E-02 | -0.043  |
|         |           | 161.27       | 1.823E-02               | 3.948E-01 | 6.275E-01      | 5.006E-02 | 0.029   |
|         |           | 216.55       | -2.532E-01              | 2.717E-01 | 4.371E-01      | 3.645E-02 | -0.579  |
|         |           | 252.85 *     | 2.210E-01               | 2.425E-01 | 4.200E-01      | 3.565E-02 | 0.526   |
|         |           | 318.01       | 1.597E-03               | 4.946E-01 | 8.139E-01      | 6.980E-02 | 0.002   |
|         |           | 792.07       | 7.599E-01               | 1.176E+00 | 1.792E+00      | 1.640E-01 | 0.424   |
|         |           | 903.28       | 2.464E-01               | 1.174E+00 | 1.832E+00      | 1.676E-01 | 0.135   |
| OS-185  |           | 920.93       | -5.139E-02              | 5.105E-01 | 8.188E-01      | 7.474E-02 | -0.063  |
|         |           | 59.72        | 2.344E-01               | 2.357E-01 | 3.639E-01      | 2.617E-02 | 0.644   |
|         |           | 61.14        | 5.276E-02               | 1.373E-01 | 2.065E-01      | 1.494E-02 | 0.255   |
|         |           | 69.30        | -1.109E-01              | 2.677E-01 | 4.141E-01      | 3.162E-02 | -0.268  |
|         |           | 592.07       | -8.884E-01              | 2.525E+00 | 4.106E+00      | 3.682E-01 | -0.216  |
|         |           | 646.12 *     | -1.531E-03              | 4.911E-02 | 8.143E-02      | 7.239E-03 | -0.019  |
|         |           | 717.42       | -5.032E-01              | 9.522E-01 | 1.501E+00      | 1.354E-01 | -0.335  |
|         |           | 874.81       | 2.697E-01               | 5.848E-01 | 9.932E-01      | 9.111E-02 | 0.272   |
|         |           | 880.27       | 1.604E-01               | 8.047E-01 | 1.333E+00      | 1.222E-01 | 0.120   |
|         |           | 155.03 *     | 3.282E-01               | 1.925E-01 | 3.242E-01      | 2.616E-02 | 1.012   |
| RE-188  |           | 477.96       | 1.619E+00               | 3.480E+00 | 5.757E+00      | 5.056E-01 | 0.281   |
|         |           | 633.10       | 2.082E+00               | 3.060E+00 | 5.327E+00      | 4.751E-01 | 0.391   |
| W-188   | +         | 63.58        | 8.946E+01               | 6.105E+01 | 7.564E+01      | 5.540E+00 | 1.183   |
| IR-192  |           | 227.08       | -6.511E+00              | 1.425E+01 | 2.343E+01      | 1.968E+00 | -0.278  |
|         |           | 290.67 *     | -5.994E+00              | 8.948E+00 | 1.235E+01      | 1.053E+00 | -0.485  |
|         | +         | 295.96       | 1.530E+00               | 2.253E-01 | 3.441E-01      | 2.962E-02 | 4.446   |
|         |           | 308.46       | -9.646E-02              | 1.051E-01 | 1.640E-01      | 1.413E-02 | -0.588  |
| AU-195  |           | 316.51 *     | 5.691E-03               | 3.815E-02 | 6.327E-02      | 5.438E-03 | 0.090   |
|         |           | 468.07       | -2.963E-03              | 8.379E-02 | 1.169E-01      | 1.094E-02 | -0.025  |
|         |           | 604.41       | 1.455E-01               | 5.606E-01 | 8.328E-01      | 1.103E-01 | 0.175   |
|         |           | 612.46       | 2.789E+00               | 9.352E-01 | 1.626E+00      | 1.657E-01 | 1.715   |
|         |           | 65.12        | 7.378E-02               | 1.566E-01 | 2.342E-01      | 1.732E-02 | 0.315   |
|         |           | 66.83        | 1.357E-02               | 8.604E-02 | 1.271E-01      | 9.510E-03 | 0.107   |
| TL-200  | +         | 75.70        | 1.554E+00               | 2.713E-01 | 4.546E-01      | 3.694E-02 | 3.420   |
|         |           | 98.88 *      | 4.386E-01               | 2.286E-01 | 3.912E-01      | 3.479E-02 | 1.121   |
|         | +         | 129.76       | 4.134E+00               | 5.320E+00 | 5.444E+00      | 4.599E-01 | 0.759   |
|         |           | 367.94 *     | 1.881E-04               | 5.320E+00 | Half-Life      | too short |         |
| TL-201  |           | 579.30       | 4.597E-04               | 5.320E+00 | Half-Life      | too short |         |
|         |           | 828.27       | 1.843E-03               | 5.320E+00 | Half-Life      | too short |         |
|         |           | 1205.75      | 1.669E-03               | 5.320E+00 | Half-Life      | too short |         |
|         |           | 68.90        | -5.245E+00              | 4.012E+00 | 6.312E+00      | 4.804E-01 | -0.831  |
|         |           | 70.82        | 1.345E+00               | 2.564E+00 | 3.847E+00      | 2.977E-01 | 0.350   |
|         |           | 80.30        | -9.560E+00              | 5.351E+00 | 7.160E+00      | 6.130E-01 | -1.335  |
|         |           | 135.34       | -1.031E+01              | 2.760E+01 | 4.348E+01      | 3.633E+00 | -0.237  |
|         |           | 167.43 *     | 6.196E-01               | 7.376E+00 | 1.172E+01      | 9.284E-01 | 0.053   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| TL-202  |           | 68.90        |     | -4.820E-01          | 3.687E-01 | 5.801E-01      | 4.415E-02 | -0.831  |
|         |           | 70.82        |     | 1.233E-01           | 2.350E-01 | 3.525E-01      | 2.728E-02 | 0.350   |
|         |           | 80.30        |     | -8.764E-01          | 4.906E-01 | 6.564E-01      | 5.620E-02 | -1.335  |
|         |           | 439.56       | *   | 1.298E-02           | 7.934E-02 | 1.293E-01      | 1.113E-02 | 0.100   |
| HG-203  |           | 70.83        |     | 5.411E-01           | 1.025E+00 | 1.536E+00      | 2.007E-01 | 0.352   |
|         |           | 72.87        |     | 1.231E+00           | 6.470E-01 | 9.872E-01      | 1.258E-01 | 1.247   |
|         |           | 82.60        |     | 2.126E+00           | 1.380E+00 | 1.720E+00      | 2.383E-01 | 1.236   |
|         |           | 279.20       | *   | 3.429E-02           | 4.482E-02 | 7.672E-02      | 6.702E-03 | 0.447   |
| BI-207  |           | 72.80        |     | 3.326E-01           | 1.857E-01 | 2.878E-01      | 2.270E-02 | 1.156   |
|         | +         | 74.97        |     | 8.626E-01           | 1.506E-01 | 2.222E-01      | 2.792E-02 | 3.883   |
|         | +         | 84.90        |     | 4.389E-01           | 1.998E-01 | 3.170E-01      | 2.871E-02 | 1.385   |
|         |           | 569.67       |     | -3.623E-02          | 3.339E-02 | 5.122E-02      | 4.593E-03 | -0.707  |
|         |           | 1063.62      | *   | 8.700E-03           | 6.210E-02 | 1.052E-01      | 9.178E-03 | 0.083   |
|         |           | 1770.23      |     | -3.040E-01          | 4.925E-01 | 5.640E-01      | 4.633E-02 | -0.539  |
| TL-207  |           | 81.07        |     | -4.479E-01          | 2.385E-01 | 3.171E-01      | 2.739E-02 | -1.413  |
|         | +         | 83.78        |     | 2.894E-01           | 1.317E-01 | 2.073E-01      | 1.851E-02 | 1.396   |
|         |           | 94.90        |     | 4.595E-01           | 2.541E-01 | 3.933E-01      | 3.556E-02 | 1.168   |
|         |           | 122.32       |     | -1.088E-01          | 1.851E+00 | 2.968E+00      | 2.738E-01 | -0.037  |
|         |           | 144.24       |     | 8.144E-01           | 7.396E-01 | 1.209E+00      | 1.123E-01 | 0.674   |
|         |           | 154.21       |     | 4.795E-01           | 4.467E-01 | 7.377E-01      | 6.633E-02 | 0.650   |
|         | +         | 269.46       |     | 9.581E-01           | 3.938E-01 | 4.128E-01      | 3.582E-02 | 2.321   |
|         |           | 323.87       | *   | -2.118E-01          | 8.246E-01 | 1.164E+00      | 2.058E-01 | -0.182  |
|         | +         | 338.28       |     | 1.039E+01           | 2.128E+00 | 2.991E+00      | 3.671E-01 | 3.475   |
|         |           | 445.03       |     | 3.478E-01           | 2.640E+00 | 4.288E+00      | 5.191E-01 | 0.081   |
| PO-209  |           | 260.50       |     | 3.256E+00           | 9.974E+00 | 1.685E+01      | 1.432E+00 | 0.193   |
|         |           | 262.80       |     | -1.131E+00          | 2.858E+01 | 4.586E+01      | 3.897E+00 | -0.025  |
|         |           | 896.60       | *   | 3.519E+00           | 8.411E+00 | 1.414E+01      | 1.295E+00 | 0.249   |
| PB-211  |           | 404.84       | *   | -2.554E-01          | 1.083E+00 | 1.711E+00      | 1.072E+00 | -0.149  |
|         |           | 427.08       |     | 7.915E-01           | 2.355E+00 | 3.803E+00      | 2.363E+00 | 0.208   |
|         |           | 831.96       |     | -1.401E+00          | 1.637E+00 | 2.058E+00      | 1.291E+00 | -0.681  |
| BI-212  | +         | 727.18       | *   | 1.657E+00           | 6.569E-01 | 8.035E-01      | 8.335E-02 | 2.062   |
|         |           | 785.46       |     | -5.332E-01          | 2.019E+00 | 3.145E+00      | 2.875E-01 | -0.170  |
|         |           | 1620.62      |     | -3.216E-02          | 1.406E+00 | 2.270E+00      | 1.897E-01 | -0.014  |
| PO-215  |           | 81.07        |     | -4.479E-01          | 2.385E-01 | 3.171E-01      | 2.739E-02 | -1.413  |
|         | +         | 83.78        |     | 2.894E-01           | 1.317E-01 | 2.073E-01      | 1.851E-02 | 1.396   |
|         |           | 94.90        |     | 4.595E-01           | 2.541E-01 | 3.933E-01      | 3.556E-02 | 1.168   |
|         |           | 122.32       |     | -1.088E-01          | 1.851E+00 | 2.968E+00      | 2.738E-01 | -0.037  |
|         |           | 144.24       |     | 8.144E-01           | 7.396E-01 | 1.209E+00      | 1.123E-01 | 0.674   |
|         |           | 154.21       |     | 4.795E-01           | 4.467E-01 | 7.377E-01      | 6.633E-02 | 0.650   |
|         | +         | 269.46       |     | 9.581E-01           | 3.938E-01 | 4.128E-01      | 3.582E-02 | 2.321   |
|         |           | 323.87       | *   | -2.118E-01          | 8.246E-01 | 1.164E+00      | 2.058E-01 | -0.182  |
|         | +         | 338.28       |     | 1.039E+01           | 2.128E+00 | 2.991E+00      | 3.671E-01 | 3.475   |
|         |           | 445.03       |     | 3.478E-01           | 2.640E+00 | 4.288E+00      | 5.191E-01 | 0.081   |
| RN-219  | +         | 271.23       |     | 1.229E+00           | 5.095E-01 | 5.338E-01      | 5.450E-02 | 2.303   |
|         |           | 401.81       | *   | -2.406E-01          | 4.686E-01 | 7.334E-01      | 1.092E-01 | -0.328  |
| RN-220  |           | 549.76       | *   | -9.795E+00          | 2.938E+01 | 4.825E+01      | 4.320E+00 | -0.203  |
| RA-223  |           | 81.07        |     | -4.479E-01          | 2.385E-01 | 3.171E-01      | 2.739E-02 | -1.413  |
|         | +         | 83.78        |     | 2.894E-01           | 1.317E-01 | 2.073E-01      | 1.851E-02 | 1.396   |
|         |           | 94.90        |     | 4.595E-01           | 2.541E-01 | 3.933E-01      | 3.556E-02 | 1.168   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|---------------------|-----------|----------------|-----------|---------|
| AC-227  |           | 122.32       | -1.088E-01          | 1.851E+00 | 2.968E+00      | 2.738E-01 | -0.037  |
|         |           | 144.24       | 8.144E-01           | 7.396E-01 | 1.209E+00      | 1.123E-01 | 0.674   |
|         |           | 154.21       | 4.795E-01           | 4.467E-01 | 7.377E-01      | 6.633E-02 | 0.650   |
|         | +         | 269.46       | 9.581E-01           | 3.938E-01 | 4.128E-01      | 3.582E-02 | 2.321   |
|         |           | 323.87       | * -2.118E-01        | 8.246E-01 | 1.164E+00      | 2.058E-01 | -0.182  |
|         | +         | 338.28       | 1.039E+01           | 2.128E+00 | 2.991E+00      | 3.671E-01 | 3.475   |
|         |           | 445.03       | 3.478E-01           | 2.640E+00 | 4.288E+00      | 5.191E-01 | 0.081   |
|         |           | 79.80        | -3.165E+00          | 1.902E+00 | 2.409E+00      | 5.171E-01 | -1.314  |
|         |           | 236.00       | 4.918E-01           | 2.796E-01 | 4.411E-01      | 5.345E-02 | 1.115   |
|         |           | 256.20       | * -2.078E-01        | 3.972E-01 | 6.428E-01      | 9.819E-02 | -0.323  |
| TH-227  |           | 286.10       | 1.203E+00           | 1.648E+00 | 2.814E+00      | 3.696E-01 | 0.427   |
|         | +         | 299.80       | 5.124E+00           | 2.129E+00 | 3.011E+00      | 5.256E-01 | 1.702   |
|         |           | 304.40       | 8.625E-01           | 2.184E+00 | 3.248E+00      | 5.979E-01 | 0.266   |
|         |           | 334.20       | -2.033E+00          | 2.843E+00 | 3.820E+00      | 7.406E-01 | -0.532  |
|         |           | 79.80        | -3.165E+00          | 1.905E+00 | 2.409E+00      | 5.237E-01 | -1.314  |
|         | +         | 94.00        | 1.284E+01           | 3.956E+00 | 3.910E+00      | 8.589E-01 | 3.284   |
|         |           | 236.00       | 4.918E-01           | 2.784E-01 | 4.411E-01      | 4.824E-02 | 1.115   |
|         |           | 256.20       | * -2.078E-01        | 3.977E-01 | 6.428E-01      | 1.157E-01 | -0.323  |
|         |           | 286.10       | 1.203E+00           | 2.037E+00 | 2.814E+00      | 2.825E+00 | 0.427   |
|         | +         | 299.80       | 5.124E+00           | 2.129E+00 | 3.011E+00      | 5.256E-01 | 1.702   |
| TH-229  |           | 304.40       | 8.625E-01           | 2.184E+00 | 3.248E+00      | 5.979E-01 | 0.266   |
|         |           | 334.20       | -2.033E+00          | 2.843E+00 | 3.820E+00      | 7.406E-01 | -0.532  |
|         | +         | 85.43        | 4.333E-01           | 1.972E-01 | 3.193E-01      | 2.911E-02 | 1.357   |
|         | +         | 88.47        | 5.381E-01           | 1.452E-01 | 2.139E-01      | 2.009E-02 | 2.515   |
|         |           | 100.00       | 2.180E-01           | 1.883E-01 | 3.168E-01      | 2.806E-02 | 0.688   |
|         |           | 193.63       | * -1.131E-01        | 5.203E-01 | 8.715E-01      | 7.116E-02 | -0.130  |
|         | +         | 210.97       | 3.372E+00           | 1.260E+00 | 1.441E+00      | 1.196E-01 | 2.340   |
|         | PA-231    | 283.67       | * -3.834E-01        | 1.664E+00 | 2.723E+00      | 4.117E-01 | -0.141  |
|         | +         | 301.29       | 2.050E+00           | 8.123E-01 | 1.191E+00      | 1.453E-01 | 1.721   |
|         | TH-231    | 81.07        | -4.479E-01          | 2.385E-01 | 3.171E-01      | 2.739E-02 | -1.413  |
| U-231   | +         | 83.78        | 2.894E-01           | 1.317E-01 | 2.073E-01      | 1.851E-02 | 1.396   |
|         |           | 94.90        | 4.595E-01           | 2.541E-01 | 3.933E-01      | 3.556E-02 | 1.168   |
|         |           | 122.32       | -1.088E-01          | 1.851E+00 | 2.968E+00      | 2.738E-01 | -0.037  |
|         |           | 144.24       | 8.144E-01           | 7.396E-01 | 1.209E+00      | 1.123E-01 | 0.674   |
|         |           | 154.21       | 4.795E-01           | 4.467E-01 | 7.377E-01      | 6.633E-02 | 0.650   |
|         | +         | 269.46       | 9.581E-01           | 3.938E-01 | 4.128E-01      | 3.582E-02 | 2.321   |
|         |           | 323.87       | * -2.118E-01        | 8.246E-01 | 1.164E+00      | 2.058E-01 | -0.182  |
|         | +         | 338.28       | 1.039E+01           | 2.128E+00 | 2.991E+00      | 3.671E-01 | 3.475   |
|         |           | 445.03       | 3.478E-01           | 2.640E+00 | 4.288E+00      | 5.191E-01 | 0.081   |
|         | +         | 84.21        | 1.221E+01           | 5.555E+00 | 8.761E+00      | 7.866E-01 | 1.393   |
| PA-233  | +         | 92.29        | 1.242E+01           | 2.910E+00 | 4.003E+00      | 3.669E-01 | 3.102   |
|         |           | 95.87        | * -1.969E-01        | 1.124E+00 | 1.616E+00      | 1.455E-01 | -0.122  |
|         |           | 108.00       | -8.868E-01          | 2.148E+00 | 3.391E+00      | 2.945E-01 | -0.262  |
|         | +         | 75.28        | 2.517E+01           | 5.433E+00 | 6.802E+00      | 1.024E+00 | 3.701   |
|         | +         | 86.59        | 7.716E+00           | 2.859E+00 | 3.037E+00      | 8.208E-01 | 2.541   |
|         | +         | 300.12       | 1.428E+00           | 5.789E-01 | 8.397E-01      | 1.246E-01 | 1.701   |
|         |           | 311.98       | * -1.658E-03        | 7.013E-02 | 1.154E-01      | 1.017E-02 | -0.014  |
|         |           | 340.50       | 2.733E+00           | 1.058E+00 | 1.436E+00      | 3.420E-01 | 1.903   |
|         |           | 398.62       | 4.300E-01           | 2.402E+00 | 3.935E+00      | 1.045E+00 | 0.109   |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PA-234  | +         | 415.76       |     | 2.776E-01           | 1.927E+00 | 3.145E+00      | 6.760E-01 | 0.088   |
|         |           | 63.00        |     | 2.598E+00           | 1.804E+00 | 2.254E+00      | 3.337E-01 | 1.153   |
|         |           | 94.67        |     | 5.536E-01           | 1.966E-01 | 3.004E-01      | 3.817E-02 | 1.843   |
|         |           | 98.44        |     | 1.053E-01           | 1.086E-01 | 1.545E-01      | 8.629E-02 | 0.681   |
|         |           | 99.86        |     | 5.681E-01           | 4.773E-01 | 8.036E-01      | 7.122E-02 | 0.707   |
|         |           | 111.00       |     | -6.449E-03          | 1.905E-01 | 3.072E-01      | 3.720E-02 | -0.021  |
|         |           | 131.20       |     | 6.238E-02           | 1.283E-01 | 1.876E-01      | 1.580E-02 | 0.333   |
|         |           | 152.70       |     | -9.862E-02          | 3.730E-01 | 5.863E-01      | 9.844E-02 | -0.168  |
|         |           | 186.00       |     | 6.628E+00           | 3.055E+00 | 2.963E+00      | 9.206E-01 | 2.237   |
|         |           | 226.40       |     | -3.379E-01          | 4.475E-01 | 7.238E-01      | 9.451E-02 | -0.467  |
|         |           | 227.20       |     | 8.733E-02           | 4.730E-01 | 7.985E-01      | 6.706E-02 | 0.109   |
|         |           | 248.90       |     | -6.992E-01          | 8.571E-01 | 1.349E+00      | 3.017E-01 | -0.518  |
|         |           | 293.70       |     | 7.003E+00           | 1.566E+00 | 1.920E+00      | 3.314E-01 | 3.648   |
|         |           | 369.80       |     | 1.033E-02           | 8.769E-01 | 1.431E+00      | 3.106E-01 | 0.007   |
|         |           | 568.70       |     | -1.377E+00          | 1.087E+00 | 1.641E+00      | 1.471E-01 | -0.839  |
|         |           | 569.50       |     | -3.287E-01          | 2.959E-01 | 4.527E-01      | 4.060E-02 | -0.726  |
|         |           | 574.00       |     | 5.935E-01           | 1.601E+00 | 2.746E+00      | 2.462E-01 | 0.216   |
|         |           | 699.00       |     | 1.459E-01           | 8.229E-01 | 1.376E+00      | 2.647E-01 | 0.106   |
|         |           | 706.10       |     | -2.896E-01          | 1.173E+00 | 1.890E+00      | 8.442E-01 | -0.153  |
|         |           | 733.00       |     | 7.502E-03           | 4.763E-01 | 6.808E-01      | 1.523E-01 | 0.011   |
|         |           | 742.81       |     | -1.298E+00          | 1.752E+00 | 2.324E+00      | 1.564E+00 | -0.559  |
|         | +         | 796.30       |     | 5.012E+00           | 2.921E+00 | 1.977E+00      | 5.384E-01 | 2.535   |
|         |           | 805.60       |     | 5.075E-01           | 1.295E+00 | 1.903E+00      | 5.862E-01 | 0.267   |
|         |           | 819.60       |     | 6.399E-01           | 1.377E+00 | 2.303E+00      | 8.789E-01 | 0.278   |
|         |           | 826.30       |     | 4.313E-01           | 8.938E-01 | 1.487E+00      | 6.670E-01 | 0.290   |
|         |           | 831.60       |     | -8.121E-01          | 7.623E-01 | 1.066E+00      | 3.198E-01 | -0.762  |
|         |           | 876.40       |     | -2.108E-02          | 8.468E-01 | 1.372E+00      | 1.411E+00 | -0.015  |
|         |           | 880.51       |     | 3.681E-02           | 2.974E-01 | 4.889E-01      | 4.483E-02 | 0.075   |
|         |           | 883.24       |     | 1.524E-01           | 3.385E-01 | 5.460E-01      | 3.674E-01 | 0.279   |
|         |           | 899.00       |     | -1.567E-01          | 9.918E-01 | 1.566E+00      | 6.863E-01 | -0.100  |
|         |           | 925.00       |     | -6.432E-01          | 1.380E+00 | 2.135E+00      | 1.948E-01 | -0.301  |
|         | *         | 926.50       |     | 3.685E-02           | 1.971E-01 | 3.241E-01      | 8.249E-02 | 0.114   |
|         |           | 946.00       |     | 9.425E-02           | 3.643E-01 | 6.011E-01      | 1.141E-01 | 0.157   |
|         |           | 949.00       |     | 3.304E-02           | 5.323E-01 | 8.645E-01      | 7.851E-02 | 0.038   |
|         |           | 980.50       |     | -3.092E-01          | 8.985E-01 | 1.402E+00      | 1.263E-01 | -0.221  |
|         |           | 1394.10      |     | 4.869E-01           | 1.351E+00 | 2.250E+00      | 1.464E+00 | 0.216   |
|         |           | 766.42       |     | 2.793E+01           | 2.046E+01 | 2.478E+01      | 1.259E+01 | 1.127   |
|         |           | 1001.03      | *   | -8.728E-01          | 5.634E+00 | 8.939E+00      | 9.166E-01 | -0.098  |
|         |           |              |     |                     |           |                |           |         |
| U-235   | +         | 89.95        |     | 2.164E+00           | 1.324E+00 | 1.825E+00      | 5.668E-01 | 1.186   |
|         |           | 93.35        |     | 3.995E+00           | 1.418E+00 | 1.303E+00      | 3.673E-01 | 3.065   |
|         | *         | 105.00       |     | 1.054E+00           | 1.131E+00 | 1.821E+00      | 5.442E-01 | 0.579   |
|         |           | 143.76       |     | 2.325E-01           | 2.280E-01 | 3.678E-01      | 6.370E-02 | 0.632   |
|         |           | 163.35       |     | 4.882E-01           | 5.292E-01 | 8.593E-01      | 1.614E-01 | 0.568   |
| NP-236  | +         | 185.71       |     | 2.455E-01           | 8.593E-02 | 1.105E-01      | 8.944E-03 | 2.222   |
|         |           | 205.31       |     | -3.711E-02          | 6.233E-01 | 9.208E-01      | 1.742E-01 | -0.040  |
|         |           | 94.67        |     | 4.232E-01           | 1.445E-01 | 2.282E-01      | 2.065E-02 | 1.855   |
|         |           | 98.44        |     | 7.948E-02           | 6.943E-02 | 1.168E-01      | 1.041E-02 | 0.680   |
|         |           | 111.00       |     | -4.878E-03          | 1.441E-01 | 2.324E-01      | 2.009E-02 | -0.021  |
|         |           | 160.31       | *   | 2.199E-03           | 8.755E-02 | 1.391E-01      | 1.111E-02 | 0.016   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| NP-239  |           | 99.55        |     | 2.149E-01           | 1.594E-01 | 2.695E-01      | 2.391E-02 | 0.798   |
|         |           | 117.00       | *   | 4.292E-02           | 1.941E-01 | 3.155E-01      | 2.715E-02 | 0.136   |
|         | +         | 209.75       |     | 3.397E+00           | 1.270E+00 | 1.616E+00      | 1.340E-01 | 2.103   |
|         |           | 228.18       |     | 1.592E-01           | 2.491E-01 | 4.274E-01      | 3.592E-02 | 0.372   |
|         |           | 277.60       |     | 1.871E-01           | 2.042E-01 | 3.511E-01      | 2.981E-02 | 0.533   |
|         |           | 334.30       |     | -1.182E+00          | 1.597E+00 | 2.159E+00      | 1.849E-01 | -0.548  |
| AM-241  |           | 59.54        | *   | 1.317E-01           | 1.245E-01 | 1.925E-01      | 1.526E-02 | 0.684   |
| CM-243  |           | 99.55        |     | 2.212E-01           | 1.641E-01 | 2.773E-01      | 2.460E-02 | 0.798   |
|         |           | 103.76       | *   | -3.585E-02          | 9.835E-02 | 1.570E-01      | 1.376E-02 | -0.228  |
|         |           | 117.00       |     | 4.415E-02           | 1.997E-01 | 3.246E-01      | 2.793E-02 | 0.136   |
|         | +         | 209.75       |     | 3.349E+00           | 1.252E+00 | 1.593E+00      | 1.321E-01 | 2.103   |
|         |           | 228.18       |     | 1.608E-01           | 2.517E-01 | 4.319E-01      | 3.629E-02 | 0.372   |
|         |           | 277.60       |     | 1.886E-01           | 2.058E-01 | 3.540E-01      | 3.005E-02 | 0.533   |
| AM-246  |           | 798.80       |     | -5.450E-02          | 1.586E-01 | 2.522E-01      | 2.310E-02 | -0.216  |
|         |           | 1036.00      |     | 1.050E-01           | 3.272E-01 | 5.639E-01      | 4.982E-02 | 0.186   |
|         |           | 1062.04      |     | 7.959E-02           | 2.608E-01 | 4.477E-01      | 3.909E-02 | 0.178   |
|         |           | 1078.86      | *   | 7.153E-02           | 1.548E-01 | 2.690E-01      | 2.329E-02 | 0.266   |
| CM-247  |           | 278.00       |     | 1.298E+00           | 8.456E-01 | 1.484E+00      | 1.260E-01 | 0.875   |
|         |           | 287.40       |     | 9.129E-01           | 1.311E+00 | 2.241E+00      | 1.909E-01 | 0.407   |
|         |           | 402.60       | *   | -4.961E-02          | 4.277E-02 | 6.400E-02      | 5.373E-03 | -0.775  |
| CF-249  |           | 252.85       |     | 8.295E-01           | 9.104E-01 | 1.577E+00      | 1.338E-01 | 0.526   |
|         |           | 333.44       |     | 1.301E-02           | 2.403E-01 | 2.926E-01      | 2.507E-02 | 0.044   |
|         |           | 387.95       | *   | -3.044E-02          | 4.444E-02 | 6.902E-02      | 5.761E-03 | -0.441  |
| CF-251  |           | 176.60       | *   | -2.261E-02          | 1.307E-01 | 2.203E-01      | 1.764E-02 | -0.103  |
|         |           | 227.00       |     | -2.046E-01          | 4.278E-01 | 7.028E-01      | 5.902E-02 | -0.291  |
|         |           | 285.00       |     | 5.975E-02           | 1.943E+00 | 3.222E+00      | 2.742E-01 | 0.019   |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*                                     *                                       *
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630005      *
* Acquisition date   : 23-JAN-2010 11:46:35 Detector SN# :                   *
* Detector ID        : GAM07 Sensitivity      : 5.000                      *
* Geometry           : CAN Energy tolerance : 1.500                      *
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000             *
* Elapsed real time  : 0 02:00:01.55 Half life ratio : 8.000              *
*****
*                                     SAMPLE DATA                            *
*                                     *                                       *
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G244630005 Analyst initials: MXR1                 *
* Batch Number       : 941639 Sample Quantity : 1.2854E+02 GRAM          *
* Recovery           : 1.00000 Carrier Weight  : 0.00000                 *
*****
*                                     QC DATA                                *
*                                     *                                       *
* Standard Weight    : 0.00000                                             *
* CALIB. DATE/TIME   : 20-JUL-2009 15:29:58 MS Isotope :                   *
* MSD DPM             : 0.000 MSD Isotope :                               *
* LCS DPM             : 0.000 LCS Isotope :                               *
* LCSD DPM            : 0.000 LCSD Isotope :                               *
*****

```

## Combined Activity-MDA Report

### ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act error | MDA<br>(pCi/GRAM ) |           |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 3.962E+01               | 3.900E+00 | 5.587E-01          | 0.000E+00 |
| CD-109  | 4.009E+00               | 1.060E+00 | 1.165E+00          | 0.000E+00 |
| SN-126  | 3.941E-01               | 1.042E-01 | 1.148E-01          | 0.000E+00 |
| TL-208  | 7.681E-01               | 1.118E-01 | 5.982E-02          | 0.000E+00 |
| BI-210  | 9.741E-01               | 2.666E+00 | 3.183E+00          | 0.000E+00 |
| PB-210  | 9.741E-01               | 2.666E+00 | 3.183E+00          | 0.000E+00 |
| PO-210  | 9.741E-01               | 2.666E+00 | 3.183E+00          | 0.000E+00 |
| BI-211  | 5.316E+00               | 6.849E-01 | 3.879E-01          | 0.000E+00 |
| PB-212  | 2.149E+00               | 2.413E-01 | 1.286E-01          | 0.000E+00 |
| PO-212  | 2.149E+00               | 2.413E-01 | 1.286E-01          | 0.000E+00 |
| BI-214  | 1.632E+00               | 2.396E-01 | 1.279E-01          | 0.000E+00 |
| PB-214  | 1.849E+00               | 2.563E-01 | 1.352E-01          | 0.000E+00 |
| PO-214  | 1.849E+00               | 2.563E-01 | 1.352E-01          | 0.000E+00 |
| PO-216  | 2.149E+00               | 2.413E-01 | 1.286E-01          | 0.000E+00 |
| PO-218  | 1.849E+00               | 2.563E-01 | 1.352E-01          | 0.000E+00 |
| RA-224  | 4.903E+00               | 1.016E+00 | 1.550E+00          | 0.000E+00 |
| RA-226  | 1.632E+00               | 2.396E-01 | 1.279E-01          | 0.000E+00 |
| AC-228  | 2.582E+00               | 4.393E-01 | 2.360E-01          | 0.000E+00 |
| RA-228  | 2.582E+00               | 4.393E-01 | 2.360E-01          | 0.000E+00 |
| TH-228  | 2.181E+00               | 2.449E-01 | 1.306E-01          | 0.000E+00 |
| TH-230  | 1.632E+00               | 2.396E-01 | 1.279E-01          | 0.000E+00 |
| TH-232  | 2.582E+00               | 4.393E-01 | 2.360E-01          | 0.000E+00 |
| TH-234  | 2.229E+00               | 1.530E+00 | 1.761E+00          | 0.000E+00 |
| U-234   | 1.632E+00               | 2.396E-01 | 1.279E-01          | 0.000E+00 |
| NP-237  | 1.157E+00               | 3.853E-01 | 3.812E-01          | 0.000E+00 |
| U-238   | 2.229E+00               | 1.530E+00 | 1.761E+00          | 0.000E+00 |
| AM-243  | 4.806E-01               | 8.220E-02 | 8.978E-02          | 0.000E+00 |
| ANH-511 | 1.389E-01               | 7.024E-02 | 4.955E-02          | 0.000E+00 |

### ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L. Act error<br>) Ided | MDA<br>(pCi/GRAM ) |
|---------|-------------------------------------|--------------------------|--------------------|
|---------|-------------------------------------|--------------------------|--------------------|

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| BE-7    | 4.938E-02  | 3.650E-01 | 6.134E-01 | 0.000E+00 | NOT IDENT. |
| NA-22   | 2.566E-02  | 4.407E-02 | 7.863E-02 | 0.000E+00 | NOT IDENT. |
| NA-24   | 0.000E+00  | 6.721E+05 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| AL-26   | 2.331E-03  | 2.590E-02 | 4.477E-02 | 0.000E+00 | NOT IDENT. |
| TI-44   | 0.000E+00  | 6.057E-02 | 8.173E-02 | 0.000E+00 | FAIL ABUN  |
| SC-46   | 7.266E-03  | 4.283E-02 | 7.261E-02 | 0.000E+00 | FAIL ABUN  |
| V-48    | -4.062E-02 | 8.070E-02 | 1.271E-01 | 0.000E+00 | NOT IDENT. |
| CR-51   | -9.339E-02 | 4.074E-01 | 6.918E-01 | 0.000E+00 | NOT IDENT. |
| MN-52   | 2.425E-02  | 2.718E-01 | 4.590E-01 | 0.000E+00 | NOT IDENT. |
| MN-54   | 3.426E-02  | 4.090E-02 | 7.298E-02 | 0.000E+00 | NOT IDENT. |
| CO-56   | -7.080E-03 | 4.398E-02 | 7.278E-02 | 0.000E+00 | NOT IDENT. |
| CO-57   | 2.014E-03  | 2.617E-02 | 4.477E-02 | 0.000E+00 | NOT IDENT. |
| CO-58   | -2.738E-02 | 4.364E-02 | 6.952E-02 | 0.000E+00 | NOT IDENT. |
| FE-59   | 5.583E-02  | 1.110E-01 | 1.969E-01 | 0.000E+00 | NOT IDENT. |
| CO-60   | 2.585E-04  | 4.262E-02 | 7.178E-02 | 0.000E+00 | NOT IDENT. |
| ZN-65   | 2.432E-02  | 1.182E-01 | 1.783E-01 | 0.000E+00 | NOT IDENT. |
| GE-68   | -8.952E-02 | 1.312E+00 | 2.239E+00 | 0.000E+00 | NOT IDENT. |
| AS-73   | 1.462E-01  | 5.563E-01 | 9.914E-01 | 0.000E+00 | NOT IDENT. |
| AS-74   | 3.036E-02  | 9.350E-02 | 1.652E-01 | 0.000E+00 | NOT IDENT. |
| SE-75   | 1.273E-03  | 4.861E-02 | 7.462E-02 | 0.000E+00 | NOT IDENT. |
| BR-77   | -2.371E+00 | 1.031E+01 | 1.774E+01 | 0.000E+00 | FAIL ABUN  |
| SR-82   | 3.453E-01  | 4.421E-01 | 7.050E-01 | 0.000E+00 | NOT IDENT. |
| RB-83   | -2.511E-02 | 6.999E-02 | 1.194E-01 | 0.000E+00 | NOT IDENT. |
| RB-84   | 1.374E-02  | 7.348E-02 | 1.249E-01 | 0.000E+00 | NOT IDENT. |
| KR-85   | 0.000E+00  | 8.567E+00 | 1.516E+01 | 0.000E+00 | NOT IDENT. |
| SR-85   | 0.000E+00  | 4.387E-02 | 7.762E-02 | 0.000E+00 | NOT IDENT. |
| RB-86   | 1.594E-01  | 8.413E-01 | 1.467E+00 | 0.000E+00 | NOT IDENT. |
| Y-88    | 1.493E-02  | 2.903E-02 | 5.424E-02 | 0.000E+00 | NOT IDENT. |
| ZR-88   | -1.245E-02 | 3.471E-02 | 5.746E-02 | 0.000E+00 | NOT IDENT. |
| Y-91    | 1.098E+00  | 2.284E+01 | 3.895E+01 | 0.000E+00 | NOT IDENT. |
| NB-94   | -1.342E-02 | 3.724E-02 | 6.188E-02 | 0.000E+00 | NOT IDENT. |
| NB-95   | 6.962E-02  | 5.307E-02 | 8.745E-02 | 0.000E+00 | NOT IDENT. |
| NB-95M  | 7.613E-02  | 1.436E-01 | 2.283E-01 | 0.000E+00 | NOT IDENT. |
| ZR-95   | 2.109E-02  | 8.045E-02 | 1.389E-01 | 0.000E+00 | NOT IDENT. |
| NB-97   | 0.000E+00  | 8.861E+04 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| ZR-97   | 0.000E+00  | 1.980E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| MO-99   | 5.655E+00  | 1.195E+01 | 2.100E+01 | 0.000E+00 | NOT IDENT. |
| TC-99M  | 0.000E+00  | 3.102E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | -1.576E-02 | 3.357E-02 | 5.855E-02 | 0.000E+00 | NOT IDENT. |
| RH-102  | 4.161E-03  | 3.368E-02 | 5.657E-02 | 0.000E+00 | NOT IDENT. |
| RU-103  | -7.631E-03 | 4.382E-02 | 7.176E-02 | 0.000E+00 | FAIL ABUN  |
| RH-106  | 3.574E-02  | 3.324E-01 | 5.771E-01 | 0.000E+00 | FAIL ABUN  |
| RU-106  | 3.574E-02  | 3.324E-01 | 5.771E-01 | 0.000E+00 | FAIL ABUN  |
| AG-108M | 1.521E-03  | 3.475E-02 | 5.850E-02 | 0.000E+00 | NOT IDENT. |
| AG-110M | -1.493E-02 | 3.607E-02 | 5.990E-02 | 0.000E+00 | NOT IDENT. |
| IN-111  | 9.082E-01  | 1.125E+00 | 1.820E+00 | 0.000E+00 | NOT IDENT. |
| IN-113M | -3.021E-03 | 4.991E-02 | 8.417E-02 | 0.000E+00 | NOT IDENT. |
| SN-113  | -3.021E-03 | 4.991E-02 | 8.417E-02 | 0.000E+00 | NOT IDENT. |
| IN-114M | 5.444E-02  | 2.033E-01 | 3.243E-01 | 0.000E+00 | NOT IDENT. |
| CD-115  | 2.560E+00  | 1.085E+01 | 1.923E+01 | 0.000E+00 | NOT IDENT. |
| SN-117M | -4.908E-02 | 5.906E-02 | 9.528E-02 | 0.000E+00 | NOT IDENT. |
| SB-122  | 2.228E+00  | 2.113E+00 | 3.898E+00 | 0.000E+00 | NOT IDENT. |
| I-123   | 0.000E+00  | 5.356E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TE-123M | -2.777E-02 | 3.103E-02 | 4.989E-02 | 0.000E+00 | NOT IDENT. |
| I-124   | 1.035E-01  | 8.452E-01 | 1.283E+00 | 0.000E+00 | NOT IDENT. |
| SB-124  | -1.412E-02 | 8.225E-02 | 1.310E-01 | 0.000E+00 | FAIL ABUN  |
| SB-125  | -1.137E-02 | 1.018E-01 | 1.699E-01 | 0.000E+00 | FAIL ABUN  |
| TE-125M | -1.049E+00 | 9.627E+00 | 1.633E+01 | 0.000E+00 | NOT IDENT. |
| I-126   | 1.803E-01  | 2.083E-01 | 3.755E-01 | 0.000E+00 | NOT IDENT. |
| SB-126  | 2.791E-03  | 1.627E-01 | 2.404E-01 | 0.000E+00 | FAIL ABUN  |
| SB-127  | 4.748E-01  | 1.485E+00 | 2.595E+00 | 0.000E+00 | NOT IDENT. |
| XE-127  | -3.528E-03 | 4.876E-02 | 8.627E-02 | 0.000E+00 | NOT IDENT. |
| I-131   | -2.506E-03 | 1.229E-01 | 2.089E-01 | 0.000E+00 | NOT IDENT. |
| TE-132  | 4.699E-01  | 7.289E-01 | 1.309E+00 | 0.000E+00 | NOT IDENT. |
| BA-133  | 2.303E-02  | 5.294E-02 | 8.163E-02 | 0.000E+00 | NOT IDENT. |
| I-133   | 0.000E+00  | 5.649E+03 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-134  | 0.000E+00  | 1.323E-01 | 1.031E-01 | 0.000E+00 | FAIL ABUN  |
| CS-135  | 2.898E-01  | 1.801E-01 | 3.005E-01 | 0.000E+00 | NOT IDENT. |
| I-135   | 0.000E+00  | 4.518E+15 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-136  | -3.237E-02 | 1.217E-01 | 2.049E-01 | 0.000E+00 | FAIL ABUN  |
| BA-137M | -3.669E-02 | 3.855E-02 | 6.129E-02 | 0.000E+00 | NOT IDENT. |
| CS-137  | -3.878E-02 | 4.075E-02 | 6.479E-02 | 0.000E+00 | NOT IDENT. |
| CE-139  | -1.831E-02 | 3.257E-02 | 5.308E-02 | 0.000E+00 | NOT IDENT. |
| BA-140  | 1.126E-02  | 2.748E-01 | 4.805E-01 | 0.000E+00 | NOT IDENT. |
| LA-140  | 7.809E-02  | 8.865E-02 | 1.508E-01 | 0.000E+00 | FAIL ABUN  |
| CE-141  | -2.508E-02 | 6.669E-02 | 1.107E-01 | 0.000E+00 | NOT IDENT. |
| CE-143  | 0.000E+00  | 2.428E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| CE-144  | 9.452E-02  | 2.450E-01 | 3.766E-01 | 0.000E+00 | NOT IDENT. |
| PM-144  | 3.393E-04  | 3.914E-02 | 6.685E-02 | 0.000E+00 | NOT IDENT. |
| PR-144  | 2.299E-02  | 2.652E+00 | 4.529E+00 | 0.000E+00 | NOT IDENT. |
| PM-146  | 4.018E-02  | 4.694E-02 | 8.270E-02 | 0.000E+00 | NOT IDENT. |
| ND-147  | -7.111E-01 | 5.925E-01 | 9.343E-01 | 0.000E+00 | FAIL ABUN  |
| PM-149  | 3.912E+01  | 9.488E+01 | 1.673E+02 | 0.000E+00 | NOT IDENT. |
| EU-152  | -5.488E-02 | 1.125E-01 | 1.802E-01 | 0.000E+00 | FAIL ABUN  |
| GD-153  | -1.091E-01 | 8.915E-02 | 1.286E-01 | 0.000E+00 | FAIL ABUN  |
| EU-154  | 6.720E-02  | 1.240E-01 | 2.202E-01 | 0.000E+00 | NOT IDENT. |
| EU-155  | 1.024E-01  | 1.094E-01 | 1.940E-01 | 0.000E+00 | FAIL ABUN  |
| TB-160  | -7.253E-02 | 1.455E-01 | 2.313E-01 | 0.000E+00 | FAIL ABUN  |
| HO-166M | 3.979E-02  | 6.654E-02 | 1.181E-01 | 0.000E+00 | NOT IDENT. |
| TM-171  | 5.141E+00  | 2.552E+01 | 4.039E+01 | 0.000E+00 | NOT IDENT. |
| LU-176  | 1.910E-02  | 2.652E-02 | 4.593E-02 | 0.000E+00 | FAIL ABUN  |
| LU-177  | 0.000E+00  | 1.732E+00 | 2.330E+00 | 0.000E+00 | FAIL ABUN  |
| LU-177M | -1.162E-01 | 2.038E-01 | 3.313E-01 | 0.000E+00 | FAIL ABUN  |
| HF-181  | -3.268E-02 | 4.708E-02 | 7.425E-02 | 0.000E+00 | NOT IDENT. |
| W-181   | 1.339E-01  | 3.307E-01 | 5.280E-01 | 0.000E+00 | NOT IDENT. |
| TA-182  | -5.662E-02 | 2.428E-01 | 4.052E-01 | 0.000E+00 | FAIL ABUN  |
| RE-183  | 1.239E-01  | 1.193E-01 | 2.078E-01 | 0.000E+00 | FAIL ABUN  |
| RE-184  | 2.210E-01  | 2.377E-01 | 4.318E-01 | 0.000E+00 | NOT IDENT. |
| OS-185  | -1.531E-03 | 4.813E-02 | 8.250E-02 | 0.000E+00 | NOT IDENT. |
| RE-188  | 3.282E-01  | 1.887E-01 | 3.357E-01 | 0.000E+00 | NOT IDENT. |
| W-188   | -5.994E+00 | 8.769E+00 | 1.267E+01 | 0.000E+00 | FAIL ABUN  |
| IR-192  | 5.691E-03  | 3.739E-02 | 6.482E-02 | 0.000E+00 | FAIL ABUN  |
| AU-195  | 0.000E+00  | 2.241E-01 | 4.079E-01 | 0.000E+00 | FAIL ABUN  |
| TL-200  | 0.000E+00  | 4.389E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TL-201  | 6.196E-01  | 7.228E+00 | 1.212E+01 | 0.000E+00 | NOT IDENT. |
| TL-202  | 1.298E-02  | 7.775E-02 | 1.318E-01 | 0.000E+00 | NOT IDENT. |
| HG-203  | 3.429E-02  | 4.392E-02 | 7.875E-02 | 0.000E+00 | NOT IDENT. |
| BI-207  | 8.700E-03  | 6.086E-02 | 1.057E-01 | 0.000E+00 | FAIL ABUN  |
| TL-207  | -2.118E-01 | 8.081E-01 | 1.192E+00 | 0.000E+00 | FAIL ABUN  |
| PO-209  | 3.519E+00  | 8.243E+00 | 1.426E+01 | 0.000E+00 | NOT IDENT. |
| PB-211  | -2.554E-01 | 1.061E+00 | 1.747E+00 | 0.000E+00 | NOT IDENT. |
| BI-212  | 0.000E+00  | 6.437E-01 | 8.126E-01 | 0.000E+00 | FAIL ABUN  |
| PO-215  | -2.118E-01 | 8.081E-01 | 1.192E+00 | 0.000E+00 | FAIL ABUN  |
| RN-219  | -2.406E-01 | 4.592E-01 | 7.486E-01 | 0.000E+00 | FAIL ABUN  |
| RN-220  | -9.795E+00 | 2.879E+01 | 4.902E+01 | 0.000E+00 | NOT IDENT. |
| RA-223  | -2.118E-01 | 8.081E-01 | 1.192E+00 | 0.000E+00 | FAIL ABUN  |
| AC-227  | -2.078E-01 | 3.893E-01 | 6.606E-01 | 0.000E+00 | FAIL ABUN  |
| TH-227  | -2.078E-01 | 3.898E-01 | 6.606E-01 | 0.000E+00 | FAIL ABUN  |
| TH-229  | -1.131E-01 | 5.098E-01 | 8.995E-01 | 0.000E+00 | FAIL ABUN  |
| PA-231  | -3.834E-01 | 1.631E+00 | 2.794E+00 | 0.000E+00 | FAIL ABUN  |
| TH-231  | -2.118E-01 | 8.081E-01 | 1.192E+00 | 0.000E+00 | FAIL ABUN  |
| U-231   | -1.969E-01 | 1.102E+00 | 1.686E+00 | 0.000E+00 | FAIL ABUN  |
| PA-233  | -1.658E-03 | 6.873E-02 | 1.182E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234  | 9.425E-02  | 3.571E-01 | 6.054E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234M | -8.728E-01 | 5.522E+00 | 8.995E+00 | 0.000E+00 | NOT IDENT. |
| U-235   | 2.325E-01  | 2.235E-01 | 3.813E-01 | 0.000E+00 | FAIL ABUN  |
| NP-236  | 2.199E-03  | 8.580E-02 | 1.439E-01 | 0.000E+00 | NOT IDENT. |
| NP-239  | 4.292E-02  | 1.902E-01 | 3.282E-01 | 0.000E+00 | FAIL ABUN  |
| AM-241  | 1.317E-01  | 1.220E-01 | 2.022E-01 | 0.000E+00 | NOT IDENT. |
| CM-243  | -3.585E-02 | 9.639E-02 | 1.636E-01 | 0.000E+00 | FAIL ABUN  |
| AM-246  | 7.153E-02  | 1.517E-01 | 2.704E-01 | 0.000E+00 | NOT IDENT. |
| CM-247  | -4.961E-02 | 4.191E-02 | 6.532E-02 | 0.000E+00 | NOT IDENT. |
| CF-249  | -3.044E-02 | 4.355E-02 | 7.049E-02 | 0.000E+00 | NOT IDENT. |
| CF-251  | -2.261E-02 | 1.280E-01 | 2.277E-01 | 0.000E+00 | NOT IDENT. |



```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630005.CNF;1
Sample date        : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 11:46:35
Sample ID          : G244630005          Sample quantity  : 1.28540E+02 GRAM
Detector name      : GAM07              Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00      Elapsed real time: 0 02:00:01.55  0.0%
Energy tolerance   : 1.50000 keV        Analyst Initials : MXR1
Abundance limit    : 75.00000          Sensitivity       : 5.00000
Batch ID           : 941639             Detector SN#      :
Matrix Spike ID    :                    LCS ID           : 1032-A
*****

```

## Nuclide Line Activity Report

## Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| K-40    | 1460.81 | 1635  | 10.67* | 1.129E+00 | 3.962E+01               | 3.962E+01              | 10.04             |
| CD-109  | 88.03   | 341   | 3.72*  | 6.837E+00 | 3.920E+00               | 4.009E+00              | 26.99             |
| SN-126  | 64.28   | 138   | 9.60   | 4.756E+00 | 8.822E-01               | 8.822E-01              | 69.37             |
|         | 86.94   | 341   | 8.90   | 6.837E+00 | 1.639E+00               | 1.639E+00              | 48.63             |
|         | 87.57   | 341   | 37.00* | 6.837E+00 | 3.941E-01               | 3.941E-01              | 26.99             |
| TL-208  | 277.35  | ----- | 6.80   | 4.401E+00 | -----                   | Line Not Found         | -----             |
|         | 510.84  | 131   | 21.60  | 2.754E+00 | 6.431E-01               | 6.431E-01              | 52.27             |
|         | 583.14  | 548   | 84.20* | 2.476E+00 | 7.681E-01               | 7.681E-01              | 14.85             |
|         | 860.37  | 96    | 12.46  | 1.783E+00 | 1.267E+00               | 1.267E+00              | 43.16             |
| BI-210  | 46.50   | 29    | 4.05*  | 2.165E+00 | 9.728E-01               | 9.741E-01              | 279.27            |
| PB-210  | 46.50   | 29    | 4.05*  | 2.165E+00 | 9.728E-01               | 9.741E-01              | 279.27            |
| PO-210  | 46.50   | 29    | 4.05*  | 2.165E+00 | 9.728E-01               | 9.741E-01              | 279.25            |
| BI-211  | 72.87   | ----- | 1.27   | 5.899E+00 | -----                   | Line Not Found         | -----             |
|         | 351.07  | 867   | 12.94* | 3.680E+00 | 5.316E+00               | 5.316E+00              | 13.15             |
| PB-212  | 74.81   | 660   | 10.70  | 6.076E+00 | 2.964E+00               | 2.964E+00              | 19.80             |
|         | 77.11   | 996   | 18.00  | 6.260E+00 | 2.581E+00               | 2.581E+00              | 12.98             |
|         | 87.30   | 341   | 8.00   | 6.837E+00 | 1.823E+00               | 1.823E+00              | 28.78             |
|         | 238.63  | 1611  | 44.60* | 4.909E+00 | 2.149E+00               | 2.149E+00              | 11.46             |
|         | 300.09  | 134   | 3.41   | 4.150E+00 | 2.765E+00               | 2.765E+00              | 39.11             |
| PO-212  | 74.81   | 660   | 10.70  | 6.076E+00 | 2.964E+00               | 2.964E+00              | 19.80             |
|         | 77.11   | 996   | 18.00  | 6.260E+00 | 2.581E+00               | 2.581E+00              | 12.98             |
|         | 87.30   | 341   | 8.00   | 6.837E+00 | 1.823E+00               | 1.823E+00              | 28.78             |
|         | 115.19  | ----- | 0.60   | 7.150E+00 | -----                   | Line Not Found         | -----             |
|         | 238.63  | 1611  | 44.60* | 4.909E+00 | 2.149E+00               | 2.149E+00              | 11.46             |
|         | 300.09  | 134   | 3.41   | 4.150E+00 | 2.765E+00               | 2.765E+00              | 39.11             |
| BI-214  | 609.31  | 618   | 46.30* | 2.389E+00 | 1.632E+00               | 1.632E+00              | 14.98             |
|         | 1120.29 | 138   | 15.10  | 1.413E+00 | 1.889E+00               | 1.889E+00              | 44.52             |
|         | 1764.49 | 113   | 15.80  | 9.832E-01 | 2.129E+00               | 2.129E+00              | 23.88             |
| PB-214  | 74.81   | 660   | 6.21   | 6.076E+00 | 5.107E+00               | 5.108E+00              | 18.96             |
|         | 77.11   | 996   | 10.50  | 6.260E+00 | 4.425E+00               | 4.425E+00              | 15.05             |
|         | 87.30   | 341   | 4.67   | 6.837E+00 | 3.123E+00               | 3.123E+00              | 28.07             |
|         | 241.98  | 323   | 7.49   | 4.863E+00 | 2.586E+00               | 2.586E+00              | 21.87             |

Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| PO-214  | 295.21  | 555   | 19.20  | 4.201E+00 | 2.009E+00               | 2.009E+00              | 15.96             |
|         | 351.92  | 867   | 37.20* | 3.680E+00 | 1.849E+00               | 1.849E+00              | 14.15             |
|         | 74.81   | 660   | 6.21   | 6.076E+00 | 5.107E+00               | 5.108E+00              | 18.96             |
|         | 77.11   | 996   | 10.50  | 6.260E+00 | 4.425E+00               | 4.425E+00              | 15.05             |
|         | 87.30   | 341   | 4.67   | 6.837E+00 | 3.123E+00               | 3.123E+00              | 28.07             |
| PO-216  | 241.98  | 323   | 7.49   | 4.863E+00 | 2.586E+00               | 2.586E+00              | 21.87             |
|         | 295.21  | 555   | 19.20  | 4.201E+00 | 2.009E+00               | 2.009E+00              | 15.96             |
|         | 351.92  | 867   | 37.20* | 3.680E+00 | 1.849E+00               | 1.849E+00              | 14.15             |
|         | 74.81   | 660   | 10.70  | 6.076E+00 | 2.964E+00               | 2.964E+00              | 19.80             |
|         | 77.11   | 996   | 18.00  | 6.260E+00 | 2.581E+00               | 2.581E+00              | 12.98             |
| PO-218  | 87.30   | 341   | 8.00   | 6.837E+00 | 1.823E+00               | 1.823E+00              | 28.78             |
|         | 238.63  | 1611  | 44.60* | 4.909E+00 | 2.149E+00               | 2.149E+00              | 11.46             |
|         | 300.09  | 134   | 3.41   | 4.150E+00 | 2.765E+00               | 2.765E+00              | 39.11             |
|         | 74.81   | 660   | 6.21   | 6.076E+00 | 5.107E+00               | 5.108E+00              | 18.96             |
|         | 77.11   | 996   | 10.50  | 6.260E+00 | 4.425E+00               | 4.425E+00              | 15.05             |
| RA-224  | 87.30   | 341   | 4.67   | 6.837E+00 | 3.123E+00               | 3.123E+00              | 28.07             |
|         | 241.98  | 323   | 7.49   | 4.863E+00 | 2.586E+00               | 2.586E+00              | 21.87             |
|         | 295.21  | 555   | 19.20  | 4.201E+00 | 2.009E+00               | 2.009E+00              | 15.96             |
|         | 351.92  | 867   | 37.20* | 3.680E+00 | 1.849E+00               | 1.849E+00              | 14.15             |
|         | 240.98  | 323   | 3.95*  | 4.863E+00 | 4.903E+00               | 4.903E+00              | 21.14             |
| RA-226  | 609.31  | 618   | 46.30* | 2.389E+00 | 1.632E+00               | 1.632E+00              | 14.98             |
|         | 1120.29 | 138   | 15.10  | 1.413E+00 | 1.889E+00               | 1.889E+00              | 44.52             |
|         | 1764.49 | 113   | 15.80  | 9.832E-01 | 2.129E+00               | 2.129E+00              | 23.88             |
|         | 338.32  | 369   | 11.40  | 3.793E+00 | 2.489E+00               | 2.489E+00              | 44.38             |
|         | 911.07  | 415   | 27.70* | 1.696E+00 | 2.582E+00               | 2.582E+00              | 17.36             |
| RA-228  | 969.11  | 197   | 16.60  | 1.606E+00 | 2.153E+00               | 2.153E+00              | 32.15             |
|         | 338.32  | 369   | 11.40  | 3.793E+00 | 2.489E+00               | 2.489E+00              | 44.38             |
|         | 911.07  | 415   | 27.70* | 1.696E+00 | 2.582E+00               | 2.582E+00              | 17.36             |
|         | 969.11  | 197   | 16.60  | 1.606E+00 | 2.153E+00               | 2.153E+00              | 32.15             |
|         | 74.81   | 660   | 10.70  | 6.076E+00 | 2.964E+00               | 3.009E+00              | 17.49             |
| TH-228  | 77.11   | 996   | 18.00  | 6.260E+00 | 2.581E+00               | 2.620E+00              | 12.98             |
|         | 87.30   | 341   | 8.00   | 6.837E+00 | 1.823E+00               | 1.850E+00              | 26.99             |
|         | 238.63  | 1611  | 44.60* | 4.909E+00 | 2.149E+00               | 2.181E+00              | 11.46             |
|         | 300.09  | 134   | 3.41   | 4.150E+00 | 2.765E+00               | 2.806E+00              | 70.25             |
|         | 609.31  | 618   | 46.30* | 2.389E+00 | 1.632E+00               | 1.632E+00              | 14.98             |
| TH-230  | 1120.29 | 138   | 15.10  | 1.413E+00 | 1.889E+00               | 1.889E+00              | 44.52             |
|         | 1764.49 | 113   | 15.80  | 9.832E-01 | 2.129E+00               | 2.129E+00              | 23.88             |
|         | 338.32  | 369   | 11.40  | 3.793E+00 | 2.489E+00               | 2.489E+00              | 18.49             |
|         | 911.07  | 415   | 27.70* | 1.696E+00 | 2.582E+00               | 2.582E+00              | 17.36             |
|         | 969.11  | 197   | 16.60  | 1.606E+00 | 2.153E+00               | 2.153E+00              | 32.15             |
| TH-234  | 63.29   | 138   | 3.80*  | 4.756E+00 | 2.229E+00               | 2.229E+00              | 70.04             |
|         | 92.38   | 432   | 5.41   | 7.023E+00 | 3.323E+00               | 3.323E+00              | 28.31             |
|         | 609.31  | 618   | 46.30* | 2.389E+00 | 1.632E+00               | 1.632E+00              | 14.98             |
|         | 1120.29 | 138   | 15.10  | 1.413E+00 | 1.889E+00               | 1.889E+00              | 44.52             |
|         | 1764.49 | 113   | 15.80  | 9.832E-01 | 2.129E+00               | 2.129E+00              | 23.88             |
| NP-237  | 86.50   | 341   | 12.60* | 6.837E+00 | 1.157E+00               | 1.157E+00              | 33.97             |
|         | 95.87   | ----- | 2.60   | 7.087E+00 | -----                   | Line Not Found         | -----             |
|         | 63.29   | 138   | 3.80*  | 4.756E+00 | 2.229E+00               | 2.229E+00              | 70.04             |
|         | 92.38   | 432   | 5.41   | 7.023E+00 | 3.323E+00               | 3.323E+00              | 23.43             |
|         |         |       |        |           |                         |                        |                   |

Nuclide Type:

| Nuclide | Energy | Area  | %Abn    | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|--------|-------|---------|-----------|-------------------------|------------------------|-------------------|
| AM-243  | 74.67  | 660   | 66.00*  | 6.076E+00 | 4.806E-01               | 4.806E-01              | 17.45             |
|         | 86.72  | 341   | 0.34    | 6.837E+00 | 4.340E+01               | 4.340E+01              | 26.99             |
|         | 117.66 | ----- | 0.55    | 7.126E+00 | -----                   | Line Not Found         | -----             |
|         | 142.18 | ----- | 0.13    | 6.723E+00 | -----                   | Line Not Found         | -----             |
| ANH-511 | 511.00 | 131   | 100.00* | 2.754E+00 | 1.389E-01               | 1.389E-01              | 51.60             |

Flag: "\*" = Keyline

Summary of Nuclide Activity  
Sample ID : G244630005

Page : 4  
Acquisition date : 23-JAN-2010 11:46:35

Total number of lines in spectrum 37  
Number of unidentified lines 4  
Number of lines tentatively identified by NID 33 89.19%

Nuclide Type :

| Nuclide | Hlife     | Decay | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | Decay Corr<br>2-Sigma Error | 2-Sigma<br>%Error | Flags |
|---------|-----------|-------|-------------------------|------------------------|-----------------------------|-------------------|-------|
| K-40    | 1.28E+09Y | 1.00  | 3.962E+01               | 3.962E+01              | 0.398E+01                   | 10.04             |       |
| CD-109  | 464.00D   | 1.02  | 3.920E+00               | 4.009E+00              | 1.082E+00                   | 26.99             |       |
| SN-126  | 1.00E+05Y | 1.00  | 3.941E-01               | 3.941E-01              | 1.064E-01                   | 26.99             |       |
| TL-208  | 1.41E+10Y | 1.00  | 7.681E-01               | 7.681E-01              | 1.141E-01                   | 14.85             |       |
| BI-210  | 22.26Y    | 1.00  | 9.728E-01               | 9.741E-01              | 27.20E-01                   | 279.27            |       |
| PB-210  | 22.26Y    | 1.00  | 9.728E-01               | 9.741E-01              | 27.20E-01                   | 279.27            |       |
| PO-210  | 22.26Y    | 1.00  | 9.728E-01               | 9.741E-01              | 27.20E-01                   | 279.25            |       |
| BI-211  | 7.04E+08Y | 1.00  | 5.316E+00               | 5.316E+00              | 0.699E+00                   | 13.15             |       |
| PB-212  | 1.41E+10Y | 1.00  | 2.149E+00               | 2.149E+00              | 0.246E+00                   | 11.46             |       |
| PO-212  | 1.41E+10Y | 1.00  | 2.149E+00               | 2.149E+00              | 0.246E+00                   | 11.46             |       |
| BI-214  | 1600.00Y  | 1.00  | 1.632E+00               | 1.632E+00              | 0.244E+00                   | 14.98             |       |
| PB-214  | 1600.00Y  | 1.00  | 1.849E+00               | 1.849E+00              | 0.262E+00                   | 14.15             |       |
| PO-214  | 1600.00Y  | 1.00  | 1.849E+00               | 1.849E+00              | 0.262E+00                   | 14.15             |       |
| PO-216  | 1.41E+10Y | 1.00  | 2.149E+00               | 2.149E+00              | 0.246E+00                   | 11.46             |       |
| PO-218  | 1600.00Y  | 1.00  | 1.849E+00               | 1.849E+00              | 0.262E+00                   | 14.15             |       |
| RA-224  | 1.41E+10Y | 1.00  | 4.903E+00               | 4.903E+00              | 1.037E+00                   | 21.14             |       |
| RA-226  | 1600.00Y  | 1.00  | 1.632E+00               | 1.632E+00              | 0.244E+00                   | 14.98             |       |
| AC-228  | 1.41E+10Y | 1.00  | 2.582E+00               | 2.582E+00              | 0.448E+00                   | 17.36             |       |
| RA-228  | 1.41E+10Y | 1.00  | 2.582E+00               | 2.582E+00              | 0.448E+00                   | 17.36             |       |
| TH-228  | 1.91Y     | 1.02  | 2.149E+00               | 2.181E+00              | 0.250E+00                   | 11.46             |       |
| TH-230  | 4.47E+09Y | 1.00  | 1.632E+00               | 1.632E+00              | 0.244E+00                   | 14.98             |       |
| TH-232  | 1.41E+10Y | 1.00  | 2.582E+00               | 2.582E+00              | 0.448E+00                   | 17.36             |       |
| TH-234  | 4.47E+09Y | 1.00  | 2.229E+00               | 2.229E+00              | 1.561E+00                   | 70.04             |       |
| U-234   | 4.47E+09Y | 1.00  | 1.632E+00               | 1.632E+00              | 0.244E+00                   | 14.98             |       |
| NP-237  | 2.14E+06Y | 1.00  | 1.157E+00               | 1.157E+00              | 0.393E+00                   | 33.97             |       |
| U-238   | 4.47E+09Y | 1.00  | 2.229E+00               | 2.229E+00              | 1.561E+00                   | 70.04             |       |
| AM-243  | 7380.00Y  | 1.00  | 4.806E-01               | 4.806E-01              | 0.839E-01                   | 17.45             |       |
| ANH-511 | 1.00E+09Y | 1.00  | 1.389E-01               | 1.389E-01              | 0.717E-01                   | 51.60             |       |

Total Activity : 9.249E+01 9.262E+01

Grand Total Activity : 9.249E+01 9.262E+01

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

Unidentified Energy Lines  
Sample ID : G244630005

Page : 5  
Acquisition date : 23-JAN-2010 11:46:35

| It | Energy  | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | %Eff     | Flags |
|----|---------|------|-------|------|---------|------|----|----------|------|----------|-------|
| 5  | 84.26   | 164  | 465   | 1.39 | 168.17  | 165  | 13 | 2.28E-02 | 44.6 | 6.70E+00 | T     |
| 0  | 89.93   | 139  | 474   | 0.95 | 179.50  | 177  | 6  | 1.93E-02 | 52.7 | 6.93E+00 | T     |
| 0  | 129.66  | 75   | 603   | 1.09 | 258.95  | 253  | 11 | 1.05E-02 | **** | 6.96E+00 | T     |
| 0  | 186.04  | 264  | 477   | 1.34 | 371.69  | 367  | 10 | 3.66E-02 | 34.1 | 5.81E+00 | T     |
| 0  | 209.52  | 203  | 323   | 1.00 | 418.64  | 414  | 10 | 2.81E-02 | 36.4 | 5.38E+00 | T     |
| 0  | 269.93  | 200  | 317   | 1.30 | 539.43  | 533  | 14 | 2.78E-02 | 40.2 | 4.49E+00 | T     |
| 0  | 328.03  | 96   | 167   | 0.93 | 655.63  | 651  | 9  | 1.34E-02 | 52.5 | 3.88E+00 | T     |
| 0  | 462.18  | 97   | 141   | 1.02 | 923.88  | 918  | 12 | 1.35E-02 | 52.9 | 2.98E+00 | T     |
| 0  | 727.21  | 138  | 111   | 1.58 | 1453.85 | 1447 | 16 | 1.92E-02 | 38.3 | 2.06E+00 | T     |
| 0  | 768.37  | 64   | 60    | 1.19 | 1536.16 | 1532 | 10 | 8.84E-03 | 52.6 | 1.97E+00 |       |
| 0  | 773.55  | 53   | 77    | 1.46 | 1546.53 | 1541 | 14 | 7.36E-03 | 75.4 | 1.96E+00 |       |
| 0  | 796.95  | 128  | 119   | 9.03 | 1593.32 | 1580 | 28 | 1.77E-02 | 51.5 | 1.91E+00 | T     |
| 1  | 964.67  | 64   | 61    | 1.98 | 1928.72 | 1922 | 24 | 8.83E-03 | 59.3 | 1.61E+00 | T     |
| 0  | 1378.69 | 36   | 30    | 0.71 | 2756.70 | 2750 | 14 | 4.96E-03 | 77.0 | 1.18E+00 |       |
| 0  | 1409.26 | 31   | 30    | 1.32 | 2817.82 | 2811 | 14 | 4.34E-03 | 83.8 | 1.16E+00 | T     |
| 0  | 1594.14 | 15   | 24    | 1.33 | 3187.56 | 3181 | 9  | 2.07E-03 | **** | 1.06E+00 |       |

Flags: "T" = Tentatively associated

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
*                               DETECTOR DATA                               *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630005.CNF;1
* Acquisition date   : 23-JAN-2010 11:46:35   Detector SN#      :
* Detector ID        : GAM07                  Sensitivity       : 5.00000
* Geometry           : CAN                    Energy tolerance: 1.50000
* Elapsed live time  : 0 02:00:00.00          Abundance limit  : 75.00000
* Elapsed real time  : 0 02:00:01.55          Half life ratio  : 8.00000
*****
*                               SAMPLE DATA                               *
*
* Sample date        : 8-JAN-2010 12:00:00.   Nuclide Library : SOLID
* Sample ID          : G244630005             Analyst initials: MXR1
* Batch Number       : 941639                 Sample Quantity  : 1.28540E+02 GRAM
*****
*                               QC DATA                               *
*
* CALIB. DATE/TIME   : 20-JUL-2009 15:29:58.0MS Isotope      :
* MSD ID              :                      MSD Isotope      :
* LCS ID              : 1032-A                LCS Isotope      :
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| K-40    | 3.962E+01              | 3.979E+00 | 5.586E-01         | 4.797E-02 | 70.932  |
| CD-109  | 4.009E+00              | 1.082E+00 | 1.115E+00         | 1.051E-01 | 3.594   |
| SN-126  | 3.941E-01              | 1.064E-01 | 1.099E-01         | 1.030E-02 | 3.587   |
| TL-208  | 7.681E-01              | 1.141E-01 | 5.895E-02         | 5.638E-03 | 13.031  |
| BI-210  | 9.741E-01              | 2.720E+00 | 3.020E+00         | 2.833E-01 | 0.323   |
| PB-210  | 9.741E-01              | 2.720E+00 | 3.020E+00         | 2.833E-01 | 0.323   |
| PO-210  | 9.741E-01              | 2.720E+00 | 3.020E+00         | 2.570E-01 | 0.323   |
| BI-211  | 5.316E+00              | 6.989E-01 | 3.793E-01         | 3.403E-02 | 14.016  |
| PB-212  | 2.149E+00              | 2.462E-01 | 1.250E-01         | 1.196E-02 | 17.187  |
| PO-212  | 2.149E+00              | 2.462E-01 | 1.250E-01         | 1.196E-02 | 17.187  |
| BI-214  | 1.632E+00              | 2.445E-01 | 1.261E-01         | 1.305E-02 | 12.942  |
| PB-214  | 1.849E+00              | 2.616E-01 | 1.322E-01         | 1.372E-02 | 13.986  |
| PO-214  | 1.849E+00              | 2.616E-01 | 1.322E-01         | 1.372E-02 | 13.986  |
| PO-216  | 2.149E+00              | 2.462E-01 | 1.250E-01         | 1.196E-02 | 17.187  |
| PO-218  | 1.849E+00              | 2.616E-01 | 1.322E-01         | 1.372E-02 | 13.986  |
| RA-224  | 4.903E+00              | 1.037E+00 | 1.507E+00         | 1.274E-01 | 3.254   |
| RA-226  | 1.632E+00              | 2.445E-01 | 1.261E-01         | 1.305E-02 | 12.942  |
| AC-228  | 2.582E+00              | 4.483E-01 | 2.342E-01         | 2.728E-02 | 11.025  |

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| RA-228  | 2.582E+00              | 4.483E-01 | 2.342E-01         | 2.728E-02 | 11.025  |
| TH-228  | 2.181E+00              | 2.499E-01 | 1.269E-01         | 1.214E-02 | 17.187  |
| TH-230  | 1.632E+00              | 2.445E-01 | 1.261E-01         | 1.305E-02 | 12.942  |
| TH-232  | 2.582E+00              | 4.483E-01 | 2.342E-01         | 2.728E-02 | 11.025  |
| TH-234  | 2.229E+00              | 1.561E+00 | 1.678E+00         | 2.920E-01 | 1.328   |
| U-234   | 1.632E+00              | 2.445E-01 | 1.261E-01         | 1.305E-02 | 12.942  |
| NP-237  | 1.157E+00              | 3.932E-01 | 3.649E-01         | 8.250E-02 | 3.172   |
| U-238   | 2.229E+00              | 1.561E+00 | 1.678E+00         | 2.920E-01 | 1.328   |
| AM-243  | 4.806E-01              | 8.388E-02 | 8.576E-02         | 6.893E-03 | 5.604   |
| ANH-511 | 1.389E-01              | 7.167E-02 | 4.873E-02         | 4.330E-03 | 2.851   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| BE-7    | 4.938E-02                          |              | 3.725E-01 | 6.025E-01           | 5.686E-02 | 0.082   |
| NA-22   | 2.566E-02                          |              | 4.497E-02 | 7.844E-02           | 6.439E-03 | 0.327   |
| NA-24   | -8.042E-01                         |              | 3.429E-01 | Half-Life too short |           |         |
| AL-26   | 2.331E-03                          |              | 2.643E-02 | 4.491E-02           | 3.662E-03 | 0.052   |
| TI-44   | 4.764E-01                          | +            | 6.181E-02 | 7.812E-02           | 6.540E-03 | 6.098   |
| SC-46   | 7.266E-03                          |              | 4.371E-02 | 7.202E-02           | 6.600E-03 | 0.101   |
| V-48    | -4.062E-02                         |              | 8.235E-02 | 1.263E-01           | 1.137E-02 | -0.322  |
| CR-51   | -9.339E-02                         |              | 4.157E-01 | 6.754E-01           | 6.103E-02 | -0.138  |
| MN-52   | 2.425E-02                          |              | 2.774E-01 | 4.588E-01           | 3.815E-02 | 0.053   |
| MN-54   | 3.426E-02                          |              | 4.174E-02 | 7.231E-02           | 6.638E-03 | 0.474   |
| CO-56   | -7.080E-03                         |              | 4.488E-02 | 7.213E-02           | 6.622E-03 | -0.098  |
| CO-57   | 2.014E-03                          |              | 2.671E-02 | 4.308E-02           | 3.706E-03 | 0.047   |
| CO-58   | -2.738E-02                         |              | 4.453E-02 | 6.885E-02           | 6.326E-03 | -0.398  |
| FE-59   | 5.583E-02                          |              | 1.132E-01 | 1.959E-01           | 1.815E-02 | 0.285   |
| CO-60   | 2.585E-04                          |              | 4.349E-02 | 7.165E-02           | 5.870E-03 | 0.004   |
| ZN-65   | 2.432E-02                          |              | 1.206E-01 | 1.775E-01           | 1.506E-02 | 0.137   |
| GE-68   | -8.952E-02                         |              | 1.339E+00 | 2.228E+00           | 1.930E-01 | -0.040  |
| AS-73   | 1.462E-01                          |              | 5.676E-01 | 9.424E-01           | 7.077E-02 | 0.155   |
| AS-74   | 3.036E-02                          |              | 9.541E-02 | 1.629E-01           | 1.460E-02 | 0.186   |
| SE-75   | 1.273E-03                          |              | 4.960E-02 | 7.264E-02           | 6.203E-03 | 0.018   |
| BR-77   | -2.371E+00                         |              | 1.052E+01 | 1.745E+01           | 1.555E+00 | -0.136  |
| SR-82   | 3.453E-01                          |              | 4.512E-01 | 6.978E-01           | 6.372E-02 | 0.495   |
| RB-83   | -2.511E-02                         |              | 7.141E-02 | 1.174E-01           | 1.046E-02 | -0.214  |
| RB-84   | 1.374E-02                          |              | 7.498E-02 | 1.239E-01           | 1.136E-02 | 0.111   |
| KR-85   | 2.000E+01                          |              | 8.742E+00 | 1.491E+01           | 1.326E+00 | 1.342   |
| SR-85   | 1.024E-01                          |              | 4.476E-02 | 7.634E-02           | 6.788E-03 | 1.342   |
| RB-86   | 1.594E-01                          |              | 8.585E-01 | 1.460E+00           | 1.265E-01 | 0.109   |
| Y-88    | 1.493E-02                          |              | 2.962E-02 | 5.443E-02           | 4.418E-03 | 0.274   |
| ZR-88   | -1.245E-02                         |              | 3.542E-02 | 5.628E-02           | 4.688E-03 | -0.221  |
| Y-91    | 1.098E+00                          |              | 2.331E+01 | 3.882E+01           | 3.171E+00 | 0.028   |
| NB-94   | -1.342E-02                         |              | 3.800E-02 | 6.115E-02           | 5.490E-03 | -0.220  |
| NB-95   | 6.962E-02                          |              | 5.416E-02 | 8.654E-02           | 7.889E-03 | 0.804   |
| NB-95M  | 7.613E-02                          |              | 1.466E-01 | 2.219E-01           | 2.154E-02 | 0.343   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| ZR-95   | 2.109E-02                          |              | 8.209E-02 | 1.375E-01           | 1.365E-02 | 0.153   |
| NB-97   | -3.997E-02                         |              | 4.521E-02 | Half-Life too short |           |         |
| ZR-97   | 3.305E-01                          |              | 1.010E+00 | Half-Life too short |           |         |
| MO-99   | 5.655E+00                          |              | 1.220E+01 | 2.077E+01           | 3.207E+00 | 0.272   |
| TC-99M  | -4.165E+10                         |              | 1.583E+10 | Half-Life too short |           |         |
| RH-101  | -1.576E-02                         |              | 3.425E-02 | 5.675E-02           | 4.655E-03 | -0.278  |
| RH-102  | 4.161E-03                          |              | 3.437E-02 | 5.556E-02           | 4.874E-03 | 0.075   |
| RU-103  | -7.631E-03                         |              | 4.471E-02 | 7.053E-02           | 1.009E-02 | -0.108  |
| RH-106  | 3.574E-02                          |              | 3.392E-01 | 5.693E-01           | 7.722E-02 | 0.063   |
| RU-106  | 3.574E-02                          |              | 3.391E-01 | 5.693E-01           | 5.088E-02 | 0.063   |
| AG-108M | 1.521E-03                          |              | 3.546E-02 | 5.738E-02           | 5.123E-03 | 0.027   |
| AG-110M | -1.493E-02                         |              | 3.680E-02 | 5.914E-02           | 5.388E-03 | -0.252  |
| IN-111  | 9.082E-01                          |              | 1.148E+00 | 1.770E+00           | 1.499E-01 | 0.513   |
| IN-113M | -3.021E-03                         |              | 5.093E-02 | 8.243E-02           | 7.086E-03 | -0.037  |
| SN-113  | -3.021E-03                         |              | 5.093E-02 | 8.243E-02           | 7.086E-03 | -0.037  |
| IN-114M | 5.444E-02                          |              | 2.075E-01 | 3.141E-01           | 2.556E-02 | 0.173   |
| CD-115  | 2.560E+00                          |              | 1.107E+01 | 1.892E+01           | 1.688E+00 | 0.135   |
| SN-117M | -4.908E-02                         |              | 6.027E-02 | 9.203E-02           | 7.379E-03 | -0.533  |
| SB-122  | 2.228E+00                          |              | 2.156E+00 | 3.839E+00           | 3.441E-01 | 0.581   |
| I-123   | -4.795E+00                         |              | 2.733E+00 | Half-Life too short |           |         |
| TE-123M | -2.777E-02                         |              | 3.166E-02 | 4.819E-02           | 3.888E-03 | -0.576  |
| I-124   | 1.035E-01                          |              | 8.625E-01 | 1.265E+00           | 1.134E-01 | 0.082   |
| SB-124  | -1.412E-02                         |              | 8.393E-02 | 1.313E-01           | 1.137E-02 | -0.108  |
| SB-125  | -1.137E-02                         |              | 1.039E-01 | 1.666E-01           | 1.453E-02 | -0.068  |
| TE-125M | -1.049E+00                         |              | 9.823E+00 | 1.569E+01           | 1.626E+00 | -0.067  |
| I-126   | 1.803E-01                          |              | 2.125E-01 | 3.708E-01           | 3.287E-02 | 0.486   |
| SB-126  | 2.791E-03                          |              | 1.660E-01 | 2.377E-01           | 2.145E-02 | 0.012   |
| SB-127  | 4.748E-01                          |              | 1.516E+00 | 2.563E+00           | 2.968E-01 | 0.185   |
| XE-127  | -3.528E-03                         |              | 4.975E-02 | 8.364E-02           | 6.893E-03 | -0.042  |
| I-131   | -2.506E-03                         |              | 1.254E-01 | 2.043E-01           | 1.829E-02 | -0.012  |
| TE-132  | 4.699E-01                          |              | 7.438E-01 | 1.271E+00           | 1.980E-01 | 0.370   |
| BA-133  | 2.303E-02                          |              | 5.402E-02 | 7.983E-02           | 1.048E-02 | 0.289   |
| I-133   | -5.321E-03                         |              | 2.882E-03 | Half-Life too short |           |         |
| CS-134  | 2.579E-01                          | +            | 1.350E-01 | 1.021E-01           | 9.404E-03 | 2.526   |
| CS-135  | 2.898E-01                          |              | 1.837E-01 | 2.926E-01           | 2.885E-02 | 0.990   |
| I-135   | 1.818E+09                          |              | 2.305E+09 | Half-Life too short |           |         |
| CS-136  | -3.237E-02                         |              | 1.241E-01 | 2.038E-01           | 1.864E-02 | -0.159  |
| BA-137M | -3.669E-02                         |              | 3.934E-02 | 6.051E-02           | 5.355E-03 | -0.606  |
| CS-137  | -3.878E-02                         |              | 4.158E-02 | 6.397E-02           | 5.671E-03 | -0.606  |
| CE-139  | -1.831E-02                         |              | 3.324E-02 | 5.130E-02           | 4.058E-03 | -0.357  |
| BA-140  | 1.126E-02                          |              | 2.804E-01 | 4.728E-01           | 1.571E-01 | 0.024   |
| LA-140  | 7.809E-02                          |              | 9.046E-02 | 1.510E-01           | 1.263E-02 | 0.517   |
| CE-141  | -2.508E-02                         |              | 6.805E-02 | 1.068E-01           | 8.939E-03 | -0.235  |
| CE-143  | 8.086E-04                          |              | 1.239E-04 | Half-Life too short |           |         |
| CE-144  | 9.452E-02                          |              | 2.500E-01 | 3.629E-01           | 5.602E-02 | 0.261   |
| PM-144  | 3.393E-04                          |              | 3.994E-02 | 6.605E-02           | 5.921E-03 | 0.005   |
| PR-144  | 2.299E-02                          |              | 2.706E+00 | 4.476E+00           | 4.011E-01 | 0.005   |
| PM-146  | 4.018E-02                          |              | 4.790E-02 | 8.117E-02           | 8.746E-03 | 0.495   |



---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| ND-147  | -7.111E-01                         |              | 6.046E-01 | 9.193E-01           | 1.391E-01 | -0.774  |
| PM-149  | 3.912E+01                          |              | 9.682E+01 | 1.631E+02           | 2.525E+01 | 0.240   |
| EU-152  | -5.488E-02                         |              | 1.148E-01 | 1.762E-01           | 1.597E-02 | -0.312  |
| GD-153  | -1.091E-01                         |              | 9.097E-02 | 1.233E-01           | 1.103E-02 | -0.885  |
| EU-154  | 6.720E-02                          |              | 1.265E-01 | 2.197E-01           | 2.415E-02 | 0.306   |
| EU-155  | 1.024E-01                          |              | 1.116E-01 | 1.862E-01           | 1.645E-02 | 0.550   |
| TB-160  | -7.253E-02                         |              | 1.484E-01 | 2.294E-01           | 2.104E-02 | -0.316  |
| HO-166M | 3.979E-02                          |              | 6.790E-02 | 1.167E-01           | 1.051E-02 | 0.341   |
| TM-171  | 5.141E+00                          |              | 2.604E+01 | 3.852E+01           | 2.881E+00 | 0.133   |
| LU-176  | 1.910E-02                          |              | 2.706E-02 | 4.481E-02           | 3.839E-03 | 0.426   |
| LU-177  | 4.728E+00                          | +            | 1.767E+00 | 2.260E+00           | 1.872E-01 | 2.092   |
| LU-177M | -1.162E-01                         |              | 2.079E-01 | 3.248E-01           | 2.750E-02 | -0.358  |
| HF-181  | -3.268E-02                         |              | 4.804E-02 | 7.295E-02           | 6.418E-03 | -0.448  |
| W-181   | 1.339E-01                          |              | 3.374E-01 | 5.034E-01           | 3.725E-02 | 0.266   |
| TA-182  | -5.662E-02                         |              | 2.477E-01 | 4.040E-01           | 3.304E-02 | -0.140  |
| RE-183  | 1.239E-01                          |              | 1.218E-01 | 2.008E-01           | 1.599E-02 | 0.617   |
| RE-184  | 2.210E-01                          |              | 2.425E-01 | 4.200E-01           | 3.565E-02 | 0.526   |
| OS-185  | -1.531E-03                         |              | 4.911E-02 | 8.143E-02           | 7.239E-03 | -0.019  |
| RE-188  | 3.282E-01                          |              | 1.925E-01 | 3.242E-01           | 2.616E-02 | 1.012   |
| W-188   | -5.994E+00                         |              | 8.948E+00 | 1.235E+01           | 1.053E+00 | -0.485  |
| IR-192  | 5.691E-03                          |              | 3.815E-02 | 6.327E-02           | 5.438E-03 | 0.090   |
| AU-195  | 4.386E-01                          |              | 2.286E-01 | 3.912E-01           | 3.479E-02 | 1.121   |
| TL-200  | 1.881E-04                          |              | 2.239E-04 | Half-Life too short |           |         |
| TL-201  | 6.196E-01                          |              | 7.376E+00 | 1.172E+01           | 9.284E-01 | 0.053   |
| TL-202  | 1.298E-02                          |              | 7.934E-02 | 1.293E-01           | 1.113E-02 | 0.100   |
| HG-203  | 3.429E-02                          |              | 4.482E-02 | 7.672E-02           | 6.702E-03 | 0.447   |
| BI-207  | 8.700E-03                          |              | 6.210E-02 | 1.052E-01           | 9.178E-03 | 0.083   |
| TL-207  | -2.118E-01                         |              | 8.246E-01 | 1.164E+00           | 2.058E-01 | -0.182  |
| PO-209  | 3.519E+00                          |              | 8.411E+00 | 1.414E+01           | 1.295E+00 | 0.249   |
| PB-211  | -2.554E-01                         |              | 1.083E+00 | 1.711E+00           | 1.072E+00 | -0.149  |
| BI-212  | 1.657E+00                          | +            | 6.569E-01 | 8.035E-01           | 8.335E-02 | 2.062   |
| PO-215  | -2.118E-01                         |              | 8.246E-01 | 1.164E+00           | 2.058E-01 | -0.182  |
| RN-219  | -2.406E-01                         |              | 4.686E-01 | 7.334E-01           | 1.092E-01 | -0.328  |
| RN-220  | -9.795E+00                         |              | 2.938E+01 | 4.825E+01           | 4.320E+00 | -0.203  |
| RA-223  | -2.118E-01                         |              | 8.246E-01 | 1.164E+00           | 2.058E-01 | -0.182  |
| AC-227  | -2.078E-01                         |              | 3.972E-01 | 6.428E-01           | 9.819E-02 | -0.323  |
| TH-227  | -2.078E-01                         |              | 3.977E-01 | 6.428E-01           | 1.157E-01 | -0.323  |
| TH-229  | -1.131E-01                         |              | 5.203E-01 | 8.715E-01           | 7.116E-02 | -0.130  |
| PA-231  | -3.834E-01                         |              | 1.664E+00 | 2.723E+00           | 4.117E-01 | -0.141  |
| TH-231  | -2.118E-01                         |              | 8.246E-01 | 1.164E+00           | 2.058E-01 | -0.182  |
| U-231   | -1.969E-01                         |              | 1.124E+00 | 1.616E+00           | 1.455E-01 | -0.122  |
| PA-233  | -1.658E-03                         |              | 7.013E-02 | 1.154E-01           | 1.017E-02 | -0.014  |
| PA-234  | 9.425E-02                          |              | 3.643E-01 | 6.011E-01           | 1.141E-01 | 0.157   |
| PA-234M | -8.728E-01                         |              | 5.634E+00 | 8.939E+00           | 9.166E-01 | -0.098  |
| U-235   | 2.325E-01                          |              | 2.280E-01 | 3.678E-01           | 6.370E-02 | 0.632   |
| NP-236  | 2.199E-03                          |              | 8.755E-02 | 1.391E-01           | 1.111E-02 | 0.016   |
| NP-239  | 4.292E-02                          |              | 1.941E-01 | 3.155E-01           | 2.715E-02 | 0.136   |
| AM-241  | 1.317E-01                          |              | 1.245E-01 | 1.925E-01           | 1.526E-02 | 0.684   |

----- Non-Identified Nuclides -----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| CM-243  | -3.585E-02                         |              | 9.835E-02 | 1.570E-01         | 1.376E-02 | -0.228  |
| AM-246  | 7.153E-02                          |              | 1.548E-01 | 2.690E-01         | 2.329E-02 | 0.266   |
| CM-247  | -4.961E-02                         |              | 4.277E-02 | 6.400E-02         | 5.373E-03 | -0.775  |
| CF-249  | -3.044E-02                         |              | 4.444E-02 | 6.902E-02         | 5.761E-03 | -0.441  |
| CF-251  | -2.261E-02                         |              | 1.307E-01 | 2.203E-01         | 1.764E-02 | -0.103  |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*                                     DETECTOR DATA                          *
*                                     *                                       *
* Configuration      : SYSSYSROOT:[ALPHA.ARCHIVE.GAMMA]G244630005            *
* Acquisition date   : 23-JAN-2010 11:46:35 Detector SN# :                   *
* Detector ID        : GAM07 Sensitivity      : 5.000                       *
* Geometry           : CAN Energy tolerance: 1.500                         *
* Elapsed live time: 0 02:00:00.00 Abundance limit : 75.000                *
* Elapsed real time: 0 02:00:01.55 Half life ratio : 8.000                 *
*****
*                                     SAMPLE DATA                            *
*                                     *                                       *
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID           *
* Sample ID          : G244630005 Analyst initials: MXR1                   *
* Batch Number       : 941639 Sample Quantity : 1.2854E+02 GRAM            *
* Recovery           : 1.00000 Carrier Weight : 0.00000                   *
*****
*                                     QC DATA                               *
*                                     *                                       *
* CALIB. DATE/TIME   : 20-JUL-2009 15:29:58 MS Isotope :                   *
* MSD DPM             : 0.000 MSD Isotope :                               *
* LCS DPM             : 0.000 LCS Isotope :                               *
* LCSD DPM            : 0.000 LCSD Isotope :                               *
*****

```

## Combined Activity-MDA Report

### ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act Error | DLC<br>(pCi/GRAM ) | TPU       |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 3.962E+01               | 3.900E+00 | 2.795E-01          | 1.990E+00 |
| CD-109  | 4.009E+00               | 1.060E+00 | 5.828E-01          | 5.410E-01 |
| SN-126  | 3.941E-01               | 1.042E-01 | 5.742E-02          | 5.318E-02 |
| TL-208  | 7.681E-01               | 1.118E-01 | 2.993E-02          | 5.703E-02 |
| BI-210  | 9.741E-01               | 2.666E+00 | 1.593E+00          | 1.360E+00 |
| PB-210  | 9.741E-01               | 2.666E+00 | 1.593E+00          | 1.360E+00 |
| PO-210  | 9.741E-01               | 2.666E+00 | 1.593E+00          | 1.360E+00 |
| BI-211  | 5.316E+00               | 6.849E-01 | 1.941E-01          | 3.494E-01 |
| PB-212  | 2.149E+00               | 2.413E-01 | 6.436E-02          | 1.231E-01 |
| PO-212  | 2.149E+00               | 2.413E-01 | 6.436E-02          | 1.231E-01 |
| BI-214  | 1.632E+00               | 2.396E-01 | 6.399E-02          | 1.222E-01 |
| PB-214  | 1.849E+00               | 2.563E-01 | 6.766E-02          | 1.308E-01 |
| PO-214  | 1.849E+00               | 2.563E-01 | 6.766E-02          | 1.308E-01 |
| PO-216  | 2.149E+00               | 2.413E-01 | 6.436E-02          | 1.231E-01 |
| PO-218  | 1.849E+00               | 2.563E-01 | 6.766E-02          | 1.308E-01 |
| RA-224  | 4.903E+00               | 1.016E+00 | 7.756E-01          | 5.183E-01 |
| RA-226  | 1.632E+00               | 2.396E-01 | 6.399E-02          | 1.222E-01 |
| AC-228  | 2.582E+00               | 4.393E-01 | 1.181E-01          | 2.242E-01 |
| RA-228  | 2.582E+00               | 4.393E-01 | 1.181E-01          | 2.242E-01 |
| TH-228  | 2.181E+00               | 2.449E-01 | 6.532E-02          | 1.249E-01 |
| TH-230  | 1.632E+00               | 2.396E-01 | 6.399E-02          | 1.222E-01 |
| TH-232  | 2.582E+00               | 4.393E-01 | 1.181E-01          | 2.242E-01 |
| TH-234  | 2.229E+00               | 1.530E+00 | 8.810E-01          | 7.805E-01 |
| U-234   | 1.632E+00               | 2.396E-01 | 6.399E-02          | 1.222E-01 |
| NP-237  | 1.157E+00               | 3.853E-01 | 1.907E-01          | 1.966E-01 |
| U-238   | 2.229E+00               | 1.530E+00 | 8.810E-01          | 7.805E-01 |
| AM-243  | 4.806E-01               | 8.220E-02 | 4.491E-02          | 4.194E-02 |
| ANH-511 | 1.389E-01               | 7.024E-02 | 2.479E-02          | 3.584E-02 |

### ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L Act error | DLC<br>(pCi/GRAM ) | TPU |
|---------|-------------------------------------|---------------|--------------------|-----|
|---------|-------------------------------------|---------------|--------------------|-----|

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| BE-7    | 4.938E-02  | 3.650E-01 | 3.069E-01 | 1.862E-01 | NOT IDENT. |
| NA-22   | 2.566E-02  | 4.407E-02 | 3.934E-02 | 2.249E-02 | NOT IDENT. |
| NA-24   | -8.042E+05 | 6.721E+05 | 0.000E+00 | 3.429E+05 | SHORT HLIF |
| AL-26   | 2.331E-03  | 2.590E-02 | 2.240E-02 | 1.321E-02 | NOT IDENT. |
| TI-44   | 4.764E-01  | 6.057E-02 | 4.089E-02 | 3.091E-02 | FAIL ABUN  |
| SC-46   | 7.266E-03  | 4.283E-02 | 3.633E-02 | 2.185E-02 | FAIL ABUN  |
| V-48    | -4.062E-02 | 8.070E-02 | 6.358E-02 | 4.117E-02 | NOT IDENT. |
| CR-51   | -9.339E-02 | 4.074E-01 | 3.461E-01 | 2.079E-01 | NOT IDENT. |
| MN-52   | 2.425E-02  | 2.718E-01 | 2.296E-01 | 1.387E-01 | NOT IDENT. |
| MN-54   | 3.426E-02  | 4.090E-02 | 3.651E-02 | 2.087E-02 | NOT IDENT. |
| CO-56   | -7.080E-03 | 4.398E-02 | 3.641E-02 | 2.244E-02 | NOT IDENT. |
| CO-57   | 2.014E-03  | 2.617E-02 | 2.240E-02 | 1.335E-02 | NOT IDENT. |
| CO-58   | -2.738E-02 | 4.364E-02 | 3.478E-02 | 2.227E-02 | NOT IDENT. |
| FE-59   | 5.583E-02  | 1.110E-01 | 9.850E-02 | 5.661E-02 | NOT IDENT. |
| CO-60   | 2.585E-04  | 4.262E-02 | 3.591E-02 | 2.174E-02 | NOT IDENT. |
| ZN-65   | 2.432E-02  | 1.182E-01 | 8.921E-02 | 6.032E-02 | NOT IDENT. |
| GE-68   | -8.952E-02 | 1.312E+00 | 1.120E+00 | 6.693E-01 | NOT IDENT. |
| AS-73   | 1.462E-01  | 5.563E-01 | 4.960E-01 | 2.838E-01 | NOT IDENT. |
| AS-74   | 3.036E-02  | 9.350E-02 | 8.267E-02 | 4.770E-02 | NOT IDENT. |
| SE-75   | 1.273E-03  | 4.861E-02 | 3.733E-02 | 2.480E-02 | NOT IDENT. |
| BR-77   | -2.371E+00 | 1.031E+01 | 8.877E+00 | 5.258E+00 | FAIL ABUN  |
| SR-82   | 3.453E-01  | 4.421E-01 | 3.527E-01 | 2.256E-01 | NOT IDENT. |
| RB-83   | -2.511E-02 | 6.999E-02 | 5.973E-02 | 3.571E-02 | NOT IDENT. |
| RB-84   | 1.374E-02  | 7.348E-02 | 6.250E-02 | 3.749E-02 | NOT IDENT. |
| KR-85   | 2.000E+01  | 8.567E+00 | 7.584E+00 | 4.371E+00 | NOT IDENT. |
| SR-85   | 1.024E-01  | 4.387E-02 | 3.884E-02 | 2.238E-02 | NOT IDENT. |
| RB-86   | 1.594E-01  | 8.413E-01 | 7.341E-01 | 4.292E-01 | NOT IDENT. |
| Y-88    | 1.493E-02  | 2.903E-02 | 2.714E-02 | 1.481E-02 | NOT IDENT. |
| ZR-88   | -1.245E-02 | 3.471E-02 | 2.875E-02 | 1.771E-02 | NOT IDENT. |
| Y-91    | 1.098E+00  | 2.284E+01 | 1.949E+01 | 1.166E+01 | NOT IDENT. |
| NB-94   | -1.342E-02 | 3.724E-02 | 3.096E-02 | 1.900E-02 | NOT IDENT. |
| NB-95   | 6.962E-02  | 5.307E-02 | 4.375E-02 | 2.708E-02 | NOT IDENT. |
| NB-95M  | 7.613E-02  | 1.436E-01 | 1.142E-01 | 7.328E-02 | NOT IDENT. |
| ZR-95   | 2.109E-02  | 8.045E-02 | 6.951E-02 | 4.105E-02 | NOT IDENT. |
| NB-97   | -3.997E+04 | 8.861E+04 | 0.000E+00 | 4.521E+04 | SHORT HLIF |
| ZR-97   | 3.305E+05  | 1.980E+06 | 0.000E+00 | 1.010E+06 | SHORT HLIF |
| MO-99   | 5.655E+00  | 1.195E+01 | 1.050E+01 | 6.099E+00 | NOT IDENT. |
| TC-99M  | -4.165E+16 | 3.102E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | -1.576E-02 | 3.357E-02 | 2.929E-02 | 1.713E-02 | NOT IDENT. |
| RH-102  | 4.161E-03  | 3.368E-02 | 2.830E-02 | 1.718E-02 | NOT IDENT. |
| RU-103  | -7.631E-03 | 4.382E-02 | 3.590E-02 | 2.236E-02 | FAIL ABUN  |
| RH-106  | 3.574E-02  | 3.324E-01 | 2.887E-01 | 1.696E-01 | FAIL ABUN  |
| RU-106  | 3.574E-02  | 3.324E-01 | 2.887E-01 | 1.696E-01 | FAIL ABUN  |
| AG-108M | 1.521E-03  | 3.475E-02 | 2.927E-02 | 1.773E-02 | NOT IDENT. |
| AG-110M | -1.493E-02 | 3.607E-02 | 2.997E-02 | 1.840E-02 | NOT IDENT. |
| IN-111  | 9.082E-01  | 1.125E+00 | 9.107E-01 | 5.738E-01 | NOT IDENT. |
| IN-113M | -3.021E-03 | 4.991E-02 | 4.211E-02 | 2.546E-02 | NOT IDENT. |
| SN-113  | -3.021E-03 | 4.991E-02 | 4.211E-02 | 2.546E-02 | NOT IDENT. |
| IN-114M | 5.444E-02  | 2.033E-01 | 1.622E-01 | 1.037E-01 | NOT IDENT. |
| CD-115  | 2.560E+00  | 1.085E+01 | 9.621E+00 | 5.536E+00 | NOT IDENT. |
| SN-117M | -4.908E-02 | 5.906E-02 | 4.767E-02 | 3.014E-02 | NOT IDENT. |
| SB-122  | 2.228E+00  | 2.113E+00 | 1.950E+00 | 1.078E+00 | NOT IDENT. |
| I-123   | -4.795E+06 | 5.356E+06 | 0.000E+00 | 2.733E+06 | SHORT HLIF |
| TE-123M | -2.777E-02 | 3.103E-02 | 2.496E-02 | 1.583E-02 | NOT IDENT. |
| I-124   | 1.035E-01  | 8.452E-01 | 6.420E-01 | 4.312E-01 | NOT IDENT. |
| SB-124  | -1.412E-02 | 8.225E-02 | 6.555E-02 | 4.196E-02 | FAIL ABUN  |
| SB-125  | -1.137E-02 | 1.018E-01 | 8.499E-02 | 5.195E-02 | FAIL ABUN  |
| TE-125M | -1.049E+00 | 9.627E+00 | 8.170E+00 | 4.912E+00 | NOT IDENT. |
| I-126   | 1.803E-01  | 2.083E-01 | 1.879E-01 | 1.063E-01 | NOT IDENT. |
| SB-126  | 2.791E-03  | 1.627E-01 | 1.203E-01 | 8.300E-02 | FAIL ABUN  |
| SB-127  | 4.748E-01  | 1.485E+00 | 1.298E+00 | 7.579E-01 | NOT IDENT. |
| XE-127  | -3.528E-03 | 4.876E-02 | 4.316E-02 | 2.488E-02 | NOT IDENT. |
| I-131   | -2.506E-03 | 1.229E-01 | 1.045E-01 | 6.269E-02 | NOT IDENT. |
| TE-132  | 4.699E-01  | 7.289E-01 | 6.549E-01 | 3.719E-01 | NOT IDENT. |
| BA-133  | 2.303E-02  | 5.294E-02 | 4.084E-02 | 2.701E-02 | NOT IDENT. |
| I-133   | -5.321E+03 | 5.649E+03 | 0.000E+00 | 2.882E+03 | SHORT HLIF |
| CS-134  | 2.579E-01  | 1.323E-01 | 5.157E-02 | 6.749E-02 | FAIL ABUN  |
| CS-135  | 2.898E-01  | 1.801E-01 | 1.504E-01 | 9.187E-02 | NOT IDENT. |
| I-135   | 1.818E+15  | 4.518E+15 | 0.000E+00 | 2.305E+15 | SHORT HLIF |
| CS-136  | -3.237E-02 | 1.217E-01 | 1.025E-01 | 6.207E-02 | FAIL ABUN  |
| BA-137M | -3.669E-02 | 3.855E-02 | 3.066E-02 | 1.967E-02 | NOT IDENT. |
| CS-137  | -3.878E-02 | 4.075E-02 | 3.242E-02 | 2.079E-02 | NOT IDENT. |
| CE-139  | -1.831E-02 | 3.257E-02 | 2.655E-02 | 1.662E-02 | NOT IDENT. |
| BA-140  | 1.126E-02  | 2.748E-01 | 2.404E-01 | 1.402E-01 | NOT IDENT. |
| LA-140  | 7.809E-02  | 8.865E-02 | 7.544E-02 | 4.523E-02 | FAIL ABUN  |
| CE-141  | -2.508E-02 | 6.669E-02 | 5.538E-02 | 3.402E-02 | NOT IDENT. |
| CE-143  | 8.086E+02  | 2.428E+02 | 0.000E+00 | 1.239E+02 | SHORT HLIF |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| CE-144  | 9.452E-02  | 2.450E-01 | 1.884E-01 | 1.250E-01 | NOT IDENT. |
| PM-144  | 3.393E-04  | 3.914E-02 | 3.344E-02 | 1.997E-02 | NOT IDENT. |
| PR-144  | 2.299E-02  | 2.652E+00 | 2.266E+00 | 1.353E+00 | NOT IDENT. |
| PM-146  | 4.018E-02  | 4.694E-02 | 4.137E-02 | 2.395E-02 | NOT IDENT. |
| ND-147  | -7.111E-01 | 5.925E-01 | 4.674E-01 | 3.023E-01 | FAIL ABUN  |
| PM-149  | 3.912E+01  | 9.488E+01 | 8.372E+01 | 4.841E+01 | NOT IDENT. |
| EU-152  | -5.488E-02 | 1.125E-01 | 9.018E-02 | 5.741E-02 | FAIL ABUN  |
| GD-153  | -1.091E-01 | 8.915E-02 | 6.433E-02 | 4.548E-02 | FAIL ABUN  |
| EU-154  | 6.720E-02  | 1.240E-01 | 1.102E-01 | 6.327E-02 | NOT IDENT. |
| EU-155  | 1.024E-01  | 1.094E-01 | 9.705E-02 | 5.581E-02 | FAIL ABUN  |
| TB-160  | -7.253E-02 | 1.455E-01 | 1.157E-01 | 7.422E-02 | FAIL ABUN  |
| HO-166M | 3.979E-02  | 6.654E-02 | 5.907E-02 | 3.395E-02 | NOT IDENT. |
| TM-171  | 5.141E+00  | 2.552E+01 | 2.021E+01 | 1.302E+01 | NOT IDENT. |
| LU-176  | 1.910E-02  | 2.652E-02 | 2.298E-02 | 1.353E-02 | FAIL ABUN  |
| LU-177  | 4.728E+00  | 1.732E+00 | 1.166E+00 | 8.835E-01 | FAIL ABUN  |
| LU-177M | -1.162E-01 | 2.038E-01 | 1.658E-01 | 1.040E-01 | FAIL ABUN  |
| HF-181  | -3.268E-02 | 4.708E-02 | 3.715E-02 | 2.402E-02 | NOT IDENT. |
| W-181   | 1.339E-01  | 3.307E-01 | 2.642E-01 | 1.687E-01 | NOT IDENT. |
| TA-182  | -5.662E-02 | 2.428E-01 | 2.027E-01 | 1.239E-01 | FAIL ABUN  |
| RE-183  | 1.239E-01  | 1.193E-01 | 1.040E-01 | 6.088E-02 | FAIL ABUN  |
| RE-184  | 2.210E-01  | 2.377E-01 | 2.160E-01 | 1.213E-01 | NOT IDENT. |
| OS-185  | -1.531E-03 | 4.813E-02 | 4.128E-02 | 2.456E-02 | NOT IDENT. |
| RE-188  | 3.282E-01  | 1.887E-01 | 1.680E-01 | 9.625E-02 | NOT IDENT. |
| W-188   | -5.994E+00 | 8.769E+00 | 6.339E+00 | 4.474E+00 | FAIL ABUN  |
| IR-192  | 5.691E-03  | 3.739E-02 | 3.243E-02 | 1.907E-02 | FAIL ABUN  |
| AU-195  | 4.386E-01  | 2.241E-01 | 2.040E-01 | 1.143E-01 | FAIL ABUN  |
| TL-200  | 1.881E+02  | 4.389E+02 | 0.000E+00 | 2.239E+02 | SHORT HLIF |
| TL-201  | 6.196E-01  | 7.228E+00 | 6.065E+00 | 3.688E+00 | NOT IDENT. |
| TL-202  | 1.298E-02  | 7.775E-02 | 6.591E-02 | 3.967E-02 | NOT IDENT. |
| HG-203  | 3.429E-02  | 4.392E-02 | 3.940E-02 | 2.241E-02 | NOT IDENT. |
| BI-207  | 8.700E-03  | 6.086E-02 | 5.291E-02 | 3.105E-02 | FAIL ABUN  |
| TL-207  | -2.118E-01 | 8.081E-01 | 5.965E-01 | 4.123E-01 | FAIL ABUN  |
| PO-209  | 3.519E+00  | 8.243E+00 | 7.133E+00 | 4.206E+00 | NOT IDENT. |
| PB-211  | -2.554E-01 | 1.061E+00 | 8.738E-01 | 5.416E-01 | NOT IDENT. |
| BI-212  | 1.657E+00  | 6.437E-01 | 4.066E-01 | 3.284E-01 | FAIL ABUN  |
| PO-215  | -2.118E-01 | 8.081E-01 | 5.965E-01 | 4.123E-01 | FAIL ABUN  |
| RN-219  | -2.406E-01 | 4.592E-01 | 3.745E-01 | 2.343E-01 | FAIL ABUN  |
| RN-220  | -9.795E+00 | 2.879E+01 | 2.452E+01 | 1.469E+01 | NOT IDENT. |
| RA-223  | -2.118E-01 | 8.081E-01 | 5.965E-01 | 4.123E-01 | FAIL ABUN  |
| AC-227  | -2.078E-01 | 3.893E-01 | 3.305E-01 | 1.986E-01 | FAIL ABUN  |
| TH-227  | -2.078E-01 | 3.898E-01 | 3.305E-01 | 1.989E-01 | FAIL ABUN  |
| TH-229  | -1.131E-01 | 5.098E-01 | 4.500E-01 | 2.601E-01 | FAIL ABUN  |
| PA-231  | -3.834E-01 | 1.631E+00 | 1.398E+00 | 8.321E-01 | FAIL ABUN  |
| TH-231  | -2.118E-01 | 8.081E-01 | 5.965E-01 | 4.123E-01 | FAIL ABUN  |
| U-231   | -1.969E-01 | 1.102E+00 | 8.434E-01 | 5.621E-01 | FAIL ABUN  |
| PA-233  | -1.658E-03 | 6.873E-02 | 5.914E-02 | 3.506E-02 | FAIL ABUN  |
| PA-234  | 9.425E-02  | 3.571E-01 | 3.029E-01 | 1.822E-01 | FAIL ABUN  |
| PA-234M | -8.728E-01 | 5.522E+00 | 4.500E+00 | 2.817E+00 | NOT IDENT. |
| U-235   | 2.325E-01  | 2.235E-01 | 1.908E-01 | 1.140E-01 | FAIL ABUN  |
| NP-236  | 2.199E-03  | 8.580E-02 | 7.201E-02 | 4.378E-02 | NOT IDENT. |
| NP-239  | 4.292E-02  | 1.902E-01 | 1.642E-01 | 9.706E-02 | FAIL ABUN  |
| AM-241  | 1.317E-01  | 1.220E-01 | 1.012E-01 | 6.225E-02 | NOT IDENT. |
| CM-243  | -3.585E-02 | 9.639E-02 | 8.183E-02 | 4.918E-02 | FAIL ABUN  |
| AM-246  | 7.153E-02  | 1.517E-01 | 1.353E-01 | 7.738E-02 | NOT IDENT. |
| CM-247  | -4.961E-02 | 4.191E-02 | 3.268E-02 | 2.138E-02 | NOT IDENT. |
| CF-249  | -3.044E-02 | 4.355E-02 | 3.527E-02 | 2.222E-02 | NOT IDENT. |
| CF-251  | -2.261E-02 | 1.280E-01 | 1.139E-01 | 6.533E-02 | NOT IDENT. |

\*\*\*\*\*  
 \* GEL Laboratories LLC \*  
 \* 2040 SAVAGE ROAD \*  
 \* CHARLESTON , SC 29417 \*  
 \* GAMMA SPECTROSCOPY BACKGROUND REPORT \*  
 \*\*\*\*\*

| ENERGY | MDA COUNTS |
|--------|------------|
| 46.50  | 346.4609   |
| 46.50  | 346.4609   |
| 46.50  | 346.4609   |
| 48.70  | 329.5865   |
| 49.72  | 366.0895   |
| 51.35  | 387.9609   |
| 52.39  | 379.6244   |
| 52.97  | 377.3108   |
| 53.15  | 390.8952   |
| 53.44  | 395.0156   |
| 54.07  | 397.5597   |
| 56.28  | 471.1764   |
| 56.28  | 471.1788   |
| 57.37  | 0.0000     |
| 57.53  | 431.9287   |
| 57.53  | 431.9309   |
| 57.60  | 432.0013   |
| 57.98  | 438.5984   |
| 57.98  | 438.5984   |
| 59.32  | 424.5300   |
| 59.32  | 424.5300   |
| 59.40  | 421.6906   |
| 59.54  | 399.9352   |
| 59.72  | 400.1046   |
| 60.01  | 422.2936   |
| 61.10  | 468.7769   |
| 61.14  | 468.8196   |
| 61.30  | 468.9929   |
| 63.00  | 507.1081   |
| 63.29  | 507.4407   |
| 63.29  | 507.4407   |
| 63.58  | 559.8268   |
| 64.28  | 550.3765   |
| 65.12  | 523.3182   |
| 65.20  | 523.4108   |
| 65.20  | 523.4108   |
| 66.05  | 551.0551   |
| 66.72  | 511.8067   |
| 66.83  | 511.9330   |
| 66.91  | 549.1256   |
| 67.20  | 528.6793   |
| 67.20  | 528.6793   |
| 67.75  | 568.5615   |
| 67.85  | 568.6840   |
| 68.90  | 609.1182   |
| 68.90  | 609.1182   |
| 69.30  | 577.6155   |
| 69.67  | 556.8734   |
| 70.82  | 559.7188   |
| 70.82  | 559.7188   |
| 70.83  | 559.7302   |
| 72.80  | 593.5849   |
| 72.87  | 593.6723   |
| 72.87  | 593.6723   |
| 74.67  | 638.0984   |
| 74.81  | 638.2791   |
| 74.81  | 638.2791   |
| 74.81  | 638.2791   |
| 74.81  | 638.2791   |
| 74.81  | 638.2791   |
| 74.81  | 638.2791   |
| 74.81  | 638.2791   |
| 74.97  | 638.4857   |
| 75.28  | 638.8858   |
| 75.70  | 639.4247   |
| 77.11  | 641.2288   |
| 77.11  | 641.2288   |

|        |          |
|--------|----------|
| 77.11  | 641.2288 |
| 77.11  | 641.2288 |
| 77.11  | 641.2288 |
| 77.11  | 641.2288 |
| 77.11  | 641.2288 |
| 78.38  | 642.8392 |
| 79.62  | 644.3979 |
| 79.80  | 644.6238 |
| 79.80  | 644.6238 |
| 80.11  | 645.0111 |
| 80.18  | 645.0983 |
| 80.30  | 645.2467 |
| 80.30  | 645.2467 |
| 80.57  | 645.5823 |
| 81.00  | 646.1180 |
| 81.07  | 646.2052 |
| 81.07  | 646.2052 |
| 81.07  | 646.2052 |
| 81.07  | 646.2052 |
| 82.60  | 428.9999 |
| 83.37  | 429.6216 |
| 83.78  | 429.9570 |
| 83.78  | 429.9570 |
| 83.78  | 429.9570 |
| 83.78  | 429.9570 |
| 84.21  | 547.1023 |
| 84.90  | 529.3404 |
| 85.43  | 529.8627 |
| 86.29  | 530.7078 |
| 86.50  | 530.9125 |
| 86.54  | 530.9518 |
| 86.59  | 531.0017 |
| 86.72  | 531.1277 |
| 86.79  | 531.1933 |
| 86.94  | 531.3429 |
| 87.30  | 531.6920 |
| 87.30  | 531.6920 |
| 87.30  | 531.6920 |
| 87.30  | 531.6920 |
| 87.30  | 531.6920 |
| 87.30  | 531.6920 |
| 87.30  | 531.6920 |
| 87.57  | 420.6151 |
| 87.88  | 420.8538 |
| 88.03  | 420.9679 |
| 88.36  | 421.2211 |
| 88.47  | 421.3062 |
| 89.95  | 804.4824 |
| 91.11  | 336.1569 |
| 92.29  | 336.8589 |
| 92.38  | 336.9133 |
| 92.38  | 336.9133 |
| 93.35  | 409.3590 |
| 94.00  | 364.4625 |
| 94.67  | 391.5062 |
| 94.67  | 391.5100 |
| 94.90  | 401.0664 |
| 94.90  | 401.0664 |
| 94.90  | 401.0664 |
| 94.90  | 401.0664 |
| 95.87  | 401.7383 |
| 95.87  | 401.7383 |
| 96.73  | 435.3358 |
| 97.43  | 454.7354 |
| 98.44  | 359.3689 |
| 98.44  | 359.3689 |
| 98.88  | 337.5522 |
| 99.55  | 356.8821 |
| 99.55  | 356.8821 |
| 99.86  | 361.2816 |
| 100.00 | 361.3653 |
| 100.10 | 367.7505 |
| 103.18 | 441.6457 |
| 103.76 | 383.7596 |
| 105.00 | 354.7901 |
| 105.31 | 359.2195 |
| 108.00 | 403.4649 |
| 109.28 | 383.9610 |

|        |          |
|--------|----------|
| 111.00 | 368.9119 |
| 111.00 | 368.9119 |
| 111.76 | 370.4212 |
| 112.95 | 399.0710 |
| 115.19 | 359.4272 |
| 116.30 | 316.7848 |
| 117.00 | 326.8610 |
| 117.00 | 326.8610 |
| 117.66 | 370.5209 |
| 121.11 | 313.6187 |
| 121.62 | 331.2909 |
| 121.78 | 331.3682 |
| 122.06 | 336.9566 |
| 122.32 | 341.4474 |
| 122.32 | 341.4474 |
| 122.32 | 341.4474 |
| 122.32 | 341.4474 |
| 123.07 | 353.8345 |
| 127.23 | 365.8439 |
| 129.76 | 368.2557 |
| 131.20 | 351.3223 |
| 133.02 | 365.4996 |
| 133.54 | 344.1483 |
| 135.34 | 381.1088 |
| 136.00 | 354.7603 |
| 136.25 | 358.2178 |
| 136.48 | 343.8625 |
| 140.51 | 394.9561 |
| 140.51 | 0.0000   |
| 142.18 | 342.0049 |
| 142.65 | 344.4631 |
| 143.76 | 293.2745 |
| 144.24 | 297.9579 |
| 144.24 | 297.9579 |
| 144.24 | 297.9579 |
| 144.24 | 297.9579 |
| 145.22 | 342.2443 |
| 145.44 | 358.1058 |
| 147.16 | 349.8727 |
| 152.43 | 362.4510 |
| 152.70 | 379.6233 |
| 153.22 | 349.1632 |
| 154.21 | 325.6805 |
| 154.21 | 325.6805 |
| 154.21 | 325.6805 |
| 154.21 | 325.6805 |
| 155.03 | 302.0742 |
| 156.02 | 327.5550 |
| 158.56 | 344.6080 |
| 159.00 | 0.0000   |
| 159.00 | 350.5192 |
| 160.31 | 320.1019 |
| 161.27 | 326.2169 |
| 162.32 | 299.0275 |
| 162.64 | 299.1412 |
| 163.35 | 299.3951 |
| 163.89 | 328.3977 |
| 165.85 | 336.0928 |
| 167.43 | 299.6927 |
| 171.28 | 283.6068 |
| 171.86 | 272.1669 |
| 172.10 | 272.2430 |
| 176.55 | 305.2036 |
| 176.60 | 305.2222 |
| 181.06 | 321.5629 |
| 184.41 | 352.4876 |
| 185.71 | 344.6606 |
| 186.00 | 344.7704 |
| 190.27 | 277.8083 |
| 192.34 | 315.0128 |
| 193.63 | 288.6379 |
| 197.04 | 290.5771 |
| 198.01 | 307.0308 |
| 198.60 | 321.5915 |
| 200.40 | 281.6957 |
| 201.83 | 283.9163 |
| 202.84 | 303.1593 |
| 205.31 | 296.6895 |



|        |          |
|--------|----------|
| 208.36 | 306.3209 |
| 208.81 | 282.3136 |
| 209.75 | 282.5793 |
| 209.75 | 282.5793 |
| 210.97 | 260.5464 |
| 215.65 | 257.9988 |
| 216.55 | 274.4316 |
| 218.09 | 249.1936 |
| 222.10 | 263.0409 |
| 223.80 | 236.7552 |
| 226.40 | 301.0660 |
| 227.00 | 297.5414 |
| 227.08 | 297.5660 |
| 227.20 | 271.7199 |
| 228.16 | 261.7910 |
| 228.18 | 261.7975 |
| 228.18 | 261.7975 |
| 231.56 | 0.0000   |
| 235.69 | 268.2993 |
| 236.00 | 246.0115 |
| 236.00 | 246.0115 |
| 238.63 | 406.5258 |
| 238.63 | 406.5258 |
| 238.63 | 406.5258 |
| 238.63 | 406.5258 |
| 239.00 | 306.4940 |
| 240.98 | 456.8261 |
| 241.98 | 374.7879 |
| 241.98 | 374.7879 |
| 241.98 | 374.7879 |
| 244.69 | 217.9089 |
| 245.39 | 184.9640 |
| 247.94 | 210.0663 |
| 248.90 | 221.5586 |
| 249.79 | 212.2988 |
| 252.40 | 194.8192 |
| 252.85 | 186.3814 |
| 252.85 | 186.3814 |
| 254.15 | 0.0000   |
| 256.20 | 214.4458 |
| 256.20 | 214.4458 |
| 260.50 | 191.4340 |
| 260.90 | 196.2652 |
| 262.80 | 195.2194 |
| 264.65 | 177.3956 |
| 268.24 | 170.2641 |
| 268.79 | 194.7048 |
| 269.46 | 194.8163 |
| 269.46 | 194.8163 |
| 269.46 | 194.8163 |
| 269.46 | 194.8163 |
| 271.23 | 195.1044 |
| 273.65 | 288.1425 |
| 276.40 | 222.6488 |
| 277.35 | 216.3813 |
| 277.60 | 217.3920 |
| 277.60 | 217.3920 |
| 278.00 | 200.0669 |
| 278.60 | 210.8016 |
| 279.20 | 202.1977 |
| 279.53 | 204.1873 |
| 280.46 | 253.7325 |
| 281.68 | 235.5657 |
| 283.67 | 201.9634 |
| 284.30 | 204.9793 |
| 285.00 | 204.1232 |
| 285.90 | 191.6253 |
| 286.10 | 175.1166 |
| 286.10 | 175.1166 |
| 287.40 | 173.3528 |
| 288.45 | 0.0000   |
| 290.67 | 206.2210 |
| 290.80 | 206.2435 |
| 291.72 | 193.8862 |
| 293.26 | 0.0000   |
| 293.70 | 164.4342 |
| 295.21 | 166.5889 |
| 295.21 | 166.5889 |

|        |          |
|--------|----------|
| 295.21 | 166.5889 |
| 295.96 | 166.6875 |
| 296.50 | 166.7575 |
| 297.23 | 166.8535 |
| 298.57 | 167.0273 |
| 299.80 | 167.1881 |
| 299.80 | 167.1881 |
| 300.09 | 167.2244 |
| 300.09 | 167.2244 |
| 300.09 | 167.2244 |
| 300.09 | 167.2244 |
| 300.12 | 167.2296 |
| 301.29 | 176.4383 |
| 302.84 | 186.1122 |
| 303.76 | 160.9912 |
| 303.91 | 161.0086 |
| 304.40 | 159.4917 |
| 304.40 | 159.4917 |
| 304.84 | 164.2850 |
| 306.84 | 154.8178 |
| 308.46 | 195.0341 |
| 311.98 | 175.7009 |
| 316.51 | 173.3097 |
| 318.01 | 174.5007 |
| 319.02 | 176.6273 |
| 319.41 | 176.6786 |
| 320.08 | 184.7544 |
| 323.87 | 181.0648 |
| 323.87 | 181.0648 |
| 323.87 | 181.0648 |
| 323.87 | 181.0648 |
| 325.23 | 161.9970 |
| 328.77 | 173.6728 |
| 333.44 | 161.3501 |
| 334.20 | 184.0393 |
| 334.20 | 184.0393 |
| 334.30 | 184.0532 |
| 338.28 | 173.0404 |
| 338.28 | 173.0404 |
| 338.28 | 173.0404 |
| 338.28 | 173.0404 |
| 338.32 | 173.0457 |
| 338.32 | 173.0457 |
| 338.32 | 173.0457 |
| 340.50 | 163.7847 |
| 340.57 | 163.7921 |
| 344.27 | 183.5003 |
| 345.85 | 173.6250 |
| 350.59 | 0.0000   |
| 351.07 | 177.6586 |
| 351.92 | 177.7648 |
| 351.92 | 177.7648 |
| 351.92 | 177.7648 |
| 355.39 | 0.0000   |
| 356.01 | 147.5288 |
| 364.48 | 144.2554 |
| 366.43 | 124.8422 |
| 367.43 | 117.6982 |
| 367.94 | 0.0000   |
| 369.80 | 125.1228 |
| 374.96 | 126.5869 |
| 383.85 | 116.8860 |
| 387.95 | 154.8652 |
| 388.63 | 136.0898 |
| 391.69 | 151.0400 |
| 391.69 | 151.0400 |
| 392.90 | 157.4547 |
| 398.62 | 145.3826 |
| 400.65 | 127.6357 |
| 401.10 | 150.8836 |
| 401.81 | 154.1180 |
| 402.60 | 170.0356 |
| 404.84 | 154.4099 |
| 410.95 | 143.3160 |
| 411.60 | 161.4281 |
| 413.65 | 162.6932 |
| 414.70 | 135.1332 |
| 415.30 | 137.3105 |

|        |          |
|--------|----------|
| 415.76 | 142.6735 |
| 417.63 | 0.0000   |
| 418.52 | 147.1788 |
| 423.70 | 149.7775 |
| 427.08 | 122.2087 |
| 427.89 | 130.8481 |
| 432.53 | 118.3034 |
| 433.93 | 115.1716 |
| 439.47 | 127.4258 |
| 439.56 | 127.4312 |
| 439.89 | 125.2961 |
| 443.98 | 121.2627 |
| 444.90 | 126.7440 |
| 445.03 | 126.7548 |
| 445.03 | 126.7548 |
| 445.03 | 126.7548 |
| 453.90 | 101.2675 |
| 463.38 | 108.5984 |
| 468.07 | 114.1515 |
| 473.00 | 110.0616 |
| 475.06 | 122.3073 |
| 475.35 | 110.2051 |
| 476.78 | 125.7312 |
| 477.59 | 118.0631 |
| 477.96 | 107.0514 |
| 482.03 | 121.6687 |
| 484.57 | 98.5768  |
| 487.03 | 125.3266 |
| 490.36 | 0.0000   |
| 492.35 | 100.1033 |
| 497.08 | 104.8163 |
| 507.63 | 0.0000   |
| 510.53 | 0.0000   |
| 510.84 | 97.7157  |
| 511.00 | 97.7237  |
| 511.85 | 97.7668  |
| 511.85 | 97.7668  |
| 513.99 | 88.5000  |
| 513.99 | 88.5000  |
| 520.41 | 101.1336 |
| 520.65 | 101.1473 |
| 527.90 | 96.0832  |
| 528.96 | 0.0000   |
| 529.64 | 115.2209 |
| 529.87 | 0.0000   |
| 531.02 | 117.1173 |
| 537.32 | 102.9166 |
| 543.00 | 100.4663 |
| 546.56 | 0.0000   |
| 549.76 | 112.7180 |
| 552.65 | 83.5107  |
| 555.20 | 90.9659  |
| 563.23 | 85.7866  |
| 563.90 | 85.8138  |
| 568.70 | 110.9824 |
| 569.32 | 108.2421 |
| 569.50 | 108.2507 |
| 569.67 | 108.2593 |
| 573.80 | 88.0768  |
| 574.00 | 92.7197  |
| 574.64 | 97.3865  |
| 578.91 | 80.5454  |
| 579.30 | 0.0000   |
| 583.14 | 81.9479  |
| 585.48 | 85.4563  |
| 591.81 | 79.4758  |
| 592.07 | 85.0948  |
| 593.00 | 90.7457  |
| 595.88 | 86.1826  |
| 600.56 | 110.7777 |
| 602.52 | 0.0000   |
| 602.71 | 115.8990 |
| 602.71 | 115.8990 |
| 603.60 | 94.0112  |
| 604.41 | 101.8825 |
| 604.70 | 101.8958 |
| 609.31 | 105.5660 |

|        |          |
|--------|----------|
| 609.31 | 105.5660 |
| 609.31 | 105.5660 |
| 609.31 | 105.5660 |
| 610.33 | 89.5844  |
| 612.46 | 69.2191  |
| 614.37 | 85.0254  |
| 618.01 | 89.8951  |
| 621.84 | 85.3110  |
| 621.84 | 85.3110  |
| 631.29 | 95.1880  |
| 633.02 | 79.0668  |
| 633.10 | 79.0688  |
| 634.78 | 75.3142  |
| 635.90 | 89.6580  |
| 636.97 | 101.1529 |
| 645.85 | 91.0084  |
| 646.12 | 96.7662  |
| 656.30 | 77.9467  |
| 657.75 | 88.5859  |
| 657.90 | 0.0000   |
| 661.65 | 105.1307 |
| 661.65 | 105.1307 |
| 664.57 | 0.0000   |
| 666.33 | 93.7438  |
| 666.33 | 93.7438  |
| 675.00 | 95.0571  |
| 677.61 | 87.3918  |
| 685.20 | 86.6946  |
| 692.80 | 89.8977  |
| 695.00 | 106.6076 |
| 696.49 | 100.7997 |
| 696.49 | 100.7997 |
| 697.00 | 98.8621  |
| 697.49 | 97.9028  |
| 698.33 | 91.0814  |
| 698.50 | 95.9855  |
| 699.00 | 97.9639  |
| 702.63 | 101.0537 |
| 706.10 | 95.2997  |
| 706.58 | 0.0000   |
| 706.67 | 101.2171 |
| 709.31 | 83.6179  |
| 711.68 | 79.7601  |
| 713.82 | 82.7859  |
| 717.42 | 83.8918  |
| 720.50 | 70.8198  |
| 721.93 | 0.0000   |
| 722.20 | 72.5151  |
| 722.78 | 59.3438  |
| 722.78 | 59.3438  |
| 722.89 | 59.3467  |
| 722.95 | 59.3481  |
| 723.30 | 61.0057  |
| 724.18 | 75.8712  |
| 727.18 | 79.2637  |
| 733.00 | 81.1004  |
| 735.90 | 75.8088  |
| 739.58 | 69.6941  |
| 742.81 | 90.7178  |
| 744.21 | 85.7795  |
| 747.13 | 76.8891  |
| 751.79 | 96.0352  |
| 752.31 | 99.0556  |
| 753.82 | 70.0803  |
| 755.35 | 77.1335  |
| 756.15 | 83.1702  |
| 756.87 | 81.1879  |
| 763.93 | 65.3269  |
| 765.79 | 73.7541  |
| 766.42 | 72.0953  |
| 766.84 | 82.1671  |
| 776.49 | 58.9058  |
| 778.00 | 84.1980  |
| 778.57 | 85.9006  |
| 778.89 | 85.9110  |
| 783.80 | 66.8298  |
| 785.46 | 84.4340  |
| 792.07 | 62.6347  |

|         |         |
|---------|---------|
| 795.84  | 85.4376 |
| 796.30  | 85.4520 |
| 798.80  | 85.5299 |
| 801.93  | 86.6477 |
| 805.60  | 69.7514 |
| 810.29  | 74.6414 |
| 810.76  | 81.8125 |
| 815.85  | 68.6456 |
| 817.79  | 43.0613 |
| 818.51  | 49.2258 |
| 819.60  | 61.5571 |
| 826.30  | 57.5914 |
| 828.27  | 0.0000  |
| 831.60  | 93.7616 |
| 831.96  | 90.6834 |
| 834.83  | 68.0818 |
| 836.80  | 0.0000  |
| 846.75  | 74.5840 |
| 848.13  | 67.3645 |
| 856.28  | 0.0000  |
| 856.80  | 58.9065 |
| 860.37  | 68.6941 |
| 867.32  | 55.6432 |
| 867.82  | 67.0809 |
| 871.10  | 68.9479 |
| 873.19  | 41.8164 |
| 874.81  | 47.0698 |
| 875.33  | 0.0000  |
| 876.40  | 53.3744 |
| 879.36  | 63.9041 |
| 880.27  | 53.4454 |
| 880.51  | 56.5932 |
| 881.50  | 57.6614 |
| 883.24  | 59.7929 |
| 884.67  | 61.9212 |
| 889.25  | 62.0163 |
| 896.60  | 61.1167 |
| 898.02  | 60.0907 |
| 899.00  | 69.6029 |
| 903.28  | 63.3647 |
| 911.07  | 65.6464 |
| 911.07  | 65.6464 |
| 911.07  | 65.6464 |
| 919.63  | 61.3494 |
| 920.93  | 64.7976 |
| 925.00  | 73.3934 |
| 925.24  | 69.1450 |
| 926.50  | 60.6599 |
| 935.52  | 59.7707 |
| 937.48  | 91.8474 |
| 944.10  | 61.0064 |
| 946.00  | 69.6116 |
| 949.00  | 70.7502 |
| 962.29  | 53.8257 |
| 964.01  | 66.7802 |
| 966.15  | 66.8256 |
| 968.20  | 66.8680 |
| 969.11  | 66.8876 |
| 969.11  | 66.8876 |
| 969.11  | 66.8876 |
| 977.42  | 59.4902 |
| 980.50  | 75.7883 |
| 983.50  | 70.4399 |
| 989.30  | 72.7382 |
| 996.32  | 59.8407 |
| 1001.03 | 78.4494 |
| 1001.68 | 71.9265 |
| 1004.76 | 59.9951 |
| 1021.30 | 0.0000  |
| 1024.50 | 0.0000  |
| 1034.80 | 67.8815 |
| 1036.00 | 56.8939 |
| 1037.82 | 65.1873 |
| 1038.57 | 67.0385 |
| 1038.76 | 0.0000  |
| 1045.16 | 65.3289 |
| 1046.59 | 66.2783 |
| 1048.07 | 71.8333 |

|         |          |
|---------|----------|
| 1050.47 | 62.6681  |
| 1050.47 | 62.6681  |
| 1062.04 | 62.8812  |
| 1063.62 | 70.3099  |
| 1076.63 | 58.5037  |
| 1077.35 | 59.4453  |
| 1078.86 | 54.8252  |
| 1085.78 | 59.5911  |
| 1099.22 | 73.8407  |
| 1112.02 | 86.3024  |
| 1112.84 | 90.0742  |
| 1115.52 | 75.6570  |
| 1120.29 | 78.0422  |
| 1120.29 | 78.0422  |
| 1120.29 | 78.0422  |
| 1120.29 | 78.0422  |
| 1120.51 | 78.0455  |
| 1121.28 | 78.0624  |
| 1124.00 | 0.0000   |
| 1129.67 | 69.4911  |
| 1131.51 | 0.0000   |
| 1147.95 | 0.0000   |
| 1167.94 | 74.3088  |
| 1173.22 | 81.0917  |
| 1175.09 | 60.1340  |
| 1177.93 | 83.1060  |
| 1189.05 | 77.6052  |
| 1204.90 | 89.4769  |
| 1205.75 | 0.0000   |
| 1213.00 | 98.3435  |
| 1221.42 | 99.5298  |
| 1230.97 | 104.6206 |
| 1235.34 | 97.9506  |
| 1236.41 | 0.0000   |
| 1238.25 | 88.3155  |
| 1246.25 | 80.7203  |
| 1260.41 | 0.0000   |
| 1271.85 | 46.0074  |
| 1274.45 | 42.1199  |
| 1274.54 | 41.1404  |
| 1291.56 | 56.0723  |
| 1298.22 | 0.0000   |
| 1312.09 | 45.4815  |
| 1325.50 | 43.6473  |
| 1325.50 | 43.6473  |
| 1332.49 | 40.7414  |
| 1333.61 | 33.7939  |
| 1360.21 | 32.0104  |
| 1362.66 | 0.0000   |
| 1365.15 | 22.0331  |
| 1368.21 | 41.0918  |
| 1368.53 | 0.0000   |
| 1376.25 | 37.8708  |
| 1384.27 | 25.8702  |
| 1394.10 | 30.2515  |
| 1395.20 | 37.3192  |
| 1407.95 | 52.0271  |
| 1434.06 | 34.6032  |
| 1436.60 | 26.4761  |
| 1457.56 | 0.0000   |
| 1460.81 | 24.5742  |
| 1489.15 | 21.6392  |
| 1509.49 | 20.7015  |
| 1596.49 | 12.6538  |
| 1620.62 | 23.3159  |
| 1678.03 | 0.0000   |
| 1691.02 | 18.2756  |
| 1691.02 | 18.2756  |
| 1706.46 | 0.0000   |
| 1750.46 | 0.0000   |
| 1764.49 | 10.2830  |
| 1764.49 | 10.2830  |
| 1764.49 | 10.2830  |
| 1764.49 | 10.2830  |
| 1770.23 | 14.7393  |
| 1771.40 | 14.7431  |
| 1791.20 | 0.0000   |
| 1808.65 | 9.4270   |

1836.01

7.5804

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G244630005

|                             |            |      |
|-----------------------------|------------|------|
| Total Uranium Activity      | 6.7379E+00 | ug/g |
| Total Uranium Counting Unc. | 4.5523E+00 | ug/g |
| Total Uranium Tpu           | 2.3226E-06 | ug/g |
| Total Uranium Mda           | 2.6225E+00 | ug/g |



```

*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON , SC 29417               *
*               GROSS GAMMA REPORT                 *
*
*****
*
*  BATCH ID      : 941639          SAMPLE ID   : G244630005
*  ANALYST       : MXR1           DETECTOR    : GAM07
*  SAMPLE DATE   : 8-JAN-2010 12:00:00.00  COUNT TIME : 0 02:00:00.00
*  ANALYSIS DATE: 23-JAN-2010 11:46:35.46  SAMPLE ALQT: 128.540 GRAM
*
*****

```

```

GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.305E+01
GROSS GAMMA ERROR (pCi/GRAM ) : 1.943E+00
GROSS GAMMA MDA (pCi/GRAM ) : 4.524E+00
GROSS GAMMA DLC (pCi/GRAM ) : 2.203E+00

```

## VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 13:49:02.79

```

*****
*                                     GEL Laboratories LLC
*                                     2040 Savage Road
*                                     Charleston, SC 29414
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630006.CNF;1
Sample date        : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 11:47:02
Sample ID          : G244630006           Sample quantity : 1.23060E+02 GRAM
Detector name      : GAM11                Detector geometry: CAN
Elapsed live time   : 0 02:00:00.00        Elapsed real time: 0 02:00:01.68 0.0%
Energy tolerance    : 1.50000 keV          Analyst Initials : MXR1
Abundance limit     : 75.00000             Sensitivity        : 5.00000
Batch ID           : 941639                Detector SN#       :
Matrix Spike ID     :                      LCS ID          : 1032-A
*****

```

| Pk | It | Energy   | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | Fit      |
|----|----|----------|------|-------|------|---------|------|----|----------|------|----------|
| 1  | 0  | 63.38*   | 72   | 517   | 1.05 | 125.64  | 122  | 8  | 1.00E-02 | 57.3 |          |
| 2  | 3  | 74.79*   | 513  | 424   | 1.02 | 148.49  | 142  | 16 | 7.12E-02 | 7.9  | 1.90E+00 |
| 3  | 3  | 77.12*   | 676  | 336   | 0.82 | 153.14  | 142  | 16 | 9.39E-02 | 5.7  |          |
| 4  | 0  | 87.10*   | 245  | 373   | 1.17 | 173.12  | 170  | 7  | 3.40E-02 | 14.8 |          |
| 5  | 0  | 89.96    | 169  | 245   | 1.04 | 178.84  | 177  | 5  | 2.35E-02 | 15.9 |          |
| 6  | 0  | 92.98*   | 211  | 455   | 1.41 | 184.89  | 181  | 8  | 2.92E-02 | 19.9 |          |
| 7  | 0  | 185.86*  | 214  | 302   | 1.26 | 370.78  | 365  | 10 | 2.97E-02 | 17.4 |          |
| 8  | 0  | 208.64   | 64   | 456   | 0.96 | 416.38  | 412  | 12 | 8.88E-03 | 67.8 |          |
| 9  | 6  | 238.68*  | 1253 | 198   | 0.93 | 476.49  | 472  | 16 | 1.74E-01 | 3.4  | 3.48E+00 |
| 10 | 6  | 241.72*  | 302  | 264   | 1.62 | 482.58  | 472  | 16 | 4.19E-02 | 12.9 |          |
| 11 | 0  | 270.34*  | 115  | 189   | 1.19 | 539.87  | 536  | 10 | 1.59E-02 | 24.6 |          |
| 12 | 0  | 295.40*  | 375  | 179   | 1.19 | 590.03  | 585  | 11 | 5.21E-02 | 8.8  |          |
| 13 | 0  | 300.38   | 116  | 131   | 1.41 | 599.98  | 596  | 10 | 1.62E-02 | 20.6 |          |
| 14 | 0  | 327.83   | 68   | 160   | 1.34 | 654.93  | 651  | 9  | 9.38E-03 | 35.9 |          |
| 15 | 0  | 338.29   | 255  | 171   | 1.24 | 675.85  | 671  | 12 | 3.54E-02 | 12.0 |          |
| 16 | 0  | 351.93*  | 578  | 204   | 1.04 | 703.15  | 697  | 12 | 8.03E-02 | 6.5  |          |
| 17 | 0  | 463.13   | 108  | 136   | 1.39 | 925.70  | 919  | 15 | 1.50E-02 | 25.4 |          |
| 18 | 0  | 511.00*  | 106  | 106   | 1.45 | 1021.50 | 1015 | 14 | 1.47E-02 | 27.3 |          |
| 19 | 0  | 583.45*  | 368  | 80    | 1.26 | 1166.47 | 1162 | 11 | 5.11E-02 | 7.2  |          |
| 20 | 0  | 609.63*  | 417  | 60    | 1.07 | 1218.88 | 1214 | 11 | 5.79E-02 | 6.3  |          |
| 21 | 0  | 662.18   | 82   | 112   | 1.61 | 1324.02 | 1317 | 16 | 1.14E-02 | 30.9 |          |
| 22 | 0  | 728.04   | 81   | 70    | 1.58 | 1455.82 | 1451 | 9  | 1.12E-02 | 21.9 |          |
| 23 | 0  | 795.50*  | 57   | 54    | 1.15 | 1590.81 | 1584 | 12 | 7.96E-03 | 29.3 |          |
| 24 | 0  | 861.15   | 51   | 49    | 0.69 | 1722.17 | 1714 | 13 | 7.12E-03 | 31.4 |          |
| 25 | 0  | 911.62*  | 283  | 64    | 1.58 | 1823.16 | 1818 | 11 | 3.93E-02 | 8.2  |          |
| 26 | 3  | 965.30   | 74   | 30    | 2.07 | 1930.57 | 1926 | 23 | 1.03E-02 | 16.5 | 1.25E+00 |
| 27 | 3  | 969.49*  | 181  | 27    | 1.71 | 1938.95 | 1926 | 23 | 2.52E-02 | 9.5  |          |
| 28 | 0  | 1121.27* | 129  | 61    | 1.75 | 2242.63 | 2235 | 17 | 1.79E-02 | 16.8 |          |
| 29 | 0  | 1378.72  | 27   | 15    | 1.49 | 2757.68 | 2753 | 9  | 3.78E-03 | 32.3 |          |
| 30 | 0  | 1409.08  | 36   | 7     | 1.51 | 2818.43 | 2812 | 14 | 4.95E-03 | 23.1 |          |
| 31 | 0  | 1461.65* | 1226 | 62    | 1.78 | 2923.59 | 2914 | 19 | 1.70E-01 | 3.3  |          |
| 32 | 0  | 1510.33  | 22   | 5     | 1.10 | 3020.96 | 3015 | 11 | 3.04E-03 | 29.7 |          |
| 33 | 0  | 1765.55* | 69   | 18    | 1.55 | 3531.48 | 3523 | 14 | 9.63E-03 | 18.1 |          |
| 34 | 0  | 1848.20  | 21   | 0     | 1.18 | 3696.81 | 3692 | 9  | 2.92E-03 | 21.8 |          |

Flag: "\*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 23-JAN-2010 13:49:05

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630006.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 8-JAN-2010 12:00:00   Acquisition date : 23-JAN-2010 11:47:02
Sample ID        : G244630006             Sample quantity  : 123.06 GRAM
Sample type      : SOLID                  Sample geometry   :
Detector name    : GAMMA11                Detector geometry: CAN
Elapsed live time: 0 02:00:00.00          Elapsed real time: 0 02:00:01.68    0.0%
Peak Width (FWHM): 3.00                   Confidence level  : 5.00 %
Energy tolerance : 1.50 keV               Half life ratio   : 8.00
Errors propagated: Yes                    Systematic Error  : 0.00 %
Efficiency type  : Empirical              Efficiencies at   : Peak Energy
Abundance limit  : 75.00                  WTM error limit   : 3.00
  
```

Full Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| K-40    | +         | 1460.81      | *   | 2.862E+01           | 3.098E+00 | 4.401E-01      | 3.805E-02 | 65.033  |
| CD-109  | +         | 88.03        | *   | 3.026E+00           | 9.370E-01 | 9.054E-01      | 8.585E-02 | 3.342   |
| SN-126  | +         | 64.28        |     | 5.328E-01           | 6.154E-01 | 5.690E-01      | 8.254E-02 | 0.936   |
|         | +         | 86.94        |     | 1.237E+00           | 6.300E-01 | 4.189E-01      | 1.739E-01 | 2.952   |
|         | +         | 87.57        | *   | 2.975E-01           | 9.212E-02 | 8.929E-02      | 8.422E-03 | 3.331   |
| BA-137M | +         | 661.65       | *   | 1.158E-01           | 7.243E-02 | 5.192E-02      | 4.912E-03 | 2.231   |
| CS-137  | +         | 661.65       | *   | 1.225E-01           | 7.657E-02 | 5.488E-02      | 5.201E-03 | 2.231   |
| TL-208  | +         | 277.35       |     | 2.223E-01           | 3.480E-01 | 5.796E-01      | 1.028E-01 | 0.384   |
|         | +         | 510.84       |     | 5.070E-01           | 2.848E-01 | 1.822E-01      | 2.470E-02 | 2.782   |
|         | +         | 583.14       | *   | 5.009E-01           | 9.048E-02 | 5.698E-02      | 6.154E-03 | 8.791   |
|         | +         | 860.37       |     | 6.519E-01           | 4.144E-01 | 4.102E-01      | 4.273E-02 | 1.589   |
| BI-211  | +         | 72.87        |     | 2.214E+00           | 2.506E+00 | 4.048E+00      | 3.215E-01 | 0.547   |
|         | +         | 351.07       | *   | 3.474E+00           | 6.431E-01 | 2.815E-01      | 3.714E-02 | 12.341  |
| PB-212  | +         | 74.81        |     | 2.524E+00           | 5.049E-01 | 4.206E-01      | 5.203E-02 | 6.002   |
|         | +         | 77.11        |     | 1.902E+00           | 2.695E-01 | 2.411E-01      | 2.003E-02 | 7.888   |
|         | +         | 87.30        |     | 1.376E+00           | 4.477E-01 | 4.648E-01      | 6.380E-02 | 2.960   |
|         | +         | 238.63       | *   | 1.645E+00           | 2.558E-01 | 8.212E-02      | 1.150E-02 | 20.038  |
|         | +         | 300.09       |     | 2.359E+00           | 1.041E+00 | 9.584E-01      | 1.536E-01 | 2.461   |
| PO-212  | +         | 74.81        |     | 2.524E+00           | 5.049E-01 | 4.206E-01      | 5.203E-02 | 6.002   |
|         | +         | 77.11        |     | 1.902E+00           | 2.695E-01 | 2.411E-01      | 2.003E-02 | 7.888   |
|         | +         | 87.30        |     | 1.376E+00           | 4.477E-01 | 4.648E-01      | 6.380E-02 | 2.960   |
|         | +         | 115.19       |     | 2.838E+00           | 3.002E+00 | 5.286E+00      | 4.478E-01 | 0.537   |
|         | +         | 238.63       | *   | 1.645E+00           | 2.558E-01 | 8.212E-02      | 1.150E-02 | 20.038  |
|         | +         | 300.09       |     | 2.359E+00           | 1.041E+00 | 9.584E-01      | 1.536E-01 | 2.461   |
| BI-214  | +         | 609.31       | *   | 1.069E+00           | 1.803E-01 | 9.380E-02      | 1.060E-02 | 11.396  |
|         | +         | 1120.29      |     | 1.698E+00           | 6.005E-01 | 4.706E-01      | 5.082E-02 | 3.609   |
|         | +         | 1764.49      |     | 1.250E+00           | 4.640E-01 | 3.107E-01      | 2.560E-02 | 4.023   |
| PB-214  | +         | 74.81        |     | 4.350E+00           | 8.339E-01 | 7.247E-01      | 7.957E-02 | 6.002   |
|         | +         | 77.11        |     | 3.260E+00           | 5.245E-01 | 4.133E-01      | 4.659E-02 | 7.888   |
|         | +         | 87.30        |     | 2.357E+00           | 7.521E-01 | 7.963E-01      | 9.681E-02 | 2.960   |
|         | +         | 241.98       |     | 2.382E+00           | 7.039E-01 | 4.948E-01      | 7.208E-02 | 4.814   |
|         | +         | 295.21       |     | 1.336E+00           | 3.198E-01 | 1.937E-01      | 3.159E-02 | 6.894   |
|         | +         | 351.92       | *   | 1.209E+00           | 2.324E-01 | 9.815E-02      | 1.389E-02 | 12.314  |
| PO-214  | +         | 74.81        |     | 4.350E+00           | 8.339E-01 | 7.247E-01      | 7.957E-02 | 6.002   |

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         | +         | 77.11        |     | 3.260E+00           | 5.245E-01 | 4.133E-01      | 4.659E-02 | 7.888   |
|         | +         | 87.30        |     | 2.357E+00           | 7.521E-01 | 7.963E-01      | 9.681E-02 | 2.960   |
|         | +         | 241.98       |     | 2.382E+00           | 7.039E-01 | 4.948E-01      | 7.208E-02 | 4.814   |
|         | +         | 295.21       |     | 1.336E+00           | 3.198E-01 | 1.937E-01      | 3.159E-02 | 6.894   |
|         | +         | 351.92       | *   | 1.209E+00           | 2.324E-01 | 9.815E-02      | 1.389E-02 | 12.314  |
| PO-216  | +         | 74.81        |     | 2.524E+00           | 5.049E-01 | 4.206E-01      | 5.203E-02 | 6.002   |
|         | +         | 77.11        |     | 1.902E+00           | 2.695E-01 | 2.411E-01      | 2.003E-02 | 7.888   |
|         | +         | 87.30        |     | 1.376E+00           | 4.477E-01 | 4.648E-01      | 6.380E-02 | 2.960   |
|         | +         | 238.63       | *   | 1.645E+00           | 2.558E-01 | 8.212E-02      | 1.150E-02 | 20.038  |
|         | +         | 300.09       |     | 2.359E+00           | 1.041E+00 | 9.584E-01      | 1.536E-01 | 2.461   |
| PO-218  | +         | 74.81        |     | 4.350E+00           | 8.339E-01 | 7.247E-01      | 7.957E-02 | 6.002   |
|         | +         | 77.11        |     | 3.260E+00           | 5.245E-01 | 4.133E-01      | 4.659E-02 | 7.888   |
|         | +         | 87.30        |     | 2.357E+00           | 7.521E-01 | 7.963E-01      | 9.681E-02 | 2.960   |
|         | +         | 241.98       |     | 2.382E+00           | 7.039E-01 | 4.948E-01      | 7.208E-02 | 4.814   |
|         | +         | 295.21       |     | 1.336E+00           | 3.198E-01 | 1.937E-01      | 3.159E-02 | 6.894   |
|         | +         | 351.92       | *   | 1.209E+00           | 2.324E-01 | 9.815E-02      | 1.389E-02 | 12.314  |
| RA-224  | +         | 240.98       | *   | 4.516E+00           | 1.311E+00 | 9.349E-01      | 1.252E-01 | 4.831   |
| RA-226  | +         | 609.31       | *   | 1.069E+00           | 1.803E-01 | 9.380E-02      | 1.060E-02 | 11.396  |
|         | +         | 1120.29      |     | 1.698E+00           | 6.005E-01 | 4.706E-01      | 5.082E-02 | 3.609   |
|         | +         | 1764.49      |     | 1.250E+00           | 4.640E-01 | 3.107E-01      | 2.560E-02 | 4.023   |
| AC-228  | +         | 338.32       |     | 1.689E+00           | 8.246E-01 | 3.375E-01      | 1.436E-01 | 5.006   |
|         | +         | 911.07       | *   | 1.699E+00           | 3.474E-01 | 1.902E-01      | 2.315E-02 | 8.934   |
|         | +         | 969.11       |     | 1.916E+00           | 5.832E-01 | 3.175E-01      | 7.525E-02 | 6.035   |
| RA-228  | +         | 338.32       |     | 1.689E+00           | 8.246E-01 | 3.375E-01      | 1.436E-01 | 5.006   |
|         | +         | 911.07       | *   | 1.699E+00           | 3.474E-01 | 1.902E-01      | 2.315E-02 | 8.934   |
|         | +         | 969.11       |     | 1.916E+00           | 5.832E-01 | 3.175E-01      | 7.525E-02 | 6.035   |
| TH-228  | +         | 74.81        |     | 2.562E+00           | 4.540E-01 | 4.269E-01      | 3.493E-02 | 6.002   |
|         | +         | 77.11        |     | 1.930E+00           | 2.735E-01 | 2.447E-01      | 2.033E-02 | 7.888   |
|         | +         | 87.30        |     | 1.396E+00           | 4.325E-01 | 4.718E-01      | 4.435E-02 | 2.960   |
|         | +         | 238.63       | *   | 1.670E+00           | 2.597E-01 | 8.336E-02      | 1.167E-02 | 20.038  |
|         | +         | 300.09       |     | 2.394E+00           | 1.752E+00 | 9.728E-01      | 5.887E-01 | 2.461   |
| TH-230  | +         | 609.31       | *   | 1.069E+00           | 1.803E-01 | 9.380E-02      | 1.060E-02 | 11.396  |
|         | +         | 1120.29      |     | 1.698E+00           | 6.005E-01 | 4.706E-01      | 5.082E-02 | 3.609   |
|         | +         | 1764.49      |     | 1.250E+00           | 4.640E-01 | 3.107E-01      | 2.560E-02 | 4.023   |
| TH-232  | +         | 338.32       |     | 1.689E+00           | 4.639E-01 | 3.375E-01      | 4.551E-02 | 5.006   |
|         | +         | 911.07       | *   | 1.699E+00           | 3.474E-01 | 1.902E-01      | 2.315E-02 | 8.934   |
|         | +         | 969.11       |     | 1.916E+00           | 5.832E-01 | 3.175E-01      | 7.525E-02 | 6.035   |
| TH-234  | +         | 63.29        | *   | 1.346E+00           | 1.560E+00 | 1.497E+00      | 2.604E-01 | 0.899   |
|         | +         | 92.38        |     | 1.680E+00           | 7.352E-01 | 5.425E-01      | 9.952E-02 | 3.097   |
| U-234   | +         | 609.31       | *   | 1.069E+00           | 1.803E-01 | 9.380E-02      | 1.060E-02 | 11.396  |
|         | +         | 1120.29      |     | 1.698E+00           | 6.005E-01 | 4.706E-01      | 5.082E-02 | 3.609   |
|         | +         | 1764.49      |     | 1.250E+00           | 4.640E-01 | 3.107E-01      | 2.560E-02 | 4.023   |
| NP-237  | +         | 86.50        | *   | 8.735E-01           | 3.251E-01 | 3.348E-01      | 7.579E-02 | 2.609   |
|         |           | 95.87        |     | -2.596E-01          | 8.054E-01 | 1.119E+00      | 2.771E-01 | -0.232  |
| U-238   | +         | 63.29        | *   | 1.346E+00           | 1.560E+00 | 1.497E+00      | 2.604E-01 | 0.899   |
|         | +         | 92.38        |     | 1.680E+00           | 6.850E-01 | 5.425E-01      | 4.968E-02 | 3.097   |
| AM-243  | +         | 74.67        | *   | 4.093E-01           | 7.237E-02 | 6.835E-02      | 5.531E-03 | 5.988   |
|         | +         | 86.72        |     | 3.276E+01           | 1.014E+01 | 1.112E+01      | 1.037E+00 | 2.947   |
|         |           | 117.66       |     | -3.080E+00          | 3.181E+00 | 5.178E+00      | 4.379E-01 | -0.595  |

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         | 142.18    |              |     | -5.036E+00          | 1.419E+01 | 2.351E+01      | 2.096E+00 | -0.214  |
| ANH-511 | +         | 511.00       | *   | 1.095E-01           | 6.084E-02 | 3.937E-02      | 4.210E-03 | 2.781   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| BE-7    |           | 477.59       | *   | -9.983E-02          | 2.627E-01 | 4.241E-01           | 4.800E-02 | -0.235  |
| NA-22   |           | 1274.54      | *   | 3.572E-02           | 4.037E-02 | 7.193E-02           | 5.907E-03 | 0.497   |
| NA-24   |           | 1368.53      | *   | -3.165E-02          | 4.037E-02 | Half-Life too short |           |         |
| AL-26   |           | 1129.67      |     | -9.472E-01          | 1.811E+00 | 2.514E+00           | 2.123E-01 | -0.377  |
|         |           | 1808.65      | *   | 1.191E-02           | 2.946E-02 | 5.220E-02           | 4.261E-03 | 0.228   |
| TI-44   |           | 67.85        |     | -8.477E-03          | 3.518E-02 | 5.501E-02           | 4.168E-03 | -0.154  |
|         | +         | 78.38        | *   | 3.509E-01           | 4.973E-02 | 5.795E-02           | 4.885E-03 | 6.056   |
| SC-46   |           | 889.25       | *   | 1.440E-03           | 3.967E-02 | 6.677E-02           | 6.576E-03 | 0.022   |
|         | +         | 1120.51      |     | 2.904E-01           | 1.009E-01 | 1.319E-01           | 1.125E-02 | 2.202   |
| V-48    |           | 944.10       |     | -4.459E-02          | 8.057E-01 | 1.338E+00           | 1.294E-01 | -0.033  |
|         |           | 983.50       | *   | -4.937E-03          | 6.263E-02 | 1.034E-01           | 9.803E-03 | -0.048  |
|         |           | 1312.09      |     | 4.287E-02           | 7.184E-02 | 1.252E-01           | 1.032E-02 | 0.342   |
| CR-51   |           | 320.08       | *   | -5.871E-02          | 3.342E-01 | 5.275E-01           | 7.655E-02 | -0.111  |
| MN-52   |           | 744.21       |     | 5.215E-03           | 2.218E-01 | 3.581E-01           | 3.479E-02 | 0.015   |
|         |           | 848.13       |     | 5.033E-01           | 6.021E+00 | 1.022E+01           | 1.007E+00 | 0.049   |
|         |           | 935.52       |     | 2.403E-01           | 2.402E-01 | 4.344E-01           | 4.217E-02 | 0.553   |
|         |           | 1246.25      |     | -1.943E+00          | 7.479E+00 | 1.189E+01           | 9.704E-01 | -0.163  |
|         |           | 1333.61      |     | -1.809E-02          | 4.842E+00 | 7.836E+00           | 6.477E-01 | -0.002  |
|         |           | 1434.06      | *   | -2.240E-02          | 1.932E-01 | 3.042E-01           | 2.549E-02 | -0.074  |
| MN-54   |           | 834.83       | *   | 9.317E-03           | 3.768E-02 | 6.471E-02           | 6.372E-03 | 0.144   |
| CO-56   |           | 846.75       | *   | 1.562E-02           | 3.541E-02 | 6.194E-02           | 6.103E-03 | 0.252   |
|         |           | 977.42       |     | 1.405E+00           | 2.960E+00 | 4.575E+00           | 4.354E-01 | 0.307   |
|         |           | 1037.82      |     | -2.934E-01          | 2.975E-01 | 4.396E-01           | 4.219E-02 | -0.667  |
|         |           | 1175.09      |     | 1.371E+00           | 2.294E+00 | 3.955E+00           | 3.179E-01 | 0.347   |
|         |           | 1238.25      |     | 1.953E-01           | 9.860E-02 | 1.818E-01           | 1.530E-02 | 1.074   |
|         |           | 1360.21      |     | -1.436E-01          | 9.295E-01 | 1.468E+00           | 1.219E-01 | -0.098  |
|         |           | 1771.40      |     | 9.844E-02           | 2.372E-01 | 3.758E-01           | 3.092E-02 | 0.262   |
| CO-57   |           | 122.06       | *   | 1.715E-02           | 1.991E-02 | 3.500E-02           | 2.961E-03 | 0.490   |
|         |           | 136.48       |     | 3.092E-02           | 1.742E-01 | 2.963E-01           | 2.783E-02 | 0.104   |
| CO-58   |           | 810.76       | *   | -1.513E-03          | 3.789E-02 | 5.994E-02           | 5.902E-03 | -0.025  |
| FE-59   |           | 142.65       |     | -4.348E-01          | 2.281E+00 | 3.709E+00           | 3.313E-01 | -0.117  |
|         |           | 192.34       |     | 5.233E-01           | 7.895E-01 | 1.344E+00           | 2.016E-01 | 0.389   |
|         |           | 1099.22      | *   | -8.272E-03          | 8.959E-02 | 1.463E-01           | 1.375E-02 | -0.057  |
|         |           | 1291.56      |     | -5.409E-02          | 1.146E-01 | 1.750E-01           | 1.652E-02 | -0.309  |
| CO-60   |           | 1173.22      |     | -8.739E-03          | 4.689E-02 | 7.552E-02           | 6.067E-03 | -0.116  |
|         |           | 1332.49      | *   | -4.328E-03          | 3.957E-02 | 6.319E-02           | 5.222E-03 | -0.068  |
| ZN-65   |           | 1115.52      | *   | 3.469E-02           | 1.042E-01 | 1.549E-01           | 1.329E-02 | 0.224   |
| GE-68   |           | 1077.35      | *   | 1.376E+00           | 1.113E+00 | 2.058E+00           | 1.827E-01 | 0.669   |
| AS-73   |           | 53.44        | *   | 1.339E-02           | 5.571E-01 | 8.921E-01           | 6.699E-02 | 0.015   |
| AS-74   |           | 595.88       | *   | 2.409E-04           | 8.447E-02 | 1.386E-01           | 1.410E-02 | 0.002   |
|         |           | 634.78       |     | 6.379E-02           | 3.339E-01 | 5.541E-01           | 5.421E-02 | 0.115   |
| SE-75   |           | 66.05        |     | -4.141E+00          | 4.006E+00 | 5.452E+00           | 5.181E-01 | -0.760  |

---- Non-Identified Nuclides ----

|        | Line<br>Nuclide | Energy<br>Ided (keV) | Activity<br>Key (pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|--------|-----------------|----------------------|----------------------------|-----------|-------------------|-----------|---------|
|        |                 | 96.73                | -5.947E-01                 | 6.991E-01 | 9.327E-01         | 1.289E-01 | -0.638  |
|        |                 | 121.11               | 1.562E-01                  | 1.098E-01 | 1.954E-01         | 2.167E-02 | 0.799   |
|        |                 | 136.00               | -2.268E-03                 | 3.189E-02 | 5.369E-02         | 4.727E-03 | -0.042  |
|        |                 | 198.60               | -2.029E-01                 | 1.599E+00 | 2.574E+00         | 3.078E-01 | -0.079  |
|        |                 | 264.65 *             | 1.789E-02                  | 3.650E-02 | 6.091E-02         | 8.953E-03 | 0.294   |
|        |                 | 279.53               | 3.057E-02                  | 9.994E-02 | 1.642E-01         | 2.570E-02 | 0.186   |
|        |                 | 303.91               | 5.762E-01                  | 1.903E+00 | 2.797E+00         | 4.649E-01 | 0.206   |
|        |                 | 400.65               | -5.423E-02                 | 2.307E-01 | 3.840E-01         | 4.912E-02 | -0.141  |
| BR-77  | +               | 87.88                | 6.303E+02                  | 1.952E+02 | 2.563E+02         | 2.427E+01 | 2.460   |
|        |                 | 200.40               | 1.036E+01                  | 1.372E+02 | 2.273E+02         | 2.571E+01 | 0.046   |
|        | +               | 239.00               | 2.547E+02                  | 3.792E+01 | 3.654E+01         | 4.856E+00 | 6.970   |
|        |                 | 249.79               | 6.264E+00                  | 5.236E+01 | 8.586E+01         | 1.190E+01 | 0.073   |
|        |                 | 281.68               | -3.113E+01                 | 7.760E+01 | 1.217E+02         | 1.878E+01 | -0.256  |
|        |                 | 297.23               | 1.500E+02                  | 6.123E+01 | 8.595E+01         | 1.289E+01 | 1.746   |
|        |                 | 303.76               | 4.043E+01                  | 1.559E+02 | 2.283E+02         | 3.379E+01 | 0.177   |
|        |                 | 439.47               | 1.686E+01                  | 1.247E+02 | 2.114E+02         | 2.280E+01 | 0.080   |
|        |                 | 484.57               | 4.232E+00                  | 1.977E+02 | 3.302E+02         | 3.555E+01 | 0.013   |
|        |                 | 520.65 *             | 4.194E+00                  | 8.590E+00 | 1.480E+01         | 1.577E+00 | 0.283   |
|        |                 | 574.64               | -6.603E+01                 | 1.934E+02 | 3.094E+02         | 3.199E+01 | -0.213  |
|        |                 | 578.91               | 1.153E+02                  | 8.610E+01 | 1.409E+02         | 1.453E+01 | 0.818   |
|        |                 | 585.48               | 9.394E+02                  | 2.356E+02 | 4.116E+02         | 4.222E+01 | 2.282   |
|        |                 | 755.35               | 1.259E+02                  | 1.472E+02 | 2.556E+02         | 2.490E+01 | 0.492   |
|        |                 | 817.79               | -9.288E+01                 | 1.159E+02 | 1.669E+02         | 1.642E+01 | -0.556  |
| SR-82  |                 | 698.33               | 2.918E+01                  | 3.186E+01 | 5.547E+01         | 5.320E+00 | 0.526   |
|        |                 | 776.49 *             | -1.422E-01                 | 3.256E-01 | 4.964E-01         | 4.855E-02 | -0.286  |
|        |                 | 1395.20              | -1.329E+00                 | 8.599E+00 | 1.348E+01         | 1.124E+00 | -0.099  |
| RB-83  |                 | 520.41 *             | 4.351E-02                  | 5.811E-02 | 1.021E-01         | 1.088E-02 | 0.426   |
|        |                 | 529.64               | 2.994E-02                  | 9.791E-02 | 1.659E-01         | 1.761E-02 | 0.180   |
|        |                 | 552.65               | -1.196E-01                 | 1.770E-01 | 2.743E-01         | 2.877E-02 | -0.436  |
| RB-84  |                 | 881.50 *             | -3.355E-02                 | 6.106E-02 | 9.665E-02         | 9.523E-03 | -0.347  |
| KR-85  |                 | 513.99 *             | 1.189E+01                  | 6.930E+00 | 1.167E+01         | 1.246E+00 | 1.019   |
| SR-85  |                 | 513.99 *             | 6.086E-02                  | 3.549E-02 | 5.975E-02         | 6.383E-03 | 1.019   |
| RB-86  |                 | 1076.63 *            | 3.649E-01                  | 7.095E-01 | 1.233E+00         | 1.095E-01 | 0.296   |
| Y-88   |                 | 898.02               | 3.068E-03                  | 3.651E-02 | 6.171E-02         | 6.098E-03 | 0.050   |
|        |                 | 1836.01 *            | 6.825E-03                  | 3.423E-02 | 5.840E-02         | 4.741E-03 | 0.117   |
| ZR-88  |                 | 392.90 *             | -1.250E-02                 | 2.783E-02 | 4.571E-02         | 4.875E-03 | -0.274  |
| Y-91   |                 | 1204.90 *            | -1.522E+01                 | 1.893E+01 | 2.851E+01         | 2.307E+00 | -0.534  |
| NB-94  |                 | 702.63 *             | -8.178E-03                 | 3.334E-02 | 5.281E-02         | 5.072E-03 | -0.155  |
|        |                 | 871.10               | 2.580E-03                  | 3.020E-02 | 5.117E-02         | 5.043E-03 | 0.050   |
| NB-95  |                 | 765.79 *             | 4.298E-03                  | 3.932E-02 | 6.382E-02         | 6.230E-03 | 0.067   |
| NB-95M |                 | 235.69 *             | 2.043E-02                  | 1.187E-01 | 1.753E-01         | 2.448E-02 | 0.117   |
| ZR-95  |                 | 724.18               | 4.662E-02                  | 9.388E-02 | 1.408E-01         | 1.456E-02 | 0.331   |
|        |                 | 756.15 *             | 2.784E-02                  | 6.574E-02 | 1.100E-01         | 1.158E-02 | 0.253   |
| NB-97  |                 | 657.90 *             | 5.574E-03                  | 6.574E-02 | Half-Life         | too short |         |
|        |                 | 1024.50              | -5.851E-01                 | 6.574E-02 | Half-Life         | too short |         |
| ZR-97  |                 | 254.15               | -3.081E-01                 | 6.574E-02 | Half-Life         | too short |         |
|        |                 | 355.39               | 3.639E-01                  | 6.574E-02 | Half-Life         | too short |         |
|        |                 | 507.63 *             | -1.950E-01                 | 6.574E-02 | Half-Life         | too short |         |
|        |                 | 602.52               | -3.004E+00                 | 6.574E-02 | Half-Life         | too short |         |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         | 1021.30   |              |     | 2.544E+00           | 6.574E-02 | Half-Life      | too short |         |
|         | 1147.95   |              |     | 4.508E-01           | 6.574E-02 | Half-Life      | too short |         |
|         | 1362.66   |              |     | 1.672E+00           | 6.574E-02 | Half-Life      | too short |         |
|         | 1750.46   |              |     | -2.300E-01          | 6.574E-02 | Half-Life      | too short |         |
| MO-99   | 140.51    |              |     | -2.188E+01          | 2.231E+01 | 3.389E+01      | 9.411E+00 | -0.646  |
|         | 181.06    |              |     | -7.727E+00          | 1.522E+01 | 2.178E+01      | 4.179E+00 | -0.355  |
|         | 366.43    |              |     | 4.562E+01           | 7.241E+01 | 1.201E+02      | 1.455E+01 | 0.380   |
|         | 739.58    | *            |     | 1.387E+00           | 9.803E+00 | 1.603E+01      | 2.537E+00 | 0.087   |
|         | 778.00    |              |     | -3.163E+01          | 3.029E+01 | 4.274E+01      | 4.182E+00 | -0.740  |
| TC-99M  | 140.51    | *            |     | -2.318E+10          | 3.029E+01 | Half-Life      | too short |         |
| RH-101  | 127.23    |              |     | -1.280E-02          | 2.606E-02 | 4.321E-02      | 3.691E-03 | -0.296  |
|         | 198.01    | *            |     | 1.161E-02           | 2.871E-02 | 4.739E-02      | 5.303E-03 | 0.245   |
|         | 325.23    |              |     | 8.099E-02           | 2.319E-01 | 3.394E-01      | 4.762E-02 | 0.239   |
| RH-102  | 418.52    |              |     | -1.534E-02          | 2.522E-01 | 4.233E-01      | 4.551E-02 | -0.036  |
|         | 475.06    | *            |     | -1.833E-02          | 2.405E-02 | 3.745E-02      | 4.038E-03 | -0.489  |
|         | 631.29    |              |     | -2.117E-02          | 4.901E-02 | 7.671E-02      | 7.533E-03 | -0.276  |
|         | 697.49    |              |     | 1.292E-02           | 7.193E-02 | 1.184E-01      | 1.135E-02 | 0.109   |
|         | 766.84    |              |     | 9.190E-02           | 1.015E-01 | 1.755E-01      | 1.714E-02 | 0.524   |
|         | 1046.59   |              |     | 1.858E-02           | 1.079E-01 | 1.817E-01      | 1.654E-02 | 0.102   |
|         | 1112.84   |              |     | -1.086E-02          | 2.503E-01 | 3.867E-01      | 3.323E-02 | -0.028  |
| RU-103  | 497.08    | *            |     | 1.502E-02           | 3.627E-02 | 6.215E-02      | 9.659E-03 | 0.242   |
| +       | 610.33    |              |     | 1.152E+01           | 2.475E+00 | 2.773E+00      | 4.842E-01 | 4.153   |
| RH-106  | 511.85    | +            |     | 5.468E-01           | 3.038E-01 | 4.259E-01      | 4.552E-02 | 1.284   |
|         | 621.84    | *            |     | 5.101E-02           | 2.748E-01 | 4.570E-01      | 6.505E-02 | 0.112   |
|         | 1050.47   |              |     | -1.490E+00          | 2.225E+00 | 3.424E+00      | 3.108E-01 | -0.435  |
| RU-106  | 511.85    | +            |     | 5.468E-01           | 3.038E-01 | 4.259E-01      | 4.552E-02 | 1.284   |
|         | 621.84    | *            |     | 5.101E-02           | 2.748E-01 | 4.570E-01      | 4.534E-02 | 0.112   |
|         | 1050.47   |              |     | -1.490E+00          | 2.225E+00 | 3.424E+00      | 3.108E-01 | -0.435  |
| AG-108M | 433.93    | *            |     | -1.521E-02          | 2.932E-02 | 4.738E-02      | 5.238E-03 | -0.321  |
|         | 614.37    |              |     | 1.097E-03           | 3.474E-02 | 5.003E-02      | 5.148E-03 | 0.022   |
|         | 722.95    |              |     | -1.029E-02          | 4.354E-02 | 5.946E-02      | 5.926E-03 | -0.173  |
| AG-110M | 657.75    | *            |     | 9.413E-04           | 3.769E-02 | 5.385E-02      | 5.247E-03 | 0.017   |
|         | 677.61    |              |     | -2.637E-01          | 2.770E-01 | 4.045E-01      | 3.940E-02 | -0.652  |
|         | 706.67    |              |     | -1.821E-01          | 2.189E-01 | 3.279E-01      | 3.224E-02 | -0.555  |
|         | 763.93    |              |     | -2.122E-01          | 1.491E-01 | 2.005E-01      | 2.000E-02 | -1.058  |
|         | 884.67    |              |     | 1.492E-02           | 4.488E-02 | 7.764E-02      | 7.838E-03 | 0.192   |
|         | 937.48    |              |     | 9.745E-03           | 1.112E-01 | 1.872E-01      | 1.868E-02 | 0.052   |
|         | 1384.27   |              |     | 2.685E-02           | 1.416E-01 | 2.064E-01      | 1.771E-02 | 0.130   |
| IN-111  | 171.28    |              |     | 1.221E-01           | 8.426E-01 | 1.414E+00      | 1.407E-01 | 0.086   |
|         | 245.39    | *            |     | 2.913E-01           | 9.436E-01 | 1.406E+00      | 1.917E-01 | 0.207   |
| IN-113M | 391.69    | *            |     | 1.390E-02           | 3.942E-02 | 6.817E-02      | 7.415E-03 | 0.204   |
| SN-113  | 391.69    | *            |     | 1.390E-02           | 3.942E-02 | 6.817E-02      | 7.415E-03 | 0.204   |
| IN-114M | 190.27    | *            |     | -7.215E-02          | 1.620E-01 | 2.493E-01      | 2.697E-02 | -0.289  |
| CD-115  | 260.90    |              |     | -5.912E+01          | 1.111E+02 | 1.736E+02      | 2.512E+01 | -0.340  |
|         | 492.35    |              |     | 3.013E+01           | 2.944E+01 | 5.271E+01      | 5.665E+00 | 0.572   |
|         | 527.90    | *            |     | 6.656E+00           | 9.639E+00 | 1.677E+01      | 1.782E+00 | 0.397   |
| SN-117M | 156.02    |              |     | -2.259E+00          | 1.935E+00 | 3.052E+00      | 2.857E-01 | -0.740  |
|         | 158.56    | *            |     | 6.771E-03           | 4.562E-02 | 7.690E-02      | 7.268E-03 | 0.088   |
| SB-122  | 563.90    | *            |     | 1.605E-01           | 1.645E+00 | 2.735E+00      | 2.849E-01 | 0.059   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| I-123   |           | 692.80       |     | 1.035E+01           | 3.953E+01 | 6.555E+01      | 6.275E+00 | 0.158   |
|         |           | 159.00       | *   | 1.762E+00           | 3.953E+01 | Half-Life      | too short |         |
|         |           | 528.96       |     | 1.496E+02           | 3.953E+01 | Half-Life      | too short |         |
| TE-123M |           | 159.00       | *   | 1.021E-02           | 2.400E-02 | 4.092E-02      | 3.893E-03 | 0.249   |
| I-124   |           | 602.71       | *   | -3.392E-01          | 5.932E-01 | 9.240E-01      | 9.339E-02 | -0.367  |
|         |           | 722.78       |     | -1.343E+00          | 4.432E+00 | 5.995E+00      | 5.792E-01 | -0.224  |
|         |           | 1325.50      |     | 1.274E+01           | 3.160E+01 | 5.385E+01      | 4.446E+00 | 0.237   |
| SB-124  |           | 1376.25      |     | 4.384E+01           | 3.083E+01 | 5.379E+01      | 4.477E+00 | 0.815   |
|         | +         | 1509.49      |     | 2.324E+01           | 1.392E+01 | 2.564E+01      | 2.158E+00 | 0.906   |
|         |           | 1691.02      |     | 6.981E-01           | 3.670E+00 | 6.284E+00      | 5.240E-01 | 0.111   |
|         |           | 602.71       |     | -2.010E-02          | 3.516E-02 | 5.476E-02      | 5.535E-03 | -0.367  |
|         |           | 645.85       |     | -3.307E-01          | 4.447E-01 | 6.698E-01      | 6.778E-02 | -0.494  |
|         |           | 709.31       |     | 2.400E+00           | 2.778E+00 | 4.803E+00      | 4.622E-01 | 0.500   |
|         |           | 713.82       |     | -2.807E-01          | 1.569E+00 | 2.494E+00      | 3.190E-01 | -0.113  |
|         |           | 722.78       |     | -1.154E-01          | 3.808E-01 | 5.150E-01      | 5.062E-02 | -0.224  |
|         | +         | 968.20       |     | 1.970E+01           | 4.205E+00 | 7.531E+00      | 7.202E-01 | 2.616   |
|         |           | 1045.16      |     | -1.500E+00          | 2.410E+00 | 3.735E+00      | 3.403E-01 | -0.402  |
|         |           | 1325.50      |     | 1.168E+00           | 2.899E+00 | 4.940E+00      | 4.080E-01 | 0.237   |
|         |           | 1368.21      |     | -1.918E-01          | 1.462E+00 | 2.310E+00      | 3.068E-01 | -0.083  |
| SB-125  |           | 1436.60      |     | 6.757E-01           | 3.013E+00 | 5.041E+00      | 4.225E-01 | 0.134   |
|         |           | 1691.02      | *   | 1.414E-02           | 7.436E-02 | 1.273E-01      | 1.107E-02 | 0.111   |
|         |           | 427.89       | *   | -1.521E-03          | 8.129E-02 | 1.366E-01      | 1.489E-02 | -0.011  |
|         | +         | 463.38       |     | 1.007E+00           | 5.245E-01 | 5.482E-01      | 6.215E-02 | 1.838   |
|         |           | 600.56       |     | 8.035E-02           | 1.678E-01 | 2.852E-01      | 3.044E-02 | 0.282   |
| TE-125M |           | 635.90       |     | 3.227E-02           | 2.602E-01 | 4.293E-01      | 4.460E-02 | 0.075   |
|         |           | 109.28       | *   | 4.581E+00           | 7.063E+00 | 1.236E+01      | 1.269E+00 | 0.371   |
|         |           | 388.63       |     | 9.993E-03           | 1.799E-01 | 3.058E-01      | 3.317E-02 | 0.033   |
| I-126   |           | 666.33       | *   | -3.553E-02          | 1.849E-01 | 2.564E-01      | 2.431E-02 | -0.139  |
|         |           | 753.82       |     | 1.191E-01           | 1.398E+00 | 2.268E+00      | 2.209E-01 | 0.052   |
|         |           | 223.80       |     | 2.446E+00           | 3.513E+00 | 5.950E+00      | 7.431E-01 | 0.411   |
| SB-126  |           | 278.60       |     | 3.869E+00           | 2.281E+00 | 3.921E+00      | 6.057E-01 | 0.987   |
|         | +         | 296.50       |     | 1.320E+01           | 3.052E+00 | 3.284E+00      | 4.933E-01 | 4.021   |
|         |           | 414.70       |     | -4.743E-03          | 6.777E-02 | 1.138E-01      | 1.222E-02 | -0.042  |
|         |           | 415.30       |     | -1.754E+00          | 5.659E+00 | 9.342E+00      | 1.003E+00 | -0.188  |
|         |           | 555.20       |     | 2.319E+00           | 3.516E+00 | 6.104E+00      | 6.394E-01 | 0.380   |
|         |           | 573.80       |     | -4.117E-01          | 9.980E-01 | 1.587E+00      | 1.642E-01 | -0.259  |
|         |           | 593.00       |     | -1.357E+00          | 8.537E-01 | 1.176E+00      | 1.199E-01 | -1.153  |
|         |           | 656.30       |     | 4.445E-01           | 3.671E+00 | 5.306E+00      | 5.057E-01 | 0.084   |
|         |           | 666.33       |     | -1.484E-02          | 7.725E-02 | 1.071E-01      | 1.016E-02 | -0.139  |
|         |           | 675.00       |     | 1.062E+00           | 1.778E+00 | 3.043E+00      | 2.894E-01 | 0.349   |
|         |           | 695.00       |     | -3.575E-02          | 7.835E-02 | 1.131E-01      | 1.084E-02 | -0.316  |
|         |           | 697.00       |     | -1.691E-01          | 2.791E-01 | 3.991E-01      | 3.826E-02 | -0.424  |
|         |           | 720.50       | *   | -2.880E-02          | 1.270E-01 | 2.005E-01      | 1.936E-02 | -0.144  |
|         |           | 856.80       |     | 3.654E-02           | 4.473E-01 | 6.633E-01      | 6.537E-02 | 0.055   |
|         |           | 989.30       |     | 6.455E-01           | 1.101E+00 | 1.939E+00      | 1.833E-01 | 0.333   |
|         |           | 1034.80      |     | 9.880E+00           | 8.299E+00 | 1.523E+01      | 1.399E+00 | 0.649   |
|         |           | 1213.00      |     | -3.185E+00          | 4.764E+00 | 7.291E+00      | 5.913E-01 | -0.437  |
| SB-127  |           | 61.10        |     | 1.025E+01           | 4.307E+01 | 6.392E+01      | 6.428E+00 | 0.160   |
|         |           | 252.40       |     | -1.032E-01          | 3.603E+00 | 5.848E+00      | 2.541E+00 | -0.018  |



---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|---------------------|-----------|----------------|-----------|---------|
|         | 290.80    |              |              | -4.947E+00          | 2.217E+01 | 3.119E+01      | 5.219E+00 | -0.159  |
|         | 411.60    |              |              | 4.631E+00           | 1.180E+01 | 2.032E+01      | 3.444E+00 | 0.228   |
|         | 444.90    |              |              | -1.885E+00          | 8.322E+00 | 1.372E+01      | 1.933E+00 | -0.137  |
|         | 473.00    |              |              | 1.219E-01           | 1.371E+00 | 2.306E+00      | 3.315E-01 | 0.053   |
|         | 543.00    |              |              | -4.695E+00          | 1.391E+01 | 2.229E+01      | 3.476E+00 | -0.211  |
|         | 603.60    |              |              | -7.349E+00          | 1.105E+01 | 1.551E+01      | 2.100E+00 | -0.474  |
|         | 685.20    | *            |              | 1.323E-02           | 1.175E+00 | 1.909E+00      | 2.303E-01 | 0.007   |
|         | 698.50    |              |              | 1.295E+01           | 1.404E+01 | 2.429E+01      | 3.969E+00 | 0.533   |
|         | 722.20    |              |              | -1.562E+01          | 2.866E+01 | 3.984E+01      | 4.760E+00 | -0.392  |
|         | 783.80    |              |              | -2.916E+00          | 3.663E+00 | 5.403E+00      | 7.146E-01 | -0.540  |
| XE-127  | 57.60     |              |              | -2.797E+00          | 4.231E+00 | 6.512E+00      | 4.688E-01 | -0.430  |
|         | 145.22    |              |              | -2.052E-02          | 5.951E-01 | 9.745E-01      | 8.778E-02 | -0.021  |
|         | 172.10    |              |              | 2.336E-02           | 1.032E-01 | 1.738E-01      | 1.736E-02 | 0.134   |
|         | 202.84    | *            |              | 1.778E-02           | 3.944E-02 | 6.647E-02      | 7.597E-03 | 0.267   |
|         | 374.96    |              |              | -6.393E-02          | 1.808E-01 | 2.772E-01      | 3.228E-02 | -0.231  |
| I-131   | 80.18     |              |              | 2.068E+00           | 3.654E+00 | 5.436E+00      | 4.709E-01 | 0.380   |
|         | 284.30    |              |              | 4.947E-01           | 1.282E+00 | 2.117E+00      | 3.306E-01 | 0.234   |
|         | 364.48    | *            |              | 3.264E-02           | 9.946E-02 | 1.616E-01      | 2.029E-02 | 0.202   |
|         | 636.97    |              |              | 1.060E-01           | 1.496E+00 | 2.457E+00      | 2.502E-01 | 0.043   |
|         | 722.89    |              |              | -1.882E+00          | 7.241E+00 | 9.856E+00      | 9.571E-01 | -0.191  |
| TE-132  | 49.72     |              |              | -4.253E+00          | 1.172E+01 | 1.842E+01      | 1.896E+00 | -0.231  |
|         | 111.76    |              |              | -7.743E+00          | 2.229E+01 | 3.703E+01      | 3.973E+00 | -0.209  |
|         | 116.30    |              |              | 3.706E+01           | 2.253E+01 | 4.024E+01      | 4.305E+00 | 0.921   |
|         | 228.16    | *            |              | 1.708E-01           | 6.007E-01 | 9.972E-01      | 1.821E-01 | 0.171   |
| BA-133  | 53.15     |              |              | -6.154E-02          | 2.382E+00 | 3.805E+00      | 2.868E-01 | -0.016  |
|         | 79.62     |              |              | 1.566E-01           | 1.058E+00 | 1.539E+00      | 2.337E-01 | 0.102   |
|         | 81.00     |              |              | -2.080E-02          | 8.134E-02 | 1.154E-01      | 1.836E-02 | -0.180  |
|         | 276.40    |              |              | 1.393E-01           | 3.360E-01 | 5.547E-01      | 1.066E-01 | 0.251   |
|         | 302.84    |              |              | -5.277E-02          | 1.361E-01 | 1.868E-01      | 3.353E-02 | -0.283  |
|         | 356.01    | *            |              | 1.329E-02           | 4.337E-02 | 6.296E-02      | 1.015E-02 | 0.211   |
|         | 383.85    |              |              | 5.153E-02           | 2.515E-01 | 4.321E-01      | 6.240E-02 | 0.119   |
| I-133   | 510.53    | +            |              | 1.007E+00           | 2.515E-01 | Half-Life      | too short |         |
|         | 529.87    | *            |              | 1.268E-03           | 2.515E-01 | Half-Life      | too short |         |
|         | 706.58    |              |              | -3.363E-01          | 2.515E-01 | Half-Life      | too short |         |
|         | 856.28    |              |              | -1.277E-02          | 2.515E-01 | Half-Life      | too short |         |
|         | 875.33    |              |              | -2.456E-02          | 2.515E-01 | Half-Life      | too short |         |
|         | 1236.41   |              |              | 6.845E-01           | 2.515E-01 | Half-Life      | too short |         |
|         | 1298.22   |              |              | 4.536E-02           | 2.515E-01 | Half-Life      | too short |         |
| CS-134  | 475.35    |              |              | -7.364E-01          | 1.534E+00 | 2.453E+00      | 2.645E-01 | -0.300  |
|         | 563.23    |              |              | 4.326E-02           | 2.996E-01 | 5.002E-01      | 5.247E-02 | 0.086   |
|         | 569.32    |              |              | -9.734E-02          | 1.837E-01 | 2.879E-01      | 3.017E-02 | -0.338  |
|         | 604.70    |              |              | -1.199E-02          | 3.416E-02 | 4.699E-02      | 4.749E-03 | -0.255  |
|         | 795.84    | *            |              | 1.119E-01           | 6.647E-02 | 9.155E-02      | 9.032E-03 | 1.222   |
|         | 801.93    |              |              | -2.151E-02          | 4.325E-01 | 6.711E-01      | 6.617E-02 | -0.032  |
|         | 1038.57   |              |              | -2.347E+00          | 3.868E+00 | 6.015E+00      | 5.508E-01 | -0.390  |
|         | 1167.94   |              |              | 1.065E+00           | 2.408E+00 | 4.111E+00      | 3.324E-01 | 0.259   |
|         | 1365.15   |              |              | -1.815E-01          | 1.097E+00 | 1.727E+00      | 1.505E-01 | -0.105  |
| CS-135  | 268.24    | *            |              | 7.891E-02           | 1.440E-01 | 2.171E-01      | 3.406E-02 | 0.364   |
| I-135   | 288.45    |              |              | 2.491E+09           | 1.440E-01 | Half-Life      | too short |         |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 417.63       |     | -4.089E+09          | 1.440E-01 | Half-Life      | too short |         |
|         |           | 546.56       |     | 3.725E+09           | 1.440E-01 | Half-Life      | too short |         |
|         |           | 836.80       |     | 7.084E+09           | 1.440E-01 | Half-Life      | too short |         |
|         |           | 1038.76      |     | -2.716E+09          | 1.440E-01 | Half-Life      | too short |         |
|         |           | 1124.00      |     | 3.009E+10           | 1.440E-01 | Half-Life      | too short |         |
|         |           | 1131.51      |     | -1.662E+09          | 1.440E-01 | Half-Life      | too short |         |
|         |           | 1260.41      | *   | -3.780E+08          | 1.440E-01 | Half-Life      | too short |         |
|         |           | 1457.56      |     | 6.222E+10           | 1.440E-01 | Half-Life      | too short |         |
|         |           | 1678.03      |     | -6.824E+09          | 1.440E-01 | Half-Life      | too short |         |
|         |           | 1706.46      |     | -7.394E+09          | 1.440E-01 | Half-Life      | too short |         |
|         |           | 1791.20      |     | -8.011E+09          | 1.440E-01 | Half-Life      | too short |         |
| CS-136  |           | 66.91        |     | -2.992E-01          | 6.373E-01 | 8.980E-01      | 1.333E-01 | -0.333  |
|         | +         | 86.29        |     | 3.856E+00           | 1.249E+00 | 1.587E+00      | 2.111E-01 | 2.429   |
|         |           | 153.22       |     | 3.580E-01           | 5.692E-01 | 9.783E-01      | 9.996E-02 | 0.366   |
|         |           | 163.89       |     | -4.138E-01          | 9.010E-01 | 1.472E+00      | 1.557E-01 | -0.281  |
|         |           | 176.55       |     | 3.611E-03           | 3.115E-01 | 5.185E-01      | 5.501E-02 | 0.007   |
|         |           | 273.65       |     | 1.575E-02           | 4.169E-01 | 6.031E-01      | 9.350E-02 | 0.026   |
|         |           | 340.57       |     | 1.972E-01           | 1.245E-01 | 1.972E-01      | 2.671E-02 | 1.000   |
|         |           | 818.51       |     | -5.638E-02          | 6.949E-02 | 1.004E-01      | 9.882E-03 | -0.561  |
|         |           | 1048.07      | *   | 6.850E-02           | 9.914E-02 | 1.750E-01      | 1.652E-02 | 0.392   |
|         |           | 1235.34      |     | -6.401E-01          | 6.509E-01 | 9.703E-01      | 1.117E-01 | -0.660  |
| CE-139  |           | 165.85       | *   | 2.494E-03           | 2.452E-02 | 4.115E-02      | 3.999E-03 | 0.061   |
| BA-140  |           | 162.64       |     | 5.119E-02           | 6.236E-01 | 1.047E+00      | 1.052E-01 | 0.049   |
|         |           | 304.84       |     | 3.244E-02           | 1.202E+00 | 1.722E+00      | 5.249E-01 | 0.019   |
|         |           | 423.70       |     | -1.023E+00          | 1.633E+00 | 2.564E+00      | 8.473E-01 | -0.399  |
|         |           | 537.32       | *   | 2.798E-02           | 2.280E-01 | 3.806E-01      | 1.283E-01 | 0.074   |
| LA-140  | +         | 328.77       |     | 5.491E-01           | 4.017E-01 | 5.205E-01      | 7.388E-02 | 1.055   |
|         |           | 432.53       |     | -9.353E-02          | 1.809E+00 | 3.030E+00      | 3.368E-01 | -0.031  |
|         |           | 487.03       |     | 8.445E-02           | 1.159E-01 | 2.036E-01      | 2.279E-02 | 0.415   |
|         |           | 751.79       |     | -3.699E-01          | 1.673E+00 | 2.635E+00      | 2.782E-01 | -0.140  |
|         |           | 815.85       |     | -2.527E-02          | 2.872E-01 | 4.543E-01      | 4.867E-02 | -0.056  |
|         |           | 867.82       |     | -9.269E-01          | 1.242E+00 | 1.864E+00      | 1.912E-01 | -0.497  |
|         |           | 919.63       |     | -5.302E-01          | 2.772E+00 | 4.557E+00      | 5.286E-01 | -0.116  |
|         |           | 925.24       |     | 1.087E-01           | 1.031E+00 | 1.742E+00      | 1.782E-01 | 0.062   |
|         |           | 1596.49      | *   | -5.061E-02          | 7.766E-02 | 1.156E-01      | 9.721E-03 | -0.438  |
| CE-141  |           | 145.44       | *   | 1.162E-02           | 5.294E-02 | 8.755E-02      | 8.025E-03 | 0.133   |
| CE-143  |           | 57.37        |     | -2.243E-04          | 5.294E-02 | Half-Life      | too short |         |
|         |           | 231.56       |     | -2.106E-03          | 5.294E-02 | Half-Life      | too short |         |
|         |           | 293.26       | *   | 2.276E-04           | 5.294E-02 | Half-Life      | too short |         |
|         | +         | 350.59       |     | 2.585E-02           | 5.294E-02 | Half-Life      | too short |         |
|         |           | 490.36       |     | 3.942E-05           | 5.294E-02 | Half-Life      | too short |         |
|         |           | 664.57       |     | 7.411E-04           | 5.294E-02 | Half-Life      | too short |         |
|         |           | 721.93       |     | -2.844E-04          | 5.294E-02 | Half-Life      | too short |         |
| CE-144  |           | 80.11        |     | 9.882E-01           | 1.701E+00 | 2.532E+00      | 2.178E-01 | 0.390   |
|         |           | 133.54       | *   | -6.480E-02          | 1.669E-01 | 2.768E-01      | 4.318E-02 | -0.234  |
| PM-144  |           | 476.78       |     | -1.097E-02          | 5.439E-02 | 8.925E-02      | 1.020E-02 | -0.123  |
|         |           | 618.01       |     | 2.353E-02           | 2.729E-02 | 4.795E-02      | 4.875E-03 | 0.491   |
|         |           | 696.49       | *   | -3.527E-02          | 3.654E-02 | 5.027E-02      | 4.819E-03 | -0.702  |
|         |           | 778.57       |     | -1.089E+00          | 2.072E+00 | 3.130E+00      | 3.064E-01 | -0.348  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PR-144  |           | 696.49       | *   | -2.390E+00          | 2.476E+00 | 3.406E+00      | 3.265E-01 | -0.702  |
|         |           | 1489.15      |     | 9.950E+00           | 9.170E+00 | 1.802E+01      | 1.516E+00 | 0.552   |
| PM-146  |           | 453.90       | *   | 4.212E-02           | 3.878E-02 | 6.932E-02      | 8.691E-03 | 0.608   |
|         |           | 633.02       |     | -5.716E-01          | 1.290E+00 | 1.991E+00      | 7.500E-01 | -0.287  |
|         |           | 735.90       |     | -3.367E-02          | 1.340E-01 | 2.099E-01      | 6.075E-02 | -0.160  |
|         |           | 747.13       |     | -3.312E-02          | 8.751E-02 | 1.354E-01      | 1.996E-02 | -0.245  |
| ND-147  | +         | 91.11        |     | 6.852E-01           | 2.288E-01 | 3.735E-01      | 3.701E-02 | 1.834   |
|         |           | 319.41       |     | 6.430E-01           | 2.926E+00 | 4.751E+00      | 6.774E-01 | 0.135   |
|         |           | 439.89       |     | -7.939E-01          | 5.299E+00 | 8.805E+00      | 9.499E-01 | -0.090  |
|         |           | 531.02       | *   | -1.990E-01          | 5.009E-01 | 8.004E-01      | 1.295E-01 | -0.249  |
| PM-149  |           | 285.90       | *   | -4.485E+01          | 8.151E+01 | 1.259E+02      | 2.524E+01 | -0.356  |
| EU-152  |           | 121.78       |     | 6.117E-02           | 5.815E-02 | 1.027E-01      | 1.005E-02 | 0.595   |
|         |           | 244.69       |     | 2.854E-01           | 3.037E-01 | 4.713E-01      | 6.405E-02 | 0.606   |
|         |           | 344.27       | *   | 1.015E-02           | 9.453E-02 | 1.351E-01      | 1.831E-02 | 0.075   |
|         |           | 443.98       |     | -2.323E-01          | 8.383E-01 | 1.378E+00      | 1.486E-01 | -0.169  |
|         |           | 778.89       |     | -5.574E-02          | 2.381E-01 | 3.723E-01      | 3.643E-02 | -0.150  |
|         |           | 867.32       |     | -2.970E-01          | 7.483E-01 | 1.132E+00      | 1.115E-01 | -0.262  |
|         | +         | 964.01       |     | 9.030E-01           | 3.095E-01 | 5.848E-01      | 5.604E-02 | 1.544   |
|         |           | 1085.78      |     | 3.789E-01           | 4.008E-01 | 7.164E-01      | 6.316E-02 | 0.529   |
|         |           | 1112.02      |     | 1.919E-01           | 3.325E-01 | 5.743E-01      | 4.939E-02 | 0.334   |
|         | +         | 1407.95      |     | 4.169E-01           | 1.955E-01 | 3.226E-01      | 2.696E-02 | 1.292   |
| GD-153  |           | 69.67        |     | 3.470E-01           | 1.410E+00 | 2.076E+00      | 1.599E-01 | 0.167   |
|         |           | 83.37        |     | 6.876E+00           | 1.310E+01 | 1.933E+01      | 1.729E+00 | 0.356   |
|         |           | 97.43        | *   | -3.514E-02          | 6.675E-02 | 1.005E-01      | 8.925E-03 | -0.350  |
|         |           | 103.18       |     | -2.528E-02          | 8.392E-02 | 1.420E-01      | 1.232E-02 | -0.178  |
| EU-154  |           | 123.07       |     | -2.922E-02          | 3.967E-02 | 6.483E-02      | 7.293E-03 | -0.451  |
|         |           | 247.94       |     | -2.869E-01          | 3.036E-01 | 4.583E-01      | 7.201E-02 | -0.626  |
|         |           | 591.81       |     | -9.196E-02          | 5.478E-01 | 8.858E-01      | 1.141E-01 | -0.104  |
|         |           | 723.30       |     | 1.697E-03           | 1.829E-01 | 2.584E-01      | 2.708E-02 | 0.007   |
|         |           | 756.87       |     | 2.302E-01           | 7.097E-01 | 1.177E+00      | 1.508E-01 | 0.196   |
|         |           | 873.19       |     | 3.100E-01           | 2.691E-01 | 4.946E-01      | 6.500E-02 | 0.627   |
|         |           | 996.32       |     | -1.578E-01          | 3.127E-01 | 4.884E-01      | 8.873E-02 | -0.323  |
|         |           | 1004.76      |     | -4.235E-02          | 2.043E-01 | 3.324E-01      | 4.057E-02 | -0.127  |
|         |           | 1274.45      | *   | 9.751E-02           | 1.127E-01 | 2.002E-01      | 2.201E-02 | 0.487   |
| EU-155  |           | 48.70        |     | -1.417E+00          | 1.557E+00 | 2.375E+00      | 1.921E-01 | -0.597  |
|         |           | 60.01        |     | 2.466E+00           | 3.666E+00 | 5.583E+00      | 3.984E-01 | 0.442   |
|         | +         | 86.54        |     | 3.582E-01           | 1.110E-01 | 1.524E-01      | 1.431E-02 | 2.351   |
|         |           | 105.31       | *   | 6.593E-02           | 8.699E-02 | 1.529E-01      | 1.334E-02 | 0.431   |
| TB-160  | +         | 86.79        |     | 9.558E-01           | 2.960E-01 | 4.113E-01      | 3.841E-02 | 2.324   |
|         |           | 197.04       |     | 1.384E-01           | 4.846E-01 | 7.957E-01      | 8.868E-02 | 0.174   |
|         |           | 215.65       |     | -4.678E-01          | 6.573E-01 | 1.035E+00      | 1.250E-01 | -0.452  |
|         |           | 298.57       |     | 1.791E-01           | 1.221E-01 | 1.632E-01      | 2.441E-02 | 1.097   |
|         |           | 879.36       | *   | 1.927E-02           | 1.209E-01 | 2.062E-01      | 2.032E-02 | 0.093   |
|         |           | 962.29       |     | 1.759E-01           | 5.180E-01 | 7.839E-01      | 7.519E-02 | 0.224   |
|         | +         | 966.15       |     | 6.193E-01           | 2.123E-01 | 4.459E-01      | 4.268E-02 | 1.389   |
|         |           | 1177.93      |     | -6.828E-02          | 3.820E-01 | 6.156E-01      | 4.951E-02 | -0.111  |
|         |           | 1271.85      |     | 3.255E-02           | 7.136E-01 | 1.166E+00      | 9.563E-02 | 0.028   |
| HO-166M |           | 80.57        |     | 7.519E-02           | 2.191E-01 | 3.219E-01      | 2.784E-02 | 0.234   |
|         | +         | 184.41       |     | 1.470E-01           | 5.353E-02 | 5.480E-02      | 5.778E-03 | 2.683   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         | 280.46    |              |     | -5.602E-02          | 8.036E-02 | 1.234E-01      | 1.907E-02 | -0.454  |
|         | 410.95    |              |     | 2.686E-01           | 2.439E-01 | 4.341E-01      | 4.658E-02 | 0.619   |
|         | 711.68    | *            |     | 7.003E-03           | 6.206E-02 | 1.013E-01      | 9.757E-03 | 0.069   |
|         | 752.31    |              |     | -1.640E-01          | 2.654E-01 | 4.003E-01      | 3.897E-02 | -0.410  |
|         | 810.29    |              |     | -7.927E-03          | 5.772E-02 | 9.041E-02      | 8.885E-03 | -0.088  |
| TM-171  | 51.35     |              |     | 4.521E-01           | 1.935E+01 | 3.104E+01      | 2.401E+00 | 0.015   |
|         | 52.39     |              |     | -2.932E+00          | 1.041E+01 | 1.641E+01      | 1.250E+00 | -0.179  |
|         | 59.40     |              |     | -8.926E+00          | 2.026E+01 | 2.892E+01      | 2.057E+00 | -0.309  |
|         | 66.72     | *            |     | -1.236E+01          | 2.321E+01 | 3.265E+01      | 2.450E+00 | -0.379  |
| LU-176  | 88.36     | +            |     | 7.055E-01           | 2.185E-01 | 2.694E-01      | 2.547E-02 | 2.619   |
|         | 201.83    |              |     | -3.731E-03          | 2.460E-02 | 4.028E-02      | 4.584E-03 | -0.093  |
|         | 306.84    | *            |     | 1.148E-02           | 2.134E-02 | 3.543E-02      | 5.209E-03 | 0.324   |
|         | 401.10    |              |     | -9.337E-01          | 5.989E+00 | 1.002E+01      | 1.072E+00 | -0.093  |
| LU-177  | 112.95    |              |     | -1.008E+00          | 1.303E+00 | 2.125E+00      | 1.805E-01 | -0.474  |
|         | 208.36    | *            |     | 1.465E+00           | 1.995E+00 | 1.867E+00      | 2.185E-01 | 0.785   |
| LU-177M | 52.97     | +            |     | -1.266E-01          | 1.071E+00 | 1.704E+00      | 1.287E-01 | -0.074  |
|         | 54.07     |              |     | -1.369E-01          | 5.824E-01 | 9.198E-01      | 6.853E-02 | -0.149  |
|         | 61.30     |              |     | 4.327E-01           | 1.144E+00 | 1.711E+00      | 1.232E-01 | 0.253   |
|         | 121.62    |              |     | 3.303E-01           | 2.985E-01 | 5.291E-01      | 4.470E-02 | 0.624   |
|         | 147.16    |              |     | -1.851E-01          | 5.232E-01 | 8.651E-01      | 7.845E-02 | -0.214  |
|         | 171.86    |              |     | 1.389E-01           | 4.190E-01 | 7.087E-01      | 7.070E-02 | 0.196   |
|         | 218.09    |              |     | 6.314E-01           | 7.448E-01 | 1.270E+00      | 1.549E-01 | 0.497   |
|         | 268.79    |              |     | 8.558E-01           | 8.126E-01 | 1.253E+00      | 1.868E-01 | 0.683   |
|         | 319.02    |              |     | 6.658E-02           | 2.286E-01 | 3.730E-01      | 5.323E-02 | 0.178   |
|         | 367.43    |              |     | 2.091E-02           | 8.302E-01 | 1.316E+00      | 1.588E-01 | 0.016   |
|         | 413.65    | *            |     | -2.647E-02          | 1.707E-01 | 2.851E-01      | 3.062E-02 | -0.093  |
| HF-181  | 56.28     |              |     | 6.921E-02           | 6.524E-01 | 1.046E+00      | 7.616E-02 | 0.066   |
|         | 57.53     |              |     | -2.343E-01          | 3.561E-01 | 5.482E-01      | 3.948E-02 | -0.427  |
|         | 65.20     |              |     | 3.422E-03           | 7.574E-01 | 1.100E+00      | 8.156E-02 | 0.003   |
|         | 133.02    |              |     | -3.575E-03          | 5.295E-02 | 8.927E-02      | 7.740E-03 | -0.040  |
|         | 136.25    |              |     | 4.612E-02           | 3.760E-01 | 6.382E-01      | 5.586E-02 | 0.072   |
|         | 345.85    |              |     | 2.832E-02           | 1.761E-01 | 2.699E-01      | 3.547E-02 | 0.105   |
|         | 482.03    | *            |     | 2.483E-03           | 3.780E-02 | 6.336E-02      | 6.824E-03 | 0.039   |
| W-181   | 56.28     |              |     | 2.784E-02           | 2.557E-01 | 4.102E-01      | 2.986E-02 | 0.068   |
|         | 57.53     |              |     | -9.190E-02          | 1.397E-01 | 2.150E-01      | 1.549E-02 | -0.427  |
|         | 65.20     | *            |     | 1.332E-03           | 2.947E-01 | 4.282E-01      | 3.174E-02 | 0.003   |
| TA-182  | 67.75     |              |     | -2.281E-02          | 8.378E-02 | 1.308E-01      | 9.905E-03 | -0.174  |
|         | 100.10    |              |     | 3.413E-02           | 1.416E-01 | 2.451E-01      | 2.151E-02 | 0.139   |
|         | 152.43    |              |     | 1.116E-01           | 2.856E-01 | 4.872E-01      | 4.501E-02 | 0.229   |
|         | 222.10    |              |     | -1.685E-01          | 3.078E-01 | 4.890E-01      | 6.064E-02 | -0.345  |
|         | 1001.68   |              |     | 1.078E+00           | 2.014E+00 | 3.474E+00      | 3.261E-01 | 0.310   |
|         | 1121.28   | +            |     | 8.023E-01           | 2.787E-01 | 3.649E-01      | 3.109E-02 | 2.199   |
|         | 1189.05   |              |     | 8.651E-02           | 2.858E-01 | 4.816E-01      | 3.884E-02 | 0.180   |
|         | 1221.42   | *            |     | 6.706E-02           | 1.969E-01 | 3.311E-01      | 2.690E-02 | 0.203   |
|         | 1230.97   |              |     | -4.176E-02          | 4.804E-01 | 7.776E-01      | 6.329E-02 | -0.054  |
| RE-183  | 57.98     |              |     | -4.899E-03          | 1.354E-01 | 2.153E-01      | 1.545E-02 | -0.023  |
|         | 59.32     |              |     | -4.136E-02          | 8.304E-02 | 1.181E-01      | 8.403E-03 | -0.350  |
|         | 67.20     |              |     | -1.163E-01          | 1.679E-01 | 2.339E-01      | 1.763E-02 | -0.497  |
|         | 162.32    | *            |     | -3.398E-02          | 9.306E-02 | 1.529E-01      | 1.466E-02 | -0.222  |

## ---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| RE-184  | +         | 208.81       |     | 1.333E+00           | 1.815E+00 | 1.726E+00      | 2.024E-01 | 0.772   |
|         |           | 291.72       |     | -2.549E-02          | 9.823E-01 | 1.406E+00      | 2.131E-01 | -0.018  |
|         |           | 57.98        |     | -1.806E-02          | 4.991E-01 | 7.938E-01      | 5.698E-02 | -0.023  |
|         |           | 59.32        |     | -1.524E-01          | 3.060E-01 | 4.350E-01      | 3.096E-02 | -0.350  |
|         |           | 67.20        |     | -4.287E-01          | 6.188E-01 | 8.624E-01      | 6.498E-02 | -0.497  |
|         |           | 161.27       |     | 8.700E-02           | 3.028E-01 | 5.129E-01      | 4.897E-02 | 0.170   |
|         |           | 216.55       |     | -7.503E-02          | 2.338E-01 | 3.774E-01      | 4.573E-02 | -0.199  |
|         |           | 252.85       | *   | -3.787E-02          | 2.000E-01 | 3.212E-01      | 4.506E-02 | -0.118  |
|         |           | 318.01       |     | -9.229E-02          | 3.992E-01 | 6.217E-01      | 8.895E-02 | -0.148  |
|         |           | 792.07       |     | -8.436E-01          | 9.584E-01 | 1.138E+00      | 1.116E-01 | -0.741  |
| OS-185  |           | 903.28       |     | 3.741E-01           | 9.154E-01 | 1.590E+00      | 1.562E-01 | 0.235   |
|         |           | 920.93       |     | 2.976E-01           | 4.431E-01 | 7.835E-01      | 7.651E-02 | 0.380   |
|         |           | 59.72        |     | 2.325E-02           | 2.207E-01 | 3.257E-01      | 2.319E-02 | 0.071   |
|         |           | 61.14        |     | 3.188E-02           | 1.253E-01 | 1.861E-01      | 1.339E-02 | 0.171   |
|         |           | 69.30        |     | 6.115E-02           | 2.495E-01 | 3.676E-01      | 2.821E-02 | 0.166   |
|         |           | 592.07       |     | -1.001E+00          | 2.233E+00 | 3.514E+00      | 3.585E-01 | -0.285  |
|         |           | 646.12       | *   | -2.549E-02          | 3.775E-02 | 5.731E-02      | 5.532E-03 | -0.445  |
|         |           | 717.42       |     | -2.959E-01          | 8.093E-01 | 1.259E+00      | 1.215E-01 | -0.235  |
|         |           | 874.81       |     | 1.006E-01           | 5.394E-01 | 9.217E-01      | 9.083E-02 | 0.109   |
|         |           | 880.27       |     | 4.817E-02           | 6.750E-01 | 1.141E+00      | 1.125E-01 | 0.042   |
| RE-188  |           | 155.03       | *   | 1.442E-01           | 1.438E-01 | 2.506E-01      | 2.337E-02 | 0.575   |
|         |           | 477.96       |     | -1.972E+00          | 2.575E+00 | 4.010E+00      | 4.322E-01 | -0.492  |
|         |           | 633.10       |     | -1.190E+00          | 2.568E+00 | 4.009E+00      | 3.929E-01 | -0.297  |
| W-188   | +         | 63.58        |     | 5.404E+01           | 6.204E+01 | 7.098E+01      | 5.196E+00 | 0.761   |
|         |           | 227.08       |     | -5.756E+00          | 1.144E+01 | 1.819E+01      | 2.303E+00 | -0.316  |
| IR-192  | *         | 290.67       |     | 3.315E+00           | 7.421E+00 | 1.102E+01      | 1.675E+00 | 0.301   |
|         | +         | 295.96       |     | 1.017E+00           | 2.354E-01 | 2.750E-01      | 4.146E-02 | 3.699   |
|         |           | 308.46       |     | -1.789E-02          | 8.467E-02 | 1.336E-01      | 1.961E-02 | -0.134  |
|         | *         | 316.51       |     | -3.691E-02          | 3.329E-02 | 4.800E-02      | 6.899E-03 | -0.769  |
|         |           | 468.07       |     | -2.724E-03          | 6.476E-02 | 9.489E-02      | 1.071E-02 | -0.029  |
|         |           | 604.41       |     | -1.526E-01          | 4.572E-01 | 6.297E-01      | 8.839E-02 | -0.242  |
| AU-195  |           | 612.46       |     | 7.647E-01           | 6.852E-01 | 1.102E+00      | 1.227E-01 | 0.694   |
|         |           | 65.12        |     | 5.342E-02           | 1.340E-01 | 1.989E-01      | 1.474E-02 | 0.269   |
|         |           | 66.83        |     | -3.812E-02          | 7.683E-02 | 1.083E-01      | 8.135E-03 | -0.352  |
|         | +         | 75.70        |     | 1.324E+00           | 2.341E-01 | 3.540E-01      | 2.896E-02 | 3.740   |
|         | *         | 98.88        |     | 2.860E-01           | 1.757E-01 | 3.171E-01      | 2.797E-02 | 0.902   |
| TL-200  |           | 129.76       |     | 2.598E+00           | 2.403E+00 | 4.226E+00      | 3.632E-01 | 0.615   |
|         | *         | 367.94       |     | 4.180E-05           | 2.403E+00 | Half-Life      | too short |         |
|         |           | 579.30       |     | 1.718E-03           | 2.403E+00 | Half-Life      | too short |         |
|         |           | 828.27       |     | -8.488E-04          | 2.403E+00 | Half-Life      | too short |         |
| TL-201  |           | 1205.75      |     | -1.776E-03          | 2.403E+00 | Half-Life      | too short |         |
|         |           | 68.90        |     | 1.200E+00           | 3.589E+00 | 5.750E+00      | 4.397E-01 | 0.209   |
|         |           | 70.82        |     | 2.190E-01           | 2.246E+00 | 3.279E+00      | 2.553E-01 | 0.067   |
|         |           | 80.30        |     | 2.110E+00           | 3.908E+00 | 5.806E+00      | 5.005E-01 | 0.363   |
| TL-202  |           | 135.34       |     | -4.475E+00          | 2.003E+01 | 3.350E+01      | 2.924E+00 | -0.134  |
|         | *         | 167.43       |     | 3.444E-01           | 5.613E+00 | 9.396E+00      | 9.192E-01 | 0.037   |
|         |           | 68.90        |     | 1.103E-01           | 3.298E-01 | 5.284E-01      | 4.041E-02 | 0.209   |
|         |           | 70.82        |     | 2.007E-02           | 2.058E-01 | 3.005E-01      | 2.339E-02 | 0.067   |
|         |           | 80.30        |     | 1.934E-01           | 3.583E-01 | 5.322E-01      | 4.588E-02 | 0.363   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| HG-203  |           | 439.56       | *   | 7.982E-03           | 6.215E-02 | 1.053E-01      | 1.136E-02 | 0.076   |
|         |           | 70.83        |     | 8.442E-02           | 8.967E-01 | 1.309E+00      | 1.714E-01 | 0.065   |
|         |           | 72.87        |     | 4.395E-01           | 4.995E-01 | 8.037E-01      | 1.026E-01 | 0.547   |
|         |           | 82.60        |     | -7.510E-01          | 8.894E-01 | 1.317E+00      | 1.830E-01 | -0.570  |
| BI-207  |           | 279.20       | *   | 4.800E-02           | 3.715E-02 | 6.342E-02      | 9.906E-03 | 0.757   |
|         |           | 72.80        |     | 1.102E-01           | 1.456E-01 | 2.341E-01      | 1.859E-02 | 0.471   |
|         | +         | 74.97        |     | 7.346E-01           | 1.299E-01 | 1.933E-01      | 1.570E-02 | 3.800   |
|         |           | 84.90        |     | 1.006E-01           | 1.674E-01 | 2.476E-01      | 2.257E-02 | 0.406   |
| TL-207  |           | 569.67       |     | -2.006E-02          | 2.938E-02 | 4.545E-02      | 4.717E-03 | -0.441  |
|         |           | 1063.62      | *   | -1.344E-02          | 4.768E-02 | 7.641E-02      | 6.864E-03 | -0.176  |
|         |           | 1770.23      |     | -3.129E-01          | 5.434E-01 | 6.450E-01      | 5.309E-02 | -0.485  |
|         |           | 81.07        |     | -4.772E-02          | 1.794E-01 | 2.544E-01      | 2.213E-02 | -0.188  |
| PO-209  |           | 83.78        |     | 1.399E-01           | 1.101E-01 | 1.679E-01      | 1.509E-02 | 0.833   |
|         |           | 94.90        |     | 1.849E-01           | 1.901E-01 | 2.872E-01      | 2.587E-02 | 0.644   |
|         |           | 122.32       |     | 8.233E-01           | 1.378E+00 | 2.398E+00      | 2.181E-01 | 0.343   |
|         |           | 144.24       |     | 5.398E-01           | 5.875E-01 | 9.979E-01      | 9.943E-02 | 0.541   |
| BI-210  |           | 154.21       |     | 5.458E-01           | 3.433E-01 | 6.069E-01      | 6.131E-02 | 0.899   |
|         | +         | 269.46       |     | 5.392E-01           | 2.779E-01 | 3.234E-01      | 4.866E-02 | 1.667   |
|         |           | 323.87       | *   | 7.148E-01           | 6.727E-01 | 1.025E+00      | 2.144E-01 | 0.697   |
|         | +         | 338.28       |     | 7.055E+00           | 2.034E+00 | 2.363E+00      | 3.804E-01 | 2.985   |
| PB-210  |           | 445.03       |     | -5.109E-01          | 1.978E+00 | 3.254E+00      | 4.465E-01 | -0.157  |
|         |           | 260.50       |     | 9.253E-01           | 8.416E+00 | 1.375E+01      | 1.986E+00 | 0.067   |
|         |           | 262.80       |     | 3.766E+00           | 2.283E+01 | 3.740E+01      | 5.450E+00 | 0.101   |
|         |           | 896.60       | *   | -3.077E+00          | 6.520E+00 | 1.040E+01      | 1.024E+00 | -0.296  |
| PB-211  |           | 46.50        | *   | 1.268E+00           | 2.240E+00 | 3.703E+00      | 3.447E-01 | 0.342   |
|         |           | 46.50        | *   | 1.268E+00           | 2.240E+00 | 3.703E+00      | 3.447E-01 | 0.342   |
|         |           | 46.50        | *   | 1.268E+00           | 2.240E+00 | 3.703E+00      | 3.121E-01 | 0.342   |
|         |           | 404.84       | *   | 3.972E-01           | 9.122E-01 | 1.522E+00      | 9.587E-01 | 0.261   |
| BI-212  |           | 427.08       |     | 1.471E-01           | 1.791E+00 | 3.027E+00      | 1.891E+00 | 0.049   |
|         |           | 831.96       |     | 1.463E-01           | 1.264E+00 | 2.033E+00      | 1.278E+00 | 0.072   |
|         | +         | 727.18       | *   | 9.371E-01           | 4.238E-01 | 6.691E-01      | 7.313E-02 | 1.401   |
|         |           | 785.46       |     | 7.704E-01           | 1.819E+00 | 3.024E+00      | 2.962E-01 | 0.255   |
| PO-215  |           | 1620.62      |     | -2.216E-01          | 1.124E+00 | 1.808E+00      | 1.518E-01 | -0.123  |
|         |           | 81.07        |     | -4.772E-02          | 1.794E-01 | 2.544E-01      | 2.213E-02 | -0.188  |
|         |           | 83.78        |     | 1.399E-01           | 1.101E-01 | 1.679E-01      | 1.509E-02 | 0.833   |
|         |           | 94.90        |     | 1.849E-01           | 1.901E-01 | 2.872E-01      | 2.587E-02 | 0.644   |
| RN-219  |           | 122.32       |     | 8.233E-01           | 1.378E+00 | 2.398E+00      | 2.181E-01 | 0.343   |
|         |           | 144.24       |     | 5.398E-01           | 5.875E-01 | 9.979E-01      | 9.943E-02 | 0.541   |
|         |           | 154.21       |     | 5.458E-01           | 3.433E-01 | 6.069E-01      | 6.131E-02 | 0.899   |
|         | +         | 269.46       |     | 5.392E-01           | 2.779E-01 | 3.234E-01      | 4.866E-02 | 1.667   |
| RA-223  |           | 323.87       | *   | 7.148E-01           | 6.727E-01 | 1.025E+00      | 2.144E-01 | 0.697   |
|         | +         | 338.28       |     | 7.055E+00           | 2.034E+00 | 2.363E+00      | 3.804E-01 | 2.985   |
|         |           | 445.03       |     | -5.109E-01          | 1.978E+00 | 3.254E+00      | 4.465E-01 | -0.157  |
|         | +         | 271.23       |     | 6.918E-01           | 3.585E-01 | 4.336E-01      | 6.966E-02 | 1.596   |
| RN-220  |           | 401.81       | *   | 3.297E-02           | 3.756E-01 | 6.383E-01      | 1.041E-01 | 0.052   |
|         |           | 549.76       | *   | 3.638E+00           | 2.303E+01 | 3.854E+01      | 4.049E+00 | 0.094   |
|         |           | 81.07        |     | -4.772E-02          | 1.794E-01 | 2.544E-01      | 2.213E-02 | -0.188  |
|         |           | 83.78        |     | 1.399E-01           | 1.101E-01 | 1.679E-01      | 1.509E-02 | 0.833   |
| RA-223  |           | 94.90        |     | 1.849E-01           | 1.901E-01 | 2.872E-01      | 2.587E-02 | 0.644   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| AC-227  |           | 122.32       |     | 8.233E-01           | 1.378E+00 | 2.398E+00      | 2.181E-01 | 0.343   |
|         |           | 144.24       |     | 5.398E-01           | 5.875E-01 | 9.979E-01      | 9.943E-02 | 0.541   |
|         |           | 154.21       |     | 5.458E-01           | 3.433E-01 | 6.069E-01      | 6.131E-02 | 0.899   |
|         | +         | 269.46       |     | 5.392E-01           | 2.779E-01 | 3.234E-01      | 4.866E-02 | 1.667   |
|         |           | 323.87       | *   | 7.148E-01           | 6.727E-01 | 1.025E+00      | 2.144E-01 | 0.697   |
|         | +         | 338.28       |     | 7.055E+00           | 2.034E+00 | 2.363E+00      | 3.804E-01 | 2.985   |
|         |           | 445.03       |     | -5.109E-01          | 1.978E+00 | 3.254E+00      | 4.465E-01 | -0.157  |
|         |           | 79.80        |     | 2.339E-01           | 1.344E+00 | 1.957E+00      | 4.204E-01 | 0.119   |
|         |           | 236.00       |     | 3.953E-02           | 2.215E-01 | 3.271E-01      | 5.151E-02 | 0.121   |
|         |           | 256.20       | *   | -3.102E-02          | 3.360E-01 | 5.426E-01      | 1.034E-01 | -0.057  |
|         |           | 286.10       |     | -4.794E-01          | 1.383E+00 | 2.174E+00      | 3.976E-01 | -0.220  |
|         | +         | 299.80       |     | 4.371E+00           | 2.025E+00 | 2.420E+00      | 5.159E-01 | 1.806   |
| TH-227  |           | 304.40       |     | 1.310E-01           | 1.751E+00 | 2.519E+00      | 5.542E-01 | 0.052   |
|         |           | 334.20       |     | 1.430E+00           | 2.259E+00 | 3.363E+00      | 7.438E-01 | 0.425   |
|         |           | 79.80        |     | 2.339E-01           | 1.344E+00 | 1.957E+00      | 4.258E-01 | 0.119   |
|         | +         | 94.00        |     | 6.492E+00           | 2.948E+00 | 2.993E+00      | 6.571E-01 | 2.169   |
|         |           | 236.00       |     | 3.953E-02           | 2.215E-01 | 3.271E-01      | 4.860E-02 | 0.121   |
|         |           | 256.20       | *   | -3.102E-02          | 3.360E-01 | 5.426E-01      | 1.156E-01 | -0.057  |
|         |           | 286.10       |     | -4.794E-01          | 1.463E+00 | 2.174E+00      | 2.199E+00 | -0.220  |
|         | +         | 299.80       |     | 4.371E+00           | 2.025E+00 | 2.420E+00      | 5.159E-01 | 1.806   |
|         |           | 304.40       |     | 1.310E-01           | 1.751E+00 | 2.519E+00      | 5.542E-01 | 0.052   |
|         |           | 334.20       |     | 1.430E+00           | 2.259E+00 | 3.363E+00      | 7.438E-01 | 0.425   |
|         |           | 85.43        |     | 1.047E-01           | 1.627E-01 | 2.414E-01      | 2.216E-02 | 0.434   |
|         | +         | 88.47        |     | 4.061E-01           | 1.258E-01 | 1.530E-01      | 1.445E-02 | 2.655   |
| TH-229  |           | 100.00       |     | 1.133E-01           | 1.454E-01 | 2.564E-01      | 2.251E-02 | 0.442   |
|         |           | 193.63       | *   | 3.640E-02           | 4.298E-01 | 7.142E-01      | 7.842E-02 | 0.051   |
|         |           | 210.97       |     | 8.551E-01           | 7.456E-01 | 1.168E+00      | 1.383E-01 | 0.732   |
|         |           | 283.67       | *   | -9.911E-01          | 1.408E+00 | 2.143E+00      | 4.247E-01 | -0.462  |
|         | +         | 301.29       |     | 1.749E+00           | 7.799E-01 | 9.674E-01      | 1.667E-01 | 1.807   |
|         |           | 81.07        |     | -4.772E-02          | 1.794E-01 | 2.544E-01      | 2.213E-02 | -0.188  |
|         |           | 83.78        |     | 1.399E-01           | 1.101E-01 | 1.679E-01      | 1.509E-02 | 0.833   |
|         |           | 94.90        |     | 1.849E-01           | 1.901E-01 | 2.872E-01      | 2.587E-02 | 0.644   |
|         |           | 122.32       |     | 8.233E-01           | 1.378E+00 | 2.398E+00      | 2.181E-01 | 0.343   |
|         |           | 144.24       |     | 5.398E-01           | 5.875E-01 | 9.979E-01      | 9.943E-02 | 0.541   |
|         |           | 154.21       |     | 5.458E-01           | 3.433E-01 | 6.069E-01      | 6.131E-02 | 0.899   |
|         | +         | 269.46       |     | 5.392E-01           | 2.779E-01 | 3.234E-01      | 4.866E-02 | 1.667   |
| U-231   |           | 323.87       | *   | 7.148E-01           | 6.727E-01 | 1.025E+00      | 2.144E-01 | 0.697   |
|         | +         | 338.28       |     | 7.055E+00           | 2.034E+00 | 2.363E+00      | 3.804E-01 | 2.985   |
|         |           | 445.03       |     | -5.109E-01          | 1.978E+00 | 3.254E+00      | 4.465E-01 | -0.157  |
|         |           | 84.21        |     | 6.239E+00           | 4.574E+00 | 7.003E+00      | 6.330E-01 | 0.891   |
|         | +         | 92.29        |     | 6.279E+00           | 2.560E+00 | 3.317E+00      | 3.039E-01 | 1.893   |
|         |           | 95.87        | *   | -2.881E-01          | 8.914E-01 | 1.242E+00      | 1.113E-01 | -0.232  |
|         |           | 108.00       |     | -9.072E-01          | 1.615E+00 | 2.695E+00      | 2.308E-01 | -0.337  |
|         | +         | 75.28        |     | 2.144E+01           | 4.667E+00 | 5.646E+00      | 8.517E-01 | 3.797   |
|         | +         | 86.59        |     | 5.823E+00           | 2.332E+00 | 2.490E+00      | 6.736E-01 | 2.339   |
|         | +         | 300.12       |     | 1.219E+00           | 5.532E-01 | 6.833E-01      | 1.313E-01 | 1.783   |
|         |           | 311.98       | *   | 3.701E-02           | 5.941E-02 | 9.878E-02      | 1.449E-02 | 0.375   |
|         |           | 340.50       |     | 1.071E+00           | 6.611E-01 | 9.829E-01      | 2.550E-01 | 1.090   |
| PA-233  |           | 398.62       |     | 1.785E-01           | 1.802E+00 | 3.066E+00      | 8.393E-01 | 0.058   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|---------------------|-----------|----------------|-----------|---------|
| PA-234  | +         | 415.76       |              | -8.348E-01          | 1.547E+00 | 2.497E+00      | 5.615E-01 | -0.334  |
|         |           | 63.00        |              | 1.569E+00           | 1.813E+00 | 2.093E+00      | 3.098E-01 | 0.750   |
|         |           | 94.67        |              | 2.221E-01           | 1.416E-01 | 2.176E-01      | 2.760E-02 | 1.021   |
|         |           | 98.44        |              | 7.646E-02           | 8.269E-02 | 1.266E-01      | 7.068E-02 | 0.604   |
|         |           | 99.86        |              | 3.300E-01           | 3.704E-01 | 6.551E-01      | 5.754E-02 | 0.504   |
|         |           | 111.00       |              | -1.393E-01          | 1.456E-01 | 2.341E-01      | 2.813E-02 | -0.595  |
|         |           | 131.20       |              | -2.544E-02          | 8.881E-02 | 1.485E-01      | 1.281E-02 | -0.171  |
|         |           | 152.70       |              | 1.046E-01           | 2.805E-01 | 4.772E-01      | 8.291E-02 | 0.219   |
|         |           | 186.00       |              | 5.292E+00           | 2.497E+00 | 2.441E+00      | 7.768E-01 | 2.168   |
|         |           | 226.40       |              | -3.845E-02          | 3.608E-01 | 5.876E-01      | 9.463E-02 | -0.065  |
|         |           | 227.20       |              | -8.790E-02          | 3.800E-01 | 6.142E-01      | 7.780E-02 | -0.143  |
|         |           | 248.90       |              | 4.172E-02           | 6.665E-01 | 1.089E+00      | 2.710E-01 | 0.038   |
|         |           | 293.70       |              | 2.981E+00           | 1.031E+00 | 1.426E+00      | 3.037E-01 | 2.089   |
|         |           | 369.80       |              | -4.679E-01          | 7.939E-01 | 1.183E+00      | 2.756E-01 | -0.395  |
|         |           | 568.70       |              | -3.735E-01          | 9.037E-01 | 1.430E+00      | 1.485E-01 | -0.261  |
|         | 569.50    |              | -1.884E-01   | 2.600E-01           | 4.005E-01 | 4.156E-02      | -0.470    |         |
|         | 574.00    |              | -2.864E-01   | 1.422E+00           | 2.303E+00 | 2.382E-01      | -0.124    |         |
|         | 699.00    |              | 2.568E-01    | 6.967E-01           | 1.161E+00 | 2.268E-01      | 0.221     |         |
|         | 706.10    |              | -9.368E-01   | 1.159E+00           | 1.618E+00 | 7.249E-01      | -0.579    |         |
|         | 733.00    |              | 9.138E-03    | 3.917E-01           | 5.535E-01 | 1.253E-01      | 0.017     |         |
|         | 742.81    |              | 5.472E-01    | 1.268E+00           | 2.044E+00 | 1.377E+00      | 0.268     |         |
|         | 796.30    |              | 2.175E+00    | 1.407E+00           | 1.801E+00 | 4.944E-01      | 1.208     |         |
|         | 805.60    |              | -9.796E-02   | 1.019E+00           | 1.615E+00 | 5.008E-01      | -0.061    |         |
|         | 819.60    |              | 8.485E-01    | 1.107E+00           | 1.845E+00 | 7.069E-01      | 0.460     |         |
|         | 826.30    |              | -1.368E-01   | 7.346E-01           | 1.143E+00 | 5.143E-01      | -0.120    |         |
|         | 831.60    |              | 7.583E-02    | 6.530E-01           | 1.052E+00 | 3.181E-01      | 0.072     |         |
|         | 876.40    |              | -2.938E-01   | 8.129E-01           | 1.220E+00 | 1.255E+00      | -0.241    |         |
|         | 880.51    |              | 1.109E-02    | 2.436E-01           | 4.109E-01 | 4.049E-02      | 0.027     |         |
|         | 883.24    |              | -1.259E-01   | 2.711E-01           | 4.115E-01 | 2.773E-01      | -0.306    |         |
|         | 899.00    |              | -8.936E-04   | 7.379E-01           | 1.237E+00 | 5.438E-01      | -0.001    |         |
| 925.00  |           | 1.029E-01    | 1.088E+00    | 1.836E+00           | 1.790E-01 | 0.056          |           |         |
| 926.50  |           | -1.601E-02   | 1.522E-01    | 2.516E-01           | 6.463E-02 | -0.064         |           |         |
| 946.00  | *         | -1.710E-01   | 2.767E-01    | 4.297E-01           | 8.279E-02 | -0.398         |           |         |
| 949.00  |           | 1.640E-01    | 4.050E-01    | 7.017E-01           | 6.773E-02 | 0.234          |           |         |
| 980.50  |           | -8.436E-02   | 6.537E-01    | 1.073E+00           | 1.020E-01 | -0.079         |           |         |
| 1394.10 |           | -7.984E-02   | 9.148E-01    | 1.449E+00           | 9.426E-01 | -0.055         |           |         |
| PA-234M |           | 766.42       |              | 3.260E+00           | 1.074E+01 | 1.753E+01      | 8.929E+00 | 0.186   |
|         |           | 1001.03      | *            | 1.347E+00           | 4.580E+00 | 7.745E+00      | 8.238E-01 | 0.174   |
| U-235   | +         | 89.95        |              | 2.751E+00           | 1.224E+00 | 1.530E+00      | 4.753E-01 | 1.798   |
|         | +         | 93.35        |              | 2.020E+00           | 9.840E-01 | 1.072E+00      | 3.020E-01 | 1.884   |
|         |           | 105.00       |              | 8.672E-01           | 8.922E-01 | 1.518E+00      | 4.531E-01 | 0.571   |
|         |           | 143.76       | *            | 9.984E-02           | 1.803E-01 | 3.015E-01      | 5.330E-02 | 0.331   |
|         |           | 163.35       |              | 5.155E-02           | 3.932E-01 | 6.611E-01      | 1.293E-01 | 0.078   |
|         | +         | 185.71       |              | 1.960E-01           | 7.138E-02 | 9.040E-02      | 9.587E-03 | 2.168   |
|         |           | 205.31       |              | 2.651E-01           | 4.861E-01 | 7.391E-01      | 1.520E-01 | 0.359   |
| NP-236  |           | 94.67        |              | 1.700E-01           | 1.064E-01 | 1.653E-01      | 1.491E-02 | 1.028   |
|         |           | 98.44        |              | 5.776E-02           | 5.378E-02 | 9.571E-02      | 8.461E-03 | 0.604   |
|         |           | 111.00       |              | -1.054E-01          | 1.097E-01 | 1.771E-01      | 1.508E-02 | -0.595  |
|         |           | 160.31       | *            | 4.054E-02           | 6.718E-02 | 1.153E-01      | 1.097E-02 | 0.352   |



---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| NP-239  |           | 99.55        |     | 1.419E-01           | 1.252E-01 | 2.230E-01      | 1.961E-02 | 0.637   |
|         |           | 117.00       | *   | 4.657E-02           | 1.587E-01 | 2.733E-01      | 2.313E-02 | 0.170   |
|         | +         | 209.75       |     | 1.053E+00           | 1.433E+00 | 1.320E+00      | 1.553E-01 | 0.798   |
|         |           | 228.18       |     | 5.810E-02           | 2.017E-01 | 3.351E-01      | 4.262E-02 | 0.173   |
|         |           | 277.60       |     | 1.453E-01           | 1.676E-01 | 2.821E-01      | 4.342E-02 | 0.515   |
|         |           | 334.30       |     | 6.775E-01           | 1.263E+00 | 1.878E+00      | 2.565E-01 | 0.361   |
| AM-241  |           | 59.54        | *   | -3.019E-02          | 1.175E-01 | 1.697E-01      | 1.333E-02 | -0.178  |
| CM-243  |           | 99.55        |     | 1.461E-01           | 1.289E-01 | 2.294E-01      | 2.018E-02 | 0.637   |
|         |           | 103.76       | *   | -1.459E-02          | 7.658E-02 | 1.301E-01      | 1.127E-02 | -0.112  |
|         |           | 117.00       |     | 4.791E-02           | 1.633E-01 | 2.812E-01      | 2.379E-02 | 0.170   |
|         | +         | 209.75       |     | 1.038E+00           | 1.413E+00 | 1.301E+00      | 1.531E-01 | 0.798   |
|         |           | 228.18       |     | 5.871E-02           | 2.038E-01 | 3.386E-01      | 4.307E-02 | 0.173   |
|         |           | 277.60       |     | 1.465E-01           | 1.690E-01 | 2.844E-01      | 4.377E-02 | 0.515   |
| AM-246  |           | 798.80       |     | -6.490E-02          | 1.614E-01 | 2.128E-01      | 2.088E-02 | -0.305  |
|         |           | 1036.00      |     | 4.759E-02           | 2.913E-01 | 4.901E-01      | 4.496E-02 | 0.097   |
|         |           | 1062.04      |     | 2.636E-02           | 2.035E-01 | 3.409E-01      | 3.066E-02 | 0.077   |
|         |           | 1078.86      | *   | 7.867E-02           | 1.357E-01 | 2.387E-01      | 2.117E-02 | 0.330   |
| CM-247  |           | 278.00       |     | 9.433E-01           | 7.050E-01 | 1.202E+00      | 1.853E-01 | 0.785   |
|         |           | 287.40       |     | 1.520E-01           | 1.137E+00 | 1.847E+00      | 2.822E-01 | 0.082   |
|         |           | 402.60       | *   | -4.517E-03          | 3.415E-02 | 5.723E-02      | 6.125E-03 | -0.079  |
| CF-249  |           | 252.85       |     | -1.422E-01          | 7.507E-01 | 1.206E+00      | 1.692E-01 | -0.118  |
|         |           | 333.44       |     | 1.652E-01           | 1.718E-01 | 2.628E-01      | 3.599E-02 | 0.629   |
|         |           | 387.95       | *   | -4.089E-03          | 3.447E-02 | 5.795E-02      | 6.310E-03 | -0.071  |
| CF-251  |           | 176.60       | *   | 2.341E-03           | 1.082E-01 | 1.802E-01      | 1.835E-02 | 0.013   |
|         |           | 227.00       |     | -1.671E-01          | 3.439E-01 | 5.476E-01      | 6.930E-02 | -0.305  |
|         |           | 285.00       |     | 2.702E-01           | 1.524E+00 | 2.486E+00      | 3.814E-01 | 0.109   |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630006      *
* Acquisition date   : 23-JAN-2010 11:47:02 Detector SN# :                  *
* Detector ID        : GAM11 Sensitivity      : 5.000                      *
* Geometry           : CAN Energy tolerance: 1.500                      *
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000           *
* Elapsed real time  : 0 02:00:01.68 Half life ratio : 8.000             *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G244630006 Analyst initials: MXR1                 *
* Batch Number       : 941639 Sample Quantity : 1.2306E+02 GRAM          *
* Recovery           : 1.00000 Carrier Weight : 0.00000                  *
*****
*
*                                     QC DATA                                *
*
* Standard Weight    : 0.00000                                             *
* CALIB. DATE/TIME   : 18-NOV-2009 15:33:22 MS Isotope :                  *
* MSD DPM             : 0.000 MSD Isotope :                               *
* LCS DPM             : 0.000 LCS Isotope :                               *
* LCSD DPM            : 0.000 LCSD Isotope :                              *
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act error | MDA<br>(pCi/GRAM ) |           |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 2.862E+01               | 3.036E+00 | 4.395E-01          | 0.000E+00 |
| CD-109  | 3.026E+00               | 9.183E-01 | 9.377E-01          | 0.000E+00 |
| SN-126  | 2.975E-01               | 9.028E-02 | 9.248E-02          | 0.000E+00 |
| BA-137M | 1.158E-01               | 7.098E-02 | 5.239E-02          | 0.000E+00 |
| CS-137  | 1.225E-01               | 7.503E-02 | 5.538E-02          | 0.000E+00 |
| TL-208  | 5.009E-01               | 8.867E-02 | 5.760E-02          | 0.000E+00 |
| BI-211  | 3.474E+00               | 6.303E-01 | 2.865E-01          | 0.000E+00 |
| PB-212  | 1.645E+00               | 2.507E-01 | 8.398E-02          | 0.000E+00 |
| PO-212  | 1.645E+00               | 2.507E-01 | 8.398E-02          | 0.000E+00 |
| BI-214  | 1.069E+00               | 1.767E-01 | 9.477E-02          | 0.000E+00 |
| PB-214  | 1.209E+00               | 2.278E-01 | 9.987E-02          | 0.000E+00 |
| PO-214  | 1.209E+00               | 2.278E-01 | 9.987E-02          | 0.000E+00 |
| PO-216  | 1.645E+00               | 2.507E-01 | 8.398E-02          | 0.000E+00 |
| PO-218  | 1.209E+00               | 2.278E-01 | 9.987E-02          | 0.000E+00 |
| RA-224  | 4.516E+00               | 1.284E+00 | 9.559E-01          | 0.000E+00 |
| RA-226  | 1.069E+00               | 1.767E-01 | 9.477E-02          | 0.000E+00 |
| AC-228  | 1.699E+00               | 3.405E-01 | 1.911E-01          | 0.000E+00 |
| RA-228  | 1.699E+00               | 3.405E-01 | 1.911E-01          | 0.000E+00 |
| TH-228  | 1.670E+00               | 2.545E-01 | 8.524E-02          | 0.000E+00 |
| TH-230  | 1.069E+00               | 1.767E-01 | 9.476E-02          | 0.000E+00 |
| TH-232  | 1.699E+00               | 3.405E-01 | 1.911E-01          | 0.000E+00 |
| TH-234  | 1.346E+00               | 1.529E+00 | 1.557E+00          | 0.000E+00 |
| U-234   | 1.069E+00               | 1.767E-01 | 9.476E-02          | 0.000E+00 |
| NP-237  | 8.735E-01               | 3.186E-01 | 3.469E-01          | 0.000E+00 |
| U-238   | 1.346E+00               | 1.529E+00 | 1.557E+00          | 0.000E+00 |
| AM-243  | 4.093E-01               | 7.092E-02 | 7.094E-02          | 0.000E+00 |
| ANH-511 | 1.095E-01               | 5.962E-02 | 3.987E-02          | 0.000E+00 |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L. Act error<br>) Ided | MDA<br>(pCi/GRAM ) |
|---------|-------------------------------------|--------------------------|--------------------|
|---------|-------------------------------------|--------------------------|--------------------|

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| BE-7    | -9.983E-02 | 2.574E-01 | 4.299E-01 | 0.000E+00 | NOT IDENT. |
| NA-22   | 3.572E-02  | 3.956E-02 | 7.196E-02 | 0.000E+00 | NOT IDENT. |
| NA-24   | 0.000E+00  | 5.181E+05 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| AL-26   | 1.191E-02  | 2.887E-02 | 5.198E-02 | 0.000E+00 | NOT IDENT. |
| TI-44   | 0.000E+00  | 4.873E-02 | 6.011E-02 | 0.000E+00 | FAIL ABUN  |
| SC-46   | 1.440E-03  | 3.888E-02 | 6.711E-02 | 0.000E+00 | FAIL ABUN  |
| V-48    | -4.937E-03 | 6.138E-02 | 1.037E-01 | 0.000E+00 | NOT IDENT. |
| CR-51   | -5.871E-02 | 3.275E-01 | 5.374E-01 | 0.000E+00 | NOT IDENT. |
| MN-52   | -2.240E-02 | 1.894E-01 | 3.039E-01 | 0.000E+00 | NOT IDENT. |
| MN-54   | 9.317E-03  | 3.692E-02 | 6.510E-02 | 0.000E+00 | NOT IDENT. |
| CO-56   | 1.562E-02  | 3.470E-02 | 6.230E-02 | 0.000E+00 | NOT IDENT. |
| CO-57   | 1.715E-02  | 1.952E-02 | 3.610E-02 | 0.000E+00 | NOT IDENT. |
| CO-58   | -1.513E-03 | 3.713E-02 | 6.033E-02 | 0.000E+00 | NOT IDENT. |
| FE-59   | -8.272E-03 | 8.780E-02 | 1.467E-01 | 0.000E+00 | NOT IDENT. |
| CO-60   | -4.328E-03 | 3.877E-02 | 6.318E-02 | 0.000E+00 | NOT IDENT. |
| ZN-65   | 3.469E-02  | 1.022E-01 | 1.552E-01 | 0.000E+00 | NOT IDENT. |
| GE-68   | 1.376E+00  | 1.091E+00 | 2.063E+00 | 0.000E+00 | NOT IDENT. |
| AS-73   | 1.339E-02  | 5.460E-01 | 9.297E-01 | 0.000E+00 | NOT IDENT. |
| AS-74   | 2.409E-04  | 8.279E-02 | 1.401E-01 | 0.000E+00 | NOT IDENT. |
| SE-75   | 1.789E-02  | 3.577E-02 | 6.221E-02 | 0.000E+00 | NOT IDENT. |
| BR-77   | 4.194E+00  | 8.419E+00 | 1.498E+01 | 0.000E+00 | FAIL ABUN  |
| SR-82   | -1.422E-01 | 3.191E-01 | 4.999E-01 | 0.000E+00 | NOT IDENT. |
| RB-83   | 4.351E-02  | 5.695E-02 | 1.033E-01 | 0.000E+00 | NOT IDENT. |
| RB-84   | -3.355E-02 | 5.984E-02 | 9.716E-02 | 0.000E+00 | NOT IDENT. |
| KR-85   | 0.000E+00  | 6.792E+00 | 1.181E+01 | 0.000E+00 | NOT IDENT. |
| SR-85   | 0.000E+00  | 3.478E-02 | 6.050E-02 | 0.000E+00 | NOT IDENT. |
| RB-86   | 3.649E-01  | 6.953E-01 | 1.236E+00 | 0.000E+00 | NOT IDENT. |
| Y-88    | 6.825E-03  | 3.354E-02 | 5.813E-02 | 0.000E+00 | NOT IDENT. |
| ZR-88   | -1.250E-02 | 2.728E-02 | 4.645E-02 | 0.000E+00 | NOT IDENT. |
| Y-91    | -1.522E+01 | 1.855E+01 | 2.854E+01 | 0.000E+00 | NOT IDENT. |
| NB-94   | -8.178E-03 | 3.267E-02 | 5.325E-02 | 0.000E+00 | NOT IDENT. |
| NB-95   | 4.298E-03  | 3.853E-02 | 6.428E-02 | 0.000E+00 | NOT IDENT. |
| NB-95M  | 2.043E-02  | 1.163E-01 | 1.793E-01 | 0.000E+00 | NOT IDENT. |
| ZR-95   | 2.784E-02  | 6.442E-02 | 1.108E-01 | 0.000E+00 | NOT IDENT. |
| NB-97   | 0.000E+00  | 9.125E+04 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| ZR-97   | 0.000E+00  | 1.385E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| MO-99   | 1.387E+00  | 9.607E+00 | 1.615E+01 | 0.000E+00 | NOT IDENT. |
| TC-99M  | 0.000E+00  | 2.324E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | 1.161E-02  | 2.814E-02 | 4.858E-02 | 0.000E+00 | NOT IDENT. |
| RH-102  | -1.833E-02 | 2.357E-02 | 3.796E-02 | 0.000E+00 | NOT IDENT. |
| RU-103  | 1.502E-02  | 3.555E-02 | 6.296E-02 | 0.000E+00 | FAIL ABUN  |
| RH-106  | 5.101E-02  | 2.693E-01 | 4.616E-01 | 0.000E+00 | FAIL ABUN  |
| RU-106  | 5.101E-02  | 2.693E-01 | 4.616E-01 | 0.000E+00 | FAIL ABUN  |
| AG-108M | -1.521E-02 | 2.873E-02 | 4.808E-02 | 0.000E+00 | NOT IDENT. |
| AG-110M | 9.413E-04  | 3.693E-02 | 5.434E-02 | 0.000E+00 | NOT IDENT. |
| IN-111  | 2.913E-01  | 9.247E-01 | 1.438E+00 | 0.000E+00 | NOT IDENT. |
| IN-113M | 1.390E-02  | 3.863E-02 | 6.927E-02 | 0.000E+00 | NOT IDENT. |
| SN-113  | 1.390E-02  | 3.863E-02 | 6.927E-02 | 0.000E+00 | NOT IDENT. |
| IN-114M | -7.215E-02 | 1.588E-01 | 2.557E-01 | 0.000E+00 | NOT IDENT. |
| CD-115  | 6.656E+00  | 9.446E+00 | 1.698E+01 | 0.000E+00 | NOT IDENT. |
| SN-117M | 6.771E-03  | 4.471E-02 | 7.906E-02 | 0.000E+00 | NOT IDENT. |
| SB-122  | 1.605E-01  | 1.612E+00 | 2.765E+00 | 0.000E+00 | NOT IDENT. |
| I-123   | 0.000E+00  | 4.062E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TE-123M | 1.021E-02  | 2.352E-02 | 4.207E-02 | 0.000E+00 | NOT IDENT. |
| I-124   | -3.392E-01 | 5.814E-01 | 9.336E-01 | 0.000E+00 | FAIL ABUN  |
| SB-124  | 1.414E-02  | 7.288E-02 | 1.269E-01 | 0.000E+00 | FAIL ABUN  |
| SB-125  | -1.521E-03 | 7.966E-02 | 1.386E-01 | 0.000E+00 | FAIL ABUN  |
| TE-125M | 4.581E+00  | 6.922E+00 | 1.277E+01 | 0.000E+00 | NOT IDENT. |
| I-126   | -3.553E-02 | 1.812E-01 | 2.588E-01 | 0.000E+00 | NOT IDENT. |
| SB-126  | -2.880E-02 | 1.245E-01 | 2.021E-01 | 0.000E+00 | FAIL ABUN  |
| SB-127  | 1.323E-02  | 1.152E+00 | 1.925E+00 | 0.000E+00 | NOT IDENT. |
| XE-127  | 1.778E-02  | 3.865E-02 | 6.812E-02 | 0.000E+00 | NOT IDENT. |
| I-131   | 3.264E-02  | 9.747E-02 | 1.644E-01 | 0.000E+00 | NOT IDENT. |
| TE-132  | 1.708E-01  | 5.887E-01 | 1.020E+00 | 0.000E+00 | NOT IDENT. |
| BA-133  | 1.329E-02  | 4.250E-02 | 6.405E-02 | 0.000E+00 | NOT IDENT. |
| I-133   | 0.000E+00  | 4.951E+03 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-134  | 0.000E+00  | 6.514E-02 | 9.217E-02 | 0.000E+00 | FAIL ABUN  |
| CS-135  | 7.891E-02  | 1.411E-01 | 2.216E-01 | 0.000E+00 | NOT IDENT. |
| I-135   | 0.000E+00  | 4.277E+15 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-136  | 6.850E-02  | 9.716E-02 | 1.755E-01 | 0.000E+00 | FAIL ABUN  |
| CE-139  | 2.494E-03  | 2.403E-02 | 4.228E-02 | 0.000E+00 | NOT IDENT. |
| BA-140  | 2.798E-02  | 2.234E-01 | 3.852E-01 | 0.000E+00 | NOT IDENT. |
| LA-140  | -5.061E-02 | 7.610E-02 | 1.153E-01 | 0.000E+00 | FAIL ABUN  |
| CE-141  | 1.162E-02  | 5.188E-02 | 9.011E-02 | 0.000E+00 | NOT IDENT. |
| CE-143  | 0.000E+00  | 1.454E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CE-144  | -6.480E-02 | 1.635E-01 | 2.851E-01 | 0.000E+00 | NOT IDENT. |
| PM-144  | -3.527E-02 | 3.581E-02 | 5.069E-02 | 0.000E+00 | NOT IDENT. |
| PR-144  | -2.390E+00 | 2.426E+00 | 3.435E+00 | 0.000E+00 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PM-146  | 4.212E-02  | 3.800E-02 | 7.030E-02 | 0.000E+00 | NOT IDENT. |
| ND-147  | -1.990E-01 | 4.909E-01 | 8.101E-01 | 0.000E+00 | FAIL ABUN  |
| PM-149  | -4.485E+01 | 7.988E+01 | 1.285E+02 | 0.000E+00 | NOT IDENT. |
| EU-152  | 1.015E-02  | 9.264E-02 | 1.375E-01 | 0.000E+00 | FAIL ABUN  |
| GD-153  | -3.514E-02 | 6.541E-02 | 1.039E-01 | 0.000E+00 | NOT IDENT. |
| EU-154  | 9.751E-02  | 1.105E-01 | 2.002E-01 | 0.000E+00 | NOT IDENT. |
| EU-155  | 6.593E-02  | 8.525E-02 | 1.580E-01 | 0.000E+00 | FAIL ABUN  |
| TB-160  | 1.927E-02  | 1.185E-01 | 2.073E-01 | 0.000E+00 | FAIL ABUN  |
| HO-166M | 7.003E-03  | 6.081E-02 | 1.021E-01 | 0.000E+00 | FAIL ABUN  |
| TM-171  | -1.236E+01 | 2.275E+01 | 3.394E+01 | 0.000E+00 | NOT IDENT. |
| LU-176  | 1.148E-02  | 2.091E-02 | 3.612E-02 | 0.000E+00 | FAIL ABUN  |
| LU-177  | 1.465E+00  | 1.955E+00 | 1.912E+00 | 0.000E+00 | FAIL ABUN  |
| LU-177M | -2.647E-02 | 1.673E-01 | 2.895E-01 | 0.000E+00 | NOT IDENT. |
| HF-181  | 2.483E-03  | 3.704E-02 | 6.421E-02 | 0.000E+00 | NOT IDENT. |
| W-181   | 1.332E-03  | 2.889E-01 | 4.452E-01 | 0.000E+00 | NOT IDENT. |
| TA-182  | 6.706E-02  | 1.930E-01 | 3.314E-01 | 0.000E+00 | FAIL ABUN  |
| RE-183  | -3.398E-02 | 9.120E-02 | 1.571E-01 | 0.000E+00 | FAIL ABUN  |
| RE-184  | -3.787E-02 | 1.960E-01 | 3.282E-01 | 0.000E+00 | NOT IDENT. |
| OS-185  | -2.549E-02 | 3.699E-02 | 5.785E-02 | 0.000E+00 | NOT IDENT. |
| RE-188  | 1.442E-01  | 1.409E-01 | 2.577E-01 | 0.000E+00 | NOT IDENT. |
| W-188   | 3.315E+00  | 7.272E+00 | 1.124E+01 | 0.000E+00 | FAIL ABUN  |
| IR-192  | -3.691E-02 | 3.262E-02 | 4.890E-02 | 0.000E+00 | FAIL ABUN  |
| AU-195  | 2.860E-01  | 1.722E-01 | 3.279E-01 | 0.000E+00 | FAIL ABUN  |
| TL-200  | 0.000E+00  | 3.778E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TL-201  | 3.444E-01  | 5.501E+00 | 9.653E+00 | 0.000E+00 | NOT IDENT. |
| TL-202  | 7.982E-03  | 6.091E-02 | 1.068E-01 | 0.000E+00 | NOT IDENT. |
| HG-203  | 4.800E-02  | 3.641E-02 | 6.473E-02 | 0.000E+00 | NOT IDENT. |
| BI-207  | -1.344E-02 | 4.672E-02 | 7.662E-02 | 0.000E+00 | FAIL ABUN  |
| TL-207  | 7.148E-01  | 6.592E-01 | 1.044E+00 | 0.000E+00 | FAIL ABUN  |
| PO-209  | -3.077E+00 | 6.389E+00 | 1.045E+01 | 0.000E+00 | NOT IDENT. |
| BI-210  | 1.268E+00  | 2.196E+00 | 3.866E+00 | 0.000E+00 | NOT IDENT. |
| PB-210  | 1.268E+00  | 2.196E+00 | 3.866E+00 | 0.000E+00 | NOT IDENT. |
| PO-210  | 1.268E+00  | 2.195E+00 | 3.866E+00 | 0.000E+00 | NOT IDENT. |
| PB-211  | 3.972E-01  | 8.940E-01 | 1.546E+00 | 0.000E+00 | NOT IDENT. |
| BI-212  | 0.000E+00  | 4.153E-01 | 6.744E-01 | 0.000E+00 | FAIL ABUN  |
| PO-215  | 7.148E-01  | 6.592E-01 | 1.044E+00 | 0.000E+00 | FAIL ABUN  |
| RN-219  | 3.297E-02  | 3.681E-01 | 6.483E-01 | 0.000E+00 | FAIL ABUN  |
| RN-220  | 3.638E+00  | 2.257E+01 | 3.898E+01 | 0.000E+00 | NOT IDENT. |
| RA-223  | 7.148E-01  | 6.592E-01 | 1.044E+00 | 0.000E+00 | FAIL ABUN  |
| AC-227  | -3.102E-02 | 3.292E-01 | 5.544E-01 | 0.000E+00 | FAIL ABUN  |
| TH-227  | -3.102E-02 | 3.293E-01 | 5.544E-01 | 0.000E+00 | FAIL ABUN  |
| TH-229  | 3.640E-02  | 4.212E-01 | 7.323E-01 | 0.000E+00 | FAIL ABUN  |
| PA-231  | -9.911E-01 | 1.379E+00 | 2.187E+00 | 0.000E+00 | FAIL ABUN  |
| TH-231  | 7.148E-01  | 6.592E-01 | 1.044E+00 | 0.000E+00 | FAIL ABUN  |
| U-231   | -2.881E-01 | 8.735E-01 | 1.285E+00 | 0.000E+00 | FAIL ABUN  |
| PA-233  | 3.701E-02  | 5.822E-02 | 1.007E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234  | -1.710E-01 | 2.712E-01 | 4.316E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234M | 1.347E+00  | 4.489E+00 | 7.772E+00 | 0.000E+00 | NOT IDENT. |
| U-235   | 9.984E-02  | 1.767E-01 | 3.103E-01 | 0.000E+00 | FAIL ABUN  |
| NP-236  | 4.054E-02  | 6.583E-02 | 1.185E-01 | 0.000E+00 | NOT IDENT. |
| NP-239  | 4.657E-02  | 1.556E-01 | 2.821E-01 | 0.000E+00 | FAIL ABUN  |
| AM-241  | -3.019E-02 | 1.152E-01 | 1.766E-01 | 0.000E+00 | NOT IDENT. |
| CM-243  | -1.459E-02 | 7.505E-02 | 1.345E-01 | 0.000E+00 | FAIL ABUN  |
| AM-246  | 7.867E-02  | 1.330E-01 | 2.393E-01 | 0.000E+00 | NOT IDENT. |
| CM-247  | -4.517E-03 | 3.347E-02 | 5.813E-02 | 0.000E+00 | NOT IDENT. |
| CF-249  | -4.089E-03 | 3.378E-02 | 5.889E-02 | 0.000E+00 | NOT IDENT. |
| CF-251  | 2.341E-03  | 1.060E-01 | 1.850E-01 | 0.000E+00 | NOT IDENT. |

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630006.CNF;1
Sample date        : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 11:47:02
Sample ID          : G244630006          Sample quantity  : 1.23060E+02 GRAM
Detector name      : GAM11              Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00      Elapsed real time: 0 02:00:01.68  0.0%
Energy tolerance   : 1.50000 keV        Analyst Initials : MXR1
Abundance limit    : 75.00000           Sensitivity       : 5.00000
Batch ID           : 941639              Detector SN#      :
Matrix Spike ID    :                     LCS ID           : 1032-A
*****

```

## Nuclide Line Activity Report

## Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| K-40    | 1460.81 | 1226  | 10.67* | 1.225E+00 | 2.862E+01               | 2.862E+01              | 10.82             |
| CD-109  | 88.03   | 245   | 3.72*  | 6.784E+00 | 2.959E+00               | 3.026E+00              | 30.97             |
| SN-126  | 64.28   | 72    | 9.60   | 4.297E+00 | 5.328E-01               | 5.328E-01              | 115.50            |
|         | 86.94   | 245   | 8.90   | 6.784E+00 | 1.237E+00               | 1.237E+00              | 50.94             |
|         | 87.57   | 245   | 37.00* | 6.784E+00 | 2.975E-01               | 2.975E-01              | 30.97             |
| BA-137M | 661.65  | 82    | 89.98* | 2.402E+00 | 1.157E-01               | 1.158E-01              | 62.52             |
| CS-137  | 661.65  | 82    | 85.12* | 2.402E+00 | 1.223E-01               | 1.225E-01              | 62.52             |
| TL-208  | 277.35  | ----- | 6.80   | 4.676E+00 | -----                   | Line Not Found         | -----             |
|         | 510.84  | 106   | 21.60  | 2.953E+00 | 5.070E-01               | 5.070E-01              | 56.18             |
|         | 583.14  | 368   | 84.20* | 2.660E+00 | 5.009E-01               | 5.009E-01              | 18.06             |
|         | 860.37  | 51    | 12.46  | 1.925E+00 | 6.519E-01               | 6.519E-01              | 63.56             |
| BI-211  | 72.87   | ----- | 1.27   | 5.576E+00 | -----                   | Line Not Found         | -----             |
|         | 351.07  | 578   | 12.94* | 3.921E+00 | 3.474E+00               | 3.474E+00              | 18.51             |
| PB-212  | 74.81   | 513   | 10.70  | 5.788E+00 | 2.524E+00               | 2.524E+00              | 20.00             |
|         | 77.11   | 676   | 18.00  | 6.023E+00 | 1.902E+00               | 1.902E+00              | 14.17             |
|         | 87.30   | 245   | 8.00   | 6.784E+00 | 1.376E+00               | 1.376E+00              | 32.54             |
|         | 238.63  | 1253  | 44.60* | 5.209E+00 | 1.645E+00               | 1.645E+00              | 15.55             |
|         | 300.09  | 116   | 3.41   | 4.410E+00 | 2.359E+00               | 2.359E+00              | 44.14             |
| PO-212  | 74.81   | 513   | 10.70  | 5.788E+00 | 2.524E+00               | 2.524E+00              | 20.00             |
|         | 77.11   | 676   | 18.00  | 6.023E+00 | 1.902E+00               | 1.902E+00              | 14.17             |
|         | 87.30   | 245   | 8.00   | 6.784E+00 | 1.376E+00               | 1.376E+00              | 32.54             |
|         | 115.19  | ----- | 0.60   | 7.407E+00 | -----                   | Line Not Found         | -----             |
|         | 238.63  | 1253  | 44.60* | 5.209E+00 | 1.645E+00               | 1.645E+00              | 15.55             |
|         | 300.09  | 116   | 3.41   | 4.410E+00 | 2.359E+00               | 2.359E+00              | 44.14             |
| BI-214  | 609.31  | 417   | 46.30* | 2.569E+00 | 1.069E+00               | 1.069E+00              | 16.87             |
|         | 1120.29 | 129   | 15.10  | 1.530E+00 | 1.698E+00               | 1.698E+00              | 35.36             |
|         | 1764.49 | 69    | 15.80  | 1.070E+00 | 1.250E+00               | 1.250E+00              | 37.12             |
| PB-214  | 74.81   | 513   | 6.21   | 5.788E+00 | 4.350E+00               | 4.350E+00              | 19.17             |
|         | 77.11   | 676   | 10.50  | 6.023E+00 | 3.260E+00               | 3.260E+00              | 16.09             |
|         | 87.30   | 245   | 4.67   | 6.784E+00 | 2.357E+00               | 2.357E+00              | 31.91             |
|         | 241.98  | 302   | 7.49   | 5.163E+00 | 2.382E+00               | 2.382E+00              | 29.56             |
|         | 295.21  | 375   | 19.20  | 4.465E+00 | 1.336E+00               | 1.336E+00              | 23.95             |

Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| PO-214  | 351.92  | 578   | 37.20* | 3.921E+00 | 1.209E+00               | 1.209E+00              | 19.23             |
|         | 74.81   | 513   | 6.21   | 5.788E+00 | 4.350E+00               | 4.350E+00              | 19.17             |
|         | 77.11   | 676   | 10.50  | 6.023E+00 | 3.260E+00               | 3.260E+00              | 16.09             |
|         | 87.30   | 245   | 4.67   | 6.784E+00 | 2.357E+00               | 2.357E+00              | 31.91             |
|         | 241.98  | 302   | 7.49   | 5.163E+00 | 2.382E+00               | 2.382E+00              | 29.56             |
| PO-216  | 295.21  | 375   | 19.20  | 4.465E+00 | 1.336E+00               | 1.336E+00              | 23.95             |
|         | 351.92  | 578   | 37.20* | 3.921E+00 | 1.209E+00               | 1.209E+00              | 19.23             |
|         | 74.81   | 513   | 10.70  | 5.788E+00 | 2.524E+00               | 2.524E+00              | 20.00             |
|         | 77.11   | 676   | 18.00  | 6.023E+00 | 1.902E+00               | 1.902E+00              | 14.17             |
|         | 87.30   | 245   | 8.00   | 6.784E+00 | 1.376E+00               | 1.376E+00              | 32.54             |
| PO-218  | 238.63  | 1253  | 44.60* | 5.209E+00 | 1.645E+00               | 1.645E+00              | 15.55             |
|         | 300.09  | 116   | 3.41   | 4.410E+00 | 2.359E+00               | 2.359E+00              | 44.14             |
|         | 74.81   | 513   | 6.21   | 5.788E+00 | 4.350E+00               | 4.350E+00              | 19.17             |
|         | 77.11   | 676   | 10.50  | 6.023E+00 | 3.260E+00               | 3.260E+00              | 16.09             |
|         | 87.30   | 245   | 4.67   | 6.784E+00 | 2.357E+00               | 2.357E+00              | 31.91             |
| RA-224  | 241.98  | 302   | 7.49   | 5.163E+00 | 2.382E+00               | 2.382E+00              | 29.56             |
|         | 295.21  | 375   | 19.20  | 4.465E+00 | 1.336E+00               | 1.336E+00              | 23.95             |
|         | 351.92  | 578   | 37.20* | 3.921E+00 | 1.209E+00               | 1.209E+00              | 19.23             |
|         | 240.98  | 302   | 3.95*  | 5.163E+00 | 4.516E+00               | 4.516E+00              | 29.02             |
|         | 609.31  | 417   | 46.30* | 2.569E+00 | 1.069E+00               | 1.069E+00              | 16.87             |
| RA-226  | 1120.29 | 129   | 15.10  | 1.530E+00 | 1.698E+00               | 1.698E+00              | 35.36             |
|         | 1764.49 | 69    | 15.80  | 1.070E+00 | 1.250E+00               | 1.250E+00              | 37.12             |
|         | 338.32  | 255   | 11.40  | 4.039E+00 | 1.689E+00               | 1.689E+00              | 48.81             |
|         | 911.07  | 283   | 27.70* | 1.833E+00 | 1.699E+00               | 1.699E+00              | 20.45             |
|         | 969.11  | 181   | 16.60  | 1.737E+00 | 1.916E+00               | 1.916E+00              | 30.43             |
| RA-228  | 338.32  | 255   | 11.40  | 4.039E+00 | 1.689E+00               | 1.689E+00              | 48.81             |
|         | 911.07  | 283   | 27.70* | 1.833E+00 | 1.699E+00               | 1.699E+00              | 20.45             |
|         | 969.11  | 181   | 16.60  | 1.737E+00 | 1.916E+00               | 1.916E+00              | 30.43             |
|         | 74.81   | 513   | 10.70  | 5.788E+00 | 2.524E+00               | 2.524E+00              | 17.72             |
|         | 77.11   | 676   | 18.00  | 6.023E+00 | 1.902E+00               | 1.930E+00              | 14.17             |
| TH-228  | 87.30   | 245   | 8.00   | 6.784E+00 | 1.376E+00               | 1.396E+00              | 30.97             |
|         | 238.63  | 1253  | 44.60* | 5.209E+00 | 1.645E+00               | 1.670E+00              | 15.55             |
|         | 300.09  | 116   | 3.41   | 4.410E+00 | 2.359E+00               | 2.394E+00              | 73.17             |
|         | 609.31  | 417   | 46.30* | 2.569E+00 | 1.069E+00               | 1.069E+00              | 16.87             |
|         | 1120.29 | 129   | 15.10  | 1.530E+00 | 1.698E+00               | 1.698E+00              | 35.36             |
| TH-230  | 1764.49 | 69    | 15.80  | 1.070E+00 | 1.250E+00               | 1.250E+00              | 37.12             |
|         | 338.32  | 255   | 11.40  | 4.039E+00 | 1.689E+00               | 1.689E+00              | 27.46             |
|         | 911.07  | 283   | 27.70* | 1.833E+00 | 1.699E+00               | 1.699E+00              | 20.45             |
|         | 969.11  | 181   | 16.60  | 1.737E+00 | 1.916E+00               | 1.916E+00              | 30.43             |
|         | 63.29   | 72    | 3.80*  | 4.297E+00 | 1.346E+00               | 1.346E+00              | 115.90            |
| TH-232  | 92.38   | 211   | 5.41   | 7.067E+00 | 1.680E+00               | 1.680E+00              | 43.76             |
|         | 609.31  | 417   | 46.30* | 2.569E+00 | 1.069E+00               | 1.069E+00              | 16.87             |
|         | 1120.29 | 129   | 15.10  | 1.530E+00 | 1.698E+00               | 1.698E+00              | 35.36             |
|         | 1764.49 | 69    | 15.80  | 1.070E+00 | 1.250E+00               | 1.250E+00              | 37.12             |
|         | 86.50   | 245   | 12.60* | 6.784E+00 | 8.735E-01               | 8.735E-01              | 37.21             |
| NP-237  | 95.87   | ----- | 2.60   | 7.169E+00 | -----                   | Line Not Found         | -----             |
|         | 63.29   | 72    | 3.80*  | 4.297E+00 | 1.346E+00               | 1.346E+00              | 115.90            |
|         | 92.38   | 211   | 5.41   | 7.067E+00 | 1.680E+00               | 1.680E+00              | 40.77             |
|         | 74.67   | 513   | 66.00* | 5.788E+00 | 4.093E-01               | 4.093E-01              | 17.68             |
|         |         |       |        |           |                         |                        |                   |

Nuclide Type:

| Nuclide | Energy | Area  | %Abn    | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|--------|-------|---------|-----------|-------------------------|------------------------|-------------------|
|         | 86.72  | 245   | 0.34    | 6.784E+00 | 3.276E+01               | 3.276E+01              | 30.97             |
|         | 117.66 | ----- | 0.55    | 7.397E+00 | -----                   | Line Not Found         | -----             |
|         | 142.18 | ----- | 0.13    | 7.065E+00 | -----                   | Line Not Found         | -----             |
| ANH-511 | 511.00 | 106   | 100.00* | 2.953E+00 | 1.095E-01               | 1.095E-01              | 55.56             |

Flag: "\*" = Keyline

Total number of lines in spectrum 34  
Number of unidentified lines 2  
Number of lines tentatively identified by NID 32 94.12%

Nuclide Type :

| Nuclide          | Hlife     | Decay | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | Decay Corr<br>2-Sigma Error | 2-Sigma<br>%Error | Flags |
|------------------|-----------|-------|-------------------------|------------------------|-----------------------------|-------------------|-------|
| K-40             | 1.28E+09Y | 1.00  | 2.862E+01               | 2.862E+01              | 0.310E+01                   | 10.82             |       |
| CD-109           | 464.00D   | 1.02  | 2.959E+00               | 3.026E+00              | 0.937E+00                   | 30.97             |       |
| SN-126           | 1.00E+05Y | 1.00  | 2.975E-01               | 2.975E-01              | 0.921E-01                   | 30.97             |       |
| BA-137M          | 30.17Y    | 1.00  | 1.157E-01               | 1.158E-01              | 0.724E-01                   | 62.52             |       |
| CS-137           | 30.17Y    | 1.00  | 1.223E-01               | 1.225E-01              | 0.766E-01                   | 62.52             |       |
| TL-208           | 1.41E+10Y | 1.00  | 5.009E-01               | 5.009E-01              | 0.905E-01                   | 18.06             |       |
| BI-211           | 7.04E+08Y | 1.00  | 3.474E+00               | 3.474E+00              | 0.643E+00                   | 18.51             |       |
| PB-212           | 1.41E+10Y | 1.00  | 1.645E+00               | 1.645E+00              | 0.256E+00                   | 15.55             |       |
| PO-212           | 1.41E+10Y | 1.00  | 1.645E+00               | 1.645E+00              | 0.256E+00                   | 15.55             |       |
| BI-214           | 1600.00Y  | 1.00  | 1.069E+00               | 1.069E+00              | 0.180E+00                   | 16.87             |       |
| PB-214           | 1600.00Y  | 1.00  | 1.209E+00               | 1.209E+00              | 0.232E+00                   | 19.23             |       |
| PO-214           | 1600.00Y  | 1.00  | 1.209E+00               | 1.209E+00              | 0.232E+00                   | 19.23             |       |
| PO-216           | 1.41E+10Y | 1.00  | 1.645E+00               | 1.645E+00              | 0.256E+00                   | 15.55             |       |
| PO-218           | 1600.00Y  | 1.00  | 1.209E+00               | 1.209E+00              | 0.232E+00                   | 19.23             |       |
| RA-224           | 1.41E+10Y | 1.00  | 4.516E+00               | 4.516E+00              | 1.311E+00                   | 29.02             |       |
| RA-226           | 1600.00Y  | 1.00  | 1.069E+00               | 1.069E+00              | 0.180E+00                   | 16.87             |       |
| AC-228           | 1.41E+10Y | 1.00  | 1.699E+00               | 1.699E+00              | 0.347E+00                   | 20.45             |       |
| RA-228           | 1.41E+10Y | 1.00  | 1.699E+00               | 1.699E+00              | 0.347E+00                   | 20.45             |       |
| TH-228           | 1.91Y     | 1.02  | 1.645E+00               | 1.670E+00              | 0.260E+00                   | 15.55             |       |
| TH-230           | 4.47E+09Y | 1.00  | 1.069E+00               | 1.069E+00              | 0.180E+00                   | 16.87             |       |
| TH-232           | 1.41E+10Y | 1.00  | 1.699E+00               | 1.699E+00              | 0.347E+00                   | 20.45             |       |
| TH-234           | 4.47E+09Y | 1.00  | 1.346E+00               | 1.346E+00              | 1.560E+00                   | 115.90            |       |
| U-234            | 4.47E+09Y | 1.00  | 1.069E+00               | 1.069E+00              | 0.180E+00                   | 16.87             |       |
| NP-237           | 2.14E+06Y | 1.00  | 8.735E-01               | 8.735E-01              | 3.251E-01                   | 37.21             |       |
| U-238            | 4.47E+09Y | 1.00  | 1.346E+00               | 1.346E+00              | 1.560E+00                   | 115.90            |       |
| AM-243           | 7380.00Y  | 1.00  | 4.093E-01               | 4.093E-01              | 0.724E-01                   | 17.68             |       |
| ANH-511          | 1.00E+09Y | 1.00  | 1.095E-01               | 1.095E-01              | 0.608E-01                   | 55.56             |       |
| Total Activity : |           |       | 6.427E+01               | 6.437E+01              |                             |                   |       |

Grand Total Activity : 6.427E+01 6.437E+01

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit



Unidentified Energy Lines  
Sample ID : G244630006

Page : 5  
Acquisition date : 23-JAN-2010 11:47:02

| It | Energy  | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | %Eff     | Flags |
|----|---------|------|-------|------|---------|------|----|----------|------|----------|-------|
| 0  | 89.96   | 169  | 245   | 1.04 | 178.84  | 177  | 5  | 2.35E-02 | 31.9 | 6.93E+00 | T     |
| 0  | 185.86  | 214  | 302   | 1.26 | 370.78  | 365  | 10 | 2.97E-02 | 34.8 | 6.16E+00 | T     |
| 0  | 208.64  | 64   | 456   | 0.96 | 416.38  | 412  | 12 | 8.88E-03 | **** | 5.72E+00 | T     |
| 0  | 270.34  | 115  | 189   | 1.19 | 539.87  | 536  | 10 | 1.59E-02 | 49.3 | 4.76E+00 | T     |
| 0  | 327.83  | 68   | 160   | 1.34 | 654.93  | 651  | 9  | 9.38E-03 | 71.8 | 4.13E+00 | T     |
| 0  | 463.13  | 108  | 136   | 1.39 | 925.70  | 919  | 15 | 1.50E-02 | 50.8 | 3.19E+00 | T     |
| 0  | 728.04  | 81   | 70    | 1.58 | 1455.82 | 1451 | 9  | 1.12E-02 | 43.9 | 2.22E+00 | T     |
| 0  | 795.50  | 57   | 54    | 1.15 | 1590.81 | 1584 | 12 | 7.96E-03 | 58.6 | 2.06E+00 | T     |
| 3  | 965.30  | 74   | 30    | 2.07 | 1930.57 | 1926 | 23 | 1.03E-02 | 32.9 | 1.74E+00 | T     |
| 0  | 1378.72 | 27   | 15    | 1.49 | 2757.68 | 2753 | 9  | 3.78E-03 | 64.7 | 1.28E+00 |       |
| 0  | 1409.08 | 36   | 7     | 1.51 | 2818.43 | 2812 | 14 | 4.95E-03 | 46.2 | 1.26E+00 | T     |
| 0  | 1510.33 | 22   | 5     | 1.10 | 3020.96 | 3015 | 11 | 3.04E-03 | 59.3 | 1.19E+00 | T     |
| 0  | 1848.20 | 21   | 0     | 1.18 | 3696.81 | 3692 | 9  | 2.92E-03 | 43.6 | 1.04E+00 |       |

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630006.CNF;1
* Acquisition date   : 23-JAN-2010 11:47:02  Detector SN#      :
* Detector ID        : GAM11                Sensitivity       : 5.00000
* Geometry           : CAN                  Energy tolerance   : 1.50000
* Elapsed live time  : 0 02:00:00.00        Abundance limit    : 75.00000
* Elapsed real time  : 0 02:00:01.68        Half life ratio   : 8.00000
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 8-JAN-2010 12:00:00.  Nuclide Library : SOLID
* Sample ID          : G244630006           Analyst initials: MXR1
* Batch Number       : 941639              Sample Quantity : 1.23060E+02 GRAM
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 18-NOV-2009 15:33:22.2MS Isotope       :
* MSD ID             :                      MSD Isotope       :
* LCS ID             : 1032-A              LCS Isotope       :
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| K-40    | 2.862E+01              | 3.098E+00 | 4.401E-01         | 3.805E-02 | 65.033  |
| CD-109  | 3.026E+00              | 9.370E-01 | 9.054E-01         | 8.585E-02 | 3.342   |
| SN-126  | 2.975E-01              | 9.212E-02 | 8.929E-02         | 8.422E-03 | 3.331   |
| BA-137M | 1.158E-01              | 7.243E-02 | 5.192E-02         | 4.912E-03 | 2.231   |
| CS-137  | 1.225E-01              | 7.657E-02 | 5.488E-02         | 5.201E-03 | 2.231   |
| TL-208  | 5.009E-01              | 9.048E-02 | 5.698E-02         | 6.154E-03 | 8.791   |
| BI-211  | 3.474E+00              | 6.431E-01 | 2.815E-01         | 3.714E-02 | 12.341  |
| PB-212  | 1.645E+00              | 2.558E-01 | 8.212E-02         | 1.150E-02 | 20.038  |
| PO-212  | 1.645E+00              | 2.558E-01 | 8.212E-02         | 1.150E-02 | 20.038  |
| BI-214  | 1.069E+00              | 1.803E-01 | 9.380E-02         | 1.060E-02 | 11.396  |
| PB-214  | 1.209E+00              | 2.324E-01 | 9.815E-02         | 1.389E-02 | 12.314  |
| PO-214  | 1.209E+00              | 2.324E-01 | 9.815E-02         | 1.389E-02 | 12.314  |
| PO-216  | 1.645E+00              | 2.558E-01 | 8.212E-02         | 1.150E-02 | 20.038  |
| PO-218  | 1.209E+00              | 2.324E-01 | 9.815E-02         | 1.389E-02 | 12.314  |
| RA-224  | 4.516E+00              | 1.311E+00 | 9.349E-01         | 1.252E-01 | 4.831   |
| RA-226  | 1.069E+00              | 1.803E-01 | 9.380E-02         | 1.060E-02 | 11.396  |
| AC-228  | 1.699E+00              | 3.474E-01 | 1.902E-01         | 2.315E-02 | 8.934   |
| RA-228  | 1.699E+00              | 3.474E-01 | 1.902E-01         | 2.315E-02 | 8.934   |

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| TH-228  | 1.670E+00              | 2.597E-01 | 8.336E-02         | 1.167E-02 | 20.038  |
| TH-230  | 1.069E+00              | 1.803E-01 | 9.380E-02         | 1.060E-02 | 11.396  |
| TH-232  | 1.699E+00              | 3.474E-01 | 1.902E-01         | 2.315E-02 | 8.934   |
| TH-234  | 1.346E+00              | 1.560E+00 | 1.497E+00         | 2.604E-01 | 0.899   |
| U-234   | 1.069E+00              | 1.803E-01 | 9.380E-02         | 1.060E-02 | 11.396  |
| NP-237  | 8.735E-01              | 3.251E-01 | 3.348E-01         | 7.579E-02 | 2.609   |
| U-238   | 1.346E+00              | 1.560E+00 | 1.497E+00         | 2.604E-01 | 0.899   |
| AM-243  | 4.093E-01              | 7.237E-02 | 6.835E-02         | 5.531E-03 | 5.988   |
| ANH-511 | 1.095E-01              | 6.084E-02 | 3.937E-02         | 4.210E-03 | 2.781   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| BE-7    | -9.983E-02                         |              | 2.627E-01 | 4.241E-01           | 4.800E-02 | -0.235  |
| NA-22   | 3.572E-02                          |              | 4.037E-02 | 7.193E-02           | 5.907E-03 | 0.497   |
| NA-24   | -3.165E-02                         |              | 2.643E-01 | Half-Life too short |           |         |
| AL-26   | 1.191E-02                          |              | 2.946E-02 | 5.220E-02           | 4.261E-03 | 0.228   |
| TI-44   | 3.509E-01                          | +            | 4.973E-02 | 5.795E-02           | 4.885E-03 | 6.056   |
| SC-46   | 1.440E-03                          |              | 3.967E-02 | 6.677E-02           | 6.576E-03 | 0.022   |
| V-48    | -4.937E-03                         |              | 6.263E-02 | 1.034E-01           | 9.803E-03 | -0.048  |
| CR-51   | -5.871E-02                         |              | 3.342E-01 | 5.275E-01           | 7.655E-02 | -0.111  |
| MN-52   | -2.240E-02                         |              | 1.932E-01 | 3.042E-01           | 2.549E-02 | -0.074  |
| MN-54   | 9.317E-03                          |              | 3.768E-02 | 6.471E-02           | 6.372E-03 | 0.144   |
| CO-56   | 1.562E-02                          |              | 3.541E-02 | 6.194E-02           | 6.103E-03 | 0.252   |
| CO-57   | 1.715E-02                          |              | 1.991E-02 | 3.500E-02           | 2.961E-03 | 0.490   |
| CO-58   | -1.513E-03                         |              | 3.789E-02 | 5.994E-02           | 5.902E-03 | -0.025  |
| FE-59   | -8.272E-03                         |              | 8.959E-02 | 1.463E-01           | 1.375E-02 | -0.057  |
| CO-60   | -4.328E-03                         |              | 3.957E-02 | 6.319E-02           | 5.222E-03 | -0.068  |
| ZN-65   | 3.469E-02                          |              | 1.042E-01 | 1.549E-01           | 1.329E-02 | 0.224   |
| GE-68   | 1.376E+00                          |              | 1.113E+00 | 2.058E+00           | 1.827E-01 | 0.669   |
| AS-73   | 1.339E-02                          |              | 5.571E-01 | 8.921E-01           | 6.699E-02 | 0.015   |
| AS-74   | 2.409E-04                          |              | 8.447E-02 | 1.386E-01           | 1.410E-02 | 0.002   |
| SE-75   | 1.789E-02                          |              | 3.650E-02 | 6.091E-02           | 8.953E-03 | 0.294   |
| BR-77   | 4.194E+00                          |              | 8.590E+00 | 1.480E+01           | 1.577E+00 | 0.283   |
| SR-82   | -1.422E-01                         |              | 3.256E-01 | 4.964E-01           | 4.855E-02 | -0.286  |
| RB-83   | 4.351E-02                          |              | 5.811E-02 | 1.021E-01           | 1.088E-02 | 0.426   |
| RB-84   | -3.355E-02                         |              | 6.106E-02 | 9.665E-02           | 9.523E-03 | -0.347  |
| KR-85   | 1.189E+01                          |              | 6.930E+00 | 1.167E+01           | 1.246E+00 | 1.019   |
| SR-85   | 6.086E-02                          |              | 3.549E-02 | 5.975E-02           | 6.383E-03 | 1.019   |
| RB-86   | 3.649E-01                          |              | 7.095E-01 | 1.233E+00           | 1.095E-01 | 0.296   |
| Y-88    | 6.825E-03                          |              | 3.423E-02 | 5.840E-02           | 4.741E-03 | 0.117   |
| ZR-88   | -1.250E-02                         |              | 2.783E-02 | 4.571E-02           | 4.875E-03 | -0.274  |
| Y-91    | -1.522E+01                         |              | 1.893E+01 | 2.851E+01           | 2.307E+00 | -0.534  |
| NB-94   | -8.178E-03                         |              | 3.334E-02 | 5.281E-02           | 5.072E-03 | -0.155  |
| NB-95   | 4.298E-03                          |              | 3.932E-02 | 6.382E-02           | 6.230E-03 | 0.067   |
| NB-95M  | 2.043E-02                          |              | 1.187E-01 | 1.753E-01           | 2.448E-02 | 0.117   |
| ZR-95   | 2.784E-02                          |              | 6.574E-02 | 1.100E-01           | 1.158E-02 | 0.253   |

----- Non-Identified Nuclides -----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| NB-97   | 5.574E-03                          |              | 4.656E-02 | Half-Life too short |           |         |
| ZR-97   | -1.950E-01                         |              | 7.067E-01 | Half-Life too short |           |         |
| MO-99   | 1.387E+00                          |              | 9.803E+00 | 1.603E+01           | 2.537E+00 | 0.087   |
| TC-99M  | -2.318E+10                         |              | 1.185E+10 | Half-Life too short |           |         |
| RH-101  | 1.161E-02                          |              | 2.871E-02 | 4.739E-02           | 5.303E-03 | 0.245   |
| RH-102  | -1.833E-02                         |              | 2.405E-02 | 3.745E-02           | 4.038E-03 | -0.489  |
| RU-103  | 1.502E-02                          |              | 3.627E-02 | 6.215E-02           | 9.659E-03 | 0.242   |
| RH-106  | 5.101E-02                          |              | 2.748E-01 | 4.570E-01           | 6.505E-02 | 0.112   |
| RU-106  | 5.101E-02                          |              | 2.748E-01 | 4.570E-01           | 4.534E-02 | 0.112   |
| AG-108M | -1.521E-02                         |              | 2.932E-02 | 4.738E-02           | 5.238E-03 | -0.321  |
| AG-110M | 9.413E-04                          |              | 3.769E-02 | 5.385E-02           | 5.247E-03 | 0.017   |
| IN-111  | 2.913E-01                          |              | 9.436E-01 | 1.406E+00           | 1.917E-01 | 0.207   |
| IN-113M | 1.390E-02                          |              | 3.942E-02 | 6.817E-02           | 7.415E-03 | 0.204   |
| SN-113  | 1.390E-02                          |              | 3.942E-02 | 6.817E-02           | 7.415E-03 | 0.204   |
| IN-114M | -7.215E-02                         |              | 1.620E-01 | 2.493E-01           | 2.697E-02 | -0.289  |
| CD-115  | 6.656E+00                          |              | 9.639E+00 | 1.677E+01           | 1.782E+00 | 0.397   |
| SN-117M | 6.771E-03                          |              | 4.562E-02 | 7.690E-02           | 7.268E-03 | 0.088   |
| SB-122  | 1.605E-01                          |              | 1.645E+00 | 2.735E+00           | 2.849E-01 | 0.059   |
| I-123   | 1.762E+00                          |              | 2.072E+00 | Half-Life too short |           |         |
| TE-123M | 1.021E-02                          |              | 2.400E-02 | 4.092E-02           | 3.893E-03 | 0.249   |
| I-124   | -3.392E-01                         |              | 5.932E-01 | 9.240E-01           | 9.339E-02 | -0.367  |
| SB-124  | 1.414E-02                          |              | 7.436E-02 | 1.273E-01           | 1.107E-02 | 0.111   |
| SB-125  | -1.521E-03                         |              | 8.129E-02 | 1.366E-01           | 1.489E-02 | -0.011  |
| TE-125M | 4.581E+00                          |              | 7.063E+00 | 1.236E+01           | 1.269E+00 | 0.371   |
| I-126   | -3.553E-02                         |              | 1.849E-01 | 2.564E-01           | 2.431E-02 | -0.139  |
| SB-126  | -2.880E-02                         |              | 1.270E-01 | 2.005E-01           | 1.936E-02 | -0.144  |
| SB-127  | 1.323E-02                          |              | 1.175E+00 | 1.909E+00           | 2.303E-01 | 0.007   |
| XE-127  | 1.778E-02                          |              | 3.944E-02 | 6.647E-02           | 7.597E-03 | 0.267   |
| I-131   | 3.264E-02                          |              | 9.946E-02 | 1.616E-01           | 2.029E-02 | 0.202   |
| TE-132  | 1.708E-01                          |              | 6.007E-01 | 9.972E-01           | 1.821E-01 | 0.171   |
| BA-133  | 1.329E-02                          |              | 4.337E-02 | 6.296E-02           | 1.015E-02 | 0.211   |
| I-133   | 1.268E-03                          |              | 2.526E-03 | Half-Life too short |           |         |
| CS-134  | 1.119E-01                          | +            | 6.647E-02 | 9.155E-02           | 9.032E-03 | 1.222   |
| CS-135  | 7.891E-02                          |              | 1.440E-01 | 2.171E-01           | 3.406E-02 | 0.364   |
| I-135   | -3.780E+08                         |              | 2.182E+09 | Half-Life too short |           |         |
| CS-136  | 6.850E-02                          |              | 9.914E-02 | 1.750E-01           | 1.652E-02 | 0.392   |
| CE-139  | 2.494E-03                          |              | 2.452E-02 | 4.115E-02           | 3.999E-03 | 0.061   |
| BA-140  | 2.798E-02                          |              | 2.280E-01 | 3.806E-01           | 1.283E-01 | 0.074   |
| LA-140  | -5.061E-02                         |              | 7.766E-02 | 1.156E-01           | 9.721E-03 | -0.438  |
| CE-141  | 1.162E-02                          |              | 5.294E-02 | 8.755E-02           | 8.025E-03 | 0.133   |
| CE-143  | 2.276E-04                          |              | 7.416E-05 | Half-Life too short |           |         |
| CE-144  | -6.480E-02                         |              | 1.669E-01 | 2.768E-01           | 4.318E-02 | -0.234  |
| PM-144  | -3.527E-02                         |              | 3.654E-02 | 5.027E-02           | 4.819E-03 | -0.702  |
| PR-144  | -2.390E+00                         |              | 2.476E+00 | 3.406E+00           | 3.265E-01 | -0.702  |
| PM-146  | 4.212E-02                          |              | 3.878E-02 | 6.932E-02           | 8.691E-03 | 0.608   |
| ND-147  | -1.990E-01                         |              | 5.009E-01 | 8.004E-01           | 1.295E-01 | -0.249  |
| PM-149  | -4.485E+01                         |              | 8.151E+01 | 1.259E+02           | 2.524E+01 | -0.356  |
| EU-152  | 1.015E-02                          |              | 9.453E-02 | 1.351E-01           | 1.831E-02 | 0.075   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| GD-153  | -3.514E-02                         |              | 6.675E-02 | 1.005E-01         | 8.925E-03 | -0.350  |
| EU-154  | 9.751E-02                          |              | 1.127E-01 | 2.002E-01         | 2.201E-02 | 0.487   |
| EU-155  | 6.593E-02                          |              | 8.699E-02 | 1.529E-01         | 1.334E-02 | 0.431   |
| TB-160  | 1.927E-02                          |              | 1.209E-01 | 2.062E-01         | 2.032E-02 | 0.093   |
| HO-166M | 7.003E-03                          |              | 6.206E-02 | 1.013E-01         | 9.757E-03 | 0.069   |
| TM-171  | -1.236E+01                         |              | 2.321E+01 | 3.265E+01         | 2.450E+00 | -0.379  |
| LU-176  | 1.148E-02                          |              | 2.134E-02 | 3.543E-02         | 5.209E-03 | 0.324   |
| LU-177  | 1.465E+00                          | +            | 1.995E+00 | 1.867E+00         | 2.185E-01 | 0.785   |
| LU-177M | -2.647E-02                         |              | 1.707E-01 | 2.851E-01         | 3.062E-02 | -0.093  |
| HF-181  | 2.483E-03                          |              | 3.780E-02 | 6.336E-02         | 6.824E-03 | 0.039   |
| W-181   | 1.332E-03                          |              | 2.947E-01 | 4.282E-01         | 3.174E-02 | 0.003   |
| TA-182  | 6.706E-02                          |              | 1.969E-01 | 3.311E-01         | 2.690E-02 | 0.203   |
| RE-183  | -3.398E-02                         |              | 9.306E-02 | 1.529E-01         | 1.466E-02 | -0.222  |
| RE-184  | -3.787E-02                         |              | 2.000E-01 | 3.212E-01         | 4.506E-02 | -0.118  |
| OS-185  | -2.549E-02                         |              | 3.775E-02 | 5.731E-02         | 5.532E-03 | -0.445  |
| RE-188  | 1.442E-01                          |              | 1.438E-01 | 2.506E-01         | 2.337E-02 | 0.575   |
| W-188   | 3.315E+00                          |              | 7.421E+00 | 1.102E+01         | 1.675E+00 | 0.301   |
| IR-192  | -3.691E-02                         |              | 3.329E-02 | 4.800E-02         | 6.899E-03 | -0.769  |
| AU-195  | 2.860E-01                          |              | 1.757E-01 | 3.171E-01         | 2.797E-02 | 0.902   |
| TL-200  | 4.180E-05                          |              | 1.928E-04 | Half-Life         | too short |         |
| TL-201  | 3.444E-01                          |              | 5.613E+00 | 9.396E+00         | 9.192E-01 | 0.037   |
| TL-202  | 7.982E-03                          |              | 6.215E-02 | 1.053E-01         | 1.136E-02 | 0.076   |
| HG-203  | 4.800E-02                          |              | 3.715E-02 | 6.342E-02         | 9.906E-03 | 0.757   |
| BI-207  | -1.344E-02                         |              | 4.768E-02 | 7.641E-02         | 6.864E-03 | -0.176  |
| TL-207  | 7.148E-01                          |              | 6.727E-01 | 1.025E+00         | 2.144E-01 | 0.697   |
| PO-209  | -3.077E+00                         |              | 6.520E+00 | 1.040E+01         | 1.024E+00 | -0.296  |
| BI-210  | 1.268E+00                          |              | 2.240E+00 | 3.703E+00         | 3.447E-01 | 0.342   |
| PB-210  | 1.268E+00                          |              | 2.240E+00 | 3.703E+00         | 3.447E-01 | 0.342   |
| PO-210  | 1.268E+00                          |              | 2.240E+00 | 3.703E+00         | 3.121E-01 | 0.342   |
| PB-211  | 3.972E-01                          |              | 9.122E-01 | 1.522E+00         | 9.587E-01 | 0.261   |
| BI-212  | 9.371E-01                          | +            | 4.238E-01 | 6.691E-01         | 7.313E-02 | 1.401   |
| PO-215  | 7.148E-01                          |              | 6.727E-01 | 1.025E+00         | 2.144E-01 | 0.697   |
| RN-219  | 3.297E-02                          |              | 3.756E-01 | 6.383E-01         | 1.041E-01 | 0.052   |
| RN-220  | 3.638E+00                          |              | 2.303E+01 | 3.854E+01         | 4.049E+00 | 0.094   |
| RA-223  | 7.148E-01                          |              | 6.727E-01 | 1.025E+00         | 2.144E-01 | 0.697   |
| AC-227  | -3.102E-02                         |              | 3.360E-01 | 5.426E-01         | 1.034E-01 | -0.057  |
| TH-227  | -3.102E-02                         |              | 3.360E-01 | 5.426E-01         | 1.156E-01 | -0.057  |
| TH-229  | 3.640E-02                          |              | 4.298E-01 | 7.142E-01         | 7.842E-02 | 0.051   |
| PA-231  | -9.911E-01                         |              | 1.408E+00 | 2.143E+00         | 4.247E-01 | -0.462  |
| TH-231  | 7.148E-01                          |              | 6.727E-01 | 1.025E+00         | 2.144E-01 | 0.697   |
| U-231   | -2.881E-01                         |              | 8.914E-01 | 1.242E+00         | 1.113E-01 | -0.232  |
| PA-233  | 3.701E-02                          |              | 5.941E-02 | 9.878E-02         | 1.449E-02 | 0.375   |
| PA-234  | -1.710E-01                         |              | 2.767E-01 | 4.297E-01         | 8.279E-02 | -0.398  |
| PA-234M | 1.347E+00                          |              | 4.580E+00 | 7.745E+00         | 8.238E-01 | 0.174   |
| U-235   | 9.984E-02                          |              | 1.803E-01 | 3.015E-01         | 5.330E-02 | 0.331   |
| NP-236  | 4.054E-02                          |              | 6.718E-02 | 1.153E-01         | 1.097E-02 | 0.352   |
| NP-239  | 4.657E-02                          |              | 1.587E-01 | 2.733E-01         | 2.313E-02 | 0.170   |
| AM-241  | -3.019E-02                         |              | 1.175E-01 | 1.697E-01         | 1.333E-02 | -0.178  |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| CM-243  | -1.459E-02                         |              | 7.658E-02 | 1.301E-01         | 1.127E-02 | -0.112  |
| AM-246  | 7.867E-02                          |              | 1.357E-01 | 2.387E-01         | 2.117E-02 | 0.330   |
| CM-247  | -4.517E-03                         |              | 3.415E-02 | 5.723E-02         | 6.125E-03 | -0.079  |
| CF-249  | -4.089E-03                         |              | 3.447E-02 | 5.795E-02         | 6.310E-03 | -0.071  |
| CF-251  | 2.341E-03                          |              | 1.082E-01 | 1.802E-01         | 1.835E-02 | 0.013   |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC
*                                     2040 Savage Road
*                                     Charleston, SC 29414
*****
*
*                               DETECTOR DATA
*
* Configuration      : SYSSYSROOT:[ALPHA.ARCHIVE.GAMMA]G244630006
* Acquisition date   : 23-JAN-2010 11:47:02 Detector SN#
* Detector ID        : GAM11 Sensitivity      : 5.000
* Geometry           : CAN Energy tolerance: 1.500
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 02:00:01.68 Half life ratio : 8.000
*****
*
*                               SAMPLE DATA
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID
* Sample ID          : G244630006 Analyst initials: MXR1
* Batch Number       : 941639 Sample Quantity : 1.2306E+02 GRAM
* Recovery           : 1.00000 Carrier Weight : 0.00000
*****
*
*                               QC DATA
*
* CALIB. DATE/TIME   : 18-NOV-2009 15:33:22 MS Isotope
* MSD DPM             : 0.000 MSD Isotope
* LCS DPM             : 0.000 LCS Isotope
* LCSD DPM            : 0.000 LCSD Isotope
*****

```

## Combined Activity-MDA Report

### ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act Error | DLC<br>(pCi/GRAM ) | TPU       |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 2.862E+01               | 3.036E+00 | 2.199E-01          | 1.549E+00 |
| CD-109  | 3.026E+00               | 9.183E-01 | 4.691E-01          | 4.685E-01 |
| SN-126  | 2.975E-01               | 9.028E-02 | 4.627E-02          | 4.606E-02 |
| BA-137M | 1.158E-01               | 7.098E-02 | 2.621E-02          | 3.621E-02 |
| CS-137  | 1.225E-01               | 7.503E-02 | 2.771E-02          | 3.828E-02 |
| TL-208  | 5.009E-01               | 8.867E-02 | 2.882E-02          | 4.524E-02 |
| BI-211  | 3.474E+00               | 6.303E-01 | 1.433E-01          | 3.216E-01 |
| PB-212  | 1.645E+00               | 2.507E-01 | 4.202E-02          | 1.279E-01 |
| PO-212  | 1.645E+00               | 2.507E-01 | 4.202E-02          | 1.279E-01 |
| BI-214  | 1.069E+00               | 1.767E-01 | 4.741E-02          | 9.015E-02 |
| PB-214  | 1.209E+00               | 2.278E-01 | 4.996E-02          | 1.162E-01 |
| PO-214  | 1.209E+00               | 2.278E-01 | 4.996E-02          | 1.162E-01 |
| PO-216  | 1.645E+00               | 2.507E-01 | 4.202E-02          | 1.279E-01 |
| PO-218  | 1.209E+00               | 2.278E-01 | 4.996E-02          | 1.162E-01 |
| RA-224  | 4.516E+00               | 1.284E+00 | 4.783E-01          | 6.553E-01 |
| RA-226  | 1.069E+00               | 1.767E-01 | 4.741E-02          | 9.015E-02 |
| AC-228  | 1.699E+00               | 3.405E-01 | 9.561E-02          | 1.737E-01 |
| RA-228  | 1.699E+00               | 3.405E-01 | 9.561E-02          | 1.737E-01 |
| TH-228  | 1.670E+00               | 2.545E-01 | 4.265E-02          | 1.298E-01 |
| TH-230  | 1.069E+00               | 1.767E-01 | 4.741E-02          | 9.015E-02 |
| TH-232  | 1.699E+00               | 3.405E-01 | 9.561E-02          | 1.737E-01 |
| TH-234  | 1.346E+00               | 1.529E+00 | 7.787E-01          | 7.801E-01 |
| U-234   | 1.069E+00               | 1.767E-01 | 4.741E-02          | 9.015E-02 |
| NP-237  | 8.735E-01               | 3.186E-01 | 1.735E-01          | 1.625E-01 |
| U-238   | 1.346E+00               | 1.529E+00 | 7.787E-01          | 7.801E-01 |
| AM-243  | 4.093E-01               | 7.092E-02 | 3.549E-02          | 3.618E-02 |
| ANH-511 | 1.095E-01               | 5.962E-02 | 1.995E-02          | 3.042E-02 |

### ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L Act error | DLC<br>(pCi/GRAM ) | TPU |
|---------|-------------------------------------|---------------|--------------------|-----|
|---------|-------------------------------------|---------------|--------------------|-----|

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| BE-7    | -9.983E-02 | 2.574E-01 | 2.151E-01 | 1.313E-01 | NOT IDENT. |
| NA-22   | 3.572E-02  | 3.956E-02 | 3.600E-02 | 2.018E-02 | NOT IDENT. |
| NA-24   | -3.165E+04 | 5.181E+05 | 0.000E+00 | 2.643E+05 | SHORT HLIF |
| AL-26   | 1.191E-02  | 2.887E-02 | 2.600E-02 | 1.473E-02 | NOT IDENT. |
| TI-44   | 3.509E-01  | 4.873E-02 | 3.007E-02 | 2.486E-02 | FAIL ABUN  |
| SC-46   | 1.440E-03  | 3.888E-02 | 3.358E-02 | 1.984E-02 | FAIL ABUN  |
| V-48    | -4.937E-03 | 6.138E-02 | 5.190E-02 | 3.132E-02 | NOT IDENT. |
| CR-51   | -5.871E-02 | 3.275E-01 | 2.689E-01 | 1.671E-01 | NOT IDENT. |
| MN-52   | -2.240E-02 | 1.894E-01 | 1.520E-01 | 9.661E-02 | NOT IDENT. |
| MN-54   | 9.317E-03  | 3.692E-02 | 3.257E-02 | 1.884E-02 | NOT IDENT. |
| CO-56   | 1.562E-02  | 3.470E-02 | 3.117E-02 | 1.770E-02 | NOT IDENT. |
| CO-57   | 1.715E-02  | 1.952E-02 | 1.806E-02 | 9.957E-03 | NOT IDENT. |
| CO-58   | -1.513E-03 | 3.713E-02 | 3.018E-02 | 1.894E-02 | NOT IDENT. |
| FE-59   | -8.272E-03 | 8.780E-02 | 7.337E-02 | 4.480E-02 | NOT IDENT. |
| CO-60   | -4.328E-03 | 3.877E-02 | 3.161E-02 | 1.978E-02 | NOT IDENT. |
| ZN-65   | 3.469E-02  | 1.022E-01 | 7.764E-02 | 5.212E-02 | NOT IDENT. |
| GE-68   | 1.376E+00  | 1.091E+00 | 1.032E+00 | 5.567E-01 | NOT IDENT. |
| AS-73   | 1.339E-02  | 5.460E-01 | 4.651E-01 | 2.786E-01 | NOT IDENT. |
| AS-74   | 2.409E-04  | 8.279E-02 | 7.010E-02 | 4.224E-02 | NOT IDENT. |
| SE-75   | 1.789E-02  | 3.577E-02 | 3.112E-02 | 1.825E-02 | NOT IDENT. |
| BR-77   | 4.194E+00  | 8.419E+00 | 7.497E+00 | 4.295E+00 | FAIL ABUN  |
| SR-82   | -1.422E-01 | 3.191E-01 | 2.501E-01 | 1.628E-01 | NOT IDENT. |
| RB-83   | 4.351E-02  | 5.695E-02 | 5.169E-02 | 2.906E-02 | NOT IDENT. |
| RB-84   | -3.355E-02 | 5.984E-02 | 4.861E-02 | 3.053E-02 | NOT IDENT. |
| KR-85   | 1.189E+01  | 6.792E+00 | 5.911E+00 | 3.465E+00 | NOT IDENT. |
| SR-85   | 6.086E-02  | 3.478E-02 | 3.027E-02 | 1.774E-02 | NOT IDENT. |
| RB-86   | 3.649E-01  | 6.953E-01 | 6.182E-01 | 3.548E-01 | NOT IDENT. |
| Y-88    | 6.825E-03  | 3.354E-02 | 2.908E-02 | 1.711E-02 | NOT IDENT. |
| ZR-88   | -1.250E-02 | 2.728E-02 | 2.324E-02 | 1.392E-02 | NOT IDENT. |
| Y-91    | -1.522E+01 | 1.855E+01 | 1.428E+01 | 9.464E+00 | NOT IDENT. |
| NB-94   | -8.178E-03 | 3.267E-02 | 2.664E-02 | 1.667E-02 | NOT IDENT. |
| NB-95   | 4.298E-03  | 3.853E-02 | 3.216E-02 | 1.966E-02 | NOT IDENT. |
| NB-95M  | 2.043E-02  | 1.163E-01 | 8.970E-02 | 5.935E-02 | NOT IDENT. |
| ZR-95   | 2.784E-02  | 6.442E-02 | 5.545E-02 | 3.287E-02 | NOT IDENT. |
| NB-97   | 5.574E+03  | 9.125E+04 | 0.000E+00 | 4.656E+04 | SHORT HLIF |
| ZR-97   | -1.950E+05 | 1.385E+06 | 0.000E+00 | 7.067E+05 | SHORT HLIF |
| MO-99   | 1.387E+00  | 9.607E+00 | 8.081E+00 | 4.901E+00 | NOT IDENT. |
| TC-99M  | -2.318E+16 | 2.324E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | 1.161E-02  | 2.814E-02 | 2.430E-02 | 1.435E-02 | NOT IDENT. |
| RH-102  | -1.833E-02 | 2.357E-02 | 1.899E-02 | 1.203E-02 | NOT IDENT. |
| RU-103  | 1.502E-02  | 3.555E-02 | 3.150E-02 | 1.814E-02 | FAIL ABUN  |
| RH-106  | 5.101E-02  | 2.693E-01 | 2.309E-01 | 1.374E-01 | FAIL ABUN  |
| RU-106  | 5.101E-02  | 2.693E-01 | 2.309E-01 | 1.374E-01 | FAIL ABUN  |
| AG-108M | -1.521E-02 | 2.873E-02 | 2.406E-02 | 1.466E-02 | NOT IDENT. |
| AG-110M | 9.413E-04  | 3.693E-02 | 2.719E-02 | 1.884E-02 | NOT IDENT. |
| IN-111  | 2.913E-01  | 9.247E-01 | 7.193E-01 | 4.718E-01 | NOT IDENT. |
| IN-113M | 1.390E-02  | 3.863E-02 | 3.466E-02 | 1.971E-02 | NOT IDENT. |
| SN-113  | 1.390E-02  | 3.863E-02 | 3.466E-02 | 1.971E-02 | NOT IDENT. |
| IN-114M | -7.215E-02 | 1.588E-01 | 1.279E-01 | 8.102E-02 | NOT IDENT. |
| CD-115  | 6.656E+00  | 9.446E+00 | 8.493E+00 | 4.819E+00 | NOT IDENT. |
| SN-117M | 6.771E-03  | 4.471E-02 | 3.955E-02 | 2.281E-02 | NOT IDENT. |
| SB-122  | 1.605E-01  | 1.612E+00 | 1.384E+00 | 8.225E-01 | NOT IDENT. |
| I-123   | 1.762E+06  | 4.062E+06 | 0.000E+00 | 2.072E+06 | SHORT HLIF |
| TE-123M | 1.021E-02  | 2.352E-02 | 2.105E-02 | 1.200E-02 | NOT IDENT. |
| I-124   | -3.392E-01 | 5.814E-01 | 4.671E-01 | 2.966E-01 | FAIL ABUN  |
| SB-124  | 1.414E-02  | 7.288E-02 | 6.349E-02 | 3.718E-02 | FAIL ABUN  |
| SB-125  | -1.521E-03 | 7.966E-02 | 6.936E-02 | 4.064E-02 | FAIL ABUN  |
| TE-125M | 4.581E+00  | 6.922E+00 | 6.389E+00 | 3.532E+00 | NOT IDENT. |
| I-126   | -3.553E-02 | 1.812E-01 | 1.295E-01 | 9.246E-02 | NOT IDENT. |
| SB-126  | -2.880E-02 | 1.245E-01 | 1.011E-01 | 6.351E-02 | FAIL ABUN  |
| SB-127  | 1.323E-02  | 1.152E+00 | 9.632E-01 | 5.876E-01 | NOT IDENT. |
| XE-127  | 1.778E-02  | 3.865E-02 | 3.408E-02 | 1.972E-02 | NOT IDENT. |
| I-131   | 3.264E-02  | 9.747E-02 | 8.223E-02 | 4.973E-02 | NOT IDENT. |
| TE-132  | 1.708E-01  | 5.887E-01 | 5.105E-01 | 3.004E-01 | NOT IDENT. |
| BA-133  | 1.329E-02  | 4.250E-02 | 3.204E-02 | 2.169E-02 | NOT IDENT. |
| I-133   | 1.268E+03  | 4.951E+03 | 0.000E+00 | 2.526E+03 | SHORT HLIF |
| CS-134  | 1.119E-01  | 6.514E-02 | 4.611E-02 | 3.324E-02 | FAIL ABUN  |
| CS-135  | 7.891E-02  | 1.411E-01 | 1.109E-01 | 7.201E-02 | NOT IDENT. |
| I-135   | -3.780E+14 | 4.277E+15 | 0.000E+00 | 2.182E+15 | SHORT HLIF |
| CS-136  | 6.850E-02  | 9.716E-02 | 8.779E-02 | 4.957E-02 | FAIL ABUN  |
| CE-139  | 2.494E-03  | 2.403E-02 | 2.115E-02 | 1.226E-02 | NOT IDENT. |
| BA-140  | 2.798E-02  | 2.234E-01 | 1.927E-01 | 1.140E-01 | NOT IDENT. |
| LA-140  | -5.061E-02 | 7.610E-02 | 5.768E-02 | 3.883E-02 | FAIL ABUN  |
| CE-141  | 1.162E-02  | 5.188E-02 | 4.508E-02 | 2.647E-02 | NOT IDENT. |
| CE-143  | 2.276E+02  | 1.454E+02 | 0.000E+00 | 7.416E+01 | SHORT HLIF |
| CE-144  | -6.480E-02 | 1.635E-01 | 1.427E-01 | 8.343E-02 | NOT IDENT. |
| PM-144  | -3.527E-02 | 3.581E-02 | 2.536E-02 | 1.827E-02 | NOT IDENT. |
| PR-144  | -2.390E+00 | 2.426E+00 | 1.718E+00 | 1.238E+00 | NOT IDENT. |



|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PM-146  | 4.212E-02  | 3.800E-02 | 3.517E-02 | 1.939E-02 | NOT IDENT. |
| ND-147  | -1.990E-01 | 4.909E-01 | 4.053E-01 | 2.505E-01 | FAIL ABUN  |
| PM-149  | -4.485E+01 | 7.988E+01 | 6.427E+01 | 4.075E+01 | NOT IDENT. |
| EU-152  | 1.015E-02  | 9.264E-02 | 6.878E-02 | 4.726E-02 | FAIL ABUN  |
| GD-153  | -3.514E-02 | 6.541E-02 | 5.199E-02 | 3.337E-02 | NOT IDENT. |
| EU-154  | 9.751E-02  | 1.105E-01 | 1.002E-01 | 5.636E-02 | NOT IDENT. |
| EU-155  | 6.593E-02  | 8.525E-02 | 7.904E-02 | 4.349E-02 | FAIL ABUN  |
| TB-160  | 1.927E-02  | 1.185E-01 | 1.037E-01 | 6.047E-02 | FAIL ABUN  |
| HO-166M | 7.003E-03  | 6.081E-02 | 5.110E-02 | 3.103E-02 | FAIL ABUN  |
| TM-171  | -1.236E+01 | 2.275E+01 | 1.698E+01 | 1.161E+01 | NOT IDENT. |
| LU-176  | 1.148E-02  | 2.091E-02 | 1.807E-02 | 1.067E-02 | FAIL ABUN  |
| LU-177  | 1.465E+00  | 1.955E+00 | 9.568E-01 | 9.975E-01 | FAIL ABUN  |
| LU-177M | -2.647E-02 | 1.673E-01 | 1.449E-01 | 8.535E-02 | NOT IDENT. |
| HF-181  | 2.483E-03  | 3.704E-02 | 3.212E-02 | 1.890E-02 | NOT IDENT. |
| W-181   | 1.332E-03  | 2.889E-01 | 2.227E-01 | 1.474E-01 | NOT IDENT. |
| TA-182  | 6.706E-02  | 1.930E-01 | 1.658E-01 | 9.846E-02 | FAIL ABUN  |
| RE-183  | -3.398E-02 | 9.120E-02 | 7.862E-02 | 4.653E-02 | FAIL ABUN  |
| RE-184  | -3.787E-02 | 1.960E-01 | 1.642E-01 | 9.998E-02 | NOT IDENT. |
| OS-185  | -2.549E-02 | 3.699E-02 | 2.894E-02 | 1.887E-02 | NOT IDENT. |
| RE-188  | 1.442E-01  | 1.409E-01 | 1.289E-01 | 7.189E-02 | NOT IDENT. |
| W-188   | 3.315E+00  | 7.272E+00 | 5.626E+00 | 3.710E+00 | FAIL ABUN  |
| IR-192  | -3.691E-02 | 3.262E-02 | 2.447E-02 | 1.664E-02 | FAIL ABUN  |
| AU-195  | 2.860E-01  | 1.722E-01 | 1.641E-01 | 8.783E-02 | FAIL ABUN  |
| TL-200  | 4.180E+01  | 3.778E+02 | 0.000E+00 | 1.928E+02 | SHORT HLIF |
| TL-201  | 3.444E-01  | 5.501E+00 | 4.829E+00 | 2.806E+00 | NOT IDENT. |
| TL-202  | 7.982E-03  | 6.091E-02 | 5.344E-02 | 3.107E-02 | NOT IDENT. |
| HG-203  | 4.800E-02  | 3.641E-02 | 3.238E-02 | 1.857E-02 | NOT IDENT. |
| BI-207  | -1.344E-02 | 4.672E-02 | 3.833E-02 | 2.384E-02 | FAIL ABUN  |
| TL-207  | 7.148E-01  | 6.592E-01 | 5.225E-01 | 3.363E-01 | FAIL ABUN  |
| PO-209  | -3.077E+00 | 6.389E+00 | 5.228E+00 | 3.260E+00 | NOT IDENT. |
| BI-210  | 1.268E+00  | 2.196E+00 | 1.934E+00 | 1.120E+00 | NOT IDENT. |
| PB-210  | 1.268E+00  | 2.196E+00 | 1.934E+00 | 1.120E+00 | NOT IDENT. |
| PO-210  | 1.268E+00  | 2.195E+00 | 1.934E+00 | 1.120E+00 | NOT IDENT. |
| PB-211  | 3.972E-01  | 8.940E-01 | 7.734E-01 | 4.561E-01 | NOT IDENT. |
| BI-212  | 9.371E-01  | 4.153E-01 | 3.374E-01 | 2.119E-01 | FAIL ABUN  |
| PO-215  | 7.148E-01  | 6.592E-01 | 5.225E-01 | 3.363E-01 | FAIL ABUN  |
| RN-219  | 3.297E-02  | 3.681E-01 | 3.244E-01 | 1.878E-01 | FAIL ABUN  |
| RN-220  | 3.638E+00  | 2.257E+01 | 1.950E+01 | 1.152E+01 | NOT IDENT. |
| RA-223  | 7.148E-01  | 6.592E-01 | 5.225E-01 | 3.363E-01 | FAIL ABUN  |
| AC-227  | -3.102E-02 | 3.292E-01 | 2.774E-01 | 1.680E-01 | FAIL ABUN  |
| TH-227  | -3.102E-02 | 3.293E-01 | 2.774E-01 | 1.680E-01 | FAIL ABUN  |
| TH-229  | 3.640E-02  | 4.212E-01 | 3.664E-01 | 2.149E-01 | FAIL ABUN  |
| PA-231  | -9.911E-01 | 1.379E+00 | 1.094E+00 | 7.038E-01 | FAIL ABUN  |
| TH-231  | 7.148E-01  | 6.592E-01 | 5.225E-01 | 3.363E-01 | FAIL ABUN  |
| U-231   | -2.881E-01 | 8.735E-01 | 6.430E-01 | 4.457E-01 | FAIL ABUN  |
| PA-233  | 3.701E-02  | 5.822E-02 | 5.037E-02 | 2.971E-02 | FAIL ABUN  |
| PA-234  | -1.710E-01 | 2.712E-01 | 2.159E-01 | 1.384E-01 | FAIL ABUN  |
| PA-234M | 1.347E+00  | 4.489E+00 | 3.889E+00 | 2.290E+00 | NOT IDENT. |
| U-235   | 9.984E-02  | 1.767E-01 | 1.553E-01 | 9.015E-02 | FAIL ABUN  |
| NP-236  | 4.054E-02  | 6.583E-02 | 5.929E-02 | 3.359E-02 | NOT IDENT. |
| NP-239  | 4.657E-02  | 1.556E-01 | 1.411E-01 | 7.937E-02 | FAIL ABUN  |
| AM-241  | -3.019E-02 | 1.152E-01 | 8.835E-02 | 5.876E-02 | NOT IDENT. |
| CM-243  | -1.459E-02 | 7.505E-02 | 6.729E-02 | 3.829E-02 | FAIL ABUN  |
| AM-246  | 7.867E-02  | 1.330E-01 | 1.197E-01 | 6.786E-02 | NOT IDENT. |
| CM-247  | -4.517E-03 | 3.347E-02 | 2.908E-02 | 1.708E-02 | NOT IDENT. |
| CF-249  | -4.089E-03 | 3.378E-02 | 2.946E-02 | 1.724E-02 | NOT IDENT. |
| CF-251  | 2.341E-03  | 1.060E-01 | 9.255E-02 | 5.409E-02 | NOT IDENT. |

\*\*\*\*\*  
 \* GEL Laboratories LLC \*  
 \* 2040 SAVAGE ROAD \*  
 \* CHARLESTON ,SC 29417 \*  
 \* GAMMA SPECTROSCOPY BACKGROUND REPORT \*  
 \*\*\*\*\*

| ENERGY | MDA COUNTS |
|--------|------------|
|--------|------------|

|       |          |
|-------|----------|
| 46.50 | 196.8343 |
| 46.50 | 196.8343 |
| 46.50 | 196.8343 |
| 48.70 | 241.0958 |
| 49.72 | 212.2467 |
| 51.35 | 204.5675 |
| 52.39 | 226.3537 |
| 52.97 | 222.3373 |
| 53.15 | 222.4678 |
| 53.44 | 226.0170 |
| 54.07 | 237.6335 |
| 56.28 | 237.0555 |
| 56.28 | 237.0579 |
| 57.37 | 0.0000   |
| 57.53 | 260.5368 |
| 57.53 | 260.5385 |
| 57.60 | 260.5932 |
| 57.98 | 236.0506 |
| 57.98 | 236.0506 |
| 59.32 | 267.6336 |
| 59.32 | 267.6336 |
| 59.40 | 267.6985 |
| 59.54 | 263.2718 |
| 59.72 | 251.3033 |
| 60.01 | 233.3401 |
| 61.10 | 270.5816 |
| 61.14 | 270.6133 |
| 61.30 | 270.7409 |
| 63.00 | 294.6377 |
| 63.29 | 294.8847 |
| 63.29 | 294.8847 |
| 63.58 | 295.1318 |
| 64.28 | 291.5062 |
| 65.12 | 275.2864 |
| 65.20 | 295.3462 |
| 65.20 | 295.3462 |
| 66.05 | 334.6035 |
| 66.72 | 315.1454 |
| 66.83 | 315.2450 |
| 66.91 | 315.3135 |
| 67.20 | 335.6785 |
| 67.20 | 335.6785 |
| 67.75 | 323.0197 |
| 67.85 | 323.1088 |
| 68.90 | 321.7087 |
| 68.90 | 321.7087 |
| 69.30 | 326.7258 |
| 69.67 | 334.8439 |
| 70.82 | 343.6896 |
| 70.82 | 343.6896 |
| 70.83 | 343.6985 |
| 72.80 | 335.6826 |
| 72.87 | 335.7434 |
| 72.87 | 335.7434 |
| 74.67 | 337.3177 |
| 74.81 | 337.4395 |
| 74.81 | 337.4395 |
| 74.81 | 337.4395 |
| 74.81 | 337.4395 |
| 74.81 | 337.4395 |
| 74.81 | 337.4395 |
| 74.81 | 337.4395 |
| 74.97 | 337.5786 |
| 75.28 | 337.8482 |
| 75.70 | 338.2114 |
| 77.11 | 339.4225 |
| 77.11 | 339.4225 |

|        |          |
|--------|----------|
| 77.11  | 339.4225 |
| 77.11  | 339.4225 |
| 77.11  | 339.4225 |
| 77.11  | 339.4225 |
| 77.11  | 339.4225 |
| 78.38  | 286.7413 |
| 79.62  | 289.2218 |
| 79.80  | 289.3507 |
| 79.80  | 289.3507 |
| 80.11  | 268.7737 |
| 80.18  | 268.8198 |
| 80.30  | 268.8984 |
| 80.30  | 268.8984 |
| 80.57  | 277.0844 |
| 81.00  | 304.6332 |
| 81.07  | 304.6854 |
| 81.07  | 304.6854 |
| 81.07  | 304.6854 |
| 81.07  | 304.6854 |
| 82.60  | 317.4833 |
| 83.37  | 301.5390 |
| 83.78  | 274.3962 |
| 83.78  | 274.3962 |
| 83.78  | 274.3962 |
| 83.78  | 274.3962 |
| 84.21  | 264.9819 |
| 84.90  | 301.0201 |
| 85.43  | 314.3580 |
| 86.29  | 402.6695 |
| 86.50  | 402.8663 |
| 86.54  | 316.7996 |
| 86.59  | 316.8373 |
| 86.72  | 316.9325 |
| 86.79  | 316.9821 |
| 86.94  | 317.0932 |
| 87.30  | 317.3590 |
| 87.30  | 317.3590 |
| 87.30  | 317.3590 |
| 87.30  | 317.3590 |
| 87.30  | 317.3590 |
| 87.30  | 317.3590 |
| 87.57  | 251.6016 |
| 87.88  | 251.7823 |
| 88.03  | 251.8688 |
| 88.36  | 252.0605 |
| 88.47  | 252.1234 |
| 89.95  | 230.8706 |
| 91.11  | 275.7993 |
| 92.29  | 212.3335 |
| 92.38  | 212.3755 |
| 92.38  | 212.3755 |
| 93.35  | 265.6277 |
| 94.00  | 213.1366 |
| 94.67  | 213.4476 |
| 94.67  | 213.4502 |
| 94.90  | 213.5565 |
| 94.90  | 213.5565 |
| 94.90  | 213.5565 |
| 94.90  | 213.5565 |
| 95.87  | 232.2567 |
| 95.87  | 232.2567 |
| 96.73  | 262.6069 |
| 97.43  | 259.6699 |
| 98.44  | 223.5296 |
| 98.44  | 223.5310 |
| 98.88  | 208.7123 |
| 99.55  | 232.4161 |
| 99.55  | 232.4161 |
| 99.86  | 232.5688 |
| 100.00 | 232.6367 |
| 100.10 | 251.9387 |
| 103.18 | 256.9218 |
| 103.76 | 247.9518 |
| 105.00 | 229.9773 |
| 105.31 | 234.3528 |
| 108.00 | 261.1393 |
| 109.28 | 206.3711 |

|        |          |
|--------|----------|
| 111.00 | 239.5840 |
| 111.00 | 239.5840 |
| 111.76 | 219.3724 |
| 112.95 | 250.7979 |
| 115.19 | 234.6216 |
| 116.30 | 205.7260 |
| 117.00 | 238.0220 |
| 117.00 | 238.0220 |
| 117.66 | 265.1819 |
| 121.11 | 184.0251 |
| 121.62 | 186.8157 |
| 121.78 | 186.8701 |
| 122.06 | 189.5869 |
| 122.32 | 195.7949 |
| 122.32 | 195.7949 |
| 122.32 | 195.7949 |
| 122.32 | 195.7949 |
| 123.07 | 212.6917 |
| 127.23 | 246.0251 |
| 129.76 | 227.6338 |
| 131.20 | 252.1777 |
| 133.02 | 222.6842 |
| 133.54 | 230.9064 |
| 135.34 | 224.4584 |
| 136.00 | 220.2324 |
| 136.25 | 221.2206 |
| 136.48 | 225.7859 |
| 140.51 | 241.7354 |
| 140.51 | 0.0000   |
| 142.18 | 228.8283 |
| 142.65 | 224.4801 |
| 143.76 | 212.1887 |
| 144.24 | 206.0005 |
| 144.24 | 206.0005 |
| 144.24 | 206.0005 |
| 144.24 | 206.0005 |
| 145.22 | 226.3224 |
| 145.44 | 210.9438 |
| 147.16 | 219.7301 |
| 152.43 | 221.5541 |
| 152.70 | 229.9245 |
| 153.22 | 227.3488 |
| 154.21 | 197.2726 |
| 154.21 | 197.2726 |
| 154.21 | 197.2726 |
| 154.21 | 197.2726 |
| 155.03 | 199.3678 |
| 156.02 | 254.2094 |
| 158.56 | 208.7906 |
| 159.00 | 0.0000   |
| 159.00 | 206.1422 |
| 160.31 | 200.9641 |
| 161.27 | 212.4326 |
| 162.32 | 223.9624 |
| 162.64 | 208.1960 |
| 163.35 | 205.6100 |
| 163.89 | 224.4800 |
| 165.85 | 197.9220 |
| 167.43 | 197.4347 |
| 171.28 | 207.9822 |
| 171.86 | 205.3138 |
| 172.10 | 205.3845 |
| 176.55 | 202.8596 |
| 176.60 | 202.8748 |
| 181.06 | 204.1228 |
| 184.41 | 187.7220 |
| 185.71 | 188.0513 |
| 186.00 | 188.1227 |
| 190.27 | 207.2357 |
| 192.34 | 172.1926 |
| 193.63 | 189.0466 |
| 197.04 | 181.0706 |
| 198.01 | 181.2945 |
| 198.60 | 201.0441 |
| 200.40 | 198.5561 |
| 201.83 | 196.9442 |
| 202.84 | 177.4750 |
| 205.31 | 176.5389 |

|        |          |
|--------|----------|
| 208.36 | 184.6490 |
| 208.81 | 184.7512 |
| 209.75 | 184.9631 |
| 209.75 | 184.9631 |
| 210.97 | 180.7578 |
| 215.65 | 199.3057 |
| 216.55 | 191.4993 |
| 218.09 | 162.7218 |
| 222.10 | 192.7584 |
| 223.80 | 161.7936 |
| 226.40 | 184.5938 |
| 227.00 | 190.8113 |
| 227.08 | 190.8285 |
| 227.20 | 179.6882 |
| 228.16 | 173.7884 |
| 228.18 | 173.7919 |
| 228.18 | 173.7919 |
| 231.56 | 0.0000   |
| 235.69 | 182.9614 |
| 236.00 | 186.1010 |
| 236.00 | 186.1010 |
| 238.63 | 180.9897 |
| 238.63 | 180.9897 |
| 238.63 | 180.9897 |
| 238.63 | 180.9897 |
| 239.00 | 181.0632 |
| 240.98 | 181.4588 |
| 241.98 | 181.6593 |
| 241.98 | 181.6593 |
| 241.98 | 181.6593 |
| 244.69 | 125.7777 |
| 245.39 | 132.0888 |
| 247.94 | 147.5165 |
| 248.90 | 124.7900 |
| 249.79 | 124.9084 |
| 252.40 | 134.6506 |
| 252.85 | 140.9807 |
| 252.85 | 140.9807 |
| 254.15 | 0.0000   |
| 256.20 | 145.6712 |
| 256.20 | 145.6712 |
| 260.50 | 136.8502 |
| 260.90 | 149.5432 |
| 262.80 | 127.6787 |
| 264.65 | 114.1765 |
| 268.24 | 117.7772 |
| 268.79 | 138.5447 |
| 269.46 | 130.6725 |
| 269.46 | 130.6725 |
| 269.46 | 130.6725 |
| 269.46 | 130.6725 |
| 271.23 | 128.7767 |
| 273.65 | 131.2205 |
| 276.40 | 144.4180 |
| 277.35 | 145.6234 |
| 277.60 | 140.3042 |
| 277.60 | 140.3042 |
| 278.00 | 131.7886 |
| 278.60 | 116.8570 |
| 279.20 | 120.1439 |
| 279.53 | 143.7899 |
| 280.46 | 165.4015 |
| 281.68 | 141.9419 |
| 283.67 | 147.6028 |
| 284.30 | 116.4287 |
| 285.00 | 120.8229 |
| 285.90 | 146.8408 |
| 286.10 | 137.1492 |
| 286.10 | 137.1492 |
| 287.40 | 136.2411 |
| 288.45 | 0.0000   |
| 290.67 | 128.5317 |
| 290.80 | 154.5837 |
| 291.72 | 149.8313 |
| 293.26 | 0.0000   |
| 293.70 | 150.1121 |
| 295.21 | 137.2537 |
| 295.21 | 137.2537 |

|        |          |
|--------|----------|
| 295.21 | 137.2537 |
| 295.96 | 137.3511 |
| 296.50 | 137.4203 |
| 297.23 | 81.8542  |
| 298.57 | 81.9565  |
| 299.80 | 103.3824 |
| 299.80 | 103.3824 |
| 300.09 | 103.4113 |
| 300.09 | 103.4113 |
| 300.09 | 103.4113 |
| 300.09 | 103.4113 |
| 300.12 | 103.4132 |
| 301.29 | 103.5247 |
| 302.84 | 118.4832 |
| 303.76 | 98.8202  |
| 303.91 | 98.8330  |
| 304.40 | 107.1187 |
| 304.40 | 107.1187 |
| 304.84 | 110.4596 |
| 306.84 | 101.3007 |
| 308.46 | 116.8885 |
| 311.98 | 112.8367 |
| 316.51 | 136.6208 |
| 318.01 | 105.6593 |
| 319.02 | 105.7540 |
| 319.41 | 108.0179 |
| 320.08 | 116.9949 |
| 323.87 | 98.9395  |
| 323.87 | 98.9395  |
| 323.87 | 98.9395  |
| 323.87 | 98.9395  |
| 325.23 | 122.5615 |
| 328.77 | 111.1494 |
| 333.44 | 103.1423 |
| 334.20 | 101.5173 |
| 334.20 | 101.5173 |
| 334.30 | 101.5265 |
| 338.28 | 119.9789 |
| 338.28 | 119.9789 |
| 338.28 | 119.9789 |
| 338.28 | 119.9789 |
| 338.32 | 119.9832 |
| 338.32 | 119.9832 |
| 338.32 | 119.9832 |
| 340.50 | 93.5544  |
| 340.57 | 93.5611  |
| 344.27 | 97.2643  |
| 345.85 | 98.4164  |
| 350.59 | 0.0000   |
| 351.07 | 101.8162 |
| 351.92 | 101.8868 |
| 351.92 | 101.8868 |
| 351.92 | 101.8868 |
| 355.39 | 0.0000   |
| 356.01 | 96.4841  |
| 364.48 | 84.4211  |
| 366.43 | 82.2353  |
| 367.43 | 97.3694  |
| 367.94 | 0.0000   |
| 369.80 | 106.8429 |
| 374.96 | 101.4451 |
| 383.85 | 88.9360  |
| 387.95 | 99.8130  |
| 388.63 | 102.5160 |
| 391.69 | 96.5526  |
| 391.69 | 96.5526  |
| 392.90 | 112.5978 |
| 398.62 | 93.4916  |
| 400.65 | 107.8986 |
| 401.10 | 105.2594 |
| 401.81 | 105.3152 |
| 402.60 | 111.6276 |
| 404.84 | 107.3383 |
| 410.95 | 108.7146 |
| 411.60 | 118.6542 |
| 413.65 | 119.7296 |
| 414.70 | 101.8028 |
| 415.30 | 105.4510 |

|        |          |
|--------|----------|
| 415.76 | 112.6995 |
| 417.63 | 0.0000   |
| 418.52 | 93.0483  |
| 423.70 | 92.4842  |
| 427.08 | 86.3416  |
| 427.89 | 90.0284  |
| 432.53 | 88.4953  |
| 433.93 | 96.8000  |
| 439.47 | 88.9216  |
| 439.56 | 88.9260  |
| 439.89 | 95.3656  |
| 443.98 | 87.3563  |
| 444.90 | 85.5712  |
| 445.03 | 85.5783  |
| 445.03 | 85.5783  |
| 445.03 | 85.5783  |
| 453.90 | 69.4290  |
| 463.38 | 79.1817  |
| 468.07 | 79.2386  |
| 473.00 | 70.3056  |
| 475.06 | 77.9088  |
| 475.35 | 71.3509  |
| 476.78 | 68.5979  |
| 477.59 | 72.3943  |
| 477.96 | 79.9352  |
| 482.03 | 78.2570  |
| 484.57 | 79.3281  |
| 487.03 | 61.4800  |
| 490.36 | 0.0000   |
| 492.35 | 55.9922  |
| 497.08 | 71.3871  |
| 507.63 | 0.0000   |
| 510.53 | 0.0000   |
| 510.84 | 67.1935  |
| 511.00 | 67.1999  |
| 511.85 | 67.2352  |
| 511.85 | 67.2352  |
| 513.99 | 60.0125  |
| 513.99 | 60.0125  |
| 520.41 | 55.9963  |
| 520.65 | 60.8332  |
| 527.90 | 67.8851  |
| 528.96 | 0.0000   |
| 529.64 | 73.7781  |
| 529.87 | 0.0000   |
| 531.02 | 76.7531  |
| 537.32 | 68.2611  |
| 543.00 | 68.4875  |
| 546.56 | 0.0000   |
| 549.76 | 65.8080  |
| 552.65 | 76.7384  |
| 555.20 | 60.1009  |
| 563.23 | 60.3727  |
| 563.90 | 59.4049  |
| 568.70 | 64.5299  |
| 569.32 | 70.5103  |
| 569.50 | 76.4760  |
| 569.67 | 76.4830  |
| 573.80 | 86.6150  |
| 574.00 | 81.6447  |
| 574.64 | 84.6628  |
| 578.91 | 59.1042  |
| 579.30 | 0.0000   |
| 583.14 | 81.0569  |
| 585.48 | 67.3312  |
| 591.81 | 66.3565  |
| 592.07 | 69.3832  |
| 593.00 | 87.5257  |
| 595.88 | 72.5471  |
| 600.56 | 72.7295  |
| 602.52 | 0.0000   |
| 602.71 | 81.9146  |
| 602.71 | 81.9146  |
| 603.60 | 82.2889  |
| 604.41 | 76.1180  |
| 604.70 | 77.7492  |
| 609.31 | 61.9047  |

|        |         |
|--------|---------|
| 609.31 | 61.9047 |
| 609.31 | 61.9047 |
| 609.31 | 61.9047 |
| 610.33 | 61.9364 |
| 612.46 | 55.2981 |
| 614.37 | 53.7249 |
| 618.01 | 48.9331 |
| 621.84 | 56.1816 |
| 621.84 | 56.1816 |
| 631.29 | 65.6934 |
| 633.02 | 68.8341 |
| 633.10 | 68.8361 |
| 634.78 | 64.7823 |
| 635.90 | 67.9054 |
| 636.97 | 71.0299 |
| 645.85 | 66.1797 |
| 646.12 | 65.1533 |
| 656.30 | 69.8517 |
| 657.75 | 68.2366 |
| 657.90 | 0.0000  |
| 661.65 | 62.5323 |
| 661.65 | 62.5323 |
| 664.57 | 0.0000  |
| 666.33 | 65.1822 |
| 666.33 | 65.1822 |
| 675.00 | 52.4506 |
| 677.61 | 68.2710 |
| 685.20 | 55.8709 |
| 692.80 | 63.4790 |
| 695.00 | 68.8403 |
| 696.49 | 82.6655 |
| 696.49 | 82.6655 |
| 697.00 | 76.3264 |
| 697.49 | 65.7407 |
| 698.33 | 57.2811 |
| 698.50 | 57.2844 |
| 699.00 | 68.9693 |
| 702.63 | 78.6544 |
| 706.10 | 91.5561 |
| 706.58 | 0.0000  |
| 706.67 | 92.6446 |
| 709.31 | 62.9054 |
| 711.68 | 73.6494 |
| 713.82 | 67.3105 |
| 717.42 | 61.0026 |
| 720.50 | 58.9444 |
| 721.93 | 0.0000  |
| 722.20 | 67.2144 |
| 722.78 | 65.2290 |
| 722.78 | 65.2290 |
| 722.89 | 65.2327 |
| 722.95 | 65.2346 |
| 723.30 | 63.5269 |
| 724.18 | 54.9641 |
| 727.18 | 68.7988 |
| 733.00 | 56.9089 |
| 735.90 | 56.1212 |
| 739.58 | 48.6461 |
| 742.81 | 47.6349 |
| 744.21 | 58.4973 |
| 747.13 | 63.9965 |
| 751.79 | 66.3018 |
| 752.31 | 68.4929 |
| 753.82 | 59.8340 |
| 755.35 | 46.8108 |
| 756.15 | 52.2729 |
| 756.87 | 52.2891 |
| 763.93 | 73.2138 |
| 765.79 | 63.4304 |
| 766.42 | 63.4481 |
| 766.84 | 56.8940 |
| 776.49 | 51.6386 |
| 778.00 | 63.7667 |
| 778.57 | 57.1844 |
| 778.89 | 53.8928 |
| 783.80 | 80.4586 |
| 785.46 | 66.1761 |
| 792.07 | 54.8600 |



|         |         |
|---------|---------|
| 795.84  | 54.9478 |
| 796.30  | 53.1855 |
| 798.80  | 69.2136 |
| 801.93  | 60.9275 |
| 805.60  | 64.5172 |
| 810.29  | 53.4976 |
| 810.76  | 51.2783 |
| 815.85  | 46.9180 |
| 817.79  | 53.6631 |
| 818.51  | 58.1525 |
| 819.60  | 34.6839 |
| 826.30  | 47.1205 |
| 828.27  | 0.0000  |
| 831.60  | 65.2111 |
| 831.96  | 65.2217 |
| 834.83  | 70.2514 |
| 836.80  | 0.0000  |
| 846.75  | 47.0590 |
| 848.13  | 50.7076 |
| 856.28  | 0.0000  |
| 856.80  | 45.4309 |
| 860.37  | 48.2253 |
| 867.32  | 47.9011 |
| 867.82  | 53.7404 |
| 871.10  | 45.6873 |
| 873.19  | 35.6656 |
| 874.81  | 48.4984 |
| 875.33  | 0.0000  |
| 876.40  | 52.1920 |
| 879.36  | 43.0849 |
| 880.27  | 44.0168 |
| 880.51  | 44.0209 |
| 881.50  | 50.4601 |
| 883.24  | 52.3298 |
| 884.67  | 45.0104 |
| 889.25  | 59.8124 |
| 896.60  | 49.8313 |
| 898.02  | 45.2413 |
| 899.00  | 46.1816 |
| 903.28  | 47.1825 |
| 911.07  | 46.3940 |
| 911.07  | 46.3940 |
| 911.07  | 46.3940 |
| 919.63  | 59.5750 |
| 920.93  | 47.4962 |
| 925.00  | 47.5685 |
| 925.24  | 46.6406 |
| 926.50  | 43.8628 |
| 935.52  | 44.0086 |
| 937.48  | 58.0962 |
| 944.10  | 46.9653 |
| 946.00  | 53.5780 |
| 949.00  | 43.2856 |
| 962.29  | 48.8525 |
| 964.01  | 37.8447 |
| 966.15  | 41.6604 |
| 968.20  | 41.6915 |
| 969.11  | 41.7055 |
| 969.11  | 41.7055 |
| 969.11  | 41.7055 |
| 977.42  | 38.0264 |
| 980.50  | 44.7292 |
| 983.50  | 43.8247 |
| 989.30  | 36.2763 |
| 996.32  | 44.9793 |
| 1001.03 | 45.0528 |
| 1001.68 | 42.1867 |
| 1004.76 | 53.7496 |
| 1021.30 | 0.0000  |
| 1024.50 | 0.0000  |
| 1034.80 | 34.9102 |
| 1036.00 | 48.5059 |
| 1037.82 | 58.2422 |
| 1038.57 | 59.2278 |
| 1038.76 | 0.0000  |
| 1045.16 | 57.4155 |
| 1046.59 | 45.7584 |
| 1048.07 | 38.9629 |

|         |          |
|---------|----------|
| 1050.47 | 56.5415  |
| 1050.47 | 56.5415  |
| 1062.04 | 41.1018  |
| 1063.62 | 46.9969  |
| 1076.63 | 38.3487  |
| 1077.35 | 30.4899  |
| 1078.86 | 38.3773  |
| 1085.78 | 43.3941  |
| 1099.22 | 53.4885  |
| 1112.02 | 55.6965  |
| 1112.84 | 63.4232  |
| 1115.52 | 58.0827  |
| 1120.29 | 58.8358  |
| 1120.29 | 58.8358  |
| 1120.29 | 58.8358  |
| 1120.29 | 58.8358  |
| 1120.51 | 58.8387  |
| 1121.28 | 58.8531  |
| 1124.00 | 0.0000   |
| 1129.67 | 57.1512  |
| 1131.51 | 0.0000   |
| 1147.95 | 0.0000   |
| 1167.94 | 48.5789  |
| 1173.22 | 64.8750  |
| 1175.09 | 53.7557  |
| 1177.93 | 66.9990  |
| 1189.05 | 47.8721  |
| 1204.90 | 70.6138  |
| 1205.75 | 0.0000   |
| 1213.00 | 72.8339  |
| 1221.42 | 59.6454  |
| 1230.97 | 68.0625  |
| 1235.34 | 100.1591 |
| 1236.41 | 0.0000   |
| 1238.25 | 58.9065  |
| 1246.25 | 64.2221  |
| 1260.41 | 0.0000   |
| 1271.85 | 45.9121  |
| 1274.45 | 31.3271  |
| 1274.54 | 31.3271  |
| 1291.56 | 40.9214  |
| 1298.22 | 0.0000   |
| 1312.09 | 26.3818  |
| 1325.50 | 27.5387  |
| 1325.50 | 27.5387  |
| 1332.49 | 36.0802  |
| 1333.61 | 32.9072  |
| 1360.21 | 27.7977  |
| 1362.66 | 0.0000   |
| 1365.15 | 24.6228  |
| 1368.21 | 21.4287  |
| 1368.53 | 0.0000   |
| 1376.25 | 17.8955  |
| 1384.27 | 16.1396  |
| 1394.10 | 17.2602  |
| 1395.20 | 18.3447  |
| 1407.95 | 27.0667  |
| 1434.06 | 18.5298  |
| 1436.60 | 15.2694  |
| 1457.56 | 0.0000   |
| 1460.81 | 16.4612  |
| 1489.15 | 8.2888   |
| 1509.49 | 14.8099  |
| 1596.49 | 23.6257  |
| 1620.62 | 18.0560  |
| 1678.03 | 0.0000   |
| 1691.02 | 14.4824  |
| 1691.02 | 14.4824  |
| 1706.46 | 0.0000   |
| 1750.46 | 0.0000   |
| 1764.49 | 13.7345  |
| 1764.49 | 13.7345  |
| 1764.49 | 13.7345  |
| 1764.49 | 13.7345  |
| 1770.23 | 18.5226  |
| 1771.40 | 10.1057  |
| 1791.20 | 0.0000   |
| 1808.65 | 10.8926  |

1836.01

12.9460

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G244630006

|                             |            |      |
|-----------------------------|------------|------|
| Total Uranium Activity      | 4.0509E+00 | ug/g |
| Total Uranium Counting Unc. | 4.5495E+00 | ug/g |
| Total Uranium Tpu           | 2.3212E-06 | ug/g |
| Total Uranium Mda           | 2.3178E+00 | ug/g |

```

*****
*
*               GEL Laboratories LLC
*               2040 SAVAGE ROAD
*               CHARLESTON , SC 29417
*               GROSS GAMMA REPORT
*
*****
*
*  BATCH ID      : 941639          SAMPLE ID   : G244630006
*  ANALYST       : MXR1           DETECTOR    : GAM11
*  SAMPLE DATE   : 8-JAN-2010 12:00:00.00  COUNT TIME : 0 02:00:00.00
*  ANALYSIS DATE : 23-JAN-2010 11:47:02.00  SAMPLE ALQT: 123.060 GRAM
*
*****

```

```

GROSS GAMMA ACTIVITY (pCi/GRAM ) : 9.298E+00
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.346E+00
GROSS GAMMA MDA     (pCi/GRAM ) : 3.257E+00
GROSS GAMMA DLC      (pCi/GRAM ) : 1.572E+00

```

VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 13:50:02.99

```

*****
*                               GEL Laboratories LLC                      *
*                               2040 Savage Road                          *
*                               Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630007.CNF;1
Sample date        : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 11:47:27
Sample ID          : G244630007      Sample quantity   : 1.30800E+02 GRAM
Detector name      : GAM15           Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00   Elapsed real time: 0 02:00:01.41  0.0%
Energy tolerance   : 1.50000 keV     Analyst Initials : MXR1
Abundance limit    : 75.00000         Sensitivity      : 5.00000
Batch ID           : 941639           Detector SN#     :
Matrix Spike ID    :                  LCS ID           : 1032-A
*****

```

| Pk | It | Energy   | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err  | Fit      |
|----|----|----------|------|-------|------|---------|------|----|----------|-------|----------|
| 1  | 4  | 74.36    | 379  | 577   | 1.91 | 149.21  | 141  | 18 | 5.26E-02 | 14.2  | 2.43E+00 |
| 2  | 4  | 76.53*   | 479  | 385   | 1.19 | 153.55  | 141  | 18 | 6.65E-02 | 8.7   |          |
| 3  | 0  | 82.85*   | 9    | 585   | 0.98 | 166.19  | 162  | 10 | 1.22E-03 | 522.6 |          |
| 4  | 0  | 86.36*   | 132  | 393   | 1.22 | 173.20  | 171  | 7  | 1.83E-02 | 26.6  | 2.01E+00 |
| 5  | 0  | 92.36*   | 144  | 498   | 1.33 | 185.18  | 181  | 9  | 2.00E-02 | 31.4  |          |
| 6  | 0  | 185.31*  | 142  | 356   | 1.66 | 371.01  | 367  | 10 | 1.97E-02 | 27.6  |          |
| 7  | 0  | 209.14   | 147  | 414   | 1.95 | 418.65  | 412  | 13 | 2.04E-02 | 29.9  | 9.29E-01 |
| 8  | 3  | 238.04*  | 1256 | 245   | 1.25 | 476.42  | 471  | 17 | 1.75E-01 | 3.7   |          |
| 9  | 3  | 240.91   | 391  | 293   | 1.98 | 482.16  | 471  | 17 | 5.43E-02 | 13.7  |          |
| 10 | 0  | 269.27   | 120  | 325   | 1.69 | 538.85  | 531  | 16 | 1.67E-02 | 34.7  | 2.01E+00 |
| 11 | 0  | 294.69*  | 377  | 276   | 1.46 | 589.68  | 583  | 13 | 5.23E-02 | 10.6  |          |
| 12 | 0  | 326.82   | 43   | 204   | 1.34 | 653.91  | 650  | 10 | 6.00E-03 | 63.5  |          |
| 13 | 0  | 337.69   | 215  | 206   | 1.23 | 675.64  | 670  | 11 | 2.98E-02 | 14.7  | 9.29E-01 |
| 14 | 0  | 351.34*  | 594  | 226   | 1.44 | 702.94  | 696  | 15 | 8.25E-02 | 7.0   |          |
| 15 | 0  | 462.70   | 85   | 92    | 1.86 | 925.56  | 921  | 10 | 1.18E-02 | 23.9  |          |
| 16 | 0  | 510.15*  | 110  | 176   | 1.60 | 1020.44 | 1012 | 17 | 1.52E-02 | 32.8  | 2.01E+00 |
| 17 | 0  | 582.55*  | 368  | 92    | 1.69 | 1165.19 | 1159 | 11 | 5.11E-02 | 7.5   |          |
| 18 | 0  | 608.97*  | 440  | 114   | 1.67 | 1218.01 | 1212 | 15 | 6.10E-02 | 7.5   |          |
| 19 | 0  | 726.61*  | 114  | 77    | 2.50 | 1453.23 | 1447 | 12 | 1.58E-02 | 18.4  | 9.29E-01 |
| 20 | 0  | 860.68*  | 35   | 65    | 2.25 | 1721.29 | 1712 | 13 | 4.79E-03 | 51.8  |          |
| 21 | 0  | 910.38*  | 327  | 48    | 1.76 | 1820.67 | 1811 | 16 | 4.54E-02 | 7.5   |          |
| 22 | 6  | 963.80   | 65   | 43    | 2.35 | 1927.47 | 1920 | 24 | 8.96E-03 | 25.9  | 9.29E-01 |
| 23 | 6  | 968.36*  | 175  | 47    | 2.26 | 1936.59 | 1920 | 24 | 2.43E-02 | 11.5  |          |
| 24 | 0  | 1120.20* | 82   | 81    | 1.85 | 2240.23 | 2232 | 15 | 1.14E-02 | 27.0  |          |
| 25 | 0  | 1460.31* | 1312 | 53    | 2.19 | 2920.35 | 2912 | 19 | 1.82E-01 | 3.1   | 9.29E-01 |
| 26 | 0  | 1729.76  | 20   | 17    | 1.66 | 3459.21 | 3452 | 11 | 2.85E-03 | 44.3  |          |
| 27 | 0  | 1764.28* | 76   | 19    | 0.89 | 3528.26 | 3521 | 19 | 1.06E-02 | 18.6  |          |

Flag: "\*" = Peak area was modified by background subtraction

## VMS Nuclide Identification Report V3.1 Generated 23-JAN-2010 13:50:07

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630007.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 8-JAN-2010 12:00:00   Acquisition date : 23-JAN-2010 11:47:27
Sample ID         : G244630007             Sample quantity  : 130.80 GRAM
Sample type       : SOLID                  Sample geometry  :
Detector name     : GAMMA15                Detector geometry: CAN
Elapsed live time : 0 02:00:00.00          Elapsed real time: 0 02:00:01.41    0.0%
Peak Width (FWHM): 3.00                   Confidence level  : 5.00 %
Energy tolerance  : 1.50 keV               Half life ratio  : 8.00
Errors propagated: Yes                     Systematic Error  : 0.00 %
Efficiency type   : Empirical               Efficiencies at   : Peak Energy
Abundance limit   : 75.00                  WTM error limit  : 3.00

```

## Full Combined Activity-MDA Report

## ---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| K-40    | +         | 1460.81      | *   | 3.532E+01           | 3.477E+00 | 6.985E-01      | 5.340E-02 | 50.560  |
| SN-126  |           | 64.28        |     | -8.259E-02          | 8.947E-01 | 1.465E+00      | 2.512E-01 | -0.056  |
|         | +         | 86.94        |     | 9.698E-01           | 6.583E-01 | 8.436E-01      | 3.548E-01 | 1.150   |
|         | +         | 87.57        | *   | 2.333E-01           | 1.272E-01 | 1.935E-01      | 2.233E-02 | 1.206   |
| CS-135  | +         | 268.24       | *   | 5.580E-01           | 3.898E-01 | 3.223E-01      | 2.756E-02 | 1.731   |
| TL-208  |           | 277.35       |     | 7.371E-01           | 5.236E-01 | 8.740E-01      | 9.793E-02 | 0.843   |
|         | +         | 510.84       |     | 5.922E-01           | 3.934E-01 | 2.633E-01      | 2.651E-02 | 2.249   |
|         | +         | 583.14       | *   | 5.618E-01           | 9.206E-02 | 7.581E-02      | 4.827E-03 | 7.410   |
|         | +         | 860.37       |     | 4.929E-01           | 5.126E-01 | 4.909E-01      | 4.219E-02 | 1.004   |
| BI-211  | +         | 72.87        |     | 2.702E+01           | 8.231E+00 | 7.162E+00      | 7.986E-01 | 3.772   |
|         | +         | 351.07       | *   | 4.109E+00           | 6.426E-01 | 3.949E-01      | 2.714E-02 | 10.403  |
| PB-212  | +         | 74.81        |     | 3.207E+00           | 1.022E+00 | 7.908E-01      | 1.148E-01 | 4.055   |
|         | +         | 77.11        |     | 2.235E+00           | 4.602E-01 | 4.281E-01      | 4.753E-02 | 5.220   |
|         | +         | 87.30        |     | 1.079E+00           | 5.979E-01 | 8.480E-01      | 1.294E-01 | 1.272   |
|         | +         | 238.63       | *   | 1.915E+00           | 2.138E-01 | 1.166E-01      | 9.653E-03 | 16.426  |
|         |           | 300.09       |     | 1.096E+00           | 1.119E+00 | 1.719E+00      | 1.541E-01 | 0.638   |
| PO-212  | +         | 74.81        |     | 3.207E+00           | 1.022E+00 | 7.908E-01      | 1.148E-01 | 4.055   |
|         | +         | 77.11        |     | 2.235E+00           | 4.602E-01 | 4.281E-01      | 4.753E-02 | 5.220   |
|         | +         | 87.30        |     | 1.079E+00           | 5.979E-01 | 8.480E-01      | 1.294E-01 | 1.272   |
|         |           | 115.19       |     | -2.456E+00          | 4.570E+00 | 7.301E+00      | 5.586E-01 | -0.336  |
|         | +         | 238.63       | *   | 1.915E+00           | 2.138E-01 | 1.166E-01      | 9.653E-03 | 16.426  |
|         |           | 300.09       |     | 1.096E+00           | 1.119E+00 | 1.719E+00      | 1.541E-01 | 0.638   |
| BI-214  | +         | 609.31       | *   | 1.264E+00           | 2.120E-01 | 1.345E-01      | 9.985E-03 | 9.399   |
|         | +         | 1120.29      |     | 1.231E+00           | 6.753E-01 | 5.651E-01      | 5.213E-02 | 2.179   |
|         | +         | 1764.49      |     | 1.568E+00           | 5.918E-01 | 3.441E-01      | 2.141E-02 | 4.556   |
| PB-214  | +         | 74.81        |     | 5.525E+00           | 1.732E+00 | 1.363E+00      | 1.820E-01 | 4.055   |
|         | +         | 77.11        |     | 3.831E+00           | 8.412E-01 | 7.338E-01      | 9.883E-02 | 5.220   |
|         | +         | 87.30        |     | 1.848E+00           | 1.018E+00 | 1.453E+00      | 2.014E-01 | 1.272   |
|         | +         | 241.98       |     | 3.578E+00           | 1.030E+00 | 6.288E-01      | 5.621E-02 | 5.690   |
|         | +         | 295.21       |     | 1.551E+00           | 3.591E-01 | 2.950E-01      | 2.729E-02 | 5.258   |
|         | +         | 351.92       | *   | 1.429E+00           | 2.356E-01 | 1.376E-01      | 1.186E-02 | 10.384  |
| PO-214  | +         | 74.81        |     | 5.525E+00           | 1.732E+00 | 1.363E+00      | 1.820E-01 | 4.055   |
|         | +         | 77.11        |     | 3.831E+00           | 8.412E-01 | 7.338E-01      | 9.883E-02 | 5.220   |
|         | +         | 87.30        |     | 1.848E+00           | 1.018E+00 | 1.453E+00      | 2.014E-01 | 1.272   |

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PO-216  | +         | 241.98       |     | 3.578E+00           | 1.030E+00 | 6.288E-01      | 5.621E-02 | 5.690   |
|         | +         | 295.21       |     | 1.551E+00           | 3.591E-01 | 2.950E-01      | 2.729E-02 | 5.258   |
|         | +         | 351.92       | *   | 1.429E+00           | 2.356E-01 | 1.376E-01      | 1.186E-02 | 10.384  |
|         | +         | 74.81        |     | 3.207E+00           | 1.022E+00 | 7.908E-01      | 1.148E-01 | 4.055   |
|         | +         | 77.11        |     | 2.235E+00           | 4.602E-01 | 4.281E-01      | 4.753E-02 | 5.220   |
|         | +         | 87.30        |     | 1.079E+00           | 5.979E-01 | 8.480E-01      | 1.294E-01 | 1.272   |
| PO-218  | +         | 238.63       | *   | 1.915E+00           | 2.138E-01 | 1.166E-01      | 9.653E-03 | 16.426  |
|         |           | 300.09       |     | 1.096E+00           | 1.119E+00 | 1.719E+00      | 1.541E-01 | 0.638   |
|         | +         | 74.81        |     | 5.525E+00           | 1.732E+00 | 1.363E+00      | 1.820E-01 | 4.055   |
|         | +         | 77.11        |     | 3.831E+00           | 8.412E-01 | 7.338E-01      | 9.883E-02 | 5.220   |
|         | +         | 87.30        |     | 1.848E+00           | 1.018E+00 | 1.453E+00      | 2.014E-01 | 1.272   |
|         | +         | 241.98       |     | 3.578E+00           | 1.030E+00 | 6.288E-01      | 5.621E-02 | 5.690   |
| RA-224  | +         | 295.21       |     | 1.551E+00           | 3.591E-01 | 2.950E-01      | 2.729E-02 | 5.258   |
|         | +         | 351.92       | *   | 1.429E+00           | 2.356E-01 | 1.376E-01      | 1.186E-02 | 10.384  |
|         | +         | 240.98       | *   | 6.785E+00           | 1.915E+00 | 1.327E+00      | 9.234E-02 | 5.114   |
| RA-226  | +         | 609.31       | *   | 1.264E+00           | 2.120E-01 | 1.345E-01      | 9.985E-03 | 9.399   |
|         | +         | 1120.29      |     | 1.231E+00           | 6.753E-01 | 5.651E-01      | 5.213E-02 | 2.179   |
|         | +         | 1764.49      |     | 1.568E+00           | 5.918E-01 | 3.441E-01      | 2.141E-02 | 4.556   |
| AC-228  | +         | 338.32       |     | 1.638E+00           | 8.237E-01 | 4.589E-01      | 1.875E-01 | 3.569   |
|         | +         | 911.07       | *   | 2.210E+00           | 4.118E-01 | 2.479E-01      | 2.756E-02 | 8.913   |
|         | +         | 969.11       |     | 2.092E+00           | 6.825E-01 | 4.228E-01      | 9.777E-02 | 4.948   |
| RA-228  | +         | 338.32       |     | 1.638E+00           | 8.237E-01 | 4.589E-01      | 1.875E-01 | 3.569   |
|         | +         | 911.07       | *   | 2.210E+00           | 4.118E-01 | 2.479E-01      | 2.756E-02 | 8.913   |
|         | +         | 969.11       |     | 2.092E+00           | 6.825E-01 | 4.228E-01      | 9.777E-02 | 4.948   |
| TH-228  | +         | 74.81        |     | 3.255E+00           | 9.923E-01 | 8.027E-01      | 8.964E-02 | 4.055   |
|         | +         | 77.11        |     | 2.268E+00           | 4.672E-01 | 4.345E-01      | 4.825E-02 | 5.220   |
|         | +         | 87.30        |     | 1.095E+00           | 5.970E-01 | 8.608E-01      | 9.916E-02 | 1.272   |
| TH-230  | +         | 238.63       | *   | 1.944E+00           | 2.170E-01 | 1.184E-01      | 9.798E-03 | 16.426  |
|         |           | 300.09       |     | 1.112E+00           | 1.308E+00 | 1.745E+00      | 1.030E+00 | 0.638   |
|         | +         | 609.31       | *   | 1.264E+00           | 2.120E-01 | 1.345E-01      | 9.985E-03 | 9.399   |
| TH-232  | +         | 1120.29      |     | 1.231E+00           | 6.753E-01 | 5.651E-01      | 5.213E-02 | 2.179   |
|         | +         | 1764.49      |     | 1.568E+00           | 5.918E-01 | 3.440E-01      | 2.141E-02 | 4.556   |
|         | +         | 338.32       |     | 1.638E+00           | 4.916E-01 | 4.589E-01      | 2.954E-02 | 3.569   |
| U-234   | +         | 911.07       | *   | 2.210E+00           | 4.118E-01 | 2.479E-01      | 2.756E-02 | 8.913   |
|         | +         | 969.11       |     | 2.092E+00           | 6.825E-01 | 4.228E-01      | 9.777E-02 | 4.948   |
|         | +         | 609.31       | *   | 1.264E+00           | 2.120E-01 | 1.345E-01      | 9.985E-03 | 9.399   |
| NP-237  | +         | 1120.29      |     | 1.231E+00           | 6.753E-01 | 5.651E-01      | 5.213E-02 | 2.179   |
|         | +         | 1764.49      |     | 1.568E+00           | 5.918E-01 | 3.440E-01      | 2.141E-02 | 4.556   |
|         | +         | 86.50        | *   | 6.850E-01           | 3.993E-01 | 6.243E-01      | 1.474E-01 | 1.097   |
| AM-243  |           | 95.87        |     | -1.762E-02          | 1.408E+00 | 2.025E+00      | 5.081E-01 | -0.009  |
|         | +         | 74.67        | *   | 5.199E-01           | 1.584E-01 | 1.288E-01      | 1.432E-02 | 4.035   |
|         | +         | 86.72        |     | 2.569E+01           | 1.400E+01 | 2.243E+01      | 2.575E+00 | 1.145   |
| ANH-511 |           | 117.66       |     | 7.936E-01           | 4.813E+00 | 7.901E+00      | 5.902E-01 | 0.100   |
|         |           | 142.18       |     | -1.423E+01          | 2.368E+01 | 3.701E+01      | 2.522E+00 | -0.384  |
|         | +         | 511.00       | *   | 1.279E-01           | 8.429E-02 | 5.690E-02      | 3.213E-03 | 2.248   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| BE-7    |           | 477.59       | *   | 2.123E-01           | 4.122E-01 | 6.952E-01      | 4.633E-02 | 0.305   |



----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| NA-22   | 1274.54   | *            |     | -1.495E-02          | 5.597E-02 | 8.819E-02           | 6.053E-03 | -0.170  |
| NA-24   | 1368.53   | *            |     | -2.603E-01          | 5.597E-02 | Half-Life too short |           |         |
| AL-26   | 1129.67   |              |     | -1.065E-01          | 2.302E+00 | 3.741E+00           | 2.357E-01 | -0.028  |
|         | 1808.65   | *            |     | 1.635E-03           | 3.521E-02 | 5.841E-02           | 3.495E-03 | 0.028   |
| TI-44   | 67.85     |              |     | 4.545E-02           | 8.100E-02 | 1.209E-01           | 1.379E-02 | 0.376   |
|         | 78.38     | *            |     | 1.535E-01           | 8.704E-02 | 1.005E-01           | 1.117E-02 | 1.528   |
| SC-46   | 889.25    | *            |     | -1.837E-02          | 4.831E-02 | 7.733E-02           | 6.486E-03 | -0.238  |
| +       | 1120.51   |              |     | 2.105E-01           | 1.146E-01 | 1.458E-01           | 9.363E-03 | 1.444   |
| V-48    | 944.10    |              |     | 2.125E-01           | 1.109E+00 | 1.859E+00           | 1.528E-01 | 0.114   |
|         | 983.50    | *            |     | -4.360E-02          | 8.541E-02 | 1.338E-01           | 1.057E-02 | -0.326  |
|         | 1312.09   |              |     | -5.411E-03          | 9.302E-02 | 1.493E-01           | 1.090E-02 | -0.036  |
| CR-51   | 320.08    | *            |     | 9.569E-02           | 4.844E-01 | 7.934E-01           | 5.722E-02 | 0.121   |
| MN-52   | 744.21    |              |     | -1.627E-01          | 2.703E-01 | 4.299E-01           | 2.637E-02 | -0.378  |
|         | 848.13    |              |     | -2.061E+00          | 7.725E+00 | 1.252E+01           | 9.652E-01 | -0.165  |
|         | 935.52    |              |     | 1.883E-01           | 2.989E-01 | 5.187E-01           | 4.296E-02 | 0.363   |
|         | 1246.25   |              |     | 1.003E+01           | 9.356E+00 | 1.649E+01           | 1.075E+00 | 0.608   |
|         | 1333.61   |              |     | 5.178E+00           | 6.152E+00 | 1.086E+01           | 8.193E-01 | 0.477   |
|         | 1434.06   | *            |     | -3.763E-02          | 2.504E-01 | 4.095E-01           | 3.036E-02 | -0.092  |
| MN-54   | 834.83    | *            |     | 2.052E-02           | 4.941E-02 | 8.436E-02           | 6.323E-03 | 0.243   |
| CO-56   | 846.75    | *            |     | 4.302E-02           | 4.630E-02 | 8.239E-02           | 6.333E-03 | 0.522   |
|         | 977.42    |              |     | 8.269E-01           | 3.630E+00 | 5.969E+00           | 4.747E-01 | 0.139   |
|         | 1037.82   |              |     | -1.570E-01          | 4.059E-01 | 6.430E-01           | 5.088E-02 | -0.244  |
|         | 1175.09   |              |     | 8.779E-01           | 2.823E+00 | 4.690E+00           | 2.681E-01 | 0.187   |
|         | 1238.25   |              |     | 2.190E-02           | 1.188E-01 | 1.954E-01           | 1.321E-02 | 0.112   |
|         | 1360.21   |              |     | -6.524E-02          | 1.233E+00 | 1.975E+00           | 1.486E-01 | -0.033  |
|         | 1771.40   |              |     | -1.792E-01          | 3.042E-01 | 3.514E-01           | 2.174E-02 | -0.510  |
| CO-57   | 122.06    | *            |     | -8.491E-03          | 3.259E-02 | 5.256E-02           | 3.779E-03 | -0.162  |
|         | 136.48    |              |     | 7.045E-02           | 2.748E-01 | 4.504E-01           | 3.457E-02 | 0.156   |
| CO-58   | 810.76    | *            |     | -4.714E-05          | 4.890E-02 | 8.134E-02           | 5.811E-03 | -0.001  |
| FE-59   | 142.65    |              |     | 4.835E-01           | 3.559E+00 | 5.722E+00           | 3.896E-01 | 0.085   |
|         | 192.34    |              |     | -4.745E-01          | 1.287E+00 | 2.003E+00           | 2.470E-01 | -0.237  |
|         | 1099.22   | *            |     | -4.245E-02          | 1.243E-01 | 1.974E-01           | 1.494E-02 | -0.215  |
|         | 1291.56   |              |     | 1.964E-02           | 1.476E-01 | 2.422E-01           | 2.044E-02 | 0.081   |
| CO-60   | 1173.22   |              |     | -2.197E-02          | 5.917E-02 | 9.271E-02           | 5.280E-03 | -0.237  |
|         | 1332.49   | *            |     | 4.469E-02           | 4.771E-02 | 8.509E-02           | 6.422E-03 | 0.525   |
| ZN-65   | 1115.52   | *            |     | 2.175E-02           | 1.361E-01 | 1.940E-01           | 1.260E-02 | 0.112   |
| GE-68   | 1077.35   | *            |     | 7.981E-01           | 1.555E+00 | 2.659E+00           | 1.848E-01 | 0.300   |
| AS-73   | 53.44     | *            |     | -2.589E-01          | 2.114E+00 | 3.502E+00           | 4.786E-01 | -0.074  |
| AS-74   | 595.88    | *            |     | 5.223E-02           | 1.208E-01 | 1.974E-01           | 1.061E-02 | 0.265   |
|         | 634.78    |              |     | 1.420E-01           | 4.423E-01 | 7.299E-01           | 3.786E-02 | 0.195   |
| SE-75   | 66.05     |              |     | -1.524E+01          | 8.435E+00 | 1.258E+01           | 1.631E+00 | -1.212  |
|         | 96.73     |              |     | 7.897E-01           | 1.147E+00 | 1.699E+00           | 2.436E-01 | 0.465   |
|         | 121.11    |              |     | -5.152E-02          | 1.768E-01 | 2.848E-01           | 2.905E-02 | -0.181  |
|         | 136.00    |              |     | -1.203E-02          | 5.190E-02 | 8.355E-02           | 5.818E-03 | -0.144  |
|         | 198.60    |              |     | -6.632E-01          | 2.419E+00 | 3.770E+00           | 3.009E-01 | -0.176  |
|         | 264.65    | *            |     | 4.721E-03           | 6.358E-02 | 9.324E-02           | 6.521E-03 | 0.051   |
|         | 279.53    |              |     | 9.597E-03           | 1.419E-01 | 2.382E-01           | 1.738E-02 | 0.040   |
|         | 303.91    |              |     | -1.561E+00          | 2.774E+00 | 4.498E+00           | 4.567E-01 | -0.347  |
|         | 400.65    |              |     | 3.324E-02           | 3.272E-01 | 5.257E-01           | 4.747E-02 | 0.063   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| BR-77   |           | 87.88        |     | 2.708E+02           | 4.005E+02 | 4.355E+02      | 5.036E+01 | 0.622   |
|         |           | 200.40       |     | -8.728E+01          | 2.075E+02 | 3.263E+02      | 2.230E+01 | -0.267  |
|         | +         | 239.00       |     | 2.965E+02           | 3.031E+01 | 4.752E+01      | 3.306E+00 | 6.241   |
|         |           | 249.79       |     | 1.171E+01           | 7.896E+01 | 1.335E+02      | 9.297E+00 | 0.088   |
|         |           | 281.68       |     | -1.126E+02          | 1.135E+02 | 1.810E+02      | 1.246E+01 | -0.622  |
|         |           | 297.23       |     | 2.108E+02           | 8.336E+01 | 1.359E+02      | 9.246E+00 | 1.551   |
|         |           | 303.76       |     | -1.267E+02          | 2.279E+02 | 3.700E+02      | 2.501E+01 | -0.342  |
|         |           | 439.47       |     | 1.507E+02           | 1.774E+02 | 3.054E+02      | 1.746E+01 | 0.493   |
|         |           | 484.57       |     | -2.746E+02          | 2.670E+02 | 4.031E+02      | 2.293E+01 | -0.681  |
|         |           | 520.65       | *   | 5.335E+00           | 1.165E+01 | 1.959E+01      | 1.102E+00 | 0.272   |
|         |           | 574.64       |     | -1.543E+02          | 2.785E+02 | 4.046E+02      | 2.210E+01 | -0.381  |
|         |           | 578.91       |     | 1.281E+02           | 1.256E+02 | 1.919E+02      | 1.045E+01 | 0.668   |
|         |           | 585.48       |     | 1.158E+03           | 2.752E+02 | 4.954E+02      | 2.685E+01 | 2.337   |
|         |           | 755.35       |     | -1.356E+01          | 2.035E+02 | 3.382E+02      | 2.128E+01 | -0.040  |
|         |           | 817.79       |     | -3.539E+01          | 1.489E+02 | 2.426E+02      | 1.753E+01 | -0.146  |
|         | SR-82     | 698.33       |     | -8.160E+00          | 3.940E+01 | 6.510E+01      | 3.584E+00 | -0.125  |
|         |           | 776.49       | *   | -6.544E-01          | 4.700E-01 | 6.955E-01      | 4.591E-02 | -0.941  |
|         |           | 1395.20      |     | 2.378E+00           | 1.442E+01 | 2.454E+01      | 1.835E+00 | 0.097   |
| RB-83   |           | 520.41       | *   | 3.521E-02           | 7.879E-02 | 1.325E-01      | 7.455E-03 | 0.266   |
|         |           | 529.64       |     | -5.518E-04          | 1.349E-01 | 2.192E-01      | 1.229E-02 | -0.003  |
|         |           | 552.65       |     | -1.403E-01          | 2.571E-01 | 4.007E-01      | 2.219E-02 | -0.350  |
| RB-84   |           | 881.50       | *   | -1.040E-02          | 8.571E-02 | 1.405E-01      | 1.160E-02 | -0.074  |
| KR-85   |           | 513.99       | *   | 5.144E+00           | 9.642E+00 | 1.425E+01      | 8.035E-01 | 0.361   |
| SR-85   |           | 513.99       | *   | 2.634E-02           | 4.937E-02 | 7.294E-02      | 4.115E-03 | 0.361   |
| RB-86   |           | 1076.63      | *   | 6.695E-02           | 9.978E-01 | 1.643E+00      | 1.143E-01 | 0.041   |
| Y-88    |           | 898.02       |     | -2.185E-02          | 5.105E-02 | 8.132E-02      | 6.977E-03 | -0.269  |
|         |           | 1836.01      | *   | 2.492E-02           | 3.814E-02 | 7.010E-02      | 4.095E-03 | 0.355   |
| ZR-88   |           | 392.90       | *   | -1.318E-02          | 3.723E-02 | 6.008E-02      | 3.407E-03 | -0.219  |
| Y-91    |           | 1204.90      | *   | 1.773E+01           | 2.515E+01 | 4.310E+01      | 2.606E+00 | 0.411   |
| NB-94   |           | 702.63       | *   | 5.058E-03           | 3.979E-02 | 6.728E-02      | 3.743E-03 | 0.075   |
|         |           | 871.10       |     | 1.821E-02           | 3.830E-02 | 6.611E-02      | 5.344E-03 | 0.275   |
| NB-95   |           | 765.79       | *   | 4.452E-02           | 5.749E-02 | 1.003E-01      | 6.465E-03 | 0.444   |
| NB-95M  |           | 235.69       | *   | 1.761E+00           | 2.852E-01 | 4.475E-01      | 3.781E-02 | 3.936   |
| ZR-95   |           | 724.18       |     | 2.311E-01           | 1.457E-01 | 2.374E-01      | 1.639E-02 | 0.973   |
|         |           | 756.15       | *   | 2.001E-02           | 9.039E-02 | 1.533E-01      | 1.143E-02 | 0.131   |
| NB-97   |           | 657.90       | *   | 3.658E-02           | 9.039E-02 | Half-Life      | too short |         |
|         |           | 1024.50      |     | 3.910E+00           | 9.039E-02 | Half-Life      | too short |         |
| ZR-97   |           | 254.15       |     | -3.143E+00          | 9.039E-02 | Half-Life      | too short |         |
|         |           | 355.39       |     | 2.943E-01           | 9.039E-02 | Half-Life      | too short |         |
|         |           | 507.63       | *   | 1.079E+01           | 9.039E-02 | Half-Life      | too short |         |
|         |           | 602.52       |     | -2.629E+00          | 9.039E-02 | Half-Life      | too short |         |
|         |           | 1021.30      |     | -1.849E+00          | 9.039E-02 | Half-Life      | too short |         |
|         |           | 1147.95      |     | -2.329E+00          | 9.039E-02 | Half-Life      | too short |         |
|         |           | 1362.66      |     | 3.340E+00           | 9.039E-02 | Half-Life      | too short |         |
|         |           | 1750.46      |     | -5.004E+00          | 9.039E-02 | Half-Life      | too short |         |
| MO-99   |           | 140.51       |     | -7.081E+00          | 3.341E+01 | 5.369E+01      | 1.460E+01 | -0.132  |
|         |           | 181.06       |     | -1.712E+00          | 2.427E+01 | 3.393E+01      | 5.929E+00 | -0.050  |
|         |           | 366.43       |     | 1.276E+01           | 1.041E+02 | 1.733E+02      | 1.053E+01 | 0.074   |
|         |           | 739.58       | *   | -1.406E+01          | 1.336E+01 | 2.022E+01      | 2.810E+00 | -0.696  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 778.00       |     | -3.346E+01          | 4.035E+01 | 6.287E+01      | 4.165E+00 | -0.532  |
| TC-99M  |           | 140.51       | *   | -7.506E+09          | 4.035E+01 | Half-Life      | too short |         |
| RH-101  |           | 127.23       |     | 1.823E-02           | 4.229E-02 | 6.987E-02      | 4.923E-03 | 0.261   |
|         |           | 198.01       | *   | 8.804E-03           | 4.410E-02 | 7.015E-02      | 4.786E-03 | 0.125   |
|         |           | 325.23       |     | 2.190E-01           | 3.389E-01 | 5.101E-01      | 3.355E-02 | 0.429   |
| RH-102  |           | 418.52       |     | 2.165E-01           | 3.570E-01 | 6.081E-01      | 3.469E-02 | 0.356   |
|         |           | 475.06       | *   | -5.467E-03          | 3.673E-02 | 5.946E-02      | 3.389E-03 | -0.092  |
|         |           | 631.29       |     | 2.318E-02           | 6.888E-02 | 1.138E-01      | 5.924E-03 | 0.204   |
|         |           | 697.49       |     | -6.189E-02          | 8.974E-02 | 1.429E-01      | 7.853E-03 | -0.433  |
|         |           | 766.84       |     | -1.841E-02          | 1.472E-01 | 2.437E-01      | 1.574E-02 | -0.076  |
|         |           | 1046.59      |     | 1.372E-02           | 1.423E-01 | 2.353E-01      | 1.715E-02 | 0.058   |
|         |           | 1112.84      |     | 2.924E-01           | 3.181E-01 | 4.958E-01      | 3.232E-02 | 0.590   |
| RU-103  |           | 497.08       | *   | -5.446E-03          | 5.027E-02 | 8.138E-02      | 1.024E-02 | -0.067  |
|         | +         | 610.33       |     | 1.362E+01           | 2.916E+00 | 3.334E+00      | 5.081E-01 | 4.085   |
| RH-106  |           | 511.85       |     | 1.342E+00           | 2.808E-01 | 5.020E-01      | 2.834E-02 | 2.673   |
|         |           | 621.84       | *   | 2.150E-01           | 3.927E-01 | 6.584E-01      | 7.557E-02 | 0.327   |
|         |           | 1050.47      |     | -4.056E-01          | 2.846E+00 | 4.604E+00      | 3.338E-01 | -0.088  |
| RU-106  |           | 511.85       |     | 1.342E+00           | 2.808E-01 | 5.020E-01      | 2.834E-02 | 2.673   |
|         |           | 621.84       | *   | 2.150E-01           | 3.921E-01 | 6.584E-01      | 3.459E-02 | 0.327   |
|         |           | 1050.47      |     | -4.056E-01          | 2.846E+00 | 4.604E+00      | 3.338E-01 | -0.088  |
| AG-108M |           | 433.93       | *   | -2.647E-02          | 4.291E-02 | 6.776E-02      | 4.213E-03 | -0.391  |
|         |           | 614.37       |     | 1.874E-02           | 5.196E-02 | 7.514E-02      | 4.378E-03 | 0.249   |
|         |           | 722.95       |     | -9.746E-04          | 6.194E-02 | 8.930E-02      | 5.649E-03 | -0.011  |
| CD-109  |           | 88.03        | *   | 7.734E-01           | 1.950E+00 | 2.084E+00      | 2.410E-01 | 0.371   |
| AG-110M |           | 657.75       | *   | 1.391E-02           | 4.118E-02 | 6.800E-02      | 3.727E-03 | 0.204   |
|         |           | 677.61       |     | -1.769E-01          | 3.457E-01 | 5.283E-01      | 2.972E-02 | -0.335  |
|         |           | 706.67       |     | 1.006E-02           | 2.522E-01 | 4.239E-01      | 2.533E-02 | 0.024   |
|         |           | 763.93       |     | -1.258E-01          | 2.265E-01 | 3.645E-01      | 2.457E-02 | -0.345  |
|         |           | 884.67       |     | 4.615E-02           | 5.961E-02 | 1.048E-01      | 9.011E-03 | 0.440   |
|         |           | 937.48       |     | -1.627E-01          | 1.378E-01 | 2.023E-01      | 1.739E-02 | -0.804  |
|         |           | 1384.27      |     | -9.726E-02          | 1.804E-01 | 2.811E-01      | 2.185E-02 | -0.346  |
| IN-111  |           | 171.28       |     | -2.664E-01          | 1.308E+00 | 2.090E+00      | 1.395E-01 | -0.127  |
|         |           | 245.39       | *   | 7.172E-02           | 1.367E+00 | 2.010E+00      | 1.399E-01 | 0.036   |
| IN-113M |           | 391.69       | *   | -5.619E-02          | 5.454E-02 | 8.414E-02      | 5.104E-03 | -0.668  |
| SN-113  |           | 391.69       | *   | -5.619E-02          | 5.454E-02 | 8.414E-02      | 5.104E-03 | -0.668  |
| IN-114M |           | 190.27       | *   | 1.084E-01           | 2.704E-01 | 3.874E-01      | 2.627E-02 | 0.280   |
| CD-115  |           | 260.90       |     | -7.090E+00          | 1.740E+02 | 2.753E+02      | 1.914E+01 | -0.026  |
|         |           | 492.35       |     | -6.046E+00          | 4.258E+01 | 6.879E+01      | 3.907E+00 | -0.088  |
|         |           | 527.90       | *   | -3.864E+00          | 1.347E+01 | 2.146E+01      | 1.204E+00 | -0.180  |
| SN-117M |           | 156.02       |     | -1.514E-01          | 2.908E+00 | 4.693E+00      | 3.145E-01 | -0.032  |
|         |           | 158.56       | *   | -4.045E-02          | 7.110E-02 | 1.122E-01      | 7.500E-03 | -0.361  |
| SB-122  |           | 563.90       | *   | -7.439E-01          | 2.489E+00 | 3.945E+00      | 2.171E-01 | -0.189  |
|         |           | 692.80       |     | 4.909E+00           | 4.733E+01 | 8.001E+01      | 4.346E+00 | 0.061   |
| I-123   |           | 159.00       | *   | -3.611E+00          | 4.733E+01 | Half-Life      | too short |         |
|         |           | 528.96       |     | -1.136E+02          | 4.733E+01 | Half-Life      | too short |         |
| TE-123M |           | 159.00       | *   | -2.090E-02          | 3.693E-02 | 5.826E-02      | 3.933E-03 | -0.359  |
| I-124   |           | 602.71       | *   | 1.169E-02           | 9.603E-01 | 1.339E+00      | 7.157E-02 | 0.009   |
|         |           | 722.78       |     | -1.267E+00          | 6.267E+00 | 8.869E+00      | 5.175E-01 | -0.143  |
|         |           | 1325.50      |     | -1.274E+01          | 4.010E+01 | 6.217E+01      | 4.639E+00 | -0.205  |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| SB-124  |           | 1376.25      |     | 4.857E+01           | 3.924E+01 | 7.126E+01      | 5.347E+00 | 0.682   |
|         |           | 1509.49      |     | 8.299E+00           | 1.818E+01 | 3.069E+01      | 2.223E+00 | 0.270   |
|         |           | 1691.02      |     | -1.495E-01          | 4.271E+00 | 7.268E+00      | 4.784E-01 | -0.021  |
|         |           | 602.71       |     | 6.926E-04           | 5.690E-02 | 7.934E-02      | 4.243E-03 | 0.009   |
|         |           | 645.85       |     | 1.192E-01           | 6.507E-01 | 1.061E+00      | 6.320E-02 | 0.112   |
|         |           | 709.31       |     | 1.819E+00           | 3.282E+00 | 5.710E+00      | 3.227E-01 | 0.319   |
|         |           | 713.82       |     | -1.986E+00          | 2.013E+00 | 3.113E+00      | 3.163E-01 | -0.638  |
|         |           | 722.78       |     | -1.088E-01          | 5.383E-01 | 7.618E-01      | 4.653E-02 | -0.143  |
|         | +         | 968.20       |     | 2.151E+01           | 5.240E+00 | 8.599E+00      | 6.904E-01 | 2.501   |
|         |           | 1045.16      |     | -2.076E+00          | 3.209E+00 | 4.908E+00      | 3.585E-01 | -0.423  |
|         |           | 1325.50      |     | -1.168E+00          | 3.679E+00 | 5.704E+00      | 4.256E-01 | -0.205  |
|         |           | 1368.21      |     | -8.739E-01          | 2.259E+00 | 3.457E+00      | 4.424E-01 | -0.253  |
|         |           | 1436.60      |     | -6.692E-01          | 3.970E+00 | 6.471E+00      | 4.795E-01 | -0.103  |
|         |           | 1691.02      |     | -3.028E-03          | 8.654E-02 | 1.473E-01      | 1.034E-02 | -0.021  |
| SB-125  |           | 427.89       | *   | 7.732E-02           | 1.170E-01 | 1.997E-01      | 1.190E-02 | 0.387   |
|         | +         | 463.38       |     | 9.040E-01           | 4.360E-01 | 6.517E-01      | 4.357E-02 | 1.387   |
|         |           | 600.56       |     | -4.713E-02          | 2.386E-01 | 3.692E-01      | 2.336E-02 | -0.128  |
|         |           | 635.90       |     | -2.499E-02          | 3.350E-01 | 5.363E-01      | 3.363E-02 | -0.047  |
| TE-125M |           | 109.28       | *   | -6.304E+00          | 1.248E+01 | 2.001E+01      | 1.988E+00 | -0.315  |
| I-126   |           | 388.63       |     | 1.266E-01           | 2.418E-01 | 4.112E-01      | 2.353E-02 | 0.308   |
|         |           | 666.33       | *   | 1.877E-01           | 2.137E-01 | 3.667E-01      | 1.866E-02 | 0.512   |
| SB-126  |           | 753.82       |     | -4.860E-01          | 1.839E+00 | 3.013E+00      | 1.889E-01 | -0.161  |
|         |           | 223.80       |     | -1.018E+00          | 5.432E+00 | 8.592E+00      | 5.953E-01 | -0.119  |
|         |           | 278.60       |     | 3.646E+00           | 3.215E+00 | 5.618E+00      | 3.877E-01 | 0.649   |
|         |           | 296.50       |     | 1.054E+01           | 2.558E+00 | 4.288E+00      | 2.919E-01 | 2.458   |
|         |           | 414.70       |     | -2.088E-02          | 9.445E-02 | 1.533E-01      | 8.742E-03 | -0.136  |
|         |           | 415.30       |     | 1.759E+00           | 7.809E+00 | 1.302E+01      | 7.422E-01 | 0.135   |
|         |           | 555.20       |     | -4.171E+00          | 4.930E+00 | 7.479E+00      | 4.136E-01 | -0.558  |
|         |           | 573.80       |     | -1.297E+00          | 1.358E+00 | 2.046E+00      | 1.118E-01 | -0.634  |
|         |           | 593.00       |     | -4.820E-01          | 1.172E+00 | 1.836E+00      | 9.894E-02 | -0.262  |
|         |           | 656.30       |     | -5.103E-01          | 4.129E+00 | 6.571E+00      | 3.328E-01 | -0.078  |
|         |           | 666.33       |     | 7.841E-02           | 8.927E-02 | 1.532E-01      | 7.796E-03 | 0.512   |
|         |           | 675.00       |     | -5.163E-01          | 2.190E+00 | 3.439E+00      | 1.788E-01 | -0.150  |
|         |           | 695.00       |     | 2.492E-02           | 8.696E-02 | 1.489E-01      | 8.130E-03 | 0.167   |
|         |           | 697.00       |     | -2.162E-01          | 3.089E-01 | 4.914E-01      | 2.696E-02 | -0.440  |
| SB-127  |           | 720.50       | *   | 7.575E-02           | 1.939E-01 | 2.915E-01      | 1.692E-02 | 0.260   |
|         |           | 856.80       |     | 3.778E-01           | 6.322E-01 | 9.649E-01      | 7.573E-02 | 0.392   |
|         |           | 989.30       |     | 3.975E-01           | 1.544E+00 | 2.596E+00      | 2.038E-01 | 0.153   |
|         |           | 1034.80      |     | -3.611E+00          | 1.125E+01 | 1.793E+01      | 1.329E+00 | -0.201  |
|         |           | 1213.00      |     | 4.053E+00           | 6.144E+00 | 1.043E+01      | 6.400E-01 | 0.389   |
|         |           | 61.10        |     | 1.978E+02           | 1.139E+02 | 1.943E+02      | 2.719E+01 | 1.018   |
|         |           | 252.40       |     | -1.320E+00          | 5.453E+00 | 9.017E+00      | 3.761E+00 | -0.146  |
|         |           | 290.80       |     | -9.221E+00          | 3.035E+01 | 4.318E+01      | 4.236E+00 | -0.214  |
|         |           | 411.60       |     | 4.474E+00           | 1.489E+01 | 2.492E+01      | 3.564E+00 | 0.180   |
|         |           | 444.90       |     | -9.840E+00          | 1.188E+01 | 1.834E+01      | 1.963E+00 | -0.536  |
|         |           | 473.00       |     | -9.056E-01          | 2.070E+00 | 3.283E+00      | 3.639E-01 | -0.276  |
|         |           | 543.00       |     | -9.972E+00          | 1.977E+01 | 3.082E+01      | 3.935E+00 | -0.324  |
|         |           | 603.60       |     | -1.268E+00          | 1.671E+01 | 2.309E+01      | 2.420E+00 | -0.055  |
|         |           | 685.20       | *   | 1.048E+00           | 1.511E+00 | 2.660E+00      | 2.421E-01 | 0.394   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| XE-127  |           | 698.50       |     | -6.093E-01          | 1.726E+01 | 2.887E+01      | 4.138E+00 | -0.021  |
|         |           | 722.20       |     | -2.477E+01          | 4.204E+01 | 5.696E+01      | 5.201E+00 | -0.435  |
|         |           | 783.80       |     | 4.063E+00           | 4.254E+00 | 7.539E+00      | 8.397E-01 | 0.539   |
|         |           | 57.60        |     | -9.431E+00          | 1.355E+01 | 2.185E+01      | 2.783E+00 | -0.432  |
|         |           | 145.22       |     | -1.740E-01          | 8.946E-01 | 1.439E+00      | 9.760E-02 | -0.121  |
|         |           | 172.10       |     | 2.709E-02           | 1.583E-01 | 2.567E-01      | 1.715E-02 | 0.106   |
|         |           | 202.84       | *   | -2.422E-03          | 7.181E-02 | 9.844E-02      | 6.739E-03 | -0.025  |
| I-131   |           | 374.96       |     | 1.214E-01           | 2.483E-01 | 4.214E-01      | 2.505E-02 | 0.288   |
|         |           | 80.18        |     | -2.310E+00          | 9.752E+00 | 9.977E+00      | 1.117E+00 | -0.232  |
|         |           | 284.30       |     | -2.660E-01          | 1.843E+00 | 3.060E+00      | 2.274E-01 | -0.087  |
|         |           | 364.48       | *   | -9.409E-02          | 1.447E-01 | 2.305E-01      | 1.554E-02 | -0.408  |
|         |           | 636.97       |     | 3.938E-01           | 1.827E+00 | 2.994E+00      | 1.779E-01 | 0.132   |
| TE-132  |           | 722.89       |     | -8.333E-01          | 1.028E+01 | 1.473E+01      | 8.713E-01 | -0.057  |
|         |           | 49.72        |     | -1.431E+01          | 5.953E+01 | 9.826E+01      | 1.471E+01 | -0.146  |
|         |           | 111.76       |     | -1.289E+01          | 3.808E+01 | 6.099E+01      | 6.269E+00 | -0.211  |
|         |           | 116.30       |     | -1.740E+01          | 3.423E+01 | 5.469E+01      | 5.472E+00 | -0.318  |
| BA-133  |           | 228.16       | *   | -1.155E+00          | 8.804E-01 | 1.379E+00      | 2.046E-01 | -0.837  |
|         |           | 53.15        |     | -1.454E+00          | 9.181E+00 | 1.519E+01      | 2.082E+00 | -0.096  |
|         |           | 79.62        |     | -1.482E-01          | 2.800E+00 | 2.913E+00      | 4.888E-01 | -0.051  |
|         |           | 81.00        |     | 6.693E-02           | 2.013E-01 | 2.159E-01      | 3.758E-02 | 0.310   |
|         |           | 276.40       |     | 6.873E-01           | 5.543E-01 | 8.560E-01      | 1.155E-01 | 0.803   |
| I-133   |           | 302.84       |     | -1.168E-01          | 1.878E-01 | 3.034E-01      | 3.691E-02 | -0.385  |
|         |           | 356.01       | *   | -2.763E-04          | 6.146E-02 | 8.830E-02      | 1.040E-02 | -0.003  |
|         |           | 383.85       |     | -5.419E-02          | 3.620E-01 | 5.922E-01      | 6.439E-02 | -0.092  |
|         | +         | 510.53       |     | 1.177E+00           | 3.620E-01 | Half-Life      | too short |         |
|         |           | 529.87       | *   | 9.101E-04           | 3.620E-01 | Half-Life      | too short |         |
|         |           | 706.58       |     | 2.100E-02           | 3.620E-01 | Half-Life      | too short |         |
|         |           | 856.28       |     | 3.354E-01           | 3.620E-01 | Half-Life      | too short |         |
| CS-134  |           | 875.33       |     | 6.605E-02           | 3.620E-01 | Half-Life      | too short |         |
|         |           | 1236.41      |     | 4.839E-01           | 3.620E-01 | Half-Life      | too short |         |
|         |           | 1298.22      |     | 1.251E-01           | 3.620E-01 | Half-Life      | too short |         |
|         |           | 475.35       |     | -3.390E-01          | 2.433E+00 | 3.940E+00      | 2.246E-01 | -0.086  |
|         |           | 563.23       |     | 1.150E-01           | 4.330E-01 | 7.154E-01      | 4.029E-02 | 0.161   |
|         |           | 569.32       |     | 2.284E-01           | 2.405E-01 | 4.152E-01      | 2.352E-02 | 0.550   |
|         |           | 604.70       |     | 9.960E-03           | 5.010E-02 | 7.110E-02      | 3.819E-03 | 0.140   |
| I-135   |           | 795.84       | *   | 8.638E-02           | 5.568E-02 | 1.024E-01      | 7.137E-03 | 0.843   |
|         |           | 801.93       |     | -5.002E-01          | 4.695E-01 | 7.115E-01      | 5.010E-02 | -0.703  |
|         |           | 1038.57      |     | -2.027E+00          | 4.982E+00 | 7.873E+00      | 5.806E-01 | -0.257  |
|         |           | 1167.94      |     | -1.202E+00          | 3.372E+00 | 5.325E+00      | 3.074E-01 | -0.226  |
|         |           | 1365.15      |     | 1.019E-01           | 1.573E+00 | 2.556E+00      | 2.036E-01 | 0.040   |
|         |           | 288.45       |     | 1.480E+10           | 1.573E+00 | Half-Life      | too short |         |
|         |           | 417.63       |     | 1.553E+10           | 1.573E+00 | Half-Life      | too short |         |
|         |           | 546.56       |     | 7.631E+09           | 1.573E+00 | Half-Life      | too short |         |
|         |           | 836.80       |     | 2.525E+10           | 1.573E+00 | Half-Life      | too short |         |
|         |           | 1038.76      |     | -6.540E+09          | 1.573E+00 | Half-Life      | too short |         |
|         |           | 1124.00      |     | -1.062E+10          | 1.573E+00 | Half-Life      | too short |         |
|         |           | 1131.51      |     | 7.716E+08           | 1.573E+00 | Half-Life      | too short |         |
|         |           | 1260.41      | *   | 3.464E+09           | 1.573E+00 | Half-Life      | too short |         |
|         |           | 1457.56      |     | 8.940E+11           | 1.573E+00 | Half-Life      | too short |         |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|---------------------|-----------|----------------|-----------|---------|
| CS-136  |           | 1678.03      |              | -5.108E+08          | 1.573E+00 | Half-Life      | too short |         |
|         |           | 1706.46      |              | -4.213E+08          | 1.573E+00 | Half-Life      | too short |         |
|         |           | 1791.20      |              | -6.823E+08          | 1.573E+00 | Half-Life      | too short |         |
|         |           | 66.91        |              | -1.795E+00          | 1.444E+00 | 2.034E+00      | 3.499E-01 | -0.882  |
|         | +         | 86.29        |              | 3.024E+00           | 1.674E+00 | 2.592E+00      | 3.862E-01 | 1.167   |
|         |           | 153.22       |              | 2.897E-01           | 8.586E-01 | 1.406E+00      | 1.122E-01 | 0.206   |
|         |           | 163.89       |              | 9.746E-01           | 1.406E+00 | 2.328E+00      | 1.852E-01 | 0.419   |
|         |           | 176.55       |              | -1.319E-01          | 4.748E-01 | 7.553E-01      | 5.538E-02 | -0.175  |
|         |           | 273.65       |              | -9.620E-01          | 6.952E-01 | 9.217E-01      | 7.019E-02 | -1.044  |
|         |           | 340.57       |              | 2.626E-01           | 1.724E-01 | 2.738E-01      | 1.847E-02 | 0.959   |
|         |           | 818.51       |              | -3.712E-02          | 8.541E-02 | 1.366E-01      | 9.903E-03 | -0.272  |
|         |           | 1048.07      | *            | -4.778E-02          | 1.331E-01 | 2.109E-01      | 1.625E-02 | -0.227  |
|         |           | 1235.34      |              | 6.184E-01           | 7.553E-01 | 1.297E+00      | 1.341E-01 | 0.477   |
| BA-137M |           | 661.65       | *            | -1.194E-02          | 4.221E-02 | 6.621E-02      | 3.331E-03 | -0.180  |
| CS-137  |           | 661.65       | *            | -1.263E-02          | 4.462E-02 | 6.999E-02      | 3.541E-03 | -0.180  |
| CE-139  |           | 165.85       | *            | 9.940E-03           | 4.055E-02 | 6.603E-02      | 4.391E-03 | 0.151   |
| BA-140  |           | 162.64       |              | -4.348E-01          | 9.880E-01 | 1.566E+00      | 1.144E-01 | -0.278  |
|         |           | 304.84       |              | -9.918E-01          | 1.667E+00 | 2.663E+00      | 7.326E-01 | -0.372  |
|         |           | 423.70       |              | -1.933E+00          | 2.486E+00 | 3.764E+00      | 1.196E+00 | -0.513  |
| LA-140  |           | 537.32       | *            | 7.426E-02           | 3.311E-01 | 5.448E-01      | 1.770E-01 | 0.136   |
|         |           | 328.77       |              | 3.989E-01           | 4.412E-01 | 6.736E-01      | 4.827E-02 | 0.592   |
|         |           | 432.53       |              | -1.138E+00          | 2.700E+00 | 4.320E+00      | 2.734E-01 | -0.263  |
|         |           | 487.03       |              | 6.500E-02           | 1.520E-01 | 2.561E-01      | 1.656E-02 | 0.254   |
|         |           | 751.79       |              | -4.662E-02          | 2.071E+00 | 3.453E+00      | 2.577E-01 | -0.014  |
|         |           | 815.85       |              | -1.529E-02          | 3.767E-01 | 6.244E-01      | 5.220E-02 | -0.024  |
|         |           | 867.82       |              | -5.979E-01          | 1.604E+00 | 2.505E+00      | 2.134E-01 | -0.239  |
|         |           | 919.63       |              | 6.460E-01           | 3.313E+00 | 5.565E+00      | 5.825E-01 | 0.116   |
|         |           | 925.24       |              | 2.263E-01           | 1.308E+00 | 2.194E+00      | 1.956E-01 | 0.103   |
|         |           | 1596.49      | *            | 4.820E-02           | 8.835E-02 | 1.586E-01      | 1.105E-02 | 0.304   |
| CE-141  |           | 145.44       | *            | -2.211E-02          | 8.152E-02 | 1.307E-01      | 9.124E-03 | -0.169  |
| CE-143  |           | 57.37        |              | -5.030E-05          | 8.152E-02 | Half-Life      | too short |         |
|         |           | 231.56       |              | 1.992E-03           | 8.152E-02 | Half-Life      | too short |         |
|         | +         | 293.26       | *            | 1.386E-03           | 8.152E-02 | Half-Life      | too short |         |
|         | +         | 350.59       |              | 3.057E-02           | 8.152E-02 | Half-Life      | too short |         |
|         |           | 490.36       |              | -1.556E-03          | 8.152E-02 | Half-Life      | too short |         |
|         |           | 664.57       |              | 9.879E-05           | 8.152E-02 | Half-Life      | too short |         |
|         |           | 721.93       |              | -9.093E-04          | 8.152E-02 | Half-Life      | too short |         |
| CE-144  |           | 80.11        |              | -1.089E+00          | 4.540E+00 | 4.644E+00      | 5.181E-01 | -0.235  |
|         |           | 133.54       | *            | -5.064E-04          | 2.674E-01 | 4.344E-01      | 6.385E-02 | -0.001  |
| PM-144  |           | 476.78       |              | 1.545E-02           | 8.636E-02 | 1.428E-01      | 9.791E-03 | 0.108   |
|         |           | 618.01       |              | -2.043E-02          | 4.095E-02 | 6.149E-02      | 3.477E-03 | -0.332  |
|         |           | 696.49       | *            | -1.477E-02          | 3.991E-02 | 6.515E-02      | 3.573E-03 | -0.227  |
|         |           | 778.57       |              | -1.277E+00          | 2.705E+00 | 4.340E+00      | 2.880E-01 | -0.294  |
| PR-144  |           | 696.49       | *            | -1.001E+00          | 2.704E+00 | 4.414E+00      | 2.419E-01 | -0.227  |
| PM-146  |           | 1489.15      |              | 2.762E-01           | 1.230E+01 | 2.057E+01      | 1.500E+00 | 0.013   |
|         |           | 453.90       | *            | 2.735E-02           | 5.378E-02 | 9.089E-02      | 7.784E-03 | 0.301   |
|         |           | 633.02       |              | 5.161E-01           | 1.765E+00 | 2.889E+00      | 1.061E+00 | 0.179   |
|         |           | 735.90       |              | 1.225E-01           | 1.825E-01 | 3.145E-01      | 8.784E-02 | 0.389   |
|         |           | 747.13       |              | 5.058E-02           | 1.045E-01 | 1.809E-01      | 2.294E-02 | 0.280   |

Sample ID : G244630007

Acquisition date : 23-JAN-2010 11:47:27

## ---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|---------------------|-----------|----------------|-----------|---------|
| ND-147  | +         | 91.11        | 7.890E-01           | 5.036E-01 | 7.132E-01      | 8.111E-02 | 1.106   |
|         |           | 319.41       | -2.418E+00          | 4.216E+00 | 6.807E+00      | 4.515E-01 | -0.355  |
|         |           | 439.89       | 4.752E+00           | 7.418E+00 | 1.263E+01      | 7.223E-01 | 0.376   |
|         |           | 531.02       | * 9.837E-02         | 7.357E-01 | 1.207E+00      | 1.621E-01 | 0.082   |
| PM-149  |           | 285.90       | * -2.291E+01        | 1.094E+02 | 1.809E+02      | 2.650E+01 | -0.127  |
| EU-152  |           | 121.78       | -4.356E-02          | 9.550E-02 | 1.528E-01      | 1.332E-02 | -0.285  |
|         |           | 244.69       | 8.742E-02           | 4.392E-01 | 6.515E-01      | 4.536E-02 | 0.134   |
|         |           | 344.27       | * -1.391E-01        | 1.614E-01 | 1.846E-01      | 1.301E-02 | -0.754  |
|         |           | 443.98       | -1.101E+00          | 1.207E+00 | 1.860E+00      | 1.063E-01 | -0.592  |
|         |           | 778.89       | -1.670E-01          | 3.127E-01 | 4.990E-01      | 3.312E-02 | -0.335  |
|         |           | 867.32       | -2.687E-01          | 1.001E+00 | 1.540E+00      | 1.235E-01 | -0.175  |
|         | +         | 964.01       | 8.865E-01           | 4.646E-01 | 6.936E-01      | 5.593E-02 | 1.278   |
|         |           | 1085.78      | -2.318E-01          | 5.080E-01 | 7.960E-01      | 5.453E-02 | -0.291  |
|         |           | 1112.02      | 4.590E-01           | 4.415E-01 | 6.983E-01      | 4.559E-02 | 0.657   |
|         |           | 1407.95      | 2.259E-01           | 2.280E-01 | 4.200E-01      | 3.133E-02 | 0.538   |
| GD-153  |           | 69.67        | 2.081E+00           | 2.871E+00 | 4.304E+00      | 4.858E-01 | 0.483   |
|         | +         | 83.37        | 2.943E+00           | 3.076E+01 | 3.396E+01      | 3.831E+00 | 0.087   |
|         |           | 97.43        | * 1.507E-01         | 1.183E-01 | 1.797E-01      | 1.724E-02 | 0.839   |
|         |           | 103.18       | 1.192E-02           | 1.405E-01 | 2.308E-01      | 2.030E-02 | 0.052   |
| EU-154  |           | 123.07       | 1.265E-03           | 6.691E-02 | 1.091E-01      | 1.123E-02 | 0.012   |
|         |           | 247.94       | -5.677E-02          | 4.557E-01 | 7.419E-01      | 7.634E-02 | -0.077  |
|         |           | 591.81       | -7.612E-01          | 7.967E-01 | 1.189E+00      | 1.135E-01 | -0.640  |
|         |           | 723.30       | 1.459E-01           | 2.643E-01 | 4.006E-01      | 2.851E-02 | 0.364   |
|         |           | 756.87       | 3.807E-01           | 1.008E+00 | 1.725E+00      | 1.801E-01 | 0.221   |
|         |           | 873.19       | -2.587E-02          | 3.426E-01 | 5.638E-01      | 6.708E-02 | -0.046  |
|         |           | 996.32       | -3.368E-01          | 4.678E-01 | 7.142E-01      | 1.241E-01 | -0.472  |
|         |           | 1004.76      | -1.399E-01          | 2.786E-01 | 4.376E-01      | 4.806E-02 | -0.320  |
|         |           | 1274.45      | * -4.307E-02        | 1.563E-01 | 2.459E-01      | 2.466E-02 | -0.175  |
| EU-155  |           | 48.70        | -2.126E+00          | 8.253E+00 | 1.362E+01      | 1.753E+00 | -0.156  |
|         |           | 60.01        | -2.539E+00          | 1.042E+01 | 1.715E+01      | 2.096E+00 | -0.148  |
|         | +         | 86.54        | 2.809E-01           | 1.532E-01 | 2.385E-01      | 2.750E-02 | 1.178   |
|         |           | 105.31       | * 3.175E-02         | 1.468E-01 | 2.420E-01      | 2.095E-02 | 0.131   |
| TB-160  | +         | 86.79        | 7.495E-01           | 4.086E-01 | 6.401E-01      | 7.351E-02 | 1.171   |
|         |           | 197.04       | 1.998E-01           | 7.540E-01 | 1.203E+00      | 8.200E-02 | 0.166   |
|         |           | 215.65       | -4.428E-01          | 1.059E+00 | 1.522E+00      | 1.051E-01 | -0.291  |
|         |           | 298.57       | 7.486E-02           | 1.653E-01 | 2.467E-01      | 1.676E-02 | 0.303   |
|         |           | 879.36       | * -5.232E-02        | 1.644E-01 | 2.646E-01      | 2.175E-02 | -0.198  |
|         |           | 962.29       | 1.224E+00           | 7.055E-01 | 1.183E+00      | 9.552E-02 | 1.035   |
|         |           | 966.15       | 1.778E+00           | 3.575E-01 | 6.871E-01      | 5.529E-02 | 2.588   |
|         |           | 1177.93      | -1.185E-01          | 4.595E-01 | 7.307E-01      | 4.200E-02 | -0.162  |
|         |           | 1271.85      | -1.831E-03          | 9.159E-01 | 1.483E+00      | 1.011E-01 | -0.001  |
| HO-166M |           | 80.57        | -1.231E-01          | 5.785E-01 | 5.931E-01      | 6.625E-02 | -0.208  |
|         | +         | 184.41       | 1.132E-01           | 6.305E-02 | 8.646E-02      | 5.834E-03 | 1.309   |
|         |           | 280.46       | -1.109E-01          | 1.120E-01 | 1.786E-01      | 1.231E-02 | -0.621  |
|         |           | 410.95       | 4.491E-02           | 3.135E-01 | 5.202E-01      | 2.963E-02 | 0.086   |
|         |           | 711.68       | * -2.293E-02        | 7.317E-02 | 1.198E-01      | 6.811E-03 | -0.191  |
|         |           | 752.31       | -2.613E-02          | 3.377E-01 | 5.610E-01      | 3.506E-02 | -0.047  |
|         |           | 810.29       | -1.878E-03          | 7.398E-02 | 1.228E-01      | 8.735E-03 | -0.015  |
| TM-171  |           | 51.35        | 3.631E+00           | 8.847E+01 | 1.476E+02      | 2.039E+01 | 0.025   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| LU-176  |           | 52.39        |     | -4.793E+00          | 4.215E+01 | 6.987E+01      | 9.639E+00 | -0.069  |
|         |           | 59.40        |     | -4.386E+01          | 5.752E+01 | 9.259E+01      | 1.139E+01 | -0.474  |
|         |           | 66.72        | *   | -6.978E+01          | 5.234E+01 | 7.434E+01      | 8.548E+00 | -0.939  |
|         |           | 88.36        |     | 6.731E-02           | 4.498E-01 | 4.730E-01      | 5.427E-02 | 0.142   |
|         |           | 201.83       |     | -1.304E-02          | 3.934E-02 | 5.982E-02      | 4.092E-03 | -0.218  |
|         |           | 306.84       | *   | -2.098E-02          | 3.247E-02 | 5.238E-02      | 3.529E-03 | -0.400  |
| LU-177  |           | 401.10       |     | -1.946E-01          | 8.689E+00 | 1.387E+01      | 7.884E-01 | -0.014  |
|         |           | 112.95       |     | -3.640E-02          | 2.102E+00 | 3.408E+00      | 2.668E-01 | -0.011  |
| LU-177M | +         | 208.36       | *   | 3.916E+00           | 2.359E+00 | 2.535E+00      | 1.742E-01 | 1.545   |
|         |           | 52.97        |     | -1.557E+00          | 4.231E+00 | 6.934E+00      | 9.522E-01 | -0.225  |
| HF-181  |           | 54.07        |     | -9.057E-01          | 2.130E+00 | 3.480E+00      | 4.717E-01 | -0.260  |
|         |           | 61.30        |     | 4.139E+00           | 3.024E+00 | 5.137E+00      | 6.202E-01 | 0.806   |
|         |           | 121.62       |     | -2.175E-01          | 4.897E-01 | 7.839E-01      | 5.648E-02 | -0.278  |
|         |           | 147.16       |     | -8.009E-01          | 8.592E-01 | 1.339E+00      | 9.061E-02 | -0.598  |
|         |           | 171.86       |     | 2.294E-01           | 6.385E-01 | 1.043E+00      | 6.967E-02 | 0.220   |
|         |           | 218.09       |     | 4.568E-01           | 1.113E+00 | 1.809E+00      | 1.250E-01 | 0.252   |
|         | +         | 268.79       |     | 2.802E+00           | 1.953E+00 | 1.811E+00      | 1.256E-01 | 1.547   |
|         |           | 319.02       |     | -3.178E-01          | 3.290E-01 | 5.192E-01      | 3.445E-02 | -0.612  |
|         |           | 367.43       |     | -3.587E-01          | 1.162E+00 | 1.889E+00      | 1.144E-01 | -0.190  |
|         |           | 413.65       | *   | -1.824E-01          | 2.281E-01 | 3.573E-01      | 2.037E-02 | -0.510  |
|         |           | 56.28        |     | -9.360E-01          | 2.173E+00 | 3.548E+00      | 4.634E-01 | -0.264  |
|         |           | 57.53        |     | -3.736E-01          | 1.122E+00 | 1.841E+00      | 2.347E-01 | -0.203  |
|         |           | 65.20        |     | -2.973E+00          | 1.687E+00 | 2.541E+00      | 2.957E-01 | -1.170  |
|         |           | 133.02       |     | -2.782E-02          | 8.608E-02 | 1.382E-01      | 9.582E-03 | -0.201  |
| W-181   |           | 136.25       |     | -3.443E-02          | 6.049E-01 | 9.803E-01      | 6.750E-02 | -0.035  |
|         |           | 345.85       |     | -1.376E-01          | 2.629E-01 | 3.620E-01      | 2.298E-02 | -0.380  |
|         |           | 482.03       | *   | -7.206E-03          | 5.246E-02 | 8.490E-02      | 4.833E-03 | -0.085  |
|         |           | 56.28        |     | -3.663E-01          | 8.515E-01 | 1.391E+00      | 1.816E-01 | -0.263  |
| TA-182  |           | 57.53        |     | -1.469E-01          | 4.402E-01 | 7.220E-01      | 9.208E-02 | -0.203  |
|         |           | 65.20        | *   | -1.157E+00          | 6.565E-01 | 9.888E-01      | 1.151E-01 | -1.170  |
|         |           | 67.75        |     | 1.080E-01           | 1.936E-01 | 2.889E-01      | 3.298E-02 | 0.374   |
| RE-183  |           | 100.10       |     | 5.063E-02           | 2.361E-01 | 3.900E-01      | 3.587E-02 | 0.130   |
|         |           | 152.43       |     | 1.475E-01           | 4.419E-01 | 7.240E-01      | 4.869E-02 | 0.204   |
|         |           | 222.10       |     | -3.918E-01          | 4.668E-01 | 7.150E-01      | 4.950E-02 | -0.548  |
|         |           | 1001.68      |     | 1.364E+00           | 2.599E+00 | 4.478E+00      | 3.464E-01 | 0.305   |
|         | +         | 1121.28      |     | 5.817E-01           | 3.167E-01 | 3.993E-01      | 2.559E-02 | 1.457   |
|         |           | 1189.05      |     | -1.151E-01          | 4.153E-01 | 6.601E-01      | 3.875E-02 | -0.174  |
|         |           | 1221.42      | *   | 1.052E-01           | 2.628E-01 | 4.398E-01      | 2.742E-02 | 0.239   |
|         |           | 1230.97      |     | -2.872E-01          | 6.489E-01 | 1.009E+00      | 6.400E-02 | -0.285  |
| RE-184  |           | 57.98        |     | -2.165E-01          | 4.375E-01 | 7.125E-01      | 9.008E-02 | -0.304  |
|         |           | 59.32        |     | -1.941E-01          | 2.367E-01 | 3.800E-01      | 4.683E-02 | -0.511  |
|         |           | 67.20        |     | -9.767E-04          | 3.585E-01 | 5.215E-01      | 5.976E-02 | -0.002  |
|         |           | 162.32       | *   | -1.064E-01          | 1.453E-01 | 2.274E-01      | 1.516E-02 | -0.468  |
| RE-184  | +         | 208.81       |     | 3.562E+00           | 2.146E+00 | 2.336E+00      | 1.606E-01 | 1.525   |
|         |           | 291.72       |     | 1.800E+00           | 1.431E+00 | 2.230E+00      | 1.524E-01 | 0.807   |
|         |           | 57.98        |     | -7.983E-01          | 1.613E+00 | 2.627E+00      | 3.322E-01 | -0.304  |
|         |           | 59.32        |     | -7.152E-01          | 8.722E-01 | 1.400E+00      | 1.725E-01 | -0.511  |
|         |           | 67.20        |     | -3.600E-03          | 1.322E+00 | 1.923E+00      | 2.203E-01 | -0.002  |
|         |           | 161.27       |     | -1.370E-01          | 4.626E-01 | 7.380E-01      | 4.923E-02 | -0.186  |



---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| OS-185  |           | 216.55       |     | -1.445E-01          | 3.486E-01 | 5.461E-01           | 3.770E-02 | -0.265  |
|         |           | 252.85       | *   | -2.682E-02          | 2.974E-01 | 4.976E-01           | 3.464E-02 | -0.054  |
|         |           | 318.01       |     | -1.870E-01          | 5.685E-01 | 9.303E-01           | 6.181E-02 | -0.201  |
|         |           | 792.07       |     | 2.992E-01           | 1.206E+00 | 2.045E+00           | 1.398E-01 | 0.146   |
|         |           | 903.28       |     | 1.977E-01           | 1.348E+00 | 1.953E+00           | 1.660E-01 | 0.101   |
|         |           | 920.93       |     | 1.298E-01           | 5.402E-01 | 9.108E-01           | 7.638E-02 | 0.143   |
|         |           | 59.72        |     | -9.679E-02          | 6.159E-01 | 1.017E+00           | 1.247E-01 | -0.095  |
|         |           | 61.14        |     | 5.823E-01           | 3.287E-01 | 5.650E-01           | 6.831E-02 | 1.031   |
|         |           | 69.30        |     | 2.152E-01           | 5.185E-01 | 7.680E-01           | 8.686E-02 | 0.280   |
|         |           | 592.07       |     | -3.157E+00          | 3.269E+00 | 4.895E+00           | 2.640E-01 | -0.645  |
|         |           | 646.12       | *   | 1.622E-02           | 5.583E-02 | 9.177E-02           | 4.702E-03 | 0.177   |
|         |           | 717.42       |     | 3.023E-01           | 1.080E+00 | 1.844E+00           | 1.063E-01 | 0.164   |
|         |           | 874.81       |     | 2.860E-01           | 6.714E-01 | 1.153E+00           | 9.393E-02 | 0.248   |
|         |           | 880.27       |     | 1.994E-01           | 9.259E-01 | 1.561E+00           | 1.286E-01 | 0.128   |
|         |           | 155.03       | *   | 1.235E-01           | 2.204E-01 | 3.639E-01           | 2.441E-02 | 0.339   |
| RE-188  |           | 477.96       |     | 3.403E+00           | 3.910E+00 | 6.734E+00           | 3.837E-01 | 0.505   |
|         |           | 633.10       |     | 1.001E+00           | 3.539E+00 | 5.823E+00           | 3.025E-01 | 0.172   |
|         |           | 63.58        |     | 3.591E+01           | 9.577E+01 | 1.595E+02           | 1.883E+01 | 0.225   |
| W-188   |           | 227.08       |     | -7.150E+00          | 1.626E+01 | 2.693E+01           | 1.868E+00 | -0.266  |
|         |           | 290.67       | *   | -3.477E+00          | 1.073E+01 | 1.524E+01           | 1.043E+00 | -0.228  |
|         |           | 295.96       |     | 1.181E+00           | 2.636E-01 | 3.498E-01           | 2.410E-02 | 3.378   |
| IR-192  | +         | 308.46       |     | 3.266E-02           | 1.242E-01 | 2.096E-01           | 1.421E-02 | 0.156   |
|         |           | 316.51       | *   | -1.858E-03          | 4.328E-02 | 7.189E-02           | 4.804E-03 | -0.026  |
|         |           | 468.07       |     | 5.812E-02           | 8.767E-02 | 1.320E-01           | 8.722E-03 | 0.440   |
| AU-195  |           | 604.41       |     | 3.932E-03           | 6.695E-01 | 9.326E-01           | 1.037E-01 | 0.004   |
|         |           | 612.46       |     | 8.961E-01           | 9.698E-01 | 1.473E+00           | 1.060E-01 | 0.608   |
|         |           | 65.12        |     | -5.249E-01          | 3.050E-01 | 4.607E-01           | 5.365E-02 | -1.139  |
|         |           | 66.83        |     | -2.227E-01          | 1.726E-01 | 2.458E-01           | 2.825E-02 | -0.906  |
|         | +         | 75.70        |     | 1.971E+00           | 4.060E-01 | 6.878E-01           | 7.637E-02 | 2.866   |
|         |           | 98.88        | *   | 7.713E-02           | 3.013E-01 | 4.985E-01           | 4.673E-02 | 0.155   |
|         |           | 129.76       |     | 5.080E+00           | 3.716E+00 | 6.315E+00           | 4.416E-01 | 0.804   |
|         |           | 367.94       | *   | 5.926E-05           | 3.716E+00 | Half-Life too short |           |         |
|         |           | 579.30       |     | 1.122E-02           | 3.716E+00 | Half-Life too short |           |         |
|         |           | 828.27       |     | -1.007E-03          | 3.716E+00 | Half-Life too short |           |         |
| TL-200  |           | 1205.75      |     | -1.012E-03          | 3.716E+00 | Half-Life too short |           |         |
|         |           | 68.90        |     | 3.170E+00           | 8.113E+00 | 1.201E+01           | 1.361E+00 | 0.264   |
|         |           | 70.82        |     | 7.628E+00           | 4.618E+00 | 7.098E+00           | 7.970E-01 | 1.075   |
|         |           | 80.30        |     | -2.416E+00          | 1.042E+01 | 1.067E+01           | 1.191E+00 | -0.226  |
|         |           | 135.34       |     | -2.464E+01          | 3.278E+01 | 5.166E+01           | 3.564E+00 | -0.477  |
| TL-202  |           | 167.43       | *   | 1.982E+00           | 9.210E+00 | 1.498E+01           | 9.966E-01 | 0.132   |
|         |           | 68.90        |     | 2.913E-01           | 7.455E-01 | 1.103E+00           | 1.251E-01 | 0.264   |
|         |           | 70.82        |     | 6.990E-01           | 4.232E-01 | 6.505E-01           | 7.304E-02 | 1.075   |
|         |           | 80.30        |     | -2.214E-01          | 9.556E-01 | 9.781E-01           | 1.092E-01 | -0.226  |
|         |           | 439.56       | *   | 7.369E-02           | 8.833E-02 | 1.520E-01           | 8.687E-03 | 0.485   |
| HG-203  |           | 70.83        |     | 3.057E+00           | 1.872E+00 | 2.835E+00           | 4.362E-01 | 1.079   |
|         | +         | 72.87        |     | 5.363E+00           | 1.720E+00 | 1.924E+00           | 2.881E-01 | 2.788   |
|         | +         | 82.60        |     | 2.185E-01           | 2.284E+00 | 2.615E+00           | 4.060E-01 | 0.084   |
| BI-207  |           | 279.20       | *   | 3.814E-02           | 5.323E-02 | 9.165E-02           | 6.601E-03 | 0.416   |
|         |           | 72.80        |     | 1.477E+00           | 3.492E-01 | 5.624E-01           | 6.272E-02 | 2.625   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| TL-207  | +         | 74.97        |     | 9.331E-01           | 2.843E-01 | 3.845E-01      | 4.272E-02 | 2.427   |
|         | +         | 84.90        |     | 5.299E-01           | 2.889E-01 | 4.767E-01      | 5.417E-02 | 1.112   |
|         |           | 569.67       |     | 4.017E-02           | 3.743E-02 | 6.514E-02      | 3.570E-03 | 0.617   |
|         |           | 1063.62      | *   | -7.452E-03          | 6.555E-02 | 1.062E-01      | 7.548E-03 | -0.070  |
|         |           | 1770.23      |     | 6.337E-03           | 5.517E-01 | 7.779E-01      | 4.817E-02 | 0.008   |
|         |           | 81.07        |     | 1.556E-01           | 4.436E-01 | 4.770E-01      | 5.336E-02 | 0.326   |
|         | +         | 83.78        |     | 2.511E-02           | 2.624E-01 | 2.911E-01      | 3.290E-02 | 0.086   |
|         |           | 94.90        |     | 1.480E-01           | 3.385E-01 | 4.971E-01      | 4.984E-02 | 0.298   |
|         |           | 122.32       |     | -8.628E-01          | 2.280E+00 | 3.660E+00      | 2.897E-01 | -0.236  |
|         |           | 144.24       |     | 3.921E-01           | 9.012E-01 | 1.464E+00      | 1.178E-01 | 0.268   |
|         |           | 154.21       |     | 2.834E-01           | 5.214E-01 | 8.599E-01      | 6.695E-02 | 0.330   |
|         | +         | 269.46       |     | 6.564E-01           | 4.576E-01 | 4.327E-01      | 3.095E-02 | 1.517   |
|         |           | 323.87       | *   | 4.096E-01           | 9.572E-01 | 1.422E+00      | 2.390E-01 | 0.288   |
|         | +         | 338.28       |     | 6.840E+00           | 2.139E+00 | 2.999E+00      | 3.268E-01 | 2.281   |
| PO-209  |           | 445.03       |     | -2.438E+00          | 2.825E+00 | 4.350E+00      | 4.446E-01 | -0.561  |
|         |           | 260.50       |     | 5.955E-01           | 1.292E+01 | 2.117E+01      | 1.471E+00 | 0.028   |
|         |           | 262.80       |     | 8.279E+00           | 3.927E+01 | 5.808E+01      | 4.035E+00 | 0.143   |
|         |           | 896.60       | *   | -7.736E-01          | 9.128E+00 | 1.499E+01      | 1.276E+00 | -0.052  |
|         |           | 46.50        | *   | -5.658E+00          | 1.412E+01 | 2.264E+01      | 2.352E+00 | -0.250  |
| BI-210  |           | 46.50        | *   | -5.658E+00          | 1.412E+01 | 2.264E+01      | 2.352E+00 | -0.250  |
| PB-210  |           | 46.50        | *   | -5.658E+00          | 1.412E+01 | 2.264E+01      | 2.175E+00 | -0.250  |
| PO-210  |           | 404.84       | *   | -1.600E+00          | 1.547E+00 | 1.791E+00      | 1.117E+00 | -0.893  |
| PB-211  |           | 427.08       |     | 2.172E+00           | 2.957E+00 | 4.538E+00      | 2.804E+00 | 0.479   |
| BI-212  |           | 831.96       |     | -1.133E-01          | 1.575E+00 | 2.600E+00      | 1.626E+00 | -0.044  |
|         | +         | 727.18       | *   | 1.483E+00           | 5.569E-01 | 8.190E-01      | 6.376E-02 | 1.811   |
|         |           | 785.46       |     | 8.662E-01           | 2.166E+00 | 3.712E+00      | 2.500E-01 | 0.233   |
|         |           | 1620.62      |     | 3.069E-01           | 1.408E+00 | 2.409E+00      | 1.657E-01 | 0.127   |
| PO-215  |           | 81.07        |     | 1.556E-01           | 4.436E-01 | 4.770E-01      | 5.336E-02 | 0.326   |
|         | +         | 83.78        |     | 2.511E-02           | 2.624E-01 | 2.911E-01      | 3.290E-02 | 0.086   |
|         |           | 94.90        |     | 1.480E-01           | 3.385E-01 | 4.971E-01      | 4.984E-02 | 0.298   |
|         |           | 122.32       |     | -8.628E-01          | 2.280E+00 | 3.660E+00      | 2.897E-01 | -0.236  |
|         |           | 144.24       |     | 3.921E-01           | 9.012E-01 | 1.464E+00      | 1.178E-01 | 0.268   |
|         |           | 154.21       |     | 2.834E-01           | 5.214E-01 | 8.599E-01      | 6.695E-02 | 0.330   |
|         | +         | 269.46       |     | 6.564E-01           | 4.576E-01 | 4.327E-01      | 3.095E-02 | 1.517   |
|         |           | 323.87       | *   | 4.096E-01           | 9.572E-01 | 1.422E+00      | 2.390E-01 | 0.288   |
|         | +         | 338.28       |     | 6.840E+00           | 2.139E+00 | 2.999E+00      | 3.268E-01 | 2.281   |
|         |           | 445.03       |     | -2.438E+00          | 2.825E+00 | 4.350E+00      | 4.446E-01 | -0.561  |
| RN-219  |           | 271.23       |     | 4.635E-01           | 3.625E-01 | 5.642E-01      | 5.047E-02 | 0.821   |
|         |           | 401.81       | *   | 1.487E-01           | 5.068E-01 | 8.488E-01      | 1.151E-01 | 0.175   |
| RN-220  |           | 549.76       | *   | 3.425E+01           | 3.413E+01 | 5.901E+01      | 3.274E+00 | 0.580   |
| RA-223  |           | 81.07        |     | 1.556E-01           | 4.436E-01 | 4.770E-01      | 5.336E-02 | 0.326   |
|         | +         | 83.78        |     | 2.511E-02           | 2.624E-01 | 2.911E-01      | 3.290E-02 | 0.086   |
|         |           | 94.90        |     | 1.480E-01           | 3.385E-01 | 4.971E-01      | 4.984E-02 | 0.298   |
|         |           | 122.32       |     | -8.628E-01          | 2.280E+00 | 3.660E+00      | 2.897E-01 | -0.236  |
|         |           | 144.24       |     | 3.921E-01           | 9.012E-01 | 1.464E+00      | 1.178E-01 | 0.268   |
|         |           | 154.21       |     | 2.834E-01           | 5.214E-01 | 8.599E-01      | 6.695E-02 | 0.330   |
|         | +         | 269.46       |     | 6.564E-01           | 4.576E-01 | 4.327E-01      | 3.095E-02 | 1.517   |
|         |           | 323.87       | *   | 4.096E-01           | 9.572E-01 | 1.422E+00      | 2.390E-01 | 0.288   |
|         | +         | 338.28       |     | 6.840E+00           | 2.139E+00 | 2.999E+00      | 3.268E-01 | 2.281   |
|         |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Activity Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|---------------------|-----------|----------------|-----------|---------|
| AC-227  |           | 445.03       |              | -2.438E+00          | 2.825E+00 | 4.350E+00      | 4.446E-01 | -0.561  |
|         |           | 79.80        |              | -5.027E-01          | 3.538E+00 | 3.650E+00      | 8.262E-01 | -0.138  |
|         |           | 236.00       |              | 4.968E+00           | 7.375E-01 | 9.444E-01      | 1.052E-01 | 5.261   |
|         |           | 256.20       | *            | 3.115E-01           | 5.001E-01 | 8.577E-01      | 1.242E-01 | 0.363   |
|         |           | 286.10       |              | -3.095E-01          | 1.911E+00 | 3.169E+00      | 3.844E-01 | -0.098  |
|         |           | 299.80       |              | 2.238E+00           | 2.070E+00 | 3.163E+00      | 5.271E-01 | 0.707   |
| TH-227  |           | 304.40       |              | -1.911E+00          | 2.510E+00 | 4.001E+00      | 7.057E-01 | -0.478  |
|         |           | 334.20       |              | -5.722E-01          | 3.479E+00 | 4.668E+00      | 8.664E-01 | -0.123  |
|         |           | 79.80        |              | -5.027E-01          | 3.538E+00 | 3.650E+00      | 8.358E-01 | -0.138  |
|         |           | 94.00        |              | 7.213E+00           | 3.290E+00 | 4.583E+00      | 1.029E+00 | 1.574   |
|         |           | 236.00       |              | 4.968E+00           | 6.904E-01 | 9.444E-01      | 9.290E-02 | 5.261   |
|         |           | 256.20       | *            | 3.115E-01           | 5.010E-01 | 8.577E-01      | 1.487E-01 | 0.363   |
| TH-229  |           | 286.10       |              | -3.095E-01          | 1.936E+00 | 3.169E+00      | 3.176E+00 | -0.098  |
|         |           | 299.80       |              | 2.238E+00           | 2.070E+00 | 3.163E+00      | 5.271E-01 | 0.707   |
|         |           | 304.40       |              | -1.911E+00          | 2.510E+00 | 4.001E+00      | 7.057E-01 | -0.478  |
|         |           | 334.20       |              | -5.722E-01          | 3.479E+00 | 4.668E+00      | 8.664E-01 | -0.123  |
|         | +         | 85.43        |              | 5.231E-01           | 2.852E-01 | 4.696E-01      | 5.352E-02 | 1.114   |
|         |           | 88.47        |              | 1.723E-02           | 2.581E-01 | 2.698E-01      | 3.088E-02 | 0.064   |
| PA-231  |           | 100.00       |              | 1.905E-02           | 2.470E-01 | 4.060E-01      | 3.740E-02 | 0.047   |
|         |           | 193.63       | *            | -5.098E-01          | 6.946E-01 | 1.063E+00      | 7.229E-02 | -0.479  |
|         |           | 210.97       |              | 1.483E+00           | 1.120E+00 | 1.676E+00      | 1.154E-01 | 0.884   |
| TH-231  |           | 283.67       | *            | -1.137E+00          | 1.936E+00 | 3.137E+00      | 4.475E-01 | -0.363  |
|         |           | 301.29       |              | 1.068E+00           | 8.022E-01 | 1.297E+00      | 1.430E-01 | 0.824   |
| U-231   |           | 81.07        |              | 1.556E-01           | 4.436E-01 | 4.770E-01      | 5.336E-02 | 0.326   |
|         | +         | 83.78        |              | 2.511E-02           | 2.624E-01 | 2.911E-01      | 3.290E-02 | 0.086   |
|         |           | 94.90        |              | 1.480E-01           | 3.385E-01 | 4.971E-01      | 4.984E-02 | 0.298   |
|         |           | 122.32       |              | -8.628E-01          | 2.280E+00 | 3.660E+00      | 2.897E-01 | -0.236  |
|         |           | 144.24       |              | 3.921E-01           | 9.012E-01 | 1.464E+00      | 1.178E-01 | 0.268   |
|         |           | 154.21       |              | 2.834E-01           | 5.214E-01 | 8.599E-01      | 6.695E-02 | 0.330   |
| PA-233  | +         | 269.46       |              | 6.564E-01           | 4.576E-01 | 4.327E-01      | 3.095E-02 | 1.517   |
|         |           | 323.87       | *            | 4.096E-01           | 9.572E-01 | 1.422E+00      | 2.390E-01 | 0.288   |
|         | +         | 338.28       |              | 6.840E+00           | 2.139E+00 | 2.999E+00      | 3.268E-01 | 2.281   |
|         |           | 445.03       |              | -2.438E+00          | 2.825E+00 | 4.350E+00      | 4.446E-01 | -0.561  |
|         | +         | 84.21        |              | 1.059E+00           | 1.107E+01 | 1.260E+01      | 1.427E+00 | 0.084   |
|         | +         | 92.29        |              | 5.909E+00           | 3.765E+00 | 5.072E+00      | 5.346E-01 | 1.165   |
| PA-234  |           | 95.87        | *            | -1.956E-02          | 1.563E+00 | 2.247E+00      | 2.215E-01 | -0.009  |
|         |           | 108.00       |              | 5.125E-02           | 2.721E+00 | 4.453E+00      | 3.684E-01 | 0.012   |
|         | +         | 75.28        |              | 2.723E+01           | 8.988E+00 | 1.129E+01      | 1.905E+00 | 2.411   |
|         | +         | 86.59        |              | 4.567E+00           | 2.746E+00 | 3.881E+00      | 1.082E+00 | 1.177   |
|         |           | 300.12       |              | 5.720E-01           | 5.817E-01 | 8.890E-01      | 1.235E-01 | 0.643   |
|         |           | 311.98       | *            | -9.545E-03          | 8.353E-02 | 1.384E-01      | 9.698E-03 | -0.069  |
| PA-234  |           | 340.50       |              | 1.419E+00           | 9.049E-01 | 1.358E+00      | 3.141E-01 | 1.045   |
|         |           | 398.62       |              | 6.513E-02           | 2.738E+00 | 4.386E+00      | 1.133E+00 | 0.015   |
|         |           | 415.76       |              | -7.550E-02          | 2.131E+00 | 3.498E+00      | 7.191E-01 | -0.022  |
|         |           | 63.00        |              | 1.781E+00           | 2.919E+00 | 4.876E+00      | 8.543E-01 | 0.365   |
|         |           | 94.67        |              | 1.885E-01           | 2.457E-01 | 3.646E-01      | 4.904E-02 | 0.517   |
|         |           | 98.44        |              | 9.275E-02           | 1.365E-01 | 2.058E-01      | 1.151E-01 | 0.451   |
| PA-234  |           | 99.86        |              | 1.371E-01           | 6.234E-01 | 1.030E+00      | 9.507E-02 | 0.133   |
|         |           | 111.00       |              | 7.317E-02           | 2.409E-01 | 3.979E-01      | 4.635E-02 | 0.184   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 131.20       |     | -1.459E-01          | 1.427E-01 | 2.226E-01      | 1.551E-02 | -0.655  |
|         |           | 152.70       |     | 4.927E-02           | 4.268E-01 | 6.934E-01      | 1.121E-01 | 0.071   |
|         | +         | 186.00       |     | 4.076E+00           | 2.578E+00 | 3.117E+00      | 9.585E-01 | 1.308   |
|         |           | 226.40       |     | 1.887E-03           | 5.107E-01 | 8.615E-01      | 1.048E-01 | 0.002   |
|         |           | 227.20       |     | -2.723E-01          | 5.486E-01 | 9.065E-01      | 6.289E-02 | -0.300  |
|         |           | 248.90       |     | 9.047E-02           | 9.939E-01 | 1.677E+00      | 3.661E-01 | 0.054   |
|         | +         | 293.70       |     | 7.446E+00           | 2.001E+00 | 2.232E+00      | 3.678E-01 | 3.336   |
|         |           | 369.80       |     | 4.992E-01           | 1.096E+00 | 1.850E+00      | 3.864E-01 | 0.270   |
|         |           | 568.70       |     | 7.582E-01           | 1.234E+00 | 2.085E+00      | 1.144E-01 | 0.364   |
|         |           | 569.50       |     | 3.385E-01           | 3.309E-01 | 5.741E-01      | 3.147E-02 | 0.590   |
|         |           | 574.00       |     | -1.951E+00          | 1.968E+00 | 2.957E+00      | 1.616E-01 | -0.660  |
|         |           | 699.00       |     | 2.094E-01           | 8.166E-01 | 1.393E+00      | 2.492E-01 | 0.150   |
|         |           | 706.10       |     | -2.258E-01          | 1.274E+00 | 2.103E+00      | 9.277E-01 | -0.107  |
|         |           | 733.00       |     | 3.663E-01           | 5.126E-01 | 7.872E-01      | 1.678E-01 | 0.465   |
|         |           | 742.81       |     | -2.949E-01          | 1.506E+00 | 2.455E+00      | 1.643E+00 | -0.120  |
|         |           | 796.30       |     | 1.754E+00           | 1.161E+00 | 1.981E+00      | 5.260E-01 | 0.885   |
|         |           | 805.60       |     | 1.524E-01           | 1.187E+00 | 1.993E+00      | 6.028E-01 | 0.076   |
|         |           | 819.60       |     | -6.781E-01          | 1.417E+00 | 2.217E+00      | 8.368E-01 | -0.306  |
|         |           | 826.30       |     | -1.076E-01          | 9.504E-01 | 1.562E+00      | 6.955E-01 | -0.069  |
|         |           | 831.60       |     | -4.963E-02          | 7.840E-01 | 1.296E+00      | 3.827E-01 | -0.038  |
|         |           | 876.40       |     | -1.035E-01          | 9.876E-01 | 1.611E+00      | 1.656E+00 | -0.064  |
|         |           | 880.51       |     | 1.186E-01           | 3.317E-01 | 5.659E-01      | 4.664E-02 | 0.210   |
|         |           | 883.24       |     | 9.567E-02           | 3.558E-01 | 5.925E-01      | 3.981E-01 | 0.161   |
|         |           | 899.00       |     | -1.562E-01          | 1.006E+00 | 1.637E+00      | 7.154E-01 | -0.095  |
|         |           | 925.00       |     | 2.063E-01           | 1.366E+00 | 2.286E+00      | 1.911E-01 | 0.090   |
|         |           | 926.50       |     | -3.932E-02          | 2.121E-01 | 3.441E-01      | 8.665E-02 | -0.114  |
|         |           | 946.00       | *   | -1.133E-01          | 3.861E-01 | 6.201E-01      | 1.152E-01 | -0.183  |
|         |           | 949.00       |     | -8.470E-02          | 5.561E-01 | 9.050E-01      | 7.405E-02 | -0.094  |
|         |           | 980.50       |     | -1.239E-01          | 8.721E-01 | 1.416E+00      | 1.123E-01 | -0.087  |
| PA-234M |           | 1394.10      |     | 4.143E-01           | 1.548E+00 | 2.625E+00      | 1.705E+00 | 0.158   |
|         |           | 766.42       |     | 5.038E+00           | 1.566E+01 | 2.629E+01      | 1.325E+01 | 0.192   |
| TH-234  |           | 1001.03      | *   | 1.096E+00           | 5.892E+00 | 9.898E+00      | 9.123E-01 | 0.111   |
|         |           | 63.29        | *   | 1.508E+00           | 2.444E+00 | 4.076E+00      | 8.045E-01 | 0.370   |
| +       |           | 92.38        |     | 1.581E+00           | 1.038E+00 | 1.352E+00      | 2.577E-01 | 1.170   |
| U-235   |           | 89.95        |     | 3.994E-01           | 2.540E+00 | 2.667E+00      | 8.436E-01 | 0.150   |
| +       |           | 93.35        |     | 1.901E+00           | 1.313E+00 | 1.535E+00      | 4.388E-01 | 1.238   |
|         |           | 105.00       |     | 5.394E-01           | 1.441E+00 | 2.375E+00      | 7.087E-01 | 0.227   |
|         |           | 143.76       | *   | 1.818E-01           | 2.780E-01 | 4.528E-01      | 7.556E-02 | 0.402   |
|         |           | 163.35       |     | 8.727E-02           | 6.262E-01 | 1.016E+00      | 1.857E-01 | 0.086   |
| +       |           | 185.71       |     | 1.510E-01           | 8.407E-02 | 1.149E-01      | 7.760E-03 | 1.314   |
|         |           | 205.31       |     | -3.200E-01          | 8.004E-01 | 1.070E+00      | 1.963E-01 | -0.299  |
| NP-236  |           | 94.67        |     | 1.443E-01           | 1.859E-01 | 2.767E-01      | 2.787E-02 | 0.522   |
|         |           | 98.44        |     | 7.013E-02           | 9.566E-02 | 1.556E-01      | 1.468E-02 | 0.451   |
|         |           | 111.00       |     | 5.535E-02           | 1.822E-01 | 3.010E-01      | 2.406E-02 | 0.184   |
|         |           | 160.31       | *   | -4.322E-02          | 1.022E-01 | 1.622E-01      | 1.083E-02 | -0.266  |
| U-238   |           | 63.29        | *   | 1.508E+00           | 2.444E+00 | 4.076E+00      | 8.045E-01 | 0.370   |
| +       |           | 92.38        |     | 1.581E+00           | 1.007E+00 | 1.352E+00      | 1.422E-01 | 1.170   |
| NP-239  |           | 99.55        |     | 5.274E-02           | 2.085E-01 | 3.449E-01      | 3.199E-02 | 0.153   |
|         |           | 117.00       | *   | -3.584E-02          | 2.407E-01 | 3.905E-01      | 2.936E-02 | -0.092  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         | +         | 209.75       |     | 2.814E+00           | 1.695E+00 | 1.845E+00      | 1.269E-01 | 1.525   |
|         |           | 228.18       |     | -3.882E-01          | 2.914E-01 | 4.633E-01      | 3.215E-02 | -0.838  |
|         |           | 277.60       |     | 3.651E-01           | 2.424E-01 | 4.196E-01      | 2.897E-02 | 0.870   |
|         |           | 334.30       |     | -1.527E-01          | 1.978E+00 | 2.675E+00      | 1.734E-01 | -0.057  |
| AM-241  |           | 59.54        | *   | -1.770E-01          | 3.301E-01 | 5.367E-01      | 6.830E-02 | -0.330  |
| CM-243  |           | 99.55        |     | 5.427E-02           | 2.146E-01 | 3.549E-01      | 3.292E-02 | 0.153   |
|         |           | 103.76       | *   | 6.858E-02           | 1.290E-01 | 2.151E-01      | 1.878E-02 | 0.319   |
|         |           | 117.00       |     | -3.687E-02          | 2.477E-01 | 4.018E-01      | 3.020E-02 | -0.092  |
|         | +         | 209.75       |     | 2.774E+00           | 1.671E+00 | 1.819E+00      | 1.251E-01 | 1.525   |
|         |           | 228.18       |     | -3.923E-01          | 2.944E-01 | 4.682E-01      | 3.249E-02 | -0.838  |
|         |           | 277.60       |     | 3.681E-01           | 2.444E-01 | 4.231E-01      | 2.921E-02 | 0.870   |
| AM-246  |           | 798.80       |     | -2.104E-01          | 1.673E-01 | 2.492E-01      | 1.728E-02 | -0.844  |
|         |           | 1036.00      |     | -5.001E-01          | 3.869E-01 | 5.556E-01      | 4.112E-02 | -0.900  |
|         |           | 1062.04      |     | -3.141E-02          | 2.819E-01 | 4.569E-01      | 3.255E-02 | -0.069  |
|         |           | 1078.86      | *   | 1.241E-01           | 1.808E-01 | 3.130E-01      | 2.169E-02 | 0.396   |
| CM-247  |           | 278.00       |     | 1.382E+00           | 9.791E-01 | 1.727E+00      | 1.192E-01 | 0.800   |
|         |           | 287.40       |     | -2.305E-01          | 1.687E+00 | 2.545E+00      | 1.746E-01 | -0.091  |
|         |           | 402.60       | *   | -4.670E-03          | 4.482E-02 | 7.337E-02      | 4.172E-03 | -0.064  |
| CF-249  |           | 252.85       |     | -1.007E-01          | 1.116E+00 | 1.868E+00      | 1.300E-01 | -0.054  |
|         |           | 333.44       |     | -2.365E-01          | 3.287E-01 | 3.423E-01      | 2.222E-02 | -0.691  |
|         |           | 387.95       | *   | 2.867E-02           | 4.727E-02 | 8.079E-02      | 4.632E-03 | 0.355   |
| CF-251  |           | 176.60       | *   | -4.641E-02          | 1.648E-01 | 2.621E-01      | 1.757E-02 | -0.177  |
|         |           | 227.00       |     | -1.960E-01          | 4.891E-01 | 8.117E-01      | 5.630E-02 | -0.241  |
|         |           | 285.00       |     | -2.683E-01          | 2.186E+00 | 3.633E+00      | 2.497E-01 | -0.074  |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630007      *
* Acquisition date   : 23-JAN-2010 11:47:27 Detector SN# :                  *
* Detector ID        : GAM15 Sensitivity : 5.000                          *
* Geometry           : CAN Energy tolerance: 1.500                        *
* Elapsed live time: 0 02:00:00.00 Abundance limit : 75.000              *
* Elapsed real time: 0 02:00:01.41 Half life ratio : 8.000                *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G244630007 Analyst initials: MXR1                 *
* Batch Number       : 941639 Sample Quantity : 1.3080E+02 GRAM          *
* Recovery           : 1.00000 Carrier Weight : 0.00000                  *
*****
*                                     QC DATA                               *
*
* Standard Weight    : 0.00000                                             *
* CALIB. DATE/TIME   : 16-FEB-2009 10:54:12 MS Isotope :                  *
* MSD DPM             : 0.000 MSD Isotope :                               *
* LCS DPM             : 0.000 LCS Isotope :                               *
* LCSD DPM           : 0.000 LCSD Isotope :                               *
*****

```

## Combined Activity-MDA Report

### ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act error | MDA<br>(pCi/GRAM ) |           |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 3.532E+01               | 3.408E+00 | 6.992E-01          | 0.000E+00 |
| SN-126  | 2.333E-01               | 1.246E-01 | 2.028E-01          | 0.000E+00 |
| CS-135  | 5.580E-01               | 3.820E-01 | 3.318E-01          | 0.000E+00 |
| TL-208  | 5.618E-01               | 9.022E-02 | 7.706E-02          | 0.000E+00 |
| BI-211  | 4.109E+00               | 6.297E-01 | 4.048E-01          | 0.000E+00 |
| PB-212  | 1.915E+00               | 2.095E-01 | 1.203E-01          | 0.000E+00 |
| PO-212  | 1.915E+00               | 2.095E-01 | 1.203E-01          | 0.000E+00 |
| BI-214  | 1.264E+00               | 2.077E-01 | 1.366E-01          | 0.000E+00 |
| PB-214  | 1.429E+00               | 2.309E-01 | 1.411E-01          | 0.000E+00 |
| PO-214  | 1.429E+00               | 2.309E-01 | 1.411E-01          | 0.000E+00 |
| PO-216  | 1.915E+00               | 2.095E-01 | 1.203E-01          | 0.000E+00 |
| PO-218  | 1.429E+00               | 2.309E-01 | 1.411E-01          | 0.000E+00 |
| RA-224  | 6.785E+00               | 1.877E+00 | 1.368E+00          | 0.000E+00 |
| RA-226  | 1.264E+00               | 2.077E-01 | 1.366E-01          | 0.000E+00 |
| AC-228  | 2.210E+00               | 4.036E-01 | 2.501E-01          | 0.000E+00 |
| RA-228  | 2.210E+00               | 4.036E-01 | 2.501E-01          | 0.000E+00 |
| TH-228  | 1.944E+00               | 2.127E-01 | 1.221E-01          | 0.000E+00 |
| TH-230  | 1.264E+00               | 2.077E-01 | 1.366E-01          | 0.000E+00 |
| TH-232  | 2.210E+00               | 4.036E-01 | 2.501E-01          | 0.000E+00 |
| U-234   | 1.264E+00               | 2.077E-01 | 1.366E-01          | 0.000E+00 |
| NP-237  | 6.850E-01               | 3.913E-01 | 6.543E-01          | 0.000E+00 |
| AM-243  | 5.199E-01               | 1.552E-01 | 1.354E-01          | 0.000E+00 |
| ANH-511 | 1.279E-01               | 8.261E-02 | 5.796E-02          | 0.000E+00 |

### ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L. Act error<br>) Ided | MDA<br>(pCi/GRAM ) |                      |
|---------|-------------------------------------|--------------------------|--------------------|----------------------|
| BE-7    | 2.123E-01                           | 4.039E-01                | 7.090E-01          | 0.000E+00 NOT IDENT. |
| NA-22   | -1.495E-02                          | 5.485E-02                | 8.848E-02          | 0.000E+00 NOT IDENT. |
| NA-24   | 0.000E+00                           | 8.195E+05                | 0.000E+00          | 0.000E+00 SHORT HLIF |
| AL-26   | 1.635E-03                           | 3.450E-02                | 5.825E-02          | 0.000E+00 NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| TI-44   | 0.000E+00  | 8.530E-02 | 1.055E-01 | 0.000E+00 | NOT IDENT. |
| SC-46   | -1.837E-02 | 4.734E-02 | 7.805E-02 | 0.000E+00 | FAIL ABUN  |
| V-48    | -4.360E-02 | 8.370E-02 | 1.348E-01 | 0.000E+00 | NOT IDENT. |
| CR-51   | 9.569E-02  | 4.747E-01 | 8.144E-01 | 0.000E+00 | NOT IDENT. |
| MN-52   | -3.763E-02 | 2.454E-01 | 4.100E-01 | 0.000E+00 | NOT IDENT. |
| MN-54   | 2.052E-02  | 4.842E-02 | 8.525E-02 | 0.000E+00 | NOT IDENT. |
| CO-56   | 4.302E-02  | 4.538E-02 | 8.324E-02 | 0.000E+00 | NOT IDENT. |
| CO-57   | -8.491E-03 | 3.194E-02 | 5.480E-02 | 0.000E+00 | NOT IDENT. |
| CO-58   | -4.714E-05 | 4.792E-02 | 8.223E-02 | 0.000E+00 | NOT IDENT. |
| FE-59   | -4.245E-02 | 1.219E-01 | 1.985E-01 | 0.000E+00 | NOT IDENT. |
| CO-60   | 4.469E-02  | 4.675E-02 | 8.531E-02 | 0.000E+00 | NOT IDENT. |
| ZN-65   | 2.175E-02  | 1.334E-01 | 1.951E-01 | 0.000E+00 | NOT IDENT. |
| GE-68   | 7.981E-01  | 1.524E+00 | 2.675E+00 | 0.000E+00 | NOT IDENT. |
| AS-73   | -2.589E-01 | 2.072E+00 | 3.698E+00 | 0.000E+00 | NOT IDENT. |
| AS-74   | 5.223E-02  | 1.184E-01 | 2.006E-01 | 0.000E+00 | NOT IDENT. |
| SE-75   | 4.721E-03  | 6.231E-02 | 9.601E-02 | 0.000E+00 | NOT IDENT. |
| BR-77   | 5.335E+00  | 1.141E+01 | 1.995E+01 | 0.000E+00 | FAIL ABUN  |
| SR-82   | -6.544E-01 | 4.606E-01 | 7.036E-01 | 0.000E+00 | NOT IDENT. |
| RB-83   | 3.521E-02  | 7.721E-02 | 1.349E-01 | 0.000E+00 | NOT IDENT. |
| RB-84   | -1.040E-02 | 8.400E-02 | 1.418E-01 | 0.000E+00 | NOT IDENT. |
| KR-85   | 5.144E+00  | 9.449E+00 | 1.451E+01 | 0.000E+00 | NOT IDENT. |
| SR-85   | 2.634E-02  | 4.839E-02 | 7.430E-02 | 0.000E+00 | NOT IDENT. |
| RB-86   | 6.695E-02  | 9.778E-01 | 1.653E+00 | 0.000E+00 | NOT IDENT. |
| Y-88    | 2.492E-02  | 3.738E-02 | 6.989E-02 | 0.000E+00 | NOT IDENT. |
| ZR-88   | -1.318E-02 | 3.648E-02 | 6.147E-02 | 0.000E+00 | NOT IDENT. |
| Y-91    | 1.773E+01  | 2.465E+01 | 4.328E+01 | 0.000E+00 | NOT IDENT. |
| NB-94   | 5.058E-03  | 3.899E-02 | 6.818E-02 | 0.000E+00 | NOT IDENT. |
| NB-95   | 4.452E-02  | 5.634E-02 | 1.015E-01 | 0.000E+00 | NOT IDENT. |
| NB-95M  | 0.000E+00  | 2.795E-01 | 4.616E-01 | 0.000E+00 | NOT IDENT. |
| ZR-95   | 2.001E-02  | 8.858E-02 | 1.551E-01 | 0.000E+00 | NOT IDENT. |
| NB-97   | 0.000E+00  | 9.964E+04 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| ZR-97   | 0.000E+00  | 2.561E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| MO-99   | -1.406E+01 | 1.309E+01 | 2.047E+01 | 0.000E+00 | NOT IDENT. |
| TC-99M  | 0.000E+00  | 3.472E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | 8.804E-03  | 4.322E-02 | 7.258E-02 | 0.000E+00 | NOT IDENT. |
| RH-102  | -5.467E-03 | 3.600E-02 | 6.064E-02 | 0.000E+00 | NOT IDENT. |
| RU-103  | -5.446E-03 | 4.927E-02 | 8.294E-02 | 0.000E+00 | FAIL ABUN  |
| RH-106  | 2.150E-01  | 3.848E-01 | 6.686E-01 | 0.000E+00 | NOT IDENT. |
| RU-106  | 2.150E-01  | 3.842E-01 | 6.686E-01 | 0.000E+00 | NOT IDENT. |
| AG-108M | -2.647E-02 | 4.206E-02 | 6.922E-02 | 0.000E+00 | NOT IDENT. |
| CD-109  | 7.734E-01  | 1.911E+00 | 2.184E+00 | 0.000E+00 | NOT IDENT. |
| AG-110M | 1.391E-02  | 4.036E-02 | 6.899E-02 | 0.000E+00 | NOT IDENT. |
| IN-111  | 7.172E-02  | 1.340E+00 | 2.072E+00 | 0.000E+00 | NOT IDENT. |
| IN-113M | -5.619E-02 | 5.345E-02 | 8.609E-02 | 0.000E+00 | NOT IDENT. |
| SN-113  | -5.619E-02 | 5.345E-02 | 8.609E-02 | 0.000E+00 | NOT IDENT. |
| IN-114M | 1.084E-01  | 2.650E-01 | 4.010E-01 | 0.000E+00 | NOT IDENT. |
| CD-115  | -3.864E+00 | 1.320E+01 | 2.185E+01 | 0.000E+00 | NOT IDENT. |
| SN-117M | -4.045E-02 | 6.967E-02 | 1.165E-01 | 0.000E+00 | NOT IDENT. |
| SB-122  | -7.439E-01 | 2.439E+00 | 4.013E+00 | 0.000E+00 | NOT IDENT. |
| I-123   | 0.000E+00  | 6.252E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TE-123M | -2.090E-02 | 3.619E-02 | 6.048E-02 | 0.000E+00 | NOT IDENT. |
| I-124   | 1.169E-02  | 9.411E-01 | 1.360E+00 | 0.000E+00 | NOT IDENT. |
| SB-124  | -3.028E-03 | 8.481E-02 | 1.470E-01 | 0.000E+00 | FAIL ABUN  |
| SB-125  | 7.732E-02  | 1.147E-01 | 2.040E-01 | 0.000E+00 | FAIL ABUN  |
| TE-125M | -6.304E+00 | 1.223E+01 | 2.089E+01 | 0.000E+00 | NOT IDENT. |
| I-126   | 1.877E-01  | 2.094E-01 | 3.719E-01 | 0.000E+00 | NOT IDENT. |
| SB-126  | 7.575E-02  | 1.900E-01 | 2.953E-01 | 0.000E+00 | NOT IDENT. |
| SB-127  | 1.048E+00  | 1.481E+00 | 2.697E+00 | 0.000E+00 | NOT IDENT. |
| XE-127  | -2.422E-03 | 7.037E-02 | 1.018E-01 | 0.000E+00 | NOT IDENT. |
| I-131   | -9.409E-02 | 1.418E-01 | 2.361E-01 | 0.000E+00 | NOT IDENT. |
| TE-132  | -1.155E+00 | 8.628E-01 | 1.424E+00 | 0.000E+00 | NOT IDENT. |
| BA-133  | -2.763E-04 | 6.023E-02 | 9.049E-02 | 0.000E+00 | NOT IDENT. |
| I-133   | 0.000E+00  | 6.945E+03 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-134  | 8.638E-02  | 5.457E-02 | 1.036E-01 | 0.000E+00 | NOT IDENT. |
| I-135   | 0.000E+00  | 5.170E+15 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-136  | -4.778E-02 | 1.304E-01 | 2.123E-01 | 0.000E+00 | FAIL ABUN  |
| BA-137M | -1.194E-02 | 4.136E-02 | 6.717E-02 | 0.000E+00 | NOT IDENT. |
| CS-137  | -1.263E-02 | 4.372E-02 | 7.100E-02 | 0.000E+00 | NOT IDENT. |
| CE-139  | 9.940E-03  | 3.974E-02 | 6.850E-02 | 0.000E+00 | NOT IDENT. |
| BA-140  | 7.426E-02  | 3.244E-01 | 5.545E-01 | 0.000E+00 | NOT IDENT. |
| LA-140  | 4.820E-02  | 8.658E-02 | 1.585E-01 | 0.000E+00 | NOT IDENT. |
| CE-141  | -2.211E-02 | 7.989E-02 | 1.359E-01 | 0.000E+00 | NOT IDENT. |
| CE-143  | 0.000E+00  | 4.175E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CE-144  | -5.064E-04 | 2.620E-01 | 4.523E-01 | 0.000E+00 | NOT IDENT. |
| PM-144  | -1.477E-02 | 3.911E-02 | 6.603E-02 | 0.000E+00 | NOT IDENT. |
| PR-144  | -1.001E+00 | 2.650E+00 | 4.474E+00 | 0.000E+00 | NOT IDENT. |
| PM-146  | 2.735E-02  | 5.271E-02 | 9.277E-02 | 0.000E+00 | NOT IDENT. |
| ND-147  | 9.837E-02  | 7.210E-01 | 1.228E+00 | 0.000E+00 | FAIL ABUN  |



|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PM-149  | -2.291E+01 | 1.072E+02 | 1.861E+02 | 0.000E+00 | NOT IDENT. |
| EU-152  | -1.391E-01 | 1.582E-01 | 1.893E-01 | 0.000E+00 | FAIL ABUN  |
| GD-153  | 1.507E-01  | 1.160E-01 | 1.880E-01 | 0.000E+00 | FAIL ABUN  |
| EU-154  | -4.307E-02 | 1.531E-01 | 2.467E-01 | 0.000E+00 | NOT IDENT. |
| EU-155  | 3.175E-02  | 1.438E-01 | 2.529E-01 | 0.000E+00 | FAIL ABUN  |
| TB-160  | -5.232E-02 | 1.612E-01 | 2.671E-01 | 0.000E+00 | FAIL ABUN  |
| HO-166M | -2.293E-02 | 7.171E-02 | 1.214E-01 | 0.000E+00 | FAIL ABUN  |
| TM-171  | -6.978E+01 | 5.129E+01 | 7.824E+01 | 0.000E+00 | NOT IDENT. |
| LU-176  | -2.098E-02 | 3.182E-02 | 5.381E-02 | 0.000E+00 | NOT IDENT. |
| LU-177  | 0.000E+00  | 2.312E+00 | 2.620E+00 | 0.000E+00 | FAIL ABUN  |
| LU-177M | -1.824E-01 | 2.235E-01 | 3.653E-01 | 0.000E+00 | FAIL ABUN  |
| HF-181  | -7.206E-03 | 5.141E-02 | 8.657E-02 | 0.000E+00 | NOT IDENT. |
| W-181   | -1.157E+00 | 6.433E-01 | 1.041E+00 | 0.000E+00 | NOT IDENT. |
| TA-182  | 1.052E-01  | 2.575E-01 | 4.416E-01 | 0.000E+00 | FAIL ABUN  |
| RE-183  | -1.064E-01 | 1.423E-01 | 2.360E-01 | 0.000E+00 | FAIL ABUN  |
| RE-184  | -2.682E-02 | 2.914E-01 | 5.127E-01 | 0.000E+00 | NOT IDENT. |
| OS-185  | 1.622E-02  | 5.471E-02 | 9.312E-02 | 0.000E+00 | NOT IDENT. |
| RE-188  | 1.235E-01  | 2.160E-01 | 3.780E-01 | 0.000E+00 | NOT IDENT. |
| W-188   | -3.477E+00 | 1.051E+01 | 1.567E+01 | 0.000E+00 | NOT IDENT. |
| IR-192  | -1.858E-03 | 4.241E-02 | 7.381E-02 | 0.000E+00 | FAIL ABUN  |
| AU-195  | 7.713E-02  | 2.953E-01 | 5.214E-01 | 0.000E+00 | FAIL ABUN  |
| TL-200  | 0.000E+00  | 5.233E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TL-201  | 1.982E+00  | 9.025E+00 | 1.554E+01 | 0.000E+00 | NOT IDENT. |
| TL-202  | 7.369E-02  | 8.657E-02 | 1.552E-01 | 0.000E+00 | NOT IDENT. |
| HG-203  | 3.814E-02  | 5.216E-02 | 9.430E-02 | 0.000E+00 | FAIL ABUN  |
| BI-207  | -7.452E-03 | 6.424E-02 | 1.069E-01 | 0.000E+00 | FAIL ABUN  |
| TL-207  | 4.096E-01  | 9.381E-01 | 1.459E+00 | 0.000E+00 | FAIL ABUN  |
| PO-209  | -7.736E-01 | 8.945E+00 | 1.513E+01 | 0.000E+00 | NOT IDENT. |
| BI-210  | -5.658E+00 | 1.384E+01 | 2.396E+01 | 0.000E+00 | NOT IDENT. |
| PB-210  | -5.658E+00 | 1.384E+01 | 2.396E+01 | 0.000E+00 | NOT IDENT. |
| PO-210  | -5.658E+00 | 1.384E+01 | 2.396E+01 | 0.000E+00 | NOT IDENT. |
| PB-211  | -1.600E+00 | 1.516E+00 | 1.832E+00 | 0.000E+00 | NOT IDENT. |
| BI-212  | 0.000E+00  | 5.458E-01 | 8.294E-01 | 0.000E+00 | FAIL ABUN  |
| PO-215  | 4.096E-01  | 9.381E-01 | 1.459E+00 | 0.000E+00 | FAIL ABUN  |
| RN-219  | 1.487E-01  | 4.967E-01 | 8.681E-01 | 0.000E+00 | NOT IDENT. |
| RN-220  | 3.425E+01  | 3.344E+01 | 6.005E+01 | 0.000E+00 | NOT IDENT. |
| RA-223  | 4.096E-01  | 9.381E-01 | 1.459E+00 | 0.000E+00 | FAIL ABUN  |
| AC-227  | 3.115E-01  | 4.901E-01 | 8.837E-01 | 0.000E+00 | NOT IDENT. |
| TH-227  | 3.115E-01  | 4.909E-01 | 8.837E-01 | 0.000E+00 | NOT IDENT. |
| TH-229  | -5.098E-01 | 6.808E-01 | 1.100E+00 | 0.000E+00 | FAIL ABUN  |
| PA-231  | -1.137E+00 | 1.898E+00 | 3.226E+00 | 0.000E+00 | NOT IDENT. |
| TH-231  | 4.096E-01  | 9.381E-01 | 1.459E+00 | 0.000E+00 | FAIL ABUN  |
| U-231   | -1.956E-02 | 1.532E+00 | 2.352E+00 | 0.000E+00 | FAIL ABUN  |
| PA-233  | -9.545E-03 | 8.186E-02 | 1.421E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234  | -1.133E-01 | 3.784E-01 | 6.253E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234M | 1.096E+00  | 5.775E+00 | 9.971E+00 | 0.000E+00 | NOT IDENT. |
| TH-234  | 1.508E+00  | 2.395E+00 | 4.293E+00 | 0.000E+00 | FAIL ABUN  |
| U-235   | 1.818E-01  | 2.725E-01 | 4.709E-01 | 0.000E+00 | FAIL ABUN  |
| NP-236  | -4.322E-02 | 1.002E-01 | 1.684E-01 | 0.000E+00 | NOT IDENT. |
| U-238   | 1.508E+00  | 2.395E+00 | 4.293E+00 | 0.000E+00 | FAIL ABUN  |
| NP-239  | -3.584E-02 | 2.359E-01 | 4.074E-01 | 0.000E+00 | FAIL ABUN  |
| AM-241  | -1.770E-01 | 3.235E-01 | 5.658E-01 | 0.000E+00 | NOT IDENT. |
| CM-243  | 6.858E-02  | 1.265E-01 | 2.249E-01 | 0.000E+00 | FAIL ABUN  |
| AM-246  | 1.241E-01  | 1.771E-01 | 3.149E-01 | 0.000E+00 | NOT IDENT. |
| CM-247  | -4.670E-03 | 4.392E-02 | 7.504E-02 | 0.000E+00 | NOT IDENT. |
| CF-249  | 2.867E-02  | 4.633E-02 | 8.267E-02 | 0.000E+00 | NOT IDENT. |
| CF-251  | -4.641E-02 | 1.615E-01 | 2.717E-01 | 0.000E+00 | NOT IDENT. |



## VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 13:50:04.40

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630007.CNF;1
Sample date        : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 11:47:27
Sample ID          : G244630007          Sample quantity  : 1.30800E+02 GRAM
Detector name      : GAM15              Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00      Elapsed real time: 0 02:00:01.41  0.0%
Energy tolerance   : 1.50000 keV        Analyst Initials : MXR1
Abundance limit    : 75.00000           Sensitivity       : 5.00000
Batch ID           : 941639             Detector SN#      :
Matrix Spike ID    :                    LCS ID           : 1032-A
*****

```

## Nuclide Line Activity Report

## Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected pCi/GRAM | Decay Corr pCi/GRAM | 2-Sigma %Error |
|---------|---------|-------|--------|-----------|----------------------|---------------------|----------------|
| K-40    | 1460.81 | 1312  | 10.67* | 9.990E-01 | 3.532E+01            | 3.532E+01           | 9.85           |
| SN-126  | 64.28   | ----- | 9.60   | 1.930E+00 | -----                | Line Not Found      | -----          |
|         | 86.94   | 132   | 8.90   | 4.384E+00 | 9.698E-01            | 9.698E-01           | 67.88          |
|         | 87.57   | 132   | 37.00* | 4.384E+00 | 2.333E-01            | 2.333E-01           | 54.51          |
| CS-135  | 268.24  | 120   | 16.00* | 3.869E+00 | 5.580E-01            | 5.580E-01           | 69.87          |
| TL-208  | 277.35  | ----- | 6.80   | 3.788E+00 | -----                | Line Not Found      | -----          |
|         | 510.84  | 110   | 21.60  | 2.463E+00 | 5.922E-01            | 5.922E-01           | 66.42          |
|         | 583.14  | 368   | 84.20* | 2.230E+00 | 5.618E-01            | 5.618E-01           | 16.39          |
|         | 860.37  | 35    | 12.46  | 1.612E+00 | 4.929E-01            | 4.929E-01           | 103.99         |
| BI-211  | 72.87   | 379   | 1.27   | 3.169E+00 | 2.702E+01            | 2.702E+01           | 30.47          |
|         | 351.07  | 594   | 12.94* | 3.206E+00 | 4.109E+00            | 4.109E+00           | 15.64          |
| PB-212  | 74.81   | 379   | 10.70  | 3.169E+00 | 3.207E+00            | 3.207E+00           | 31.87          |
|         | 77.11   | 479   | 18.00  | 3.418E+00 | 2.235E+00            | 2.235E+00           | 20.60          |
|         | 87.30   | 132   | 8.00   | 4.384E+00 | 1.079E+00            | 1.079E+00           | 55.42          |
|         | 238.63  | 1256  | 44.60* | 4.221E+00 | 1.915E+00            | 1.915E+00           | 11.16          |
|         | 300.09  | ----- | 3.41   | 3.583E+00 | -----                | Line Not Found      | -----          |
| PO-212  | 74.81   | 379   | 10.70  | 3.169E+00 | 3.207E+00            | 3.207E+00           | 31.87          |
|         | 77.11   | 479   | 18.00  | 3.418E+00 | 2.235E+00            | 2.235E+00           | 20.60          |
|         | 87.30   | 132   | 8.00   | 4.384E+00 | 1.079E+00            | 1.079E+00           | 55.42          |
|         | 115.19  | ----- | 0.60   | 5.666E+00 | -----                | Line Not Found      | -----          |
|         | 238.63  | 1256  | 44.60* | 4.221E+00 | 1.915E+00            | 1.915E+00           | 11.16          |
|         | 300.09  | ----- | 3.41   | 3.583E+00 | -----                | Line Not Found      | -----          |
| BI-214  | 609.31  | 440   | 46.30* | 2.155E+00 | 1.264E+00            | 1.264E+00           | 16.77          |
|         | 1120.29 | 82    | 15.10  | 1.263E+00 | 1.231E+00            | 1.231E+00           | 54.85          |
|         | 1764.49 | 76    | 15.80  | 8.816E-01 | 1.568E+00            | 1.568E+00           | 37.75          |
| PB-214  | 74.81   | 379   | 6.21   | 3.169E+00 | 5.525E+00            | 5.525E+00           | 31.35          |
|         | 77.11   | 479   | 10.50  | 3.418E+00 | 3.831E+00            | 3.831E+00           | 21.96          |
|         | 87.30   | 132   | 4.67   | 4.384E+00 | 1.848E+00            | 1.848E+00           | 55.06          |
|         | 241.98  | 391   | 7.49   | 4.185E+00 | 3.578E+00            | 3.578E+00           | 28.77          |
|         | 295.21  | 377   | 19.20  | 3.629E+00 | 1.551E+00            | 1.551E+00           | 23.15          |
|         | 351.92  | 594   | 37.20* | 3.206E+00 | 1.429E+00            | 1.429E+00           | 16.49          |
| PO-214  | 74.81   | 379   | 6.21   | 3.169E+00 | 5.525E+00            | 5.525E+00           | 31.35          |

Nuclide Type:

| Nuclide | Energy  | Area  | %Abn    | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|---------|-----------|-------------------------|------------------------|-------------------|
| PO-216  | 77.11   | 479   | 10.50   | 3.418E+00 | 3.831E+00               | 3.831E+00              | 21.96             |
|         | 87.30   | 132   | 4.67    | 4.384E+00 | 1.848E+00               | 1.848E+00              | 55.06             |
|         | 241.98  | 391   | 7.49    | 4.185E+00 | 3.578E+00               | 3.578E+00              | 28.77             |
|         | 295.21  | 377   | 19.20   | 3.629E+00 | 1.551E+00               | 1.551E+00              | 23.15             |
|         | 351.92  | 594   | 37.20*  | 3.206E+00 | 1.429E+00               | 1.429E+00              | 16.49             |
|         | 74.81   | 379   | 10.70   | 3.169E+00 | 3.207E+00               | 3.207E+00              | 31.87             |
|         | 77.11   | 479   | 18.00   | 3.418E+00 | 2.235E+00               | 2.235E+00              | 20.60             |
|         | 87.30   | 132   | 8.00    | 4.384E+00 | 1.079E+00               | 1.079E+00              | 55.42             |
|         | 238.63  | 1256  | 44.60*  | 4.221E+00 | 1.915E+00               | 1.915E+00              | 11.16             |
|         | 300.09  | ----- | 3.41    | 3.583E+00 | -----                   | Line Not Found         | -----             |
| PO-218  | 74.81   | 379   | 6.21    | 3.169E+00 | 5.525E+00               | 5.525E+00              | 31.35             |
|         | 77.11   | 479   | 10.50   | 3.418E+00 | 3.831E+00               | 3.831E+00              | 21.96             |
|         | 87.30   | 132   | 4.67    | 4.384E+00 | 1.848E+00               | 1.848E+00              | 55.06             |
|         | 241.98  | 391   | 7.49    | 4.185E+00 | 3.578E+00               | 3.578E+00              | 28.77             |
|         | 295.21  | 377   | 19.20   | 3.629E+00 | 1.551E+00               | 1.551E+00              | 23.15             |
|         | 351.92  | 594   | 37.20*  | 3.206E+00 | 1.429E+00               | 1.429E+00              | 16.49             |
| RA-224  | 240.98  | 391   | 3.95*   | 4.185E+00 | 6.785E+00               | 6.785E+00              | 28.22             |
| RA-226  | 609.31  | 440   | 46.30*  | 2.155E+00 | 1.264E+00               | 1.264E+00              | 16.77             |
|         | 1120.29 | 82    | 15.10   | 1.263E+00 | 1.231E+00               | 1.231E+00              | 54.85             |
|         | 1764.49 | 76    | 15.80   | 8.816E-01 | 1.568E+00               | 1.568E+00              | 37.75             |
| AC-228  | 338.32  | 215   | 11.40   | 3.297E+00 | 1.638E+00               | 1.638E+00              | 50.29             |
|         | 911.07  | 327   | 27.70*  | 1.532E+00 | 2.210E+00               | 2.210E+00              | 18.64             |
|         | 969.11  | 175   | 16.60   | 1.448E+00 | 2.092E+00               | 2.092E+00              | 32.62             |
| RA-228  | 338.32  | 215   | 11.40   | 3.297E+00 | 1.638E+00               | 1.638E+00              | 50.29             |
|         | 911.07  | 327   | 27.70*  | 1.532E+00 | 2.210E+00               | 2.210E+00              | 18.64             |
|         | 969.11  | 175   | 16.60   | 1.448E+00 | 2.092E+00               | 2.092E+00              | 32.62             |
| TH-228  | 74.81   | 379   | 10.70   | 3.169E+00 | 3.207E+00               | 3.255E+00              | 30.49             |
|         | 77.11   | 479   | 18.00   | 3.418E+00 | 2.235E+00               | 2.268E+00              | 20.60             |
|         | 87.30   | 132   | 8.00    | 4.384E+00 | 1.079E+00               | 1.095E+00              | 54.51             |
|         | 238.63  | 1256  | 44.60*  | 4.221E+00 | 1.915E+00               | 1.944E+00              | 11.16             |
| TH-230  | 300.09  | ----- | 3.41    | 3.583E+00 | -----                   | Line Not Found         | -----             |
|         | 609.31  | 440   | 46.30*  | 2.155E+00 | 1.264E+00               | 1.264E+00              | 16.77             |
|         | 1120.29 | 82    | 15.10   | 1.263E+00 | 1.231E+00               | 1.231E+00              | 54.85             |
|         | 1764.49 | 76    | 15.80   | 8.816E-01 | 1.568E+00               | 1.568E+00              | 37.75             |
| TH-232  | 338.32  | 215   | 11.40   | 3.297E+00 | 1.638E+00               | 1.638E+00              | 30.01             |
|         | 911.07  | 327   | 27.70*  | 1.532E+00 | 2.210E+00               | 2.210E+00              | 18.64             |
|         | 969.11  | 175   | 16.60   | 1.448E+00 | 2.092E+00               | 2.092E+00              | 32.62             |
| U-234   | 609.31  | 440   | 46.30*  | 2.155E+00 | 1.264E+00               | 1.264E+00              | 16.77             |
|         | 1120.29 | 82    | 15.10   | 1.263E+00 | 1.231E+00               | 1.231E+00              | 54.85             |
|         | 1764.49 | 76    | 15.80   | 8.816E-01 | 1.568E+00               | 1.568E+00              | 37.75             |
| NP-237  | 86.50   | 132   | 12.60*  | 4.384E+00 | 6.850E-01               | 6.850E-01              | 58.29             |
|         | 95.87   | ----- | 2.60    | 5.041E+00 | -----                   | Line Not Found         | -----             |
| AM-243  | 74.67   | 379   | 66.00*  | 3.169E+00 | 5.199E-01               | 5.199E-01              | 30.47             |
|         | 86.72   | 132   | 0.34    | 4.384E+00 | 2.569E+01               | 2.569E+01              | 54.51             |
|         | 117.66  | ----- | 0.55    | 5.694E+00 | -----                   | Line Not Found         | -----             |
| ANH-511 | 142.18  | ----- | 0.13    | 5.637E+00 | -----                   | Line Not Found         | -----             |
|         | 511.00  | 110   | 100.00* | 2.463E+00 | 1.279E-01               | 1.279E-01              | 65.90             |

Flag: "\*" = Keyline

Total number of lines in spectrum 27  
Number of unidentified lines 2  
Number of lines tentatively identified by NID 25 92.59%

Nuclide Type :

| Nuclide | Hlife     | Decay | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | Decay Corr<br>2-Sigma Error | 2-Sigma<br>%Error | Flags |
|---------|-----------|-------|-------------------------|------------------------|-----------------------------|-------------------|-------|
| K-40    | 1.28E+09Y | 1.00  | 3.532E+01               | 3.532E+01              | 0.348E+01                   | 9.85              |       |
| SN-126  | 1.00E+05Y | 1.00  | 2.333E-01               | 2.333E-01              | 1.272E-01                   | 54.51             |       |
| CS-135  | 2.30E+06Y | 1.00  | 5.580E-01               | 5.580E-01              | 3.898E-01                   | 69.87             |       |
| TL-208  | 1.41E+10Y | 1.00  | 5.618E-01               | 5.618E-01              | 0.921E-01                   | 16.39             |       |
| BI-211  | 7.04E+08Y | 1.00  | 4.109E+00               | 4.109E+00              | 0.643E+00                   | 15.64             |       |
| PB-212  | 1.41E+10Y | 1.00  | 1.915E+00               | 1.915E+00              | 0.214E+00                   | 11.16             |       |
| PO-212  | 1.41E+10Y | 1.00  | 1.915E+00               | 1.915E+00              | 0.214E+00                   | 11.16             |       |
| BI-214  | 1600.00Y  | 1.00  | 1.264E+00               | 1.264E+00              | 0.212E+00                   | 16.77             |       |
| PB-214  | 1600.00Y  | 1.00  | 1.429E+00               | 1.429E+00              | 0.236E+00                   | 16.49             |       |
| PO-214  | 1600.00Y  | 1.00  | 1.429E+00               | 1.429E+00              | 0.236E+00                   | 16.49             |       |
| PO-216  | 1.41E+10Y | 1.00  | 1.915E+00               | 1.915E+00              | 0.214E+00                   | 11.16             |       |
| PO-218  | 1600.00Y  | 1.00  | 1.429E+00               | 1.429E+00              | 0.236E+00                   | 16.49             |       |
| RA-224  | 1.41E+10Y | 1.00  | 6.785E+00               | 6.785E+00              | 1.915E+00                   | 28.22             |       |
| RA-226  | 1600.00Y  | 1.00  | 1.264E+00               | 1.264E+00              | 0.212E+00                   | 16.77             |       |
| AC-228  | 1.41E+10Y | 1.00  | 2.210E+00               | 2.210E+00              | 0.412E+00                   | 18.64             |       |
| RA-228  | 1.41E+10Y | 1.00  | 2.210E+00               | 2.210E+00              | 0.412E+00                   | 18.64             |       |
| TH-228  | 1.91Y     | 1.02  | 1.915E+00               | 1.944E+00              | 0.217E+00                   | 11.16             |       |
| TH-230  | 4.47E+09Y | 1.00  | 1.264E+00               | 1.264E+00              | 0.212E+00                   | 16.77             |       |
| TH-232  | 1.41E+10Y | 1.00  | 2.210E+00               | 2.210E+00              | 0.412E+00                   | 18.64             |       |
| U-234   | 4.47E+09Y | 1.00  | 1.264E+00               | 1.264E+00              | 0.212E+00                   | 16.77             |       |
| NP-237  | 2.14E+06Y | 1.00  | 6.850E-01               | 6.850E-01              | 3.993E-01                   | 58.29             |       |
| AM-243  | 7380.00Y  | 1.00  | 5.199E-01               | 5.199E-01              | 1.584E-01                   | 30.47             |       |
| ANH-511 | 1.00E+09Y | 1.00  | 1.279E-01               | 1.279E-01              | 0.843E-01                   | 65.90             |       |

Total Activity : 7.253E+01 7.256E+01

Grand Total Activity : 7.253E+01 7.256E+01

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

| It | Energy  | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | %Eff     | Flags |
|----|---------|------|-------|------|---------|------|----|----------|------|----------|-------|
| 0  | 82.85   | 9    | 585   | 0.98 | 166.19  | 162  | 10 | 1.22E-03 | **** | 4.07E+00 | T     |
| 0  | 92.36   | 144  | 498   | 1.33 | 185.18  | 181  | 9  | 2.00E-02 | 62.8 | 4.83E+00 | T     |
| 0  | 185.31  | 142  | 356   | 1.66 | 371.01  | 367  | 10 | 1.97E-02 | 55.3 | 4.98E+00 | T     |
| 0  | 209.14  | 147  | 414   | 1.95 | 418.65  | 412  | 13 | 2.04E-02 | 59.9 | 4.61E+00 | T     |
| 0  | 326.82  | 43   | 204   | 1.34 | 653.91  | 650  | 10 | 6.00E-03 | **** | 3.37E+00 |       |
| 0  | 462.70  | 85   | 92    | 1.86 | 925.56  | 921  | 10 | 1.18E-02 | 47.8 | 2.64E+00 | T     |
| 0  | 726.61  | 114  | 77    | 2.50 | 1453.23 | 1447 | 12 | 1.58E-02 | 36.7 | 1.87E+00 | T     |
| 6  | 963.80  | 65   | 43    | 2.35 | 1927.47 | 1920 | 24 | 8.96E-03 | 51.8 | 1.45E+00 | T     |
| 0  | 1729.76 | 20   | 17    | 1.66 | 3459.21 | 3452 | 11 | 2.85E-03 | 88.6 | 8.91E-01 |       |

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630007.CNF;1
* Acquisition date   : 23-JAN-2010 11:47:27  Detector SN#      :
* Detector ID        : GAM15                  Sensitivity       : 5.00000
* Geometry           : CAN                    Energy tolerance: 1.50000
* Elapsed live time  : 0 02:00:00.00          Abundance limit  : 75.00000
* Elapsed real time  : 0 02:00:01.41          Half life ratio : 8.00000
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 8-JAN-2010 12:00:00.  Nuclide Library : SOLID
* Sample ID          : G244630007            Analyst initials: MXR1
* Batch Number       : 941639                Sample Quantity : 1.30800E+02 GRAM
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME  : 16-FEB-2009 10:54:12.9MS Isotope       :
* MSD ID            :                          MSD Isotope    :
* LCS ID            : 1032-A                    LCS Isotope    :
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| K-40    | 3.532E+01              | 3.477E+00 | 6.985E-01         | 5.340E-02 | 50.560  |
| SN-126  | 2.333E-01              | 1.272E-01 | 1.935E-01         | 2.233E-02 | 1.206   |
| CS-135  | 5.580E-01              | 3.898E-01 | 3.223E-01         | 2.756E-02 | 1.731   |
| TL-208  | 5.618E-01              | 9.206E-02 | 7.581E-02         | 4.827E-03 | 7.410   |
| BI-211  | 4.109E+00              | 6.426E-01 | 3.949E-01         | 2.714E-02 | 10.403  |
| PB-212  | 1.915E+00              | 2.138E-01 | 1.166E-01         | 9.653E-03 | 16.426  |
| PO-212  | 1.915E+00              | 2.138E-01 | 1.166E-01         | 9.653E-03 | 16.426  |
| BI-214  | 1.264E+00              | 2.120E-01 | 1.345E-01         | 9.985E-03 | 9.399   |
| PB-214  | 1.429E+00              | 2.356E-01 | 1.376E-01         | 1.186E-02 | 10.384  |
| PO-214  | 1.429E+00              | 2.356E-01 | 1.376E-01         | 1.186E-02 | 10.384  |
| PO-216  | 1.915E+00              | 2.138E-01 | 1.166E-01         | 9.653E-03 | 16.426  |
| PO-218  | 1.429E+00              | 2.356E-01 | 1.376E-01         | 1.186E-02 | 10.384  |
| RA-224  | 6.785E+00              | 1.915E+00 | 1.327E+00         | 9.234E-02 | 5.114   |
| RA-226  | 1.264E+00              | 2.120E-01 | 1.345E-01         | 9.985E-03 | 9.399   |
| AC-228  | 2.210E+00              | 4.118E-01 | 2.479E-01         | 2.756E-02 | 8.913   |
| RA-228  | 2.210E+00              | 4.118E-01 | 2.479E-01         | 2.756E-02 | 8.913   |
| TH-228  | 1.944E+00              | 2.170E-01 | 1.184E-01         | 9.798E-03 | 16.426  |
| TH-230  | 1.264E+00              | 2.120E-01 | 1.345E-01         | 9.985E-03 | 9.399   |

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| TH-232  | 2.210E+00              | 4.118E-01 | 2.479E-01         | 2.756E-02 | 8.913   |
| U-234   | 1.264E+00              | 2.120E-01 | 1.345E-01         | 9.985E-03 | 9.399   |
| NP-237  | 6.850E-01              | 3.993E-01 | 6.243E-01         | 1.474E-01 | 1.097   |
| AM-243  | 5.199E-01              | 1.584E-01 | 1.288E-01         | 1.432E-02 | 4.035   |
| ANH-511 | 1.279E-01              | 8.429E-02 | 5.690E-02         | 3.213E-03 | 2.248   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| BE-7    | 2.123E-01                          |              | 4.122E-01 | 6.952E-01           | 4.633E-02 | 0.305   |
| NA-22   | -1.495E-02                         |              | 5.597E-02 | 8.819E-02           | 6.053E-03 | -0.170  |
| NA-24   | -2.603E-01                         |              | 4.181E-01 | Half-Life too short |           |         |
| AL-26   | 1.635E-03                          |              | 3.521E-02 | 5.841E-02           | 3.495E-03 | 0.028   |
| TI-44   | 1.535E-01                          |              | 8.704E-02 | 1.005E-01           | 1.117E-02 | 1.528   |
| SC-46   | -1.837E-02                         |              | 4.831E-02 | 7.733E-02           | 6.486E-03 | -0.238  |
| V-48    | -4.360E-02                         |              | 8.541E-02 | 1.338E-01           | 1.057E-02 | -0.326  |
| CR-51   | 9.569E-02                          |              | 4.844E-01 | 7.934E-01           | 5.722E-02 | 0.121   |
| MN-52   | -3.763E-02                         |              | 2.504E-01 | 4.095E-01           | 3.036E-02 | -0.092  |
| MN-54   | 2.052E-02                          |              | 4.941E-02 | 8.436E-02           | 6.323E-03 | 0.243   |
| CO-56   | 4.302E-02                          |              | 4.630E-02 | 8.239E-02           | 6.333E-03 | 0.522   |
| CO-57   | -8.491E-03                         |              | 3.259E-02 | 5.256E-02           | 3.779E-03 | -0.162  |
| CO-58   | -4.714E-05                         |              | 4.890E-02 | 8.134E-02           | 5.811E-03 | -0.001  |
| FE-59   | -4.245E-02                         |              | 1.243E-01 | 1.974E-01           | 1.494E-02 | -0.215  |
| CO-60   | 4.469E-02                          |              | 4.771E-02 | 8.509E-02           | 6.422E-03 | 0.525   |
| ZN-65   | 2.175E-02                          |              | 1.361E-01 | 1.940E-01           | 1.260E-02 | 0.112   |
| GE-68   | 7.981E-01                          |              | 1.555E+00 | 2.659E+00           | 1.848E-01 | 0.300   |
| AS-73   | -2.589E-01                         |              | 2.114E+00 | 3.502E+00           | 4.786E-01 | -0.074  |
| AS-74   | 5.223E-02                          |              | 1.208E-01 | 1.974E-01           | 1.061E-02 | 0.265   |
| SE-75   | 4.721E-03                          |              | 6.358E-02 | 9.324E-02           | 6.521E-03 | 0.051   |
| BR-77   | 5.335E+00                          |              | 1.165E+01 | 1.959E+01           | 1.102E+00 | 0.272   |
| SR-82   | -6.544E-01                         |              | 4.700E-01 | 6.955E-01           | 4.591E-02 | -0.941  |
| RB-83   | 3.521E-02                          |              | 7.879E-02 | 1.325E-01           | 7.455E-03 | 0.266   |
| RB-84   | -1.040E-02                         |              | 8.571E-02 | 1.405E-01           | 1.160E-02 | -0.074  |
| KR-85   | 5.144E+00                          |              | 9.642E+00 | 1.425E+01           | 8.035E-01 | 0.361   |
| SR-85   | 2.634E-02                          |              | 4.937E-02 | 7.294E-02           | 4.115E-03 | 0.361   |
| RB-86   | 6.695E-02                          |              | 9.978E-01 | 1.643E+00           | 1.143E-01 | 0.041   |
| Y-88    | 2.492E-02                          |              | 3.814E-02 | 7.010E-02           | 4.095E-03 | 0.355   |
| ZR-88   | -1.318E-02                         |              | 3.723E-02 | 6.008E-02           | 3.407E-03 | -0.219  |
| Y-91    | 1.773E+01                          |              | 2.515E+01 | 4.310E+01           | 2.606E+00 | 0.411   |
| NB-94   | 5.058E-03                          |              | 3.979E-02 | 6.728E-02           | 3.743E-03 | 0.075   |
| NB-95   | 4.452E-02                          |              | 5.749E-02 | 1.003E-01           | 6.465E-03 | 0.444   |
| NB-95M  | 1.761E+00                          |              | 2.852E-01 | 4.475E-01           | 3.781E-02 | 3.936   |
| ZR-95   | 2.001E-02                          |              | 9.039E-02 | 1.533E-01           | 1.143E-02 | 0.131   |
| NB-97   | 3.658E-02                          |              | 5.084E-02 | Half-Life too short |           |         |
| ZR-97   | 1.079E+01                          |              | 1.306E+00 | Half-Life too short |           |         |
| MO-99   | -1.406E+01                         |              | 1.336E+01 | 2.022E+01           | 2.810E+00 | -0.696  |
| TC-99M  | -7.506E+09                         |              | 1.771E+10 | Half-Life too short |           |         |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| RH-101  | 8.804E-03                          |              | 4.410E-02 | 7.015E-02         | 4.786E-03 | 0.125   |
| RH-102  | -5.467E-03                         |              | 3.673E-02 | 5.946E-02         | 3.389E-03 | -0.092  |
| RU-103  | -5.446E-03                         |              | 5.027E-02 | 8.138E-02         | 1.024E-02 | -0.067  |
| RH-106  | 2.150E-01                          |              | 3.927E-01 | 6.584E-01         | 7.557E-02 | 0.327   |
| RU-106  | 2.150E-01                          |              | 3.921E-01 | 6.584E-01         | 3.459E-02 | 0.327   |
| AG-108M | -2.647E-02                         |              | 4.291E-02 | 6.776E-02         | 4.213E-03 | -0.391  |
| CD-109  | 7.734E-01                          |              | 1.950E+00 | 2.084E+00         | 2.410E-01 | 0.371   |
| AG-110M | 1.391E-02                          |              | 4.118E-02 | 6.800E-02         | 3.727E-03 | 0.204   |
| IN-111  | 7.172E-02                          |              | 1.367E+00 | 2.010E+00         | 1.399E-01 | 0.036   |
| IN-113M | -5.619E-02                         |              | 5.454E-02 | 8.414E-02         | 5.104E-03 | -0.668  |
| SN-113  | -5.619E-02                         |              | 5.454E-02 | 8.414E-02         | 5.104E-03 | -0.668  |
| IN-114M | 1.084E-01                          |              | 2.704E-01 | 3.874E-01         | 2.627E-02 | 0.280   |
| CD-115  | -3.864E+00                         |              | 1.347E+01 | 2.146E+01         | 1.204E+00 | -0.180  |
| SN-117M | -4.045E-02                         |              | 7.110E-02 | 1.122E-01         | 7.500E-03 | -0.361  |
| SB-122  | -7.439E-01                         |              | 2.489E+00 | 3.945E+00         | 2.171E-01 | -0.189  |
| I-123   | -3.611E+00                         |              | 3.190E+00 | Half-Life         | too short |         |
| TE-123M | -2.090E-02                         |              | 3.693E-02 | 5.826E-02         | 3.933E-03 | -0.359  |
| I-124   | 1.169E-02                          |              | 9.603E-01 | 1.339E+00         | 7.157E-02 | 0.009   |
| SB-124  | -3.028E-03                         |              | 8.654E-02 | 1.473E-01         | 1.034E-02 | -0.021  |
| SB-125  | 7.732E-02                          |              | 1.170E-01 | 1.997E-01         | 1.190E-02 | 0.387   |
| TE-125M | -6.304E+00                         |              | 1.248E+01 | 2.001E+01         | 1.988E+00 | -0.315  |
| I-126   | 1.877E-01                          |              | 2.137E-01 | 3.667E-01         | 1.866E-02 | 0.512   |
| SB-126  | 7.575E-02                          |              | 1.939E-01 | 2.915E-01         | 1.692E-02 | 0.260   |
| SB-127  | 1.048E+00                          |              | 1.511E+00 | 2.660E+00         | 2.421E-01 | 0.394   |
| XE-127  | -2.422E-03                         |              | 7.181E-02 | 9.844E-02         | 6.739E-03 | -0.025  |
| I-131   | -9.409E-02                         |              | 1.447E-01 | 2.305E-01         | 1.554E-02 | -0.408  |
| TE-132  | -1.155E+00                         |              | 8.804E-01 | 1.379E+00         | 2.046E-01 | -0.837  |
| BA-133  | -2.763E-04                         |              | 6.146E-02 | 8.830E-02         | 1.040E-02 | -0.003  |
| I-133   | 9.101E-04                          |              | 3.543E-03 | Half-Life         | too short |         |
| CS-134  | 8.638E-02                          |              | 5.568E-02 | 1.024E-01         | 7.137E-03 | 0.843   |
| I-135   | 3.464E+09                          |              | 2.638E+09 | Half-Life         | too short |         |
| CS-136  | -4.778E-02                         |              | 1.331E-01 | 2.109E-01         | 1.625E-02 | -0.227  |
| BA-137M | -1.194E-02                         |              | 4.221E-02 | 6.621E-02         | 3.331E-03 | -0.180  |
| CS-137  | -1.263E-02                         |              | 4.462E-02 | 6.999E-02         | 3.541E-03 | -0.180  |
| CE-139  | 9.940E-03                          |              | 4.055E-02 | 6.603E-02         | 4.391E-03 | 0.151   |
| BA-140  | 7.426E-02                          |              | 3.311E-01 | 5.448E-01         | 1.770E-01 | 0.136   |
| LA-140  | 4.820E-02                          |              | 8.835E-02 | 1.586E-01         | 1.105E-02 | 0.304   |
| CE-141  | -2.211E-02                         |              | 8.152E-02 | 1.307E-01         | 9.124E-03 | -0.169  |
| CE-143  | 1.386E-03                          | +            | 2.130E-04 | Half-Life         | too short |         |
| CE-144  | -5.064E-04                         |              | 2.674E-01 | 4.344E-01         | 6.385E-02 | -0.001  |
| PM-144  | -1.477E-02                         |              | 3.991E-02 | 6.515E-02         | 3.573E-03 | -0.227  |
| PR-144  | -1.001E+00                         |              | 2.704E+00 | 4.414E+00         | 2.419E-01 | -0.227  |
| PM-146  | 2.735E-02                          |              | 5.378E-02 | 9.089E-02         | 7.784E-03 | 0.301   |
| ND-147  | 9.837E-02                          |              | 7.357E-01 | 1.207E+00         | 1.621E-01 | 0.082   |
| PM-149  | -2.291E+01                         |              | 1.094E+02 | 1.809E+02         | 2.650E+01 | -0.127  |
| EU-152  | -1.391E-01                         |              | 1.614E-01 | 1.846E-01         | 1.301E-02 | -0.754  |
| GD-153  | 1.507E-01                          |              | 1.183E-01 | 1.797E-01         | 1.724E-02 | 0.839   |
| EU-154  | -4.307E-02                         |              | 1.563E-01 | 2.459E-01         | 2.466E-02 | -0.175  |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| EU-155  | 3.175E-02                          |              | 1.468E-01 | 2.420E-01           | 2.095E-02 | 0.131   |
| TB-160  | -5.232E-02                         |              | 1.644E-01 | 2.646E-01           | 2.175E-02 | -0.198  |
| HO-166M | -2.293E-02                         |              | 7.317E-02 | 1.198E-01           | 6.811E-03 | -0.191  |
| TM-171  | -6.978E+01                         |              | 5.234E+01 | 7.434E+01           | 8.548E+00 | -0.939  |
| LU-176  | -2.098E-02                         |              | 3.247E-02 | 5.238E-02           | 3.529E-03 | -0.400  |
| LU-177  | 3.916E+00                          | +            | 2.359E+00 | 2.535E+00           | 1.742E-01 | 1.545   |
| LU-177M | -1.824E-01                         |              | 2.281E-01 | 3.573E-01           | 2.037E-02 | -0.510  |
| HF-181  | -7.206E-03                         |              | 5.246E-02 | 8.490E-02           | 4.833E-03 | -0.085  |
| W-181   | -1.157E+00                         |              | 6.565E-01 | 9.888E-01           | 1.151E-01 | -1.170  |
| TA-182  | 1.052E-01                          |              | 2.628E-01 | 4.398E-01           | 2.742E-02 | 0.239   |
| RE-183  | -1.064E-01                         |              | 1.453E-01 | 2.274E-01           | 1.516E-02 | -0.468  |
| RE-184  | -2.682E-02                         |              | 2.974E-01 | 4.976E-01           | 3.464E-02 | -0.054  |
| OS-185  | 1.622E-02                          |              | 5.583E-02 | 9.177E-02           | 4.702E-03 | 0.177   |
| RE-188  | 1.235E-01                          |              | 2.204E-01 | 3.639E-01           | 2.441E-02 | 0.339   |
| W-188   | -3.477E+00                         |              | 1.073E+01 | 1.524E+01           | 1.043E+00 | -0.228  |
| IR-192  | -1.858E-03                         |              | 4.328E-02 | 7.189E-02           | 4.804E-03 | -0.026  |
| AU-195  | 7.713E-02                          |              | 3.013E-01 | 4.985E-01           | 4.673E-02 | 0.155   |
| TL-200  | 5.926E-05                          |              | 2.670E-04 | Half-Life too short |           |         |
| TL-201  | 1.982E+00                          |              | 9.210E+00 | 1.498E+01           | 9.966E-01 | 0.132   |
| TL-202  | 7.369E-02                          |              | 8.833E-02 | 1.520E-01           | 8.687E-03 | 0.485   |
| HG-203  | 3.814E-02                          |              | 5.323E-02 | 9.165E-02           | 6.601E-03 | 0.416   |
| BI-207  | -7.452E-03                         |              | 6.555E-02 | 1.062E-01           | 7.548E-03 | -0.070  |
| TL-207  | 4.096E-01                          |              | 9.572E-01 | 1.422E+00           | 2.390E-01 | 0.288   |
| PO-209  | -7.736E-01                         |              | 9.128E+00 | 1.499E+01           | 1.276E+00 | -0.052  |
| BI-210  | -5.658E+00                         |              | 1.412E+01 | 2.264E+01           | 2.352E+00 | -0.250  |
| PB-210  | -5.658E+00                         |              | 1.412E+01 | 2.264E+01           | 2.352E+00 | -0.250  |
| PO-210  | -5.658E+00                         |              | 1.412E+01 | 2.264E+01           | 2.175E+00 | -0.250  |
| PB-211  | -1.600E+00                         |              | 1.547E+00 | 1.791E+00           | 1.117E+00 | -0.893  |
| BI-212  | 1.483E+00                          | +            | 5.569E-01 | 8.190E-01           | 6.376E-02 | 1.811   |
| PO-215  | 4.096E-01                          |              | 9.572E-01 | 1.422E+00           | 2.390E-01 | 0.288   |
| RN-219  | 1.487E-01                          |              | 5.068E-01 | 8.488E-01           | 1.151E-01 | 0.175   |
| RN-220  | 3.425E+01                          |              | 3.413E+01 | 5.901E+01           | 3.274E+00 | 0.580   |
| RA-223  | 4.096E-01                          |              | 9.572E-01 | 1.422E+00           | 2.390E-01 | 0.288   |
| AC-227  | 3.115E-01                          |              | 5.001E-01 | 8.577E-01           | 1.242E-01 | 0.363   |
| TH-227  | 3.115E-01                          |              | 5.010E-01 | 8.577E-01           | 1.487E-01 | 0.363   |
| TH-229  | -5.098E-01                         |              | 6.946E-01 | 1.063E+00           | 7.229E-02 | -0.479  |
| PA-231  | -1.137E+00                         |              | 1.936E+00 | 3.137E+00           | 4.475E-01 | -0.363  |
| TH-231  | 4.096E-01                          |              | 9.572E-01 | 1.422E+00           | 2.390E-01 | 0.288   |
| U-231   | -1.956E-02                         |              | 1.563E+00 | 2.247E+00           | 2.215E-01 | -0.009  |
| PA-233  | -9.545E-03                         |              | 8.353E-02 | 1.384E-01           | 9.698E-03 | -0.069  |
| PA-234  | -1.133E-01                         |              | 3.861E-01 | 6.201E-01           | 1.152E-01 | -0.183  |
| PA-234M | 1.096E+00                          |              | 5.892E+00 | 9.898E+00           | 9.123E-01 | 0.111   |
| TH-234  | 1.508E+00                          |              | 2.444E+00 | 4.076E+00           | 8.045E-01 | 0.370   |
| U-235   | 1.818E-01                          |              | 2.780E-01 | 4.528E-01           | 7.556E-02 | 0.402   |
| NP-236  | -4.322E-02                         |              | 1.022E-01 | 1.622E-01           | 1.083E-02 | -0.266  |
| U-238   | 1.508E+00                          |              | 2.444E+00 | 4.076E+00           | 8.045E-01 | 0.370   |
| NP-239  | -3.584E-02                         |              | 2.407E-01 | 3.905E-01           | 2.936E-02 | -0.092  |
| AM-241  | -1.770E-01                         |              | 3.301E-01 | 5.367E-01           | 6.830E-02 | -0.330  |



---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| CM-243  | 6.858E-02                          |              | 1.290E-01 | 2.151E-01         | 1.878E-02 | 0.319   |
| AM-246  | 1.241E-01                          |              | 1.808E-01 | 3.130E-01         | 2.169E-02 | 0.396   |
| CM-247  | -4.670E-03                         |              | 4.482E-02 | 7.337E-02         | 4.172E-03 | -0.064  |
| CF-249  | 2.867E-02                          |              | 4.727E-02 | 8.079E-02         | 4.632E-03 | 0.355   |
| CF-251  | -4.641E-02                         |              | 1.648E-01 | 2.621E-01         | 1.757E-02 | -0.177  |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     *
*               GEL Laboratories LLC   *
*               2040 Savage Road      *
*               Charleston, SC 29414  *
*                                     *
*****
*                                     *
*               DETECTOR DATA        *
*                                     *
* Configuration      : SYSSYSROOT:[ALPHA.ARCHIVE.GAMMA]G244630007 *
* Acquisition date   : 23-JAN-2010 11:47:27 Detector SN#      : *
* Detector ID        : GAM15          Sensitivity             : 5.000 *
* Geometry           : CAN            Energy tolerance        : 1.500 *
* Elapsed live time  : 0 02:00:00.00 Abundance limit         : 75.000 *
* Elapsed real time  : 0 02:00:01.41 Half life ratio         : 8.000 *
*****
*                                     *
*               SAMPLE DATA          *
*                                     *
* Sample date       : 8-JAN-2010 12:00:00 Nuclide Library : SOLID *
* Sample ID         : G244630007      Analyst initials: MXR1  *
* Batch Number      : 941639          Sample Quantity : 1.3080E+02 GRAM *
* Recovery          : 1.00000          Carrier Weight  : 0.00000 *
*****
*                                     *
*               QC DATA              *
*                                     *
* CALIB. DATE/TIME  : 16-FEB-2009 10:54:12 MS Isotope       : *
* MSD DPM           : 0.000           MSD Isotope           : *
* LCS DPM           : 0.000           LCS Isotope           : *
* LCSD DPM          : 0.000           LCSD Isotope          : *
*****

```

## Combined Activity-MDA Report

### ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act Error | DLC<br>(pCi/GRAM ) | TPU       |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 3.532E+01               | 3.408E+00 | 3.498E-01          | 1.739E+00 |
| SN-126  | 2.333E-01               | 1.246E-01 | 1.014E-01          | 6.358E-02 |
| CS-135  | 5.580E-01               | 3.820E-01 | 1.660E-01          | 1.949E-01 |
| TL-208  | 5.618E-01               | 9.022E-02 | 3.855E-02          | 4.603E-02 |
| BI-211  | 4.109E+00               | 6.297E-01 | 2.025E-01          | 3.213E-01 |
| PB-212  | 1.915E+00               | 2.095E-01 | 6.018E-02          | 1.069E-01 |
| PO-212  | 1.915E+00               | 2.095E-01 | 6.018E-02          | 1.069E-01 |
| BI-214  | 1.264E+00               | 2.077E-01 | 6.834E-02          | 1.060E-01 |
| PB-214  | 1.429E+00               | 2.309E-01 | 7.058E-02          | 1.178E-01 |
| PO-214  | 1.429E+00               | 2.309E-01 | 7.058E-02          | 1.178E-01 |
| PO-216  | 1.915E+00               | 2.095E-01 | 6.018E-02          | 1.069E-01 |
| PO-218  | 1.429E+00               | 2.309E-01 | 7.058E-02          | 1.178E-01 |
| RA-224  | 6.785E+00               | 1.877E+00 | 6.846E-01          | 9.574E-01 |
| RA-226  | 1.264E+00               | 2.077E-01 | 6.834E-02          | 1.060E-01 |
| AC-228  | 2.210E+00               | 4.036E-01 | 1.251E-01          | 2.059E-01 |
| RA-228  | 2.210E+00               | 4.036E-01 | 1.251E-01          | 2.059E-01 |
| TH-228  | 1.944E+00               | 2.127E-01 | 6.108E-02          | 1.085E-01 |
| TH-230  | 1.264E+00               | 2.077E-01 | 6.834E-02          | 1.060E-01 |
| TH-232  | 2.210E+00               | 4.036E-01 | 1.251E-01          | 2.059E-01 |
| U-234   | 1.264E+00               | 2.077E-01 | 6.834E-02          | 1.060E-01 |
| NP-237  | 6.850E-01               | 3.913E-01 | 3.274E-01          | 1.996E-01 |
| AM-243  | 5.199E-01               | 1.552E-01 | 6.772E-02          | 7.919E-02 |
| ANH-511 | 1.279E-01               | 8.261E-02 | 2.900E-02          | 4.215E-02 |

### ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L Act error | DLC<br>(pCi/GRAM ) | TPU                  |
|---------|-------------------------------------|---------------|--------------------|----------------------|
| BE-7    | 2.123E-01                           | 4.039E-01     | 3.547E-01          | 2.061E-01 NOT IDENT. |
| NA-22   | -1.495E-02                          | 5.485E-02     | 4.427E-02          | 2.798E-02 NOT IDENT. |
| NA-24   | -2.603E+05                          | 8.195E+05     | 0.000E+00          | 4.181E+05 SHORT HLIF |
| AL-26   | 1.635E-03                           | 3.450E-02     | 2.914E-02          | 1.760E-02 NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| TI-44   | 1.535E-01  | 8.530E-02 | 5.278E-02 | 4.352E-02 | NOT IDENT. |
| SC-46   | -1.837E-02 | 4.734E-02 | 3.905E-02 | 2.415E-02 | FAIL ABUN  |
| V-48    | -4.360E-02 | 8.370E-02 | 6.744E-02 | 4.270E-02 | NOT IDENT. |
| CR-51   | 9.569E-02  | 4.747E-01 | 4.075E-01 | 2.422E-01 | NOT IDENT. |
| MN-52   | -3.763E-02 | 2.454E-01 | 2.051E-01 | 1.252E-01 | NOT IDENT. |
| MN-54   | 2.052E-02  | 4.842E-02 | 4.265E-02 | 2.470E-02 | NOT IDENT. |
| CO-56   | 4.302E-02  | 4.538E-02 | 4.164E-02 | 2.315E-02 | NOT IDENT. |
| CO-57   | -8.491E-03 | 3.194E-02 | 2.741E-02 | 1.629E-02 | NOT IDENT. |
| CO-58   | -4.714E-05 | 4.792E-02 | 4.114E-02 | 2.445E-02 | NOT IDENT. |
| FE-59   | -4.245E-02 | 1.219E-01 | 9.931E-02 | 6.217E-02 | NOT IDENT. |
| CO-60   | 4.469E-02  | 4.675E-02 | 4.268E-02 | 2.385E-02 | NOT IDENT. |
| ZN-65   | 2.175E-02  | 1.334E-01 | 9.761E-02 | 6.804E-02 | NOT IDENT. |
| GE-68   | 7.981E-01  | 1.524E+00 | 1.338E+00 | 7.776E-01 | NOT IDENT. |
| AS-73   | -2.589E-01 | 2.072E+00 | 1.850E+00 | 1.057E+00 | NOT IDENT. |
| AS-74   | 5.223E-02  | 1.184E-01 | 1.003E-01 | 6.042E-02 | NOT IDENT. |
| SE-75   | 4.721E-03  | 6.231E-02 | 4.803E-02 | 3.179E-02 | NOT IDENT. |
| BR-77   | 5.335E+00  | 1.141E+01 | 9.983E+00 | 5.824E+00 | FAIL ABUN  |
| SR-82   | -6.544E-01 | 4.606E-01 | 3.520E-01 | 2.350E-01 | NOT IDENT. |
| RB-83   | 3.521E-02  | 7.721E-02 | 6.751E-02 | 3.939E-02 | NOT IDENT. |
| RB-84   | -1.040E-02 | 8.400E-02 | 7.095E-02 | 4.286E-02 | NOT IDENT. |
| KR-85   | 5.144E+00  | 9.449E+00 | 7.260E+00 | 4.821E+00 | NOT IDENT. |
| SR-85   | 2.634E-02  | 4.839E-02 | 3.717E-02 | 2.469E-02 | NOT IDENT. |
| RB-86   | 6.695E-02  | 9.778E-01 | 8.268E-01 | 4.989E-01 | NOT IDENT. |
| Y-88    | 2.492E-02  | 3.738E-02 | 3.496E-02 | 1.907E-02 | NOT IDENT. |
| ZR-88   | -1.318E-02 | 3.648E-02 | 3.075E-02 | 1.861E-02 | NOT IDENT. |
| Y-91    | 1.773E+01  | 2.465E+01 | 2.165E+01 | 1.258E+01 | NOT IDENT. |
| NB-94   | 5.058E-03  | 3.899E-02 | 3.411E-02 | 1.989E-02 | NOT IDENT. |
| NB-95   | 4.452E-02  | 5.634E-02 | 5.079E-02 | 2.874E-02 | NOT IDENT. |
| NB-95M  | 1.761E+00  | 2.795E-01 | 2.310E-01 | 1.426E-01 | NOT IDENT. |
| ZR-95   | 2.001E-02  | 8.858E-02 | 7.760E-02 | 4.520E-02 | NOT IDENT. |
| NB-97   | 3.658E+04  | 9.964E+04 | 0.000E+00 | 5.084E+04 | SHORT HLIF |
| ZR-97   | 1.079E+07  | 2.561E+06 | 0.000E+00 | 1.306E+06 | SHORT HLIF |
| MO-99   | -1.406E+01 | 1.309E+01 | 1.024E+01 | 6.678E+00 | NOT IDENT. |
| TC-99M  | -7.506E+15 | 3.472E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | 8.804E-03  | 4.322E-02 | 3.631E-02 | 2.205E-02 | NOT IDENT. |
| RH-102  | -5.467E-03 | 3.600E-02 | 3.034E-02 | 1.837E-02 | NOT IDENT. |
| RU-103  | -5.446E-03 | 4.927E-02 | 4.149E-02 | 2.514E-02 | FAIL ABUN  |
| RH-106  | 2.150E-01  | 3.848E-01 | 3.345E-01 | 1.963E-01 | NOT IDENT. |
| RU-106  | 2.150E-01  | 3.842E-01 | 3.345E-01 | 1.960E-01 | NOT IDENT. |
| AG-108M | -2.647E-02 | 4.206E-02 | 3.463E-02 | 2.146E-02 | NOT IDENT. |
| CD-109  | 7.734E-01  | 1.911E+00 | 1.092E+00 | 9.749E-01 | NOT IDENT. |
| AG-110M | 1.391E-02  | 4.036E-02 | 3.451E-02 | 2.059E-02 | NOT IDENT. |
| IN-111  | 7.172E-02  | 1.340E+00 | 1.037E+00 | 6.837E-01 | NOT IDENT. |
| IN-113M | -5.619E-02 | 5.345E-02 | 4.307E-02 | 2.727E-02 | NOT IDENT. |
| SN-113  | -5.619E-02 | 5.345E-02 | 4.307E-02 | 2.727E-02 | NOT IDENT. |
| IN-114M | 1.084E-01  | 2.650E-01 | 2.006E-01 | 1.352E-01 | NOT IDENT. |
| CD-115  | -3.864E+00 | 1.320E+01 | 1.093E+01 | 6.734E+00 | NOT IDENT. |
| SN-117M | -4.045E-02 | 6.967E-02 | 5.826E-02 | 3.555E-02 | NOT IDENT. |
| SB-122  | -7.439E-01 | 2.439E+00 | 2.008E+00 | 1.244E+00 | NOT IDENT. |
| I-123   | -3.611E+06 | 6.252E+06 | 0.000E+00 | 3.190E+06 | SHORT HLIF |
| TE-123M | -2.090E-02 | 3.619E-02 | 3.026E-02 | 1.846E-02 | NOT IDENT. |
| I-124   | 1.169E-02  | 9.411E-01 | 6.805E-01 | 4.801E-01 | NOT IDENT. |
| SB-124  | -3.028E-03 | 8.481E-02 | 7.356E-02 | 4.327E-02 | FAIL ABUN  |
| SB-125  | 7.732E-02  | 1.147E-01 | 1.021E-01 | 5.852E-02 | FAIL ABUN  |
| TE-125M | -6.304E+00 | 1.223E+01 | 1.045E+01 | 6.240E+00 | NOT IDENT. |
| I-126   | 1.877E-01  | 2.094E-01 | 1.861E-01 | 1.068E-01 | NOT IDENT. |
| SB-126  | 7.575E-02  | 1.900E-01 | 1.477E-01 | 9.695E-02 | NOT IDENT. |
| SB-127  | 1.048E+00  | 1.481E+00 | 1.349E+00 | 7.556E-01 | NOT IDENT. |
| XE-127  | -2.422E-03 | 7.037E-02 | 5.093E-02 | 3.591E-02 | NOT IDENT. |
| I-131   | -9.409E-02 | 1.418E-01 | 1.181E-01 | 7.237E-02 | NOT IDENT. |
| TE-132  | -1.155E+00 | 8.628E-01 | 7.123E-01 | 4.402E-01 | NOT IDENT. |
| BA-133  | -2.763E-04 | 6.023E-02 | 4.527E-02 | 3.073E-02 | NOT IDENT. |
| I-133   | 9.101E+02  | 6.945E+03 | 0.000E+00 | 3.543E+03 | SHORT HLIF |
| CS-134  | 8.638E-02  | 5.457E-02 | 5.182E-02 | 2.784E-02 | NOT IDENT. |
| I-135   | 3.464E+15  | 5.170E+15 | 0.000E+00 | 2.638E+15 | SHORT HLIF |
| CS-136  | -4.778E-02 | 1.304E-01 | 1.062E-01 | 6.655E-02 | FAIL ABUN  |
| BA-137M | -1.194E-02 | 4.136E-02 | 3.360E-02 | 2.110E-02 | NOT IDENT. |
| CS-137  | -1.263E-02 | 4.372E-02 | 3.552E-02 | 2.231E-02 | NOT IDENT. |
| CE-139  | 9.940E-03  | 3.974E-02 | 3.427E-02 | 2.028E-02 | NOT IDENT. |
| BA-140  | 7.426E-02  | 3.244E-01 | 2.774E-01 | 1.655E-01 | NOT IDENT. |
| LA-140  | 4.820E-02  | 8.658E-02 | 7.930E-02 | 4.418E-02 | NOT IDENT. |
| CE-141  | -2.211E-02 | 7.989E-02 | 6.799E-02 | 4.076E-02 | NOT IDENT. |
| CE-143  | 1.386E+03  | 4.175E+02 | 0.000E+00 | 2.130E+02 | SHORT HLIF |
| CE-144  | -5.064E-04 | 2.620E-01 | 2.263E-01 | 1.337E-01 | NOT IDENT. |
| PM-144  | -1.477E-02 | 3.911E-02 | 3.303E-02 | 1.996E-02 | NOT IDENT. |
| PR-144  | -1.001E+00 | 2.650E+00 | 2.238E+00 | 1.352E+00 | NOT IDENT. |
| PM-146  | 2.735E-02  | 5.271E-02 | 4.641E-02 | 2.689E-02 | NOT IDENT. |
| ND-147  | 9.837E-02  | 7.210E-01 | 6.145E-01 | 3.679E-01 | FAIL ABUN  |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PM-149  | -2.291E+01 | 1.072E+02 | 9.310E+01 | 5.469E+01 | NOT IDENT. |
| EU-152  | -1.391E-01 | 1.582E-01 | 9.468E-02 | 8.072E-02 | FAIL ABUN  |
| GD-153  | 1.507E-01  | 1.160E-01 | 9.404E-02 | 5.916E-02 | FAIL ABUN  |
| EU-154  | -4.307E-02 | 1.531E-01 | 1.234E-01 | 7.813E-02 | NOT IDENT. |
| EU-155  | 3.175E-02  | 1.438E-01 | 1.265E-01 | 7.338E-02 | FAIL ABUN  |
| TB-160  | -5.232E-02 | 1.612E-01 | 1.337E-01 | 8.222E-02 | FAIL ABUN  |
| HO-166M | -2.293E-02 | 7.171E-02 | 6.074E-02 | 3.659E-02 | FAIL ABUN  |
| TM-171  | -6.978E+01 | 5.129E+01 | 3.914E+01 | 2.617E+01 | NOT IDENT. |
| LU-176  | -2.098E-02 | 3.182E-02 | 2.692E-02 | 1.623E-02 | NOT IDENT. |
| LU-177  | 3.916E+00  | 2.312E+00 | 1.311E+00 | 1.180E+00 | FAIL ABUN  |
| LU-177M | -1.824E-01 | 2.235E-01 | 1.828E-01 | 1.140E-01 | FAIL ABUN  |
| HF-181  | -7.206E-03 | 5.141E-02 | 4.331E-02 | 2.623E-02 | NOT IDENT. |
| W-181   | -1.157E+00 | 6.433E-01 | 5.208E-01 | 3.282E-01 | NOT IDENT. |
| TA-182  | 1.052E-01  | 2.575E-01 | 2.209E-01 | 1.314E-01 | FAIL ABUN  |
| RE-183  | -1.064E-01 | 1.423E-01 | 1.181E-01 | 7.263E-02 | FAIL ABUN  |
| RE-184  | -2.682E-02 | 2.914E-01 | 2.565E-01 | 1.487E-01 | NOT IDENT. |
| OS-185  | 1.622E-02  | 5.471E-02 | 4.659E-02 | 2.791E-02 | NOT IDENT. |
| RE-188  | 1.235E-01  | 2.160E-01 | 1.891E-01 | 1.102E-01 | NOT IDENT. |
| W-188   | -3.477E+00 | 1.051E+01 | 7.839E+00 | 5.364E+00 | NOT IDENT. |
| IR-192  | -1.858E-03 | 4.241E-02 | 3.693E-02 | 2.164E-02 | FAIL ABUN  |
| AU-195  | 7.713E-02  | 2.953E-01 | 2.609E-01 | 1.507E-01 | FAIL ABUN  |
| TL-200  | 5.926E+01  | 5.233E+02 | 0.000E+00 | 2.670E+02 | SHORT HLIF |
| TL-201  | 1.982E+00  | 9.025E+00 | 7.772E+00 | 4.605E+00 | NOT IDENT. |
| TL-202  | 7.369E-02  | 8.657E-02 | 7.767E-02 | 4.417E-02 | NOT IDENT. |
| HG-203  | 3.814E-02  | 5.216E-02 | 4.718E-02 | 2.661E-02 | FAIL ABUN  |
| BI-207  | -7.452E-03 | 6.424E-02 | 5.349E-02 | 3.277E-02 | FAIL ABUN  |
| TL-207  | 4.096E-01  | 9.381E-01 | 7.300E-01 | 4.786E-01 | FAIL ABUN  |
| PO-209  | -7.736E-01 | 8.945E+00 | 7.570E+00 | 4.564E+00 | NOT IDENT. |
| BI-210  | -5.658E+00 | 1.384E+01 | 1.199E+01 | 7.061E+00 | NOT IDENT. |
| PB-210  | -5.658E+00 | 1.384E+01 | 1.199E+01 | 7.061E+00 | NOT IDENT. |
| PO-210  | -5.658E+00 | 1.384E+01 | 1.199E+01 | 7.060E+00 | NOT IDENT. |
| PB-211  | -1.600E+00 | 1.516E+00 | 9.165E-01 | 7.735E-01 | NOT IDENT. |
| BI-212  | 1.483E+00  | 5.458E-01 | 4.150E-01 | 2.785E-01 | FAIL ABUN  |
| PO-215  | 4.096E-01  | 9.381E-01 | 7.300E-01 | 4.786E-01 | FAIL ABUN  |
| RN-219  | 1.487E-01  | 4.967E-01 | 4.343E-01 | 2.534E-01 | NOT IDENT. |
| RN-220  | 3.425E+01  | 3.344E+01 | 3.004E+01 | 1.706E+01 | NOT IDENT. |
| RA-223  | 4.096E-01  | 9.381E-01 | 7.300E-01 | 4.786E-01 | FAIL ABUN  |
| AC-227  | 3.115E-01  | 4.901E-01 | 4.421E-01 | 2.500E-01 | NOT IDENT. |
| TH-227  | 3.115E-01  | 4.909E-01 | 4.421E-01 | 2.505E-01 | NOT IDENT. |
| TH-229  | -5.098E-01 | 6.808E-01 | 5.505E-01 | 3.473E-01 | FAIL ABUN  |
| PA-231  | -1.137E+00 | 1.898E+00 | 1.614E+00 | 9.681E-01 | NOT IDENT. |
| TH-231  | 4.096E-01  | 9.381E-01 | 7.300E-01 | 4.786E-01 | FAIL ABUN  |
| U-231   | -1.956E-02 | 1.532E+00 | 1.177E+00 | 7.814E-01 | FAIL ABUN  |
| PA-233  | -9.545E-03 | 8.186E-02 | 7.109E-02 | 4.176E-02 | FAIL ABUN  |
| PA-234  | -1.133E-01 | 3.784E-01 | 3.128E-01 | 1.931E-01 | FAIL ABUN  |
| PA-234M | 1.096E+00  | 5.775E+00 | 4.989E+00 | 2.946E+00 | NOT IDENT. |
| TH-234  | 1.508E+00  | 2.395E+00 | 2.148E+00 | 1.222E+00 | FAIL ABUN  |
| U-235   | 1.818E-01  | 2.725E-01 | 2.356E-01 | 1.390E-01 | FAIL ABUN  |
| NP-236  | -4.322E-02 | 1.002E-01 | 8.425E-02 | 5.112E-02 | NOT IDENT. |
| U-238   | 1.508E+00  | 2.395E+00 | 2.148E+00 | 1.222E+00 | FAIL ABUN  |
| NP-239  | -3.584E-02 | 2.359E-01 | 2.038E-01 | 1.204E-01 | FAIL ABUN  |
| AM-241  | -1.770E-01 | 3.235E-01 | 2.831E-01 | 1.650E-01 | NOT IDENT. |
| CM-243  | 6.858E-02  | 1.265E-01 | 1.125E-01 | 6.452E-02 | FAIL ABUN  |
| AM-246  | 1.241E-01  | 1.771E-01 | 1.575E-01 | 9.038E-02 | NOT IDENT. |
| CM-247  | -4.670E-03 | 4.392E-02 | 3.754E-02 | 2.241E-02 | NOT IDENT. |
| CF-249  | 2.867E-02  | 4.633E-02 | 4.136E-02 | 2.364E-02 | NOT IDENT. |
| CF-251  | -4.641E-02 | 1.615E-01 | 1.359E-01 | 8.240E-02 | NOT IDENT. |

```

*****
*                                     *
*               GEL Laboratories LLC   *
*               2040 SAVAGE ROAD       *
*               CHARLESTON ,SC 29417   *
*               GAMMA SPECTROSCOPY BACKGROUND REPORT *
*****

```

| ENERGY | MDA COUNTS |
|--------|------------|
|--------|------------|

|       |          |
|-------|----------|
| 46.50 | 328.8987 |
| 46.50 | 328.8987 |
| 46.50 | 328.8987 |
| 48.70 | 329.2184 |
| 49.72 | 321.2876 |
| 51.35 | 315.5366 |
| 52.39 | 306.5884 |
| 52.97 | 316.3814 |
| 53.15 | 306.0206 |
| 53.44 | 311.8699 |
| 54.07 | 325.5141 |
| 56.28 | 346.7217 |
| 56.28 | 346.7231 |
| 57.37 | 0.0000   |
| 57.53 | 356.9741 |
| 57.53 | 356.9755 |
| 57.60 | 378.0703 |
| 57.98 | 375.4202 |
| 57.98 | 375.4202 |
| 59.32 | 427.0595 |
| 59.32 | 427.0595 |
| 59.40 | 427.1122 |
| 59.54 | 416.6429 |
| 59.72 | 400.4333 |
| 60.01 | 416.9417 |
| 61.10 | 353.1569 |
| 61.14 | 353.1779 |
| 61.30 | 353.2626 |
| 63.00 | 382.1435 |
| 63.29 | 376.5137 |
| 63.29 | 376.5137 |
| 63.58 | 385.3672 |
| 64.28 | 410.9000 |
| 65.12 | 463.6745 |
| 65.20 | 463.7279 |
| 65.20 | 463.7279 |
| 66.05 | 457.5111 |
| 66.72 | 451.4804 |
| 66.83 | 451.5532 |
| 66.91 | 451.6047 |
| 67.20 | 382.1453 |
| 67.20 | 382.1453 |
| 67.75 | 356.0136 |
| 67.85 | 356.0640 |
| 68.90 | 381.5056 |
| 68.90 | 381.5056 |
| 69.30 | 389.5096 |
| 69.67 | 380.3579 |
| 70.82 | 379.4012 |
| 70.82 | 379.4012 |
| 70.83 | 379.4072 |
| 72.80 | 415.9895 |
| 72.87 | 416.0284 |
| 72.87 | 416.0284 |
| 74.67 | 417.0371 |
| 74.81 | 417.1150 |
| 74.81 | 417.1150 |
| 74.81 | 417.1150 |
| 74.81 | 417.1150 |
| 74.81 | 417.1150 |
| 74.81 | 417.1150 |
| 74.81 | 417.1150 |
| 74.97 | 417.2042 |
| 75.28 | 417.3761 |
| 75.70 | 417.6080 |
| 77.11 | 404.1372 |
| 77.11 | 404.1372 |

|        |          |
|--------|----------|
| 77.11  | 404.1372 |
| 77.11  | 404.1372 |
| 77.11  | 404.1372 |
| 77.11  | 404.1372 |
| 77.11  | 404.1372 |
| 78.38  | 508.6363 |
| 79.62  | 438.3650 |
| 79.80  | 438.4666 |
| 79.80  | 438.4666 |
| 80.11  | 438.6411 |
| 80.18  | 438.6800 |
| 80.30  | 438.7478 |
| 80.30  | 438.7478 |
| 80.57  | 438.8985 |
| 81.00  | 399.5769 |
| 81.07  | 399.6124 |
| 81.07  | 399.6124 |
| 81.07  | 399.6124 |
| 81.07  | 399.6124 |
| 82.60  | 451.9191 |
| 83.37  | 452.3540 |
| 83.78  | 349.3655 |
| 83.78  | 349.3655 |
| 83.78  | 349.3655 |
| 83.78  | 349.3655 |
| 84.21  | 349.5521 |
| 84.90  | 349.8516 |
| 85.43  | 350.0798 |
| 86.29  | 641.1625 |
| 86.50  | 671.2026 |
| 86.54  | 621.4411 |
| 86.59  | 621.4792 |
| 86.72  | 621.5768 |
| 86.79  | 621.6292 |
| 86.94  | 621.7434 |
| 87.30  | 514.3604 |
| 87.30  | 514.3604 |
| 87.30  | 514.3604 |
| 87.30  | 514.3604 |
| 87.30  | 514.3604 |
| 87.30  | 514.3604 |
| 87.57  | 578.3450 |
| 87.88  | 578.5619 |
| 88.03  | 614.5854 |
| 88.36  | 614.8298 |
| 88.47  | 614.9120 |
| 89.95  | 616.0024 |
| 91.11  | 616.8530 |
| 92.29  | 507.6917 |
| 92.38  | 507.7458 |
| 92.38  | 507.7458 |
| 93.35  | 403.2147 |
| 94.00  | 389.0522 |
| 94.67  | 403.8321 |
| 94.67  | 403.8336 |
| 94.90  | 403.9409 |
| 94.90  | 403.9409 |
| 94.90  | 403.9409 |
| 94.90  | 403.9409 |
| 95.87  | 396.3372 |
| 95.87  | 396.3372 |
| 96.73  | 366.0867 |
| 97.43  | 347.0090 |
| 98.44  | 368.1818 |
| 98.44  | 368.1818 |
| 98.88  | 384.9634 |
| 99.55  | 380.1983 |
| 99.55  | 380.1983 |
| 99.86  | 380.3302 |
| 100.00 | 387.4708 |
| 100.10 | 378.4099 |
| 103.18 | 385.7925 |
| 103.76 | 369.7833 |
| 105.00 | 391.6457 |
| 105.31 | 400.9348 |
| 108.00 | 407.1994 |
| 109.28 | 416.9508 |

|        |          |
|--------|----------|
| 111.00 | 370.6128 |
| 111.00 | 370.6128 |
| 111.76 | 385.2528 |
| 112.95 | 371.3668 |
| 115.19 | 377.3669 |
| 116.30 | 367.5012 |
| 117.00 | 349.2207 |
| 117.00 | 349.2207 |
| 117.66 | 340.1765 |
| 121.11 | 365.1462 |
| 121.62 | 369.4718 |
| 121.78 | 369.5304 |
| 122.06 | 358.2433 |
| 122.32 | 369.7265 |
| 122.32 | 369.7265 |
| 122.32 | 369.7265 |
| 122.32 | 369.7265 |
| 123.07 | 356.5268 |
| 127.23 | 385.0304 |
| 129.76 | 352.5847 |
| 131.20 | 438.7198 |
| 133.02 | 390.2937 |
| 133.54 | 374.7813 |
| 135.34 | 405.8197 |
| 136.00 | 387.1809 |
| 136.25 | 383.0729 |
| 136.48 | 369.5071 |
| 140.51 | 395.1044 |
| 140.51 | 0.0000   |
| 142.18 | 397.8099 |
| 142.65 | 361.0306 |
| 143.76 | 344.4823 |
| 144.24 | 354.1433 |
| 144.24 | 354.1433 |
| 144.24 | 354.1433 |
| 144.24 | 354.1433 |
| 145.22 | 380.9042 |
| 145.44 | 386.2698 |
| 147.16 | 409.1149 |
| 152.43 | 364.1447 |
| 152.70 | 371.6859 |
| 153.22 | 364.3926 |
| 154.21 | 358.3022 |
| 154.21 | 358.3022 |
| 154.21 | 358.3022 |
| 154.21 | 358.3022 |
| 155.03 | 340.4124 |
| 156.02 | 356.7199 |
| 158.56 | 364.9792 |
| 159.00 | 0.0000   |
| 159.00 | 361.8997 |
| 160.31 | 349.4342 |
| 161.27 | 356.1492 |
| 162.32 | 379.0053 |
| 162.64 | 371.5899 |
| 163.35 | 357.8368 |
| 163.89 | 339.7207 |
| 165.85 | 368.2621 |
| 167.43 | 361.1885 |
| 171.28 | 354.7386 |
| 171.86 | 330.0172 |
| 172.10 | 335.4912 |
| 176.55 | 332.3296 |
| 176.60 | 332.3412 |
| 181.06 | 329.5734 |
| 184.41 | 325.1753 |
| 185.71 | 335.7789 |
| 186.00 | 344.8221 |
| 190.27 | 312.5690 |
| 192.34 | 339.6520 |
| 193.63 | 349.8784 |
| 197.04 | 307.7383 |
| 198.01 | 305.7499 |
| 198.60 | 321.3384 |
| 200.40 | 328.3945 |
| 201.83 | 328.8902 |
| 202.84 | 308.3678 |
| 205.31 | 324.8920 |

|        |          |
|--------|----------|
| 208.36 | 302.4639 |
| 208.81 | 302.5593 |
| 209.75 | 302.7606 |
| 209.75 | 302.7606 |
| 210.97 | 276.2811 |
| 215.65 | 296.5546 |
| 216.55 | 297.4824 |
| 218.09 | 272.0476 |
| 222.10 | 313.2045 |
| 223.80 | 298.9537 |
| 226.40 | 286.4154 |
| 227.00 | 298.2434 |
| 227.08 | 298.2596 |
| 227.20 | 298.2818 |
| 228.16 | 323.7223 |
| 228.18 | 323.7267 |
| 228.18 | 323.7267 |
| 231.56 | 0.0000   |
| 235.69 | 362.4829 |
| 236.00 | 348.9603 |
| 236.00 | 348.9603 |
| 238.63 | 269.6566 |
| 238.63 | 269.6566 |
| 238.63 | 269.6566 |
| 238.63 | 269.6566 |
| 239.00 | 269.7200 |
| 240.98 | 270.0645 |
| 241.98 | 216.8566 |
| 241.98 | 216.8566 |
| 241.98 | 216.8566 |
| 244.69 | 218.7510 |
| 245.39 | 214.2883 |
| 247.94 | 230.3637 |
| 248.90 | 218.4186 |
| 249.79 | 224.0276 |
| 252.40 | 245.4578 |
| 252.85 | 242.7781 |
| 252.85 | 242.7781 |
| 254.15 | 0.0000   |
| 256.20 | 235.9368 |
| 256.20 | 235.9368 |
| 260.50 | 244.4346 |
| 260.90 | 246.2848 |
| 262.80 | 227.3657 |
| 264.65 | 221.4668 |
| 268.24 | 224.7186 |
| 268.79 | 224.7928 |
| 269.46 | 224.8848 |
| 269.46 | 224.8848 |
| 269.46 | 224.8848 |
| 269.46 | 224.8848 |
| 271.23 | 231.6040 |
| 273.65 | 303.0639 |
| 276.40 | 218.3733 |
| 277.35 | 218.4938 |
| 277.60 | 213.8759 |
| 277.60 | 213.8759 |
| 278.00 | 214.8565 |
| 278.60 | 221.4457 |
| 279.20 | 225.2473 |
| 279.53 | 238.3219 |
| 280.46 | 260.8047 |
| 281.68 | 252.6003 |
| 283.67 | 220.2302 |
| 284.30 | 205.3745 |
| 285.00 | 205.4578 |
| 285.90 | 204.6281 |
| 286.10 | 204.6522 |
| 286.10 | 204.6522 |
| 287.40 | 204.4038 |
| 288.45 | 0.0000   |
| 290.67 | 221.7363 |
| 290.80 | 221.7537 |
| 291.72 | 215.6194 |
| 293.26 | 0.0000   |
| 293.70 | 236.5084 |
| 295.21 | 236.7084 |
| 295.21 | 236.7084 |



|        |          |
|--------|----------|
| 295.21 | 236.7084 |
| 295.96 | 258.4201 |
| 296.50 | 250.6673 |
| 297.23 | 225.6914 |
| 298.57 | 221.1559 |
| 299.80 | 193.0533 |
| 299.80 | 193.0533 |
| 300.09 | 200.9349 |
| 300.09 | 200.9349 |
| 300.09 | 200.9349 |
| 300.09 | 200.9349 |
| 300.12 | 200.9375 |
| 301.29 | 193.8867 |
| 302.84 | 232.0544 |
| 303.76 | 233.1153 |
| 303.91 | 233.1364 |
| 304.40 | 237.9173 |
| 304.40 | 237.9173 |
| 304.84 | 222.8662 |
| 306.84 | 217.4387 |
| 308.46 | 192.0818 |
| 311.98 | 199.0847 |
| 316.51 | 180.5649 |
| 318.01 | 189.2686 |
| 319.02 | 202.6932 |
| 319.41 | 197.9758 |
| 320.08 | 180.9082 |
| 323.87 | 178.0921 |
| 323.87 | 178.0921 |
| 323.87 | 178.0921 |
| 323.87 | 178.0921 |
| 325.23 | 198.9059 |
| 328.77 | 194.4921 |
| 333.44 | 217.3366 |
| 334.20 | 186.0880 |
| 334.20 | 186.0880 |
| 334.30 | 186.0974 |
| 338.28 | 166.6133 |
| 338.28 | 166.6133 |
| 338.28 | 166.6133 |
| 338.28 | 166.6133 |
| 338.32 | 166.6175 |
| 338.32 | 166.6175 |
| 338.32 | 166.6175 |
| 340.50 | 152.3668 |
| 340.57 | 152.3726 |
| 344.27 | 183.1904 |
| 345.85 | 160.8215 |
| 350.59 | 0.0000   |
| 351.07 | 150.9250 |
| 351.92 | 150.9879 |
| 351.92 | 150.9879 |
| 351.92 | 150.9879 |
| 355.39 | 0.0000   |
| 356.01 | 158.4066 |
| 364.48 | 166.5330 |
| 366.43 | 153.0443 |
| 367.43 | 163.8472 |
| 367.94 | 0.0000   |
| 369.80 | 149.3879 |
| 374.96 | 142.9061 |
| 383.85 | 139.5784 |
| 387.95 | 123.1033 |
| 388.63 | 126.0984 |
| 391.69 | 157.8477 |
| 391.69 | 157.8477 |
| 392.90 | 143.1291 |
| 398.62 | 140.5370 |
| 400.65 | 132.7421 |
| 401.10 | 139.7057 |
| 401.81 | 135.7859 |
| 402.60 | 138.8105 |
| 404.84 | 174.6809 |
| 410.95 | 152.2735 |
| 411.60 | 140.3700 |
| 413.65 | 166.4068 |
| 414.70 | 146.5460 |
| 415.30 | 136.6137 |

|        |          |
|--------|----------|
| 415.76 | 147.6134 |
| 417.63 | 0.0000   |
| 418.52 | 124.8260 |
| 423.70 | 153.1363 |
| 427.08 | 125.2975 |
| 427.89 | 125.3418 |
| 432.53 | 150.7141 |
| 433.93 | 151.8092 |
| 439.47 | 120.9316 |
| 439.56 | 120.9360 |
| 439.89 | 123.9775 |
| 443.98 | 142.3683 |
| 444.90 | 136.3629 |
| 445.03 | 136.3711 |
| 445.03 | 136.3711 |
| 445.03 | 136.3711 |
| 445.03 | 136.3711 |
| 453.90 | 113.5613 |
| 463.38 | 113.6705 |
| 468.07 | 95.1916  |
| 473.00 | 127.7466 |
| 475.06 | 122.7393 |
| 475.35 | 125.8228 |
| 476.78 | 121.8021 |
| 477.59 | 116.7220 |
| 477.96 | 108.5478 |
| 482.03 | 115.9050 |
| 484.57 | 123.2109 |
| 487.03 | 85.3050  |
| 490.36 | 0.0000   |
| 492.35 | 110.2040 |
| 497.08 | 112.4741 |
| 507.63 | 0.0000   |
| 510.53 | 0.0000   |
| 510.84 | 109.9660 |
| 511.00 | 109.9731 |
| 511.85 | 112.4309 |
| 511.85 | 112.4309 |
| 513.99 | 109.0605 |
| 513.99 | 109.0605 |
| 520.41 | 84.3401  |
| 520.65 | 86.4306  |
| 527.90 | 117.9934 |
| 528.96 | 0.0000   |
| 529.64 | 111.8014 |
| 529.87 | 0.0000   |
| 531.02 | 116.0405 |
| 537.32 | 107.9312 |
| 543.00 | 106.0599 |
| 546.56 | 0.0000   |
| 549.76 | 97.9020  |
| 552.65 | 119.0831 |
| 555.20 | 113.9194 |
| 563.23 | 95.2097  |
| 563.90 | 110.0455 |
| 568.70 | 95.3965  |
| 569.32 | 87.9970  |
| 569.50 | 85.8806  |
| 569.67 | 85.8865  |
| 573.80 | 129.5505 |
| 574.00 | 130.6214 |
| 574.64 | 120.8260 |
| 578.91 | 104.6088 |
| 579.30 | 0.0000   |
| 583.14 | 113.6432 |
| 585.48 | 85.3027  |
| 591.81 | 117.5518 |
| 592.07 | 119.6973 |
| 593.00 | 107.9783 |
| 595.88 | 98.4530  |
| 600.56 | 119.0972 |
| 602.52 | 0.0000   |
| 602.71 | 112.6315 |
| 602.71 | 112.6315 |
| 603.60 | 116.2415 |
| 604.41 | 116.2745 |
| 604.70 | 116.2864 |
| 609.31 | 101.0592 |

|        |          |
|--------|----------|
| 609.31 | 101.0592 |
| 609.31 | 101.0592 |
| 609.31 | 101.0592 |
| 610.33 | 101.0959 |
| 612.46 | 89.6871  |
| 614.37 | 86.1563  |
| 618.01 | 103.0348 |
| 621.84 | 84.2137  |
| 621.84 | 84.2137  |
| 631.29 | 88.8126  |
| 633.02 | 89.9484  |
| 633.10 | 89.9504  |
| 634.78 | 86.7480  |
| 635.90 | 90.0335  |
| 636.97 | 80.2998  |
| 645.85 | 94.6826  |
| 646.12 | 94.6911  |
| 656.30 | 92.8214  |
| 657.75 | 78.6621  |
| 657.90 | 0.0000   |
| 661.65 | 88.6056  |
| 661.65 | 88.6056  |
| 664.57 | 0.0000   |
| 666.33 | 74.4962  |
| 666.33 | 74.4962  |
| 675.00 | 72.5049  |
| 677.61 | 76.9641  |
| 685.20 | 69.7996  |
| 692.80 | 80.0934  |
| 695.00 | 79.2270  |
| 696.49 | 93.0888  |
| 696.49 | 93.0888  |
| 697.00 | 97.7123  |
| 697.49 | 99.5713  |
| 698.33 | 92.2180  |
| 698.50 | 90.3796  |
| 699.00 | 83.0145  |
| 702.63 | 90.4953  |
| 706.10 | 97.9862  |
| 706.58 | 0.0000   |
| 706.67 | 93.3806  |
| 709.31 | 80.5023  |
| 711.68 | 93.5245  |
| 713.82 | 104.7029 |
| 717.42 | 83.4833  |
| 720.50 | 79.5829  |
| 721.93 | 0.0000   |
| 722.20 | 106.6948 |
| 722.78 | 106.7135 |
| 722.78 | 106.7135 |
| 722.89 | 106.7182 |
| 722.95 | 106.7205 |
| 723.30 | 103.5461 |
| 724.18 | 97.1996  |
| 727.18 | 84.5279  |
| 733.00 | 71.8945  |
| 735.90 | 73.6880  |
| 739.58 | 91.5121  |
| 742.81 | 70.1019  |
| 744.21 | 82.2869  |
| 747.13 | 67.3828  |
| 751.79 | 84.3439  |
| 752.31 | 87.1686  |
| 753.82 | 93.7724  |
| 755.35 | 92.8749  |
| 756.15 | 89.1437  |
| 756.87 | 91.0401  |
| 763.93 | 126.0258 |
| 765.79 | 106.3329 |
| 766.42 | 116.7041 |
| 766.84 | 124.2495 |
| 776.49 | 102.8860 |
| 778.00 | 92.5429  |
| 778.57 | 82.1678  |
| 778.89 | 83.1213  |
| 783.80 | 69.9953  |
| 785.46 | 81.3844  |
| 792.07 | 82.4847  |

|         |         |
|---------|---------|
| 795.84  | 61.6913 |
| 796.30  | 58.8516 |
| 798.80  | 94.9890 |
| 801.93  | 78.9101 |
| 805.60  | 72.3293 |
| 810.29  | 80.0471 |
| 810.76  | 79.1060 |
| 815.85  | 68.7188 |
| 817.79  | 68.7554 |
| 818.51  | 70.6788 |
| 819.60  | 67.8337 |
| 826.30  | 67.0022 |
| 828.27  | 0.0000  |
| 831.60  | 83.3945 |
| 831.96  | 90.1139 |
| 834.83  | 91.1441 |
| 836.80  | 0.0000  |
| 846.75  | 56.7877 |
| 848.13  | 68.3638 |
| 856.28  | 0.0000  |
| 856.80  | 62.8699 |
| 860.37  | 54.6493 |
| 867.32  | 65.0357 |
| 867.82  | 64.4118 |
| 871.10  | 52.3136 |
| 873.19  | 61.0659 |
| 874.81  | 55.2733 |
| 875.33  | 0.0000  |
| 876.40  | 64.0275 |
| 879.36  | 66.9897 |
| 880.27  | 62.1510 |
| 880.51  | 59.2414 |
| 881.50  | 69.9419 |
| 883.24  | 64.1429 |
| 884.67  | 56.3893 |
| 889.25  | 73.0042 |
| 896.60  | 69.2420 |
| 898.02  | 74.1445 |
| 899.00  | 67.3337 |
| 903.28  | 61.9639 |
| 911.07  | 62.0878 |
| 911.07  | 62.0878 |
| 911.07  | 62.0878 |
| 919.63  | 60.8219 |
| 920.93  | 59.8607 |
| 925.00  | 56.9757 |
| 925.24  | 56.9793 |
| 926.50  | 65.8414 |
| 935.52  | 58.1117 |
| 937.48  | 82.7747 |
| 944.10  | 65.1447 |
| 946.00  | 75.0506 |
| 949.00  | 70.1651 |
| 962.29  | 52.6909 |
| 964.01  | 56.5385 |
| 966.15  | 56.5686 |
| 968.20  | 56.5964 |
| 969.11  | 57.8861 |
| 969.11  | 57.8861 |
| 969.11  | 57.8861 |
| 977.42  | 58.6238 |
| 980.50  | 60.7493 |
| 983.50  | 66.7737 |
| 989.30  | 59.8804 |
| 996.32  | 76.9765 |
| 1001.03 | 64.0521 |
| 1001.68 | 60.0586 |
| 1004.76 | 79.1350 |
| 1021.30 | 0.0000  |
| 1024.50 | 0.0000  |
| 1034.80 | 69.6064 |
| 1036.00 | 81.7350 |
| 1037.82 | 73.6951 |
| 1038.57 | 71.6876 |
| 1038.76 | 0.0000  |
| 1045.16 | 73.8198 |
| 1046.59 | 61.7049 |
| 1048.07 | 66.7842 |

|         |         |
|---------|---------|
| 1050.47 | 63.7844 |
| 1050.47 | 63.7844 |
| 1062.04 | 62.9385 |
| 1063.62 | 64.9922 |
| 1076.63 | 64.1664 |
| 1077.35 | 57.0459 |
| 1078.86 | 57.0641 |
| 1085.78 | 70.4207 |
| 1099.22 | 80.8708 |
| 1112.02 | 51.0352 |
| 1112.84 | 54.5657 |
| 1115.52 | 75.7299 |
| 1120.29 | 65.2326 |
| 1120.29 | 65.2326 |
| 1120.29 | 65.2326 |
| 1120.29 | 65.2326 |
| 1120.51 | 65.2352 |
| 1121.28 | 75.8259 |
| 1124.00 | 0.0000  |
| 1129.67 | 78.3224 |
| 1131.51 | 0.0000  |
| 1147.95 | 0.0000  |
| 1167.94 | 83.1250 |
| 1173.22 | 75.9377 |
| 1175.09 | 61.3983 |
| 1177.93 | 73.9294 |
| 1189.05 | 84.5398 |
| 1204.90 | 73.3012 |
| 1205.75 | 0.0000  |
| 1213.00 | 69.2280 |
| 1221.42 | 79.8563 |
| 1230.97 | 94.7498 |
| 1235.34 | 77.9746 |
| 1236.41 | 0.0000  |
| 1238.25 | 88.5664 |
| 1246.25 | 59.1400 |
| 1260.41 | 0.0000  |
| 1271.85 | 57.3223 |
| 1274.45 | 59.4749 |
| 1274.54 | 59.4749 |
| 1291.56 | 44.7583 |
| 1298.22 | 0.0000  |
| 1312.09 | 39.5880 |
| 1325.50 | 39.6904 |
| 1325.50 | 39.6904 |
| 1332.49 | 30.0770 |
| 1333.61 | 32.2327 |
| 1360.21 | 35.6359 |
| 1362.66 | 0.0000  |
| 1365.15 | 35.6694 |
| 1368.21 | 40.0156 |
| 1368.53 | 0.0000  |
| 1376.25 | 32.4939 |
| 1384.27 | 34.4023 |
| 1394.10 | 35.3970 |
| 1395.20 | 38.2001 |
| 1407.95 | 28.0172 |
| 1434.06 | 25.3360 |
| 1436.60 | 24.4095 |
| 1457.56 | 0.0000  |
| 1460.81 | 31.1159 |
| 1489.15 | 18.9537 |
| 1509.49 | 19.0220 |
| 1596.49 | 15.4459 |
| 1620.62 | 18.4155 |
| 1678.03 | 0.0000  |
| 1691.02 | 12.7456 |
| 1691.02 | 12.7456 |
| 1706.46 | 0.0000  |
| 1750.46 | 0.0000  |
| 1764.49 | 12.8944 |
| 1764.49 | 12.8944 |
| 1764.49 | 12.8944 |
| 1764.49 | 12.8944 |
| 1770.23 | 12.1611 |
| 1771.40 | 17.3761 |
| 1791.20 | 0.0000  |
| 1808.65 | 13.9805 |

1836.01

10.0276

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G244630007

|                             |            |      |
|-----------------------------|------------|------|
| Total Uranium Activity      | 4.5696E+00 | ug/g |
| Total Uranium Counting Unc. | 7.1263E+00 | ug/g |
| Total Uranium Tpu           | 3.6359E-06 | ug/g |
| Total Uranium Mda           | 6.3910E+00 | ug/g |

```

*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON , SC 29417              *
*               GROSS GAMMA REPORT                 *
*
*****
*
*  BATCH ID      : 941639          SAMPLE ID   : G244630007
*  ANALYST       : MXR1            DETECTOR    : GAM15
*  SAMPLE DATE   : 8-JAN-2010 12:00:00.00  COUNT TIME : 0 02:00:00.00
*  ANALYSIS DATE: 23-JAN-2010 11:47:27.48  SAMPLE ALQT: 130.800 GRAM
*
*****

```

```

GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.023E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 2.367E+00
GROSS GAMMA MDA     (pCi/GRAM ) : 3.247E+00
GROSS GAMMA DLC     (pCi/GRAM ) : 1.576E+00

```



VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 13:51:00.58

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630008.CNF;1
Sample date        : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 11:47:57
Sample ID          : G244630008          Sample quantity  : 1.35220E+02 GRAM
Detector name      : GAM16              Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00      Elapsed real time: 0 02:00:02.16  0.0%
Energy tolerance   : 1.50000 keV        Analyst Initials : MXR1
Abundance limit    : 75.00000           Sensitivity       : 5.00000
Batch ID           : 941639             Detector SN#      :
Matrix Spike ID    :                    LCS ID           : 1032-A
*****

```

| Pk | It | Energy   | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | Fit      |
|----|----|----------|------|-------|------|---------|------|----|----------|------|----------|
| 1  | 0  | 63.47*   | 77   | 476   | 1.22 | 127.12  | 123  | 8  | 1.07E-02 | 51.9 |          |
| 2  | 2  | 74.85    | 503  | 438   | 1.02 | 149.90  | 144  | 21 | 6.99E-02 | 8.0  | 2.41E+00 |
| 3  | 2  | 77.08*   | 768  | 338   | 0.90 | 154.35  | 144  | 21 | 1.07E-01 | 5.2  |          |
| 4  | 0  | 83.90*   | 98   | 511   | 1.18 | 167.99  | 165  | 7  | 1.37E-02 | 39.9 |          |
| 5  | 0  | 87.25    | 254  | 451   | 0.92 | 174.68  | 172  | 6  | 3.52E-02 | 14.7 |          |
| 6  | 4  | 89.93    | 166  | 336   | 0.80 | 180.05  | 178  | 13 | 2.30E-02 | 18.0 | 2.77E+00 |
| 7  | 4  | 92.81*   | 253  | 494   | 1.29 | 185.82  | 178  | 13 | 3.52E-02 | 17.3 |          |
| 8  | 0  | 129.25   | 82   | 389   | 0.94 | 258.69  | 255  | 8  | 1.14E-02 | 42.9 |          |
| 9  | 0  | 185.88*  | 203  | 429   | 1.48 | 371.95  | 368  | 10 | 2.82E-02 | 20.9 |          |
| 10 | 0  | 209.30   | 136  | 297   | 1.12 | 418.79  | 415  | 8  | 1.88E-02 | 23.6 |          |
| 11 | 5  | 238.55*  | 1613 | 162   | 1.06 | 477.29  | 471  | 18 | 2.24E-01 | 2.8  | 2.28E+00 |
| 12 | 5  | 241.60   | 394  | 262   | 1.74 | 483.40  | 471  | 18 | 5.47E-02 | 11.3 |          |
| 13 | 0  | 270.05   | 201  | 209   | 1.26 | 540.29  | 535  | 12 | 2.80E-02 | 16.0 |          |
| 14 | 0  | 277.91   | 52   | 249   | 1.27 | 556.01  | 550  | 10 | 7.22E-03 | 58.5 |          |
| 15 | 3  | 295.16*  | 468  | 133   | 1.12 | 590.51  | 584  | 20 | 6.50E-02 | 6.2  | 8.70E-01 |
| 16 | 3  | 299.90*  | 106  | 133   | 1.27 | 599.99  | 584  | 20 | 1.47E-02 | 22.2 |          |
| 17 | 0  | 327.72   | 74   | 156   | 1.21 | 655.62  | 652  | 8  | 1.03E-02 | 31.1 |          |
| 18 | 0  | 338.09   | 290  | 168   | 1.03 | 676.37  | 673  | 9  | 4.03E-02 | 9.8  |          |
| 19 | 0  | 351.74*  | 756  | 157   | 1.06 | 703.66  | 698  | 10 | 1.05E-01 | 4.8  |          |
| 20 | 0  | 409.61   | 54   | 125   | 2.08 | 819.41  | 814  | 9  | 7.55E-03 | 39.8 |          |
| 21 | 0  | 462.67   | 103  | 103   | 1.14 | 925.52  | 921  | 10 | 1.42E-02 | 21.0 |          |
| 22 | 0  | 510.84*  | 156  | 147   | 1.87 | 1021.83 | 1015 | 17 | 2.17E-02 | 21.9 |          |
| 23 | 0  | 583.14*  | 496  | 116   | 1.26 | 1166.42 | 1160 | 13 | 6.89E-02 | 6.5  |          |
| 24 | 0  | 609.18*  | 563  | 124   | 1.37 | 1218.50 | 1212 | 14 | 7.82E-02 | 6.1  |          |
| 25 | 0  | 727.11   | 118  | 75    | 1.31 | 1454.31 | 1449 | 11 | 1.64E-02 | 16.9 |          |
| 26 | 0  | 768.08   | 70   | 57    | 1.87 | 1536.23 | 1531 | 11 | 9.66E-03 | 24.3 |          |
| 27 | 0  | 794.59   | 85   | 61    | 0.97 | 1589.24 | 1583 | 11 | 1.17E-02 | 20.9 |          |
| 28 | 0  | 860.79   | 89   | 39    | 1.96 | 1721.62 | 1717 | 10 | 1.24E-02 | 16.9 |          |
| 29 | 0  | 910.94*  | 370  | 58    | 1.47 | 1821.89 | 1814 | 13 | 5.14E-02 | 6.8  |          |
| 30 | 3  | 964.74   | 60   | 70    | 2.10 | 1929.45 | 1921 | 28 | 8.29E-03 | 30.1 | 5.18E+00 |
| 31 | 3  | 968.76*  | 244  | 43    | 1.79 | 1937.50 | 1921 | 28 | 3.38E-02 | 8.5  |          |
| 32 | 0  | 1119.86* | 147  | 81    | 1.18 | 2239.60 | 2233 | 14 | 2.04E-02 | 15.5 |          |
| 33 | 0  | 1378.37  | 26   | 35    | 0.82 | 2756.42 | 2749 | 11 | 3.55E-03 | 49.4 |          |
| 34 | 0  | 1460.54* | 1522 | 28    | 1.78 | 2920.69 | 2913 | 18 | 2.11E-01 | 2.7  |          |
| 35 | 0  | 1508.47  | 31   | 10    | 3.96 | 3016.49 | 3009 | 12 | 4.36E-03 | 26.2 |          |
| 36 | 0  | 1588.53  | 17   | 21    | 0.65 | 3176.54 | 3172 | 9  | 2.39E-03 | 53.0 |          |
| 37 | 0  | 1621.68  | 24   | 13    | 0.86 | 3242.80 | 3233 | 18 | 3.28E-03 | 41.9 |          |
| 38 | 0  | 1630.73  | 23   | 12    | 1.41 | 3260.89 | 3255 | 12 | 3.15E-03 | 37.2 |          |

| Pk | It | Energy   | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | Fit |
|----|----|----------|------|-------|------|---------|------|----|----------|------|-----|
| 39 | 0  | 1729.25  | 36   | 6     | 0.78 | 3457.82 | 3451 | 12 | 4.96E-03 | 21.7 |     |
| 40 | 0  | 1764.21* | 113  | 3     | 1.55 | 3527.70 | 3522 | 12 | 1.57E-02 | 10.3 |     |

Flag: "\*" = Peak area was modified by background subtraction

Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630008.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8  
 Sample title : MXR1  
 Sample date : 8-JAN-2010 12:00:00 Acquisition date : 23-JAN-2010 11:47:57  
 Sample ID : G244630008 Sample quantity : 135.22 GRAM  
 Sample type : SOLID Sample geometry :  
 Detector name : GAMMA16 Detector geometry: CAN  
 Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:02.16 0.0%  
 Peak Width (FWHM): 3.00 Confidence level : 5.00 %  
 Energy tolerance : 1.50 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 0.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 75.00 WTM error limit : 3.00

## Full Combined Activity-MDA Report

## ---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| K-40    | +         | 1460.81      | *   | 3.278E+01           | 3.383E+00 | 4.810E-01      | 4.228E-02 | 68.146  |
| CD-109  | +         | 88.03        | *   | 3.093E+00           | 9.565E-01 | 1.075E+00      | 1.036E-01 | 2.878   |
| SN-126  | +         | 64.28        |     | 6.276E-01           | 6.576E-01 | 6.151E-01      | 8.961E-02 | 1.020   |
|         | +         | 86.94        |     | 1.264E+00           | 6.437E-01 | 4.643E-01      | 1.929E-01 | 2.723   |
|         | +         | 87.57        | *   | 3.041E-01           | 9.403E-02 | 1.061E-01      | 1.018E-02 | 2.865   |
| HG-203  |           | 70.83        |     | 5.935E-03           | 9.154E-01 | 1.417E+00      | 1.871E-01 | 0.004   |
|         |           | 72.87        |     | 7.658E-01           | 5.485E-01 | 8.820E-01      | 1.137E-01 | 0.868   |
|         | +         | 82.60        |     | 1.604E+00           | 1.300E+00 | 1.374E+00      | 1.925E-01 | 1.167   |
|         | +         | 279.20       | *   | 4.981E-02           | 5.862E-02 | 5.789E-02      | 7.055E-03 | 0.860   |
| TL-208  | +         | 277.35       |     | 4.527E-01           | 5.343E-01 | 5.301E-01      | 7.881E-02 | 0.854   |
|         | +         | 510.84       |     | 6.785E-01           | 3.091E-01 | 1.747E-01      | 2.209E-02 | 3.884   |
|         | +         | 583.14       | *   | 6.132E-01           | 1.001E-01 | 5.274E-02      | 5.227E-03 | 11.628  |
|         | +         | 860.37       |     | 1.037E+00           | 3.657E-01 | 4.450E-01      | 4.455E-02 | 2.330   |
| BI-211  |           | 72.87        |     | 3.857E+00           | 2.736E+00 | 4.443E+00      | 3.611E-01 | 0.868   |
|         | +         | 351.07       | *   | 4.115E+00           | 6.008E-01 | 2.791E-01      | 3.051E-02 | 14.744  |
| BI-212  | +         | 727.18       | *   | 1.251E+00           | 4.419E-01 | 4.225E-01      | 4.414E-02 | 2.961   |
|         |           | 785.46       |     | 2.671E+00           | 1.663E+00 | 3.090E+00      | 2.872E-01 | 0.864   |
|         | +         | 1620.62      |     | 2.132E+00           | 1.797E+00 | 1.744E+00      | 1.482E-01 | 1.222   |
| PB-212  | +         | 74.81        |     | 2.554E+00           | 5.167E-01 | 4.509E-01      | 5.633E-02 | 5.666   |
|         | +         | 77.11        |     | 2.210E+00           | 2.962E-01 | 2.558E-01      | 2.173E-02 | 8.641   |
|         | +         | 87.30        |     | 1.406E+00           | 4.571E-01 | 5.129E-01      | 7.095E-02 | 2.742   |
|         | +         | 238.63       | *   | 1.921E+00           | 2.524E-01 | 7.446E-02      | 8.816E-03 | 25.805  |
|         | +         | 300.09       |     | 1.944E+00           | 8.983E-01 | 1.071E+00      | 1.403E-01 | 1.816   |
| PO-212  | +         | 74.81        |     | 2.554E+00           | 5.167E-01 | 4.509E-01      | 5.633E-02 | 5.666   |
|         | +         | 77.11        |     | 2.210E+00           | 2.962E-01 | 2.558E-01      | 2.173E-02 | 8.641   |
|         | +         | 87.30        |     | 1.406E+00           | 4.571E-01 | 5.129E-01      | 7.095E-02 | 2.742   |
|         |           | 115.19       |     | 4.339E+00           | 3.102E+00 | 5.446E+00      | 4.544E-01 | 0.797   |
|         | +         | 238.63       | *   | 1.921E+00           | 2.524E-01 | 7.446E-02      | 8.816E-03 | 25.805  |
|         | +         | 300.09       |     | 1.944E+00           | 8.983E-01 | 1.071E+00      | 1.403E-01 | 1.816   |
| BI-214  | +         | 609.31       | *   | 1.311E+00           | 2.107E-01 | 9.695E-02      | 1.025E-02 | 13.521  |
|         | +         | 1120.29      |     | 1.784E+00           | 5.862E-01 | 4.876E-01      | 5.235E-02 | 3.659   |
|         | +         | 1764.49      |     | 1.887E+00           | 4.181E-01 | 2.033E-01      | 1.683E-02 | 9.279   |
| PB-214  | +         | 74.81        |     | 4.401E+00           | 8.543E-01 | 7.769E-01      | 8.637E-02 | 5.666   |
|         | +         | 77.11        |     | 3.789E+00           | 5.842E-01 | 4.385E-01      | 5.004E-02 | 8.641   |

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PO-214  | +         | 87.30        |     | 2.409E+00           | 7.678E-01 | 8.787E-01      | 1.079E-01 | 2.742   |
|         | +         | 241.98       |     | 2.818E+00           | 7.258E-01 | 4.485E-01      | 5.556E-02 | 6.284   |
|         | +         | 295.21       |     | 1.508E+00           | 2.751E-01 | 1.882E-01      | 2.511E-02 | 8.015   |
|         | +         | 351.92       | *   | 1.431E+00           | 2.220E-01 | 1.077E-01      | 1.303E-02 | 13.286  |
|         | +         | 74.81        |     | 4.401E+00           | 8.543E-01 | 7.769E-01      | 8.637E-02 | 5.666   |
|         | +         | 77.11        |     | 3.789E+00           | 5.842E-01 | 4.385E-01      | 5.004E-02 | 8.641   |
|         | +         | 87.30        |     | 2.409E+00           | 7.678E-01 | 8.787E-01      | 1.079E-01 | 2.742   |
| PO-216  | +         | 241.98       |     | 2.818E+00           | 7.258E-01 | 4.485E-01      | 5.556E-02 | 6.284   |
|         | +         | 295.21       |     | 1.508E+00           | 2.751E-01 | 1.882E-01      | 2.511E-02 | 8.015   |
|         | +         | 351.92       | *   | 1.431E+00           | 2.220E-01 | 1.077E-01      | 1.303E-02 | 13.286  |
|         | +         | 74.81        |     | 2.554E+00           | 5.167E-01 | 4.509E-01      | 5.633E-02 | 5.666   |
|         | +         | 77.11        |     | 2.210E+00           | 2.962E-01 | 2.558E-01      | 2.173E-02 | 8.641   |
|         | +         | 87.30        |     | 1.406E+00           | 4.571E-01 | 5.129E-01      | 7.095E-02 | 2.742   |
|         | +         | 238.63       | *   | 1.921E+00           | 2.524E-01 | 7.446E-02      | 8.816E-03 | 25.805  |
| PO-218  | +         | 300.09       |     | 1.944E+00           | 8.983E-01 | 1.071E+00      | 1.403E-01 | 1.816   |
|         | +         | 74.81        |     | 4.401E+00           | 8.543E-01 | 7.769E-01      | 8.637E-02 | 5.666   |
|         | +         | 77.11        |     | 3.789E+00           | 5.842E-01 | 4.385E-01      | 5.004E-02 | 8.641   |
|         | +         | 87.30        |     | 2.409E+00           | 7.678E-01 | 8.787E-01      | 1.079E-01 | 2.742   |
|         | +         | 241.98       |     | 2.818E+00           | 7.258E-01 | 4.485E-01      | 5.556E-02 | 6.284   |
|         | +         | 295.21       |     | 1.508E+00           | 2.751E-01 | 1.882E-01      | 2.511E-02 | 8.015   |
|         | +         | 351.92       | *   | 1.431E+00           | 2.220E-01 | 1.077E-01      | 1.303E-02 | 13.286  |
| RA-224  | +         | 240.98       | *   | 5.344E+00           | 1.343E+00 | 8.475E-01      | 9.340E-02 | 6.305   |
| RA-226  | +         | 609.31       | *   | 1.311E+00           | 2.107E-01 | 9.695E-02      | 1.025E-02 | 13.521  |
| AC-228  | +         | 1120.29      |     | 1.784E+00           | 5.862E-01 | 4.876E-01      | 5.235E-02 | 3.659   |
|         | +         | 1764.49      |     | 1.887E+00           | 4.181E-01 | 2.033E-01      | 1.683E-02 | 9.279   |
|         | +         | 338.32       |     | 1.742E+00           | 8.050E-01 | 3.314E-01      | 1.385E-01 | 5.257   |
|         | +         | 911.07       | *   | 2.034E+00           | 3.659E-01 | 1.755E-01      | 2.084E-02 | 11.592  |
|         | +         | 969.11       |     | 2.360E+00           | 6.861E-01 | 3.481E-01      | 8.207E-02 | 6.779   |
|         | +         | 338.32       |     | 1.742E+00           | 8.050E-01 | 3.314E-01      | 1.385E-01 | 5.257   |
|         | +         | 911.07       | *   | 2.034E+00           | 3.659E-01 | 1.755E-01      | 2.084E-02 | 11.592  |
| TH-228  | +         | 969.11       |     | 2.360E+00           | 6.861E-01 | 3.481E-01      | 8.207E-02 | 6.779   |
|         | +         | 74.81        |     | 2.593E+00           | 4.661E-01 | 4.577E-01      | 3.829E-02 | 5.666   |
|         | +         | 77.11        |     | 2.244E+00           | 3.007E-01 | 2.597E-01      | 2.205E-02 | 8.641   |
|         | +         | 87.30        |     | 1.428E+00           | 4.414E-01 | 5.206E-01      | 4.975E-02 | 2.742   |
|         | +         | 238.63       | *   | 1.950E+00           | 2.562E-01 | 7.558E-02      | 8.949E-03 | 25.805  |
|         | +         | 300.09       |     | 1.973E+00           | 1.469E+00 | 1.087E+00      | 6.499E-01 | 1.816   |
|         | +         | 609.31       | *   | 1.311E+00           | 2.107E-01 | 9.695E-02      | 1.025E-02 | 13.521  |
| TH-230  | +         | 1120.29      |     | 1.784E+00           | 5.861E-01 | 4.876E-01      | 5.235E-02 | 3.659   |
|         | +         | 1764.49      |     | 1.887E+00           | 4.181E-01 | 2.033E-01      | 1.683E-02 | 9.279   |
|         | +         | 338.32       |     | 1.742E+00           | 3.923E-01 | 3.314E-01      | 3.617E-02 | 5.257   |
|         | +         | 911.07       | *   | 2.034E+00           | 3.659E-01 | 1.755E-01      | 2.084E-02 | 11.592  |
|         | +         | 969.11       |     | 2.360E+00           | 6.861E-01 | 3.481E-01      | 8.207E-02 | 6.779   |
|         | +         | 63.29        | *   | 1.586E+00           | 1.668E+00 | 1.652E+00      | 2.881E-01 | 0.960   |
|         | +         | 92.38        |     | 1.972E+00           | 7.734E-01 | 6.372E-01      | 1.171E-01 | 3.094   |
| U-234   | +         | 609.31       | *   | 1.311E+00           | 2.107E-01 | 9.695E-02      | 1.025E-02 | 13.521  |
|         | +         | 1120.29      |     | 1.784E+00           | 5.861E-01 | 4.876E-01      | 5.235E-02 | 3.659   |
|         | +         | 1764.49      |     | 1.887E+00           | 4.181E-01 | 2.033E-01      | 1.683E-02 | 9.279   |
|         | +         | 86.50        | *   | 8.930E-01           | 3.320E-01 | 3.421E-01      | 7.767E-02 | 2.610   |
|         | +         | 95.87        |     | -3.680E-01          | 8.384E-01 | 1.242E+00      | 3.075E-01 | -0.296  |

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| U-238   | +         | 63.29        | *   | 1.586E+00           | 1.668E+00 | 1.652E+00      | 2.881E-01 | 0.960   |
|         | +         | 92.38        |     | 1.972E+00           | 7.070E-01 | 6.372E-01      | 5.879E-02 | 3.094   |
| AM-243  | +         | 74.67        | *   | 4.141E-01           | 7.430E-02 | 7.332E-02      | 6.070E-03 | 5.648   |
|         | +         | 86.72        |     | 3.349E+01           | 1.035E+01 | 1.280E+01      | 1.215E+00 | 2.616   |
|         |           | 117.66       |     | -1.099E+00          | 3.327E+00 | 5.510E+00      | 4.584E-01 | -0.199  |
|         |           | 142.18       |     | -9.281E+00          | 1.589E+01 | 2.579E+01      | 2.199E+00 | -0.360  |
| ANH-511 | +         | 511.00       | *   | 1.465E-01           | 6.564E-02 | 3.774E-02      | 3.590E-03 | 3.883   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| BE-7    |           | 477.59       | *   | 1.366E-01           | 2.822E-01 | 4.828E-01           | 4.884E-02 | 0.283   |
| NA-22   |           | 1274.54      | *   | -3.744E-02          | 4.574E-02 | 6.792E-02           | 5.651E-03 | -0.551  |
| NA-24   |           | 1368.53      | *   | -3.029E-01          | 4.574E-02 | Half-Life too short |           |         |
| AL-26   |           | 1129.67      |     | -1.250E+00          | 1.673E+00 | 2.545E+00           | 2.133E-01 | -0.491  |
|         |           | 1808.65      | *   | -5.212E-03          | 2.386E-02 | 3.730E-02           | 3.050E-03 | -0.140  |
| TI-44   |           | 67.85        |     | 6.047E-02           | 3.902E-02 | 6.427E-02           | 4.977E-03 | 0.941   |
|         | +         | 78.38        | *   | 4.079E-01           | 5.467E-02 | 6.674E-02           | 5.747E-03 | 6.112   |
| SC-46   |           | 889.25       | *   | -1.588E-02          | 3.487E-02 | 5.575E-02           | 5.270E-03 | -0.285  |
|         | +         | 1120.51      |     | 3.051E-01           | 9.818E-02 | 1.398E-01           | 1.181E-02 | 2.182   |
| V-48    |           | 944.10       |     | -2.024E-01          | 8.245E-01 | 1.340E+00           | 1.252E-01 | -0.151  |
|         |           | 983.50       | *   | 2.890E-02           | 6.742E-02 | 1.159E-01           | 1.067E-02 | 0.249   |
|         |           | 1312.09      |     | -3.647E-03          | 7.837E-02 | 1.261E-01           | 1.058E-02 | -0.029  |
| CR-51   |           | 320.08       | *   | 9.744E-02           | 3.496E-01 | 5.630E-01           | 6.582E-02 | 0.173   |
| MN-52   |           | 744.21       |     | -1.487E-01          | 2.110E-01 | 3.136E-01           | 2.879E-02 | -0.474  |
|         |           | 848.13       |     | -6.175E-01          | 5.990E+00 | 9.955E+00           | 9.370E-01 | -0.062  |
|         |           | 935.52       |     | 5.040E-02           | 2.435E-01 | 4.120E-01           | 3.860E-02 | 0.122   |
|         |           | 1246.25      |     | 2.830E+00           | 7.625E+00 | 1.277E+01           | 1.052E+00 | 0.222   |
|         |           | 1333.61      |     | -4.823E+00          | 5.455E+00 | 7.919E+00           | 6.681E-01 | -0.609  |
|         |           | 1434.06      | *   | -4.313E-02          | 1.760E-01 | 2.694E-01           | 2.299E-02 | -0.160  |
| MN-54   |           | 834.83       | *   | 3.239E-02           | 3.216E-02 | 5.812E-02           | 5.459E-03 | 0.557   |
| CO-56   |           | 846.75       | *   | -2.540E-02          | 3.615E-02 | 5.683E-02           | 5.347E-03 | -0.447  |
|         |           | 977.42       |     | 1.740E+00           | 2.986E+00 | 4.629E+00           | 4.272E-01 | 0.376   |
|         |           | 1037.82      |     | -1.284E-02          | 3.125E-01 | 5.139E-01           | 4.830E-02 | -0.025  |
|         |           | 1175.09      |     | 3.232E+00           | 2.227E+00 | 4.054E+00           | 3.262E-01 | 0.797   |
|         |           | 1238.25      |     | 9.492E-02           | 9.118E-02 | 1.593E-01           | 1.351E-02 | 0.596   |
|         |           | 1360.21      |     | -4.472E-01          | 8.917E-01 | 1.332E+00           | 1.128E-01 | -0.336  |
|         |           | 1771.40      |     | -3.072E-01          | 2.251E-01 | 2.683E-01           | 2.217E-02 | -1.145  |
| CO-57   |           | 122.06       | *   | 7.677E-03           | 2.175E-02 | 3.693E-02           | 3.069E-03 | 0.208   |
|         |           | 136.48       |     | -1.623E-01          | 1.763E-01 | 2.811E-01           | 2.556E-02 | -0.577  |
| CO-58   |           | 810.76       | *   | -4.688E-02          | 3.508E-02 | 5.154E-02           | 4.829E-03 | -0.910  |
| FE-59   |           | 142.65       |     | 6.727E-01           | 2.492E+00 | 4.111E+00           | 3.510E-01 | 0.164   |
|         |           | 192.34       |     | 2.573E-02           | 8.351E-01 | 1.367E+00           | 1.936E-01 | 0.019   |
|         |           | 1099.22      | *   | 1.061E-02           | 8.794E-02 | 1.460E-01           | 1.357E-02 | 0.073   |
|         |           | 1291.56      |     | 8.071E-02           | 1.019E-01 | 1.804E-01           | 1.722E-02 | 0.448   |
| CO-60   |           | 1173.22      |     | -7.372E-03          | 4.635E-02 | 7.466E-02           | 6.003E-03 | -0.099  |
|         |           | 1332.49      | *   | -5.131E-02          | 4.233E-02 | 5.837E-02           | 4.924E-03 | -0.879  |
| ZN-65   |           | 1115.52      | *   | -2.036E-02          | 1.030E-01 | 1.427E-01           | 1.211E-02 | -0.143  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| GE-68   | 1077.35   | *            |     | -2.641E-01          | 1.184E+00 | 1.906E+00           | 1.665E-01 | -0.139  |
| AS-73   | 53.44     | *            |     | 9.129E-01           | 7.214E-01 | 1.197E+00           | 9.132E-02 | 0.763   |
| AS-74   | 595.88    | *            |     | -8.136E-02          | 9.112E-02 | 1.328E-01           | 1.233E-02 | -0.613  |
|         | 634.78    |              |     | 9.650E-02           | 3.349E-01 | 5.558E-01           | 5.039E-02 | 0.174   |
| SE-75   | 66.05     |              |     | -2.178E+00          | 4.456E+00 | 6.173E+00           | 5.939E-01 | -0.353  |
|         | 96.73     |              |     | -8.687E-01          | 6.964E-01 | 9.757E-01           | 1.349E-01 | -0.890  |
|         | 121.11    |              |     | -2.562E-02          | 1.177E-01 | 1.955E-01           | 2.146E-02 | -0.131  |
|         | 136.00    |              |     | -3.897E-02          | 3.264E-02 | 5.129E-02           | 4.353E-03 | -0.760  |
|         | 198.60    |              |     | -9.171E-02          | 1.590E+00 | 2.577E+00           | 2.762E-01 | -0.036  |
|         | 264.65    | *            |     | 4.201E-02           | 4.203E-02 | 6.433E-02           | 7.507E-03 | 0.653   |
|         | 279.53    |              |     | 4.917E-02           | 1.100E-01 | 1.614E-01           | 1.976E-02 | 0.305   |
|         | 303.91    |              |     | 2.105E+00           | 2.007E+00 | 3.059E+00           | 4.251E-01 | 0.688   |
|         | 400.65    |              |     | 9.003E-02           | 2.292E-01 | 3.929E-01           | 4.574E-02 | 0.229   |
| BR-77   | 87.88     | +            |     | 6.445E+02           | 1.993E+02 | 2.925E+02           | 2.815E+01 | 2.203   |
|         | 200.40    |              |     | -4.375E+01          | 1.348E+02 | 2.163E+02           | 2.149E+01 | -0.202  |
|         | 239.00    | +            |     | 2.975E+02           | 3.673E+01 | 3.692E+01           | 4.050E+00 | 8.057   |
|         | 249.79    |              |     | 2.015E+01           | 5.702E+01 | 9.349E+01           | 1.052E+01 | 0.216   |
|         | 281.68    |              |     | 2.624E+01           | 8.751E+01 | 1.272E+02           | 1.523E+01 | 0.206   |
|         | 297.23    |              |     | 8.827E+01           | 4.970E+01 | 8.482E+01           | 9.977E+00 | 1.041   |
|         | 303.76    |              |     | 2.190E+02           | 1.613E+02 | 2.517E+02           | 2.934E+01 | 0.870   |
|         | 439.47    |              |     | 1.387E+02           | 1.289E+02 | 2.278E+02           | 2.150E+01 | 0.609   |
|         | 484.57    |              |     | -1.076E+02          | 1.920E+02 | 3.041E+02           | 2.893E+01 | -0.354  |
|         | 520.65    | *            |     | 5.883E+00           | 9.089E+00 | 1.565E+01           | 1.487E+00 | 0.376   |
|         | 574.64    |              |     | -9.436E+01          | 1.897E+02 | 2.981E+02           | 2.793E+01 | -0.317  |
|         | 578.91    |              |     | -7.931E+00          | 8.518E+01 | 1.207E+02           | 1.129E+01 | -0.066  |
|         | 585.48    |              |     | 7.615E+02           | 2.039E+02 | 3.595E+02           | 3.354E+01 | 2.118   |
|         | 755.35    |              |     | 1.119E+02           | 1.543E+02 | 2.619E+02           | 2.413E+01 | 0.427   |
|         | 817.79    |              |     | 1.750E+01           | 1.169E+02 | 1.989E+02           | 1.863E+01 | 0.088   |
| SR-82   | 698.33    |              |     | -1.176E+01          | 3.282E+01 | 5.127E+01           | 4.626E+00 | -0.229  |
|         | 776.49    | *            |     | -2.623E-01          | 3.803E-01 | 5.679E-01           | 5.266E-02 | -0.462  |
|         | 1395.20   |              |     | -1.158E+01          | 1.043E+01 | 1.389E+01           | 1.181E+00 | -0.834  |
| RB-83   | 520.41    | *            |     | 4.813E-02           | 6.289E-02 | 1.090E-01           | 1.036E-02 | 0.442   |
|         | 529.64    |              |     | -1.317E-01          | 9.835E-02 | 1.437E-01           | 1.363E-02 | -0.917  |
|         | 552.65    |              |     | 6.272E-02           | 1.766E-01 | 2.974E-01           | 2.808E-02 | 0.211   |
| RB-84   | 881.50    | *            |     | -2.791E-02          | 6.024E-02 | 9.617E-02           | 9.086E-03 | -0.290  |
| KR-85   | 513.99    | *            |     | 5.831E+00           | 6.339E+00 | 1.001E+01           | 9.519E-01 | 0.582   |
| SR-85   | 513.99    | *            |     | 2.986E-02           | 3.246E-02 | 5.126E-02           | 4.874E-03 | 0.582   |
| RB-86   | 1076.63   | *            |     | 3.504E-01           | 7.503E-01 | 1.286E+00           | 1.124E-01 | 0.272   |
| Y-88    | 898.02    |              |     | 9.629E-04           | 3.986E-02 | 6.668E-02           | 6.333E-03 | 0.014   |
|         | 1836.01   | *            |     | -9.783E-03          | 2.294E-02 | 3.322E-02           | 2.697E-03 | -0.294  |
| ZR-88   | 392.90    | *            |     | -2.362E-02          | 2.785E-02 | 4.421E-02           | 4.090E-03 | -0.534  |
| Y-91    | 1204.90   | *            |     | -5.294E+00          | 1.954E+01 | 3.112E+01           | 2.531E+00 | -0.170  |
| NB-94   | 702.63    | *            |     | 2.584E-02           | 3.327E-02 | 5.662E-02           | 5.119E-03 | 0.456   |
|         | 871.10    |              |     | -2.936E-02          | 3.192E-02 | 4.882E-02           | 4.608E-03 | -0.601  |
| NB-95   | 765.79    | *            |     | 4.918E-02           | 4.172E-02 | 6.623E-02           | 6.122E-03 | 0.743   |
| NB-95M  | 235.69    | *            |     | 5.824E-02           | 1.172E-01 | 1.740E-01           | 2.069E-02 | 0.335   |
| ZR-95   | 724.18    |              |     | 7.670E-02           | 8.600E-02 | 1.339E-01           | 1.316E-02 | 0.573   |
|         | 756.15    | *            |     | 5.474E-02           | 6.842E-02 | 1.167E-01           | 1.171E-02 | 0.469   |
| NB-97   | 657.90    | *            |     | -1.294E-02          | 6.842E-02 | Half-Life too short |           |         |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| ZR-97   | 1024.50   |              |     | -4.733E-01          | 6.842E-02 | Half-Life      | too short |         |
|         | 254.15    |              |     | -1.758E+00          | 6.842E-02 | Half-Life      | too short |         |
|         | 355.39    |              |     | 2.150E+00           | 6.842E-02 | Half-Life      | too short |         |
|         | 507.63    | *            |     | 1.333E+00           | 6.842E-02 | Half-Life      | too short |         |
|         | 602.52    |              |     | -6.290E+00          | 6.842E-02 | Half-Life      | too short |         |
|         | 1021.30   |              |     | -7.858E-02          | 6.842E-02 | Half-Life      | too short |         |
|         | 1147.95   |              |     | -1.696E+00          | 6.842E-02 | Half-Life      | too short |         |
|         | 1362.66   |              |     | 6.167E+00           | 6.842E-02 | Half-Life      | too short |         |
| MO-99   | 1750.46   |              |     | -3.505E+00          | 6.842E-02 | Half-Life      | too short |         |
|         | 140.51    |              |     | 2.050E+00           | 2.264E+01 | 3.724E+01      | 1.030E+01 | 0.055   |
|         | 181.06    |              |     | -7.376E+00          | 1.555E+01 | 2.365E+01      | 4.419E+00 | -0.312  |
|         | 366.43    |              |     | 2.937E+01           | 7.261E+01 | 1.252E+02      | 1.267E+01 | 0.235   |
|         | 739.58    | *            |     | 1.151E+01           | 1.034E+01 | 1.799E+01      | 2.789E+00 | 0.639   |
| TC-99M  | 778.00    |              |     | 1.376E+01           | 3.122E+01 | 5.179E+01      | 4.804E+00 | 0.266   |
|         | 140.51    | *            |     | 2.175E+09           | 3.122E+01 | Half-Life      | too short |         |
| RH-101  | 127.23    |              |     | -1.304E-03          | 2.917E-02 | 4.366E-02      | 3.635E-03 | -0.030  |
|         | 198.01    | *            |     | 1.529E-02           | 2.891E-02 | 4.805E-02      | 4.744E-03 | 0.318   |
|         | 325.23    |              |     | 1.730E-01           | 2.109E-01 | 3.168E-01      | 3.557E-02 | 0.546   |
| RH-102  | 418.52    |              |     | 6.283E-02           | 2.603E-01 | 4.415E-01      | 4.136E-02 | 0.142   |
|         | 475.06    | *            |     | -5.811E-03          | 2.606E-02 | 4.251E-02      | 4.040E-03 | -0.137  |
|         | 631.29    |              |     | 5.339E-03           | 5.136E-02 | 8.407E-02      | 7.640E-03 | 0.064   |
|         | 697.49    |              |     | 1.409E-02           | 7.459E-02 | 1.219E-01      | 1.100E-02 | 0.116   |
|         | 766.84    | +            |     | 2.707E-01           | 1.339E-01 | 1.892E-01      | 1.749E-02 | 1.431   |
|         | 1046.59   |              |     | -3.387E-02          | 1.135E-01 | 1.821E-01      | 1.623E-02 | -0.186  |
| RU-103  | 1112.84   |              |     | -2.822E-02          | 2.704E-01 | 3.791E-01      | 3.224E-02 | -0.074  |
|         | 497.08    | *            |     | -7.368E-03          | 3.412E-02 | 5.540E-02      | 8.158E-03 | -0.133  |
| RH-106  | 610.33    | +            |     | 1.412E+01           | 2.947E+00 | 2.879E+00      | 4.893E-01 | 4.906   |
|         | 511.85    | +            |     | 7.318E-01           | 3.278E-01 | 4.013E-01      | 3.816E-02 | 1.824   |
| RU-106  | 621.84    | *            |     | 6.285E-02           | 2.969E-01 | 4.905E-01      | 6.721E-02 | 0.128   |
|         | 1050.47   |              |     | -5.129E-02          | 2.302E+00 | 3.788E+00      | 3.367E-01 | -0.014  |
|         | 511.85    | +            |     | 7.318E-01           | 3.278E-01 | 4.013E-01      | 3.816E-02 | 1.824   |
|         | 621.84    | *            |     | 6.285E-02           | 2.968E-01 | 4.905E-01      | 4.485E-02 | 0.128   |
| AG-108M | 1050.47   |              |     | -5.129E-02          | 2.302E+00 | 3.788E+00      | 3.367E-01 | -0.014  |
|         | 433.93    | *            |     | -1.066E-02          | 2.995E-02 | 4.877E-02      | 4.748E-03 | -0.219  |
| AG-110M | 614.37    |              |     | 2.151E-03           | 3.848E-02 | 5.511E-02      | 5.239E-03 | 0.039   |
|         | 722.95    |              |     | 1.055E-02           | 3.854E-02 | 5.598E-02      | 5.280E-03 | 0.188   |
|         | 657.75    | *            |     | -1.157E-02          | 3.447E-02 | 5.425E-02      | 4.966E-03 | -0.213  |
|         | 677.61    |              |     | -7.348E-02          | 2.855E-01 | 4.503E-01      | 4.132E-02 | -0.163  |
| IN-111  | 706.67    |              |     | -2.397E-01          | 2.146E-01 | 3.120E-01      | 2.896E-02 | -0.768  |
|         | 763.93    |              |     | 1.355E-01           | 1.405E-01 | 2.224E-01      | 2.105E-02 | 0.609   |
|         | 884.67    |              |     | 2.770E-02           | 4.451E-02 | 7.830E-02      | 7.598E-03 | 0.354   |
|         | 937.48    |              |     | -7.437E-02          | 1.078E-01 | 1.681E-01      | 1.622E-02 | -0.442  |
|         | 1384.27   |              |     | 1.298E-01           | 1.601E-01 | 2.716E-01      | 2.374E-02 | 0.478   |
|         | 171.28    |              |     | 2.115E-01           | 8.401E-01 | 1.398E+00      | 1.285E-01 | 0.151   |
| IN-113M | 245.39    | *            |     | -3.366E-01          | 9.858E-01 | 1.377E+00      | 1.533E-01 | -0.244  |
|         | 391.69    | *            |     | -2.608E-02          | 4.069E-02 | 6.561E-02      | 6.228E-03 | -0.398  |
| SN-113  | 391.69    | *            |     | -2.608E-02          | 4.069E-02 | 6.561E-02      | 6.228E-03 | -0.398  |
| IN-114M | 190.27    | *            |     | 5.689E-02           | 1.760E-01 | 2.622E-01      | 2.536E-02 | 0.217   |
| CD-115  | 260.90    |              |     | -1.162E+02          | 1.174E+02 | 1.765E+02      | 2.038E+01 | -0.658  |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 492.35       |     | 1.340E+01           | 2.972E+01 | 5.074E+01      | 4.828E+00 | 0.264   |
|         |           | 527.90       | *   | 1.354E+00           | 9.131E+00 | 1.519E+01      | 1.442E+00 | 0.089   |
| SN-117M |           | 156.02       |     | -1.535E+00          | 2.025E+00 | 3.237E+00      | 2.855E-01 | -0.474  |
|         |           | 158.56       | *   | 4.951E-03           | 4.676E-02 | 7.764E-02      | 6.895E-03 | 0.064   |
| SB-122  |           | 563.90       | *   | -7.131E-01          | 1.808E+00 | 2.866E+00      | 2.697E-01 | -0.249  |
|         |           | 692.80       |     | -2.635E+01          | 4.033E+01 | 6.006E+01      | 5.407E+00 | -0.439  |
| I-123   |           | 159.00       | *   | 2.560E+00           | 4.033E+01 | Half-Life      | too short |         |
|         |           | 528.96       |     | -2.097E+02          | 4.033E+01 | Half-Life      | too short |         |
| TE-123M |           | 159.00       | *   | 1.481E-02           | 2.423E-02 | 4.104E-02      | 3.671E-03 | 0.361   |
| I-124   |           | 602.71       | *   | -7.927E-01          | 7.464E-01 | 9.118E-01      | 8.433E-02 | -0.869  |
|         |           | 722.78       |     | 1.705E+00           | 3.876E+00 | 5.751E+00      | 5.240E-01 | 0.297   |
|         |           | 1325.50      |     | -3.179E+00          | 3.049E+01 | 4.860E+01      | 4.093E+00 | -0.065  |
|         |           | 1376.25      |     | 5.928E+01           | 3.502E+01 | 6.051E+01      | 5.136E+00 | 0.980   |
|         | +         | 1509.49      |     | 3.078E+01           | 1.637E+01 | 2.731E+01      | 2.335E+00 | 1.127   |
|         |           | 1691.02      |     | 8.292E-01           | 2.989E+00 | 5.215E+00      | 4.385E-01 | 0.159   |
| SB-124  |           | 602.71       |     | -4.697E-02          | 4.423E-02 | 5.403E-02      | 4.998E-03 | -0.869  |
|         |           | 645.85       |     | -8.607E-02          | 4.607E-01 | 7.344E-01      | 6.967E-02 | -0.117  |
|         |           | 709.31       |     | 1.827E+00           | 2.754E+00 | 4.577E+00      | 4.149E-01 | 0.399   |
|         |           | 713.82       |     | -2.132E+00          | 1.699E+00 | 2.368E+00      | 2.930E-01 | -0.900  |
|         |           | 722.78       |     | 1.465E-01           | 3.329E-01 | 4.940E-01      | 4.588E-02 | 0.297   |
|         | +         | 968.20       |     | 2.426E+01           | 4.699E+00 | 7.755E+00      | 7.183E-01 | 3.128   |
|         |           | 1045.16      |     | 6.536E-01           | 2.447E+00 | 4.130E+00      | 3.683E-01 | 0.158   |
|         |           | 1325.50      |     | -2.916E-01          | 2.797E+00 | 4.459E+00      | 3.755E-01 | -0.065  |
|         |           | 1368.21      |     | -8.241E-01          | 1.656E+00 | 2.477E+00      | 3.316E-01 | -0.333  |
|         |           | 1436.60      |     | 5.938E-01           | 2.619E+00 | 4.559E+00      | 3.891E-01 | 0.130   |
|         |           | 1691.02      | *   | 1.680E-02           | 6.057E-02 | 1.057E-01      | 9.254E-03 | 0.159   |
| SB-125  |           | 427.89       | *   | -1.286E-02          | 8.196E-02 | 1.354E-01      | 1.294E-02 | -0.095  |
|         | +         | 463.38       |     | 8.681E-01           | 3.744E-01 | 5.332E-01      | 5.389E-02 | 1.628   |
|         |           | 600.56       |     | 1.523E-01           | 1.607E-01 | 2.795E-01      | 2.754E-02 | 0.545   |
|         |           | 635.90       |     | -9.276E-03          | 2.567E-01 | 4.152E-01      | 4.037E-02 | -0.022  |
| TE-125M |           | 109.28       | *   | -1.040E+00          | 7.710E+00 | 1.291E+01      | 1.314E+00 | -0.081  |
| I-126   |           | 388.63       |     | 1.302E-01           | 1.889E-01 | 3.289E-01      | 3.077E-02 | 0.396   |
|         |           | 666.33       | *   | -1.490E-01          | 1.688E-01 | 2.515E-01      | 2.237E-02 | -0.592  |
|         |           | 753.82       |     | 1.778E+00           | 1.432E+00 | 2.515E+00      | 2.317E-01 | 0.707   |
| SB-126  |           | 223.80       |     | 1.444E-01           | 3.685E+00 | 5.983E+00      | 6.319E-01 | 0.024   |
|         | +         | 278.60       |     | 2.972E+00           | 3.498E+00 | 3.874E+00      | 4.647E-01 | 0.767   |
|         | +         | 296.50       |     | 1.491E+01           | 2.555E+00 | 3.282E+00      | 3.864E-01 | 4.543   |
|         |           | 414.70       |     | -9.207E-03          | 6.836E-02 | 1.096E-01      | 1.025E-02 | -0.084  |
|         |           | 415.30       |     | 2.979E+00           | 5.373E+00 | 9.291E+00      | 8.691E-01 | 0.321   |
|         |           | 555.20       |     | -1.123E+00          | 3.589E+00 | 5.736E+00      | 5.411E-01 | -0.196  |
|         |           | 573.80       |     | -4.099E-01          | 9.720E-01 | 1.537E+00      | 1.441E-01 | -0.267  |
|         |           | 593.00       |     | 4.202E-01           | 8.513E-01 | 1.440E+00      | 1.339E-01 | 0.292   |
|         |           | 656.30       |     | 1.903E+00           | 3.016E+00 | 5.131E+00      | 4.574E-01 | 0.371   |
|         |           | 666.33       |     | -6.223E-02          | 7.054E-02 | 1.051E-01      | 9.345E-03 | -0.592  |
|         |           | 675.00       |     | -1.897E-01          | 1.682E+00 | 2.687E+00      | 2.400E-01 | -0.071  |
|         |           | 695.00       |     | 3.492E-02           | 7.166E-02 | 1.200E-01      | 1.081E-02 | 0.291   |
|         |           | 697.00       |     | 3.132E-02           | 2.581E-01 | 4.198E-01      | 3.786E-02 | 0.075   |
|         |           | 720.50       | *   | -2.356E-02          | 1.338E-01 | 2.016E-01      | 1.835E-02 | -0.117  |
|         |           | 856.80       |     | 1.237E-01           | 4.551E-01 | 6.862E-01      | 6.466E-02 | 0.180   |



Sample ID : G244630008

Acquisition date : 23-JAN-2010 11:47:57

## ----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Activity Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|---------------------|-----------|---------------------|-----------|---------|
| SB-127  |           | 989.30       |              | -8.730E-01          | 1.145E+00 | 1.750E+00           | 1.607E-01 | -0.499  |
|         |           | 1034.80      |              | 1.018E+01           | 8.546E+00 | 1.549E+01           | 1.390E+00 | 0.657   |
|         |           | 1213.00      |              | 9.597E-01           | 4.683E+00 | 7.756E+00           | 6.325E-01 | 0.124   |
|         |           | 61.10        |              | 5.312E+00           | 5.365E+01 | 7.727E+01           | 7.797E+00 | 0.069   |
|         |           | 252.40       |              | -1.565E+00          | 3.792E+00 | 5.856E+00           | 2.498E+00 | -0.267  |
|         |           | 290.80       |              | -2.338E+01          | 2.248E+01 | 2.886E+01           | 3.978E+00 | -0.810  |
|         |           | 411.60       |              | 4.466E+00           | 1.096E+01 | 1.673E+01           | 2.695E+00 | 0.267   |
|         |           | 444.90       |              | 5.796E+00           | 8.279E+00 | 1.438E+01           | 1.882E+00 | 0.403   |
|         |           | 473.00       |              | -6.510E-02          | 1.445E+00 | 2.387E+00           | 3.209E-01 | -0.027  |
|         |           | 543.00       |              | 1.064E+01           | 1.547E+01 | 2.651E+01           | 3.947E+00 | 0.401   |
|         |           | 603.60       |              | -7.176E+00          | 1.221E+01 | 1.575E+01           | 2.034E+00 | -0.456  |
|         |           | 685.20       | *            | -8.529E-02          | 1.215E+00 | 1.947E+00           | 2.262E-01 | -0.044  |
|         |           | 698.50       |              | -8.082E+00          | 1.453E+01 | 2.224E+01           | 3.562E+00 | -0.363  |
|         |           | 722.20       |              | 2.325E+00           | 2.744E+01 | 3.888E+01           | 4.474E+00 | 0.060   |
| XE-127  |           | 783.80       |              | 4.860E+00           | 3.567E+00 | 6.240E+00           | 8.024E-01 | 0.779   |
|         |           | 57.60        |              | 8.541E+00           | 5.536E+00 | 9.204E+00           | 6.654E-01 | 0.928   |
|         |           | 145.22       |              | 3.928E-01           | 6.294E-01 | 1.050E+00           | 9.016E-02 | 0.374   |
|         |           | 172.10       |              | 3.598E-03           | 1.038E-01 | 1.710E-01           | 1.576E-02 | 0.021   |
| I-131   |           | 202.84       | *            | 1.175E-02           | 4.075E-02 | 6.730E-02           | 6.731E-03 | 0.175   |
|         |           | 374.96       |              | 1.895E-02           | 1.647E-01 | 2.794E-01           | 2.748E-02 | 0.068   |
|         |           | 80.18        |              | 1.750E+00           | 4.022E+00 | 6.299E+00           | 5.567E-01 | 0.278   |
|         |           | 284.30       |              | -4.170E-01          | 1.387E+00 | 2.171E+00           | 2.665E-01 | -0.192  |
| TE-132  |           | 364.48       | *            | 1.929E-02           | 9.831E-02 | 1.678E-01           | 1.774E-02 | 0.115   |
|         |           | 636.97       |              | -7.904E-01          | 1.489E+00 | 2.308E+00           | 2.195E-01 | -0.342  |
|         |           | 722.89       |              | 2.777E+00           | 6.311E+00 | 9.365E+00           | 8.582E-01 | 0.297   |
|         |           | 49.72        |              | -1.255E+01          | 1.681E+01 | 2.532E+01           | 2.634E+00 | -0.496  |
| BA-133  |           | 111.76       |              | -1.407E+01          | 2.384E+01 | 3.908E+01           | 4.158E+00 | -0.360  |
|         |           | 116.30       |              | -3.444E+00          | 2.326E+01 | 3.883E+01           | 4.114E+00 | -0.089  |
|         |           | 228.16       | *            | 2.422E-01           | 6.380E-01 | 1.049E+00           | 1.774E-01 | 0.231   |
|         |           | 53.15        |              | 4.865E+00           | 3.096E+00 | 5.202E+00           | 3.986E-01 | 0.935   |
| I-133   |           | 79.62        |              | 7.406E-01           | 1.156E+00 | 1.820E+00           | 2.782E-01 | 0.407   |
|         |           | 81.00        |              | 5.621E-02           | 1.007E-01 | 1.284E-01           | 2.056E-02 | 0.438   |
|         |           | 276.40       |              | 3.165E-01           | 3.470E-01 | 5.758E-01           | 9.582E-02 | 0.550   |
|         |           | 302.84       |              | 7.685E-02           | 1.363E-01 | 2.011E-01           | 3.106E-02 | 0.382   |
| CS-134  |           | 356.01       | *            | 3.487E-02           | 4.027E-02 | 6.386E-02           | 9.228E-03 | 0.546   |
|         |           | 383.85       |              | -2.342E-01          | 2.701E-01 | 4.274E-01           | 5.660E-02 | -0.548  |
|         | +         | 510.53       |              | 1.349E+00           | 2.701E-01 | Half-Life too short |           |         |
|         |           | 529.87       | *            | -5.284E-03          | 2.701E-01 | Half-Life too short |           |         |
|         |           | 706.58       |              | -4.409E-01          | 2.701E-01 | Half-Life too short |           |         |
|         |           | 856.28       |              | 1.217E-01           | 2.701E-01 | Half-Life too short |           |         |
|         |           | 875.33       |              | 5.627E-02           | 2.701E-01 | Half-Life too short |           |         |
|         |           | 1236.41      |              | 4.095E-01           | 2.701E-01 | Half-Life too short |           |         |
|         |           | 1298.22      |              | -7.001E-02          | 2.701E-01 | Half-Life too short |           |         |
|         |           | 475.35       |              | -1.729E-01          | 1.710E+00 | 2.814E+00           | 2.674E-01 | -0.061  |
|         |           | 563.23       |              | 1.244E-01           | 3.176E-01 | 5.354E-01           | 5.078E-02 | 0.232   |
|         |           | 569.32       |              | 5.043E-02           | 1.904E-01 | 3.139E-01           | 2.981E-02 | 0.161   |
|         |           | 604.70       |              | -1.311E-02          | 3.357E-02 | 4.570E-02           | 4.232E-03 | -0.287  |
|         | +         | 795.84       | *            | 1.504E-01           | 6.436E-02 | 9.401E-02           | 8.814E-03 | 1.599   |
|         |           | 801.93       |              | -3.315E-01          | 3.632E-01 | 5.649E-01           | 5.296E-02 | -0.587  |

----- Non-Identified Nuclides -----

| Nuclide         | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|-----------------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| CS-135<br>I-135 | 1038.57   |              |     | -2.425E-02          | 3.788E+00 | 6.247E+00      | 5.593E-01 | -0.004  |
|                 | 1167.94   |              |     | 1.394E+00           | 2.296E+00 | 3.958E+00      | 3.200E-01 | 0.352   |
|                 | 1365.15   |              |     | 5.177E-01           | 1.196E+00 | 2.033E+00      | 1.804E-01 | 0.255   |
|                 | 268.24    | *            |     | 1.489E-01           | 1.538E-01 | 2.337E-01      | 2.980E-02 | 0.637   |
|                 | 288.45    |              |     | 2.325E+09           | 1.538E-01 | Half-Life      | too short |         |
|                 | 417.63    |              |     | 1.213E+10           | 1.538E-01 | Half-Life      | too short |         |
|                 | 546.56    |              |     | -7.945E+09          | 1.538E-01 | Half-Life      | too short |         |
|                 | 836.80    |              |     | 1.595E+09           | 1.538E-01 | Half-Life      | too short |         |
|                 | 1038.76   |              |     | -6.907E+09          | 1.538E-01 | Half-Life      | too short |         |
|                 | 1124.00   |              |     | 2.964E+10           | 1.538E-01 | Half-Life      | too short |         |
|                 | 1131.51   |              |     | 1.585E+09           | 1.538E-01 | Half-Life      | too short |         |
|                 | 1260.41   | *            |     | -6.359E+08          | 1.538E-01 | Half-Life      | too short |         |
|                 | 1457.56   |              |     | 4.287E+11           | 1.538E-01 | Half-Life      | too short |         |
|                 | 1678.03   |              |     | 3.587E+09           | 1.538E-01 | Half-Life      | too short |         |
|                 | 1706.46   |              |     | 9.869E+09           | 1.538E-01 | Half-Life      | too short |         |
| CS-136          | 1791.20   |              |     | 5.533E+09           | 1.538E-01 | Half-Life      | too short |         |
|                 | 66.91     |              |     | 1.711E-02           | 7.275E-01 | 1.039E+00      | 1.551E-01 | 0.016   |
|                 | 86.29     | +            |     | 3.942E+00           | 1.276E+00 | 1.818E+00      | 2.438E-01 | 2.169   |
|                 | 153.22    |              |     | 5.049E-01           | 5.730E-01 | 9.792E-01      | 9.553E-02 | 0.516   |
|                 | 163.89    |              |     | 2.280E-01           | 9.223E-01 | 1.537E+00      | 1.539E-01 | 0.148   |
|                 | 176.55    |              |     | 8.222E-02           | 3.121E-01 | 5.188E-01      | 5.076E-02 | 0.158   |
|                 | 273.65    |              |     | -2.088E-02          | 5.318E-01 | 5.907E-01      | 7.259E-02 | -0.035  |
|                 | 340.57    |              |     | 7.734E-02           | 1.205E-01 | 1.883E-01      | 2.082E-02 | 0.411   |
|                 | 818.51    |              |     | 5.823E-02           | 6.643E-02 | 1.193E-01      | 1.118E-02 | 0.488   |
|                 | 1048.07   | *            |     | -6.158E-02          | 1.078E-01 | 1.684E-01      | 1.559E-02 | -0.366  |
| BA-137M         | 1235.34   |              |     | -4.540E-01          | 6.277E-01 | 9.602E-01      | 1.110E-01 | -0.473  |
|                 | 661.65    | *            |     | 6.615E-03           | 3.354E-02 | 5.510E-02      | 4.890E-03 | 0.120   |
|                 | 661.65    | *            |     | 6.992E-03           | 3.546E-02 | 5.824E-02      | 5.178E-03 | 0.120   |
|                 | 165.85    | *            |     | 2.331E-03           | 2.641E-02 | 4.371E-02      | 3.964E-03 | 0.053   |
| CE-139          | 162.64    |              |     | 7.401E-02           | 6.422E-01 | 1.065E+00      | 1.008E-01 | 0.069   |
|                 | 304.84    |              |     | -5.776E-02          | 1.178E+00 | 1.772E+00      | 5.155E-01 | -0.033  |
|                 | 423.70    |              |     | -4.927E-02          | 1.706E+00 | 2.844E+00      | 9.281E-01 | -0.017  |
|                 | 537.32    | *            |     | -1.828E-01          | 2.540E-01 | 3.830E-01      | 1.278E-01 | -0.477  |
| LA-140          | 328.77    | +            |     | 5.483E-01           | 3.474E-01 | 5.084E-01      | 5.859E-02 | 1.079   |
|                 | 432.53    |              |     | 4.349E-02           | 1.871E+00 | 3.077E+00      | 3.016E-01 | 0.014   |
|                 | 487.03    |              |     | 5.749E-02           | 1.197E-01 | 2.047E-01      | 2.047E-02 | 0.281   |
|                 | 751.79    |              |     | -1.322E+00          | 1.725E+00 | 2.566E+00      | 2.584E-01 | -0.515  |
| CE-141          | 815.85    |              |     | 6.088E-02           | 2.880E-01 | 4.928E-01      | 5.066E-02 | 0.124   |
|                 | 867.82    |              |     | -3.303E-01          | 1.272E+00 | 2.021E+00      | 1.992E-01 | -0.163  |
|                 | 919.63    |              |     | -1.598E+00          | 2.469E+00 | 3.849E+00      | 4.348E-01 | -0.415  |
|                 | 925.24    |              |     | 2.437E-01           | 9.975E-01 | 1.698E+00      | 1.681E-01 | 0.143   |
| CE-143          | 1596.49   | *            |     | -1.118E-01          | 7.606E-02 | 9.441E-02      | 8.041E-03 | -1.184  |
|                 | 145.44    | *            |     | 3.256E-02           | 5.470E-02 | 9.284E-02      | 8.121E-03 | 0.351   |
|                 | 57.37     |              |     | 1.198E-03           | 5.470E-02 | Half-Life      | too short |         |
|                 | 231.56    |              |     | 8.001E-04           | 5.470E-02 | Half-Life      | too short |         |
|                 | 293.26    | *            |     | 3.946E-04           | 5.470E-02 | Half-Life      | too short |         |
|                 | 350.59    | +            |     | 3.062E-02           | 5.470E-02 | Half-Life      | too short |         |
|                 | 490.36    |              |     | -2.050E-04          | 5.470E-02 | Half-Life      | too short |         |
|                 | 664.57    |              |     | -2.874E-04          | 5.470E-02 | Half-Life      | too short |         |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
|         |           | 721.93       |     | -2.259E-04          | 5.470E-02 | Half-Life too short |           |         |
| CE-144  |           | 80.11        |     | 9.429E-01           | 1.876E+00 | 2.946E+00           | 2.586E-01 | 0.320   |
|         |           | 133.54       | *   | 6.060E-02           | 1.868E-01 | 2.842E-01           | 4.389E-02 | 0.213   |
| PM-144  |           | 476.78       |     | 2.883E-02           | 6.010E-02 | 1.028E-01           | 1.053E-02 | 0.280   |
|         |           | 618.01       |     | -1.027E-02          | 2.881E-02 | 4.540E-02           | 4.264E-03 | -0.226  |
|         |           | 696.49       | *   | 2.381E-03           | 3.284E-02 | 5.321E-02           | 4.799E-03 | 0.045   |
|         |           | 778.57       |     | -3.611E-01          | 2.219E+00 | 3.487E+00           | 3.236E-01 | -0.104  |
| PR-144  |           | 696.49       | *   | 1.613E-01           | 2.225E+00 | 3.605E+00           | 3.251E-01 | 0.045   |
|         |           | 1489.15      |     | -4.281E+00          | 9.180E+00 | 1.414E+01           | 1.209E+00 | -0.303  |
| PM-146  |           | 453.90       | *   | 7.455E-03           | 4.031E-02 | 6.781E-02           | 7.744E-03 | 0.110   |
|         |           | 633.02       |     | -2.268E-01          | 1.314E+00 | 2.097E+00           | 7.860E-01 | -0.108  |
|         |           | 735.90       |     | 9.563E-03           | 1.358E-01 | 2.191E-01           | 6.303E-02 | 0.044   |
|         |           | 747.13       |     | 4.109E-02           | 8.015E-02 | 1.343E-01           | 1.934E-02 | 0.306   |
| ND-147  | +         | 91.11        |     | 6.590E-01           | 2.465E-01 | 4.206E-01           | 4.204E-02 | 1.567   |
|         |           | 319.41       |     | 6.745E-01           | 3.116E+00 | 4.999E+00           | 5.677E-01 | 0.135   |
|         |           | 439.89       |     | 3.026E+00           | 5.394E+00 | 9.289E+00           | 8.769E-01 | 0.326   |
|         |           | 531.02       | *   | -2.664E-01          | 5.036E-01 | 7.915E-01           | 1.224E-01 | -0.337  |
| PM-149  |           | 285.90       | *   | -3.096E+01          | 8.420E+01 | 1.311E+02           | 2.307E+01 | -0.236  |
| EU-152  |           | 121.78       |     | -7.217E-03          | 6.351E-02 | 1.059E-01           | 1.022E-02 | -0.068  |
|         |           | 244.69       |     | -2.385E-03          | 3.072E-01 | 4.408E-01           | 4.901E-02 | -0.005  |
|         |           | 344.27       | *   | -3.308E-02          | 8.529E-02 | 1.363E-01           | 1.523E-02 | -0.243  |
|         |           | 443.98       |     | -1.086E-01          | 8.586E-01 | 1.418E+00           | 1.340E-01 | -0.077  |
|         |           | 778.89       |     | -8.373E-03          | 2.588E-01 | 4.119E-01           | 3.821E-02 | -0.020  |
|         |           | 867.32       |     | 1.292E-01           | 7.742E-01 | 1.245E+00           | 1.175E-01 | 0.104   |
|         | +         | 964.01       |     | 6.653E-01           | 4.050E-01 | 5.527E-01           | 5.128E-02 | 1.204   |
|         |           | 1085.78      |     | 1.407E-01           | 3.460E-01 | 5.919E-01           | 5.138E-02 | 0.238   |
|         |           | 1112.02      |     | 9.653E-02           | 3.415E-01 | 5.429E-01           | 4.619E-02 | 0.178   |
|         |           | 1407.95      |     | 5.532E-02           | 1.691E-01 | 2.886E-01           | 2.458E-02 | 0.192   |
| GD-153  |           | 69.67        |     | -6.756E-01          | 1.453E+00 | 2.203E+00           | 1.736E-01 | -0.307  |
|         | +         | 83.37        |     | 2.161E+01           | 1.737E+01 | 2.229E+01           | 2.031E+00 | 0.970   |
|         |           | 97.43        | *   | -8.795E-02          | 7.419E-02 | 1.040E-01           | 9.243E-03 | -0.845  |
|         |           | 103.18       |     | -8.041E-02          | 9.042E-02 | 1.471E-01           | 1.267E-02 | -0.547  |
| EU-154  |           | 123.07       |     | 1.457E-02           | 4.422E-02 | 7.497E-02           | 8.341E-03 | 0.194   |
|         |           | 247.94       |     | 1.193E-01           | 3.155E-01 | 5.182E-01           | 7.009E-02 | 0.230   |
|         |           | 591.81       |     | 2.750E-01           | 5.675E-01 | 9.591E-01           | 1.168E-01 | 0.287   |
|         |           | 723.30       |     | 3.661E-02           | 1.605E-01 | 2.318E-01           | 2.313E-02 | 0.158   |
|         |           | 756.87       |     | 6.548E-01           | 7.180E-01 | 1.235E+00           | 1.533E-01 | 0.530   |
|         |           | 873.19       |     | 1.548E-01           | 2.765E-01 | 4.833E-01           | 6.203E-02 | 0.320   |
|         |           | 996.32       |     | -8.632E-02          | 3.509E-01 | 5.676E-01           | 1.023E-01 | -0.152  |
|         |           | 1004.76      |     | 9.846E-02           | 2.078E-01 | 3.572E-01           | 4.290E-02 | 0.276   |
|         |           | 1274.45      | *   | -9.950E-02          | 1.273E-01 | 1.894E-01           | 2.098E-02 | -0.525  |
| EU-155  |           | 48.70        |     | -5.909E-01          | 2.179E+00 | 3.380E+00           | 2.777E-01 | -0.175  |
|         |           | 60.01        |     | -1.724E+00          | 4.980E+00 | 7.001E+00           | 5.001E-01 | -0.246  |
|         | +         | 86.54        |     | 3.662E-01           | 1.133E-01 | 1.713E-01           | 1.635E-02 | 2.138   |
|         |           | 105.31       | *   | 6.764E-03           | 9.347E-02 | 1.581E-01           | 1.368E-02 | 0.043   |
| TB-160  | +         | 86.79        |     | 9.772E-01           | 3.021E-01 | 4.590E-01           | 4.358E-02 | 2.129   |
|         |           | 197.04       |     | -1.295E-01          | 5.061E-01 | 8.129E-01           | 8.005E-02 | -0.159  |
|         |           | 215.65       |     | 9.072E-02           | 6.529E-01 | 1.067E+00           | 1.104E-01 | 0.085   |
|         | +         | 298.57       |     | 2.826E-01           | 1.295E-01 | 1.763E-01           | 2.070E-02 | 1.602   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|------------|-----------|----------------|-----------|---------|
| HO-166M |           | 879.36       | *            | -1.322E-01 | 1.298E-01 | 1.960E-01      | 1.851E-02 | -0.674  |
|         |           | 962.29       |              | 3.722E-01  | 5.586E-01 | 8.645E-01      | 8.026E-02 | 0.430   |
|         | +         | 966.15       |              | 4.563E-01  | 2.778E-01 | 4.972E-01      | 4.609E-02 | 0.918   |
|         |           | 1177.93      |              | -2.936E-01 | 3.818E-01 | 5.810E-01      | 4.679E-02 | -0.505  |
|         |           | 1271.85      |              | 6.662E-01  | 7.473E-01 | 1.308E+00      | 1.086E-01 | 0.509   |
|         |           | 80.57        |              | 1.213E-02  | 2.361E-01 | 3.640E-01      | 3.212E-02 | 0.033   |
|         | +         | 184.41       |              | 1.275E-01  | 5.473E-02 | 5.856E-02      | 5.575E-03 | 2.178   |
|         |           | 280.46       |              | 2.410E-02  | 8.601E-02 | 1.248E-01      | 1.497E-02 | 0.193   |
|         | +         | 410.95       |              | 3.832E-01  | 3.071E-01 | 3.733E-01      | 3.485E-02 | 1.027   |
|         |           | 711.68       | *            | 9.463E-03  | 5.808E-02 | 9.466E-02      | 8.589E-03 | 0.100   |
| TM-171  |           | 752.31       |              | -1.983E-01 | 2.826E-01 | 4.239E-01      | 3.902E-02 | -0.468  |
|         |           | 810.29       |              | -5.765E-02 | 5.238E-02 | 7.908E-02      | 7.393E-03 | -0.729  |
|         |           | 51.35        |              | -2.989E+01 | 2.734E+01 | 4.031E+01      | 3.177E+00 | -0.741  |
|         |           | 52.39        |              | 1.050E+01  | 1.381E+01 | 2.246E+01      | 1.741E+00 | 0.468   |
|         |           | 59.40        |              | -1.839E+01 | 2.764E+01 | 3.817E+01      | 2.711E+00 | -0.482  |
| LU-176  |           | 66.72        | *            | -7.360E+00 | 2.676E+01 | 3.758E+01      | 2.879E+00 | -0.196  |
|         | +         | 88.36        |              | 7.213E-01  | 2.230E-01 | 3.145E-01      | 3.019E-02 | 2.294   |
|         |           | 201.83       |              | -3.008E-02 | 2.536E-02 | 3.869E-02      | 3.859E-03 | -0.777  |
|         |           | 306.84       | *            | -2.428E-02 | 2.288E-02 | 3.348E-02      | 3.883E-03 | -0.725  |
| LU-177  |           | 401.10       |              | 2.584E+00  | 6.031E+00 | 1.036E+01      | 9.625E-01 | 0.249   |
|         |           | 112.95       |              | -1.134E+00 | 1.365E+00 | 2.215E+00      | 1.854E-01 | -0.512  |
|         | +         | 208.36       | *            | 2.834E+00  | 1.371E+00 | 1.857E+00      | 1.885E-01 | 1.526   |
| LU-177M |           | 52.97        |              | 2.236E+00  | 1.404E+00 | 2.361E+00      | 1.814E-01 | 0.947   |
|         |           | 54.07        |              | 9.872E-02  | 7.569E-01 | 1.193E+00      | 9.021E-02 | 0.083   |
| HF-181  |           | 61.30        |              | 4.183E-03  | 1.411E+00 | 2.021E+00      | 1.466E-01 | 0.002   |
|         |           | 121.62       |              | -5.958E-02 | 3.240E-01 | 5.387E-01      | 4.472E-02 | -0.111  |
|         |           | 147.16       |              | -3.220E-01 | 5.504E-01 | 8.895E-01      | 7.671E-02 | -0.362  |
|         |           | 171.86       |              | -3.582E-03 | 4.181E-01 | 6.878E-01      | 6.334E-02 | -0.005  |
|         |           | 218.09       |              | -8.353E-01 | 7.680E-01 | 1.170E+00      | 1.218E-01 | -0.714  |
|         | +         | 268.79       |              | 3.666E+00  | 1.251E+00 | 1.340E+00      | 1.574E-01 | 2.736   |
|         |           | 319.02       |              | 9.693E-02  | 2.445E-01 | 3.964E-01      | 4.504E-02 | 0.245   |
|         |           | 367.43       |              | 6.037E-01  | 8.001E-01 | 1.404E+00      | 1.415E-01 | 0.430   |
|         |           | 413.65       | *            | -1.278E-01 | 1.802E-01 | 2.483E-01      | 2.321E-02 | -0.515  |
|         |           | 56.28        |              | -7.383E-01 | 8.665E-01 | 1.296E+00      | 9.516E-02 | -0.570  |
|         |           | 57.53        |              | 6.800E-01  | 4.644E-01 | 7.702E-01      | 5.572E-02 | 0.883   |
|         |           | 65.20        |              | -7.645E-01 | 8.789E-01 | 1.190E+00      | 8.985E-02 | -0.643  |
|         |           | 133.02       |              | 6.351E-02  | 6.082E-02 | 9.584E-02      | 8.036E-03 | 0.663   |
|         |           | 136.25       |              | -4.287E-01 | 3.826E-01 | 6.038E-01      | 5.090E-02 | -0.710  |
|         |           | 345.85       |              | 2.547E-02  | 1.717E-01 | 2.695E-01      | 2.889E-02 | 0.094   |
| W-181   |           | 482.03       | *            | -7.329E-03 | 3.674E-02 | 5.994E-02      | 5.701E-03 | -0.122  |
|         |           | 56.28        |              | -2.881E-01 | 3.397E-01 | 5.083E-01      | 3.731E-02 | -0.567  |
|         |           | 57.53        |              | 2.663E-01  | 1.821E-01 | 3.021E-01      | 2.185E-02 | 0.882   |
| TA-182  |           | 65.20        | *            | -2.975E-01 | 3.420E-01 | 4.630E-01      | 3.496E-02 | -0.643  |
|         |           | 67.75        |              | 1.191E-01  | 9.428E-02 | 1.532E-01      | 1.185E-02 | 0.777   |
|         |           | 100.10       |              | 1.497E-01  | 1.491E-01 | 2.605E-01      | 2.278E-02 | 0.575   |
|         |           | 152.43       |              | -6.383E-03 | 2.931E-01 | 4.851E-01      | 4.238E-02 | -0.013  |
|         |           | 222.10       |              | -4.819E-02 | 3.231E-01 | 5.200E-01      | 5.469E-02 | -0.093  |
|         |           | 1001.68      |              | 1.067E+00  | 2.103E+00 | 3.603E+00      | 3.290E-01 | 0.296   |
|         | +         | 1121.28      |              | 8.429E-01  | 2.712E-01 | 3.840E-01      | 3.242E-02 | 2.195   |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| RE-183  |           | 1189.05      |     | 6.517E-02           | 3.060E-01 | 5.082E-01           | 4.110E-02 | 0.128   |
|         |           | 1221.42      | *   | 1.426E-01           | 2.091E-01 | 3.578E-01           | 2.926E-02 | 0.399   |
|         |           | 1230.97      |     | 1.438E-01           | 5.061E-01 | 8.409E-01           | 6.898E-02 | 0.171   |
|         |           | 57.98        |     | 2.088E-01           | 1.891E-01 | 3.087E-01           | 2.223E-02 | 0.676   |
|         |           | 59.32        |     | -7.407E-03          | 1.099E-01 | 1.571E-01           | 1.116E-02 | -0.047  |
|         |           | 67.20        |     | 9.530E-02           | 1.858E-01 | 2.720E-01           | 2.094E-02 | 0.350   |
|         |           | 162.32       | *   | -2.710E-02          | 9.468E-02 | 1.543E-01           | 1.385E-02 | -0.176  |
|         | +         | 208.81       |     | 2.578E+00           | 1.247E+00 | 1.712E+00           | 1.740E-01 | 1.505   |
|         |           | 291.72       |     | -5.390E-01          | 9.516E-01 | 1.282E+00           | 1.518E-01 | -0.421  |
|         |           | 57.98        |     | 7.700E-01           | 6.972E-01 | 1.138E+00           | 8.197E-02 | 0.676   |
| RE-184  |           | 59.32        |     | -2.729E-02          | 4.050E-01 | 5.788E-01           | 4.114E-02 | -0.047  |
|         |           | 67.20        |     | 3.513E-01           | 6.849E-01 | 1.003E+00           | 7.718E-02 | 0.350   |
|         |           | 161.27       |     | -2.633E-01          | 3.122E-01 | 4.951E-01           | 4.431E-02 | -0.532  |
|         |           | 216.55       |     | -2.768E-02          | 2.314E-01 | 3.735E-01           | 3.872E-02 | -0.074  |
|         |           | 252.85       | *   | -4.338E-02          | 2.034E-01 | 3.229E-01           | 3.660E-02 | -0.134  |
|         |           | 318.01       |     | 2.157E-01           | 4.351E-01 | 7.089E-01           | 8.069E-02 | 0.304   |
|         |           | 792.07       |     | 1.051E+00           | 9.176E-01 | 1.522E+00           | 1.416E-01 | 0.691   |
|         |           | 903.28       |     | 1.656E-01           | 1.059E+00 | 1.634E+00           | 1.543E-01 | 0.101   |
|         |           | 920.93       |     | 5.133E-02           | 4.017E-01 | 6.771E-01           | 6.369E-02 | 0.076   |
|         |           | 59.72        |     | -1.954E-01          | 3.039E-01 | 4.201E-01           | 2.990E-02 | -0.465  |
| OS-185  |           | 61.14        |     | 1.244E-02           | 1.558E-01 | 2.242E-01           | 1.623E-02 | 0.055   |
|         |           | 69.30        |     | -1.055E-01          | 2.440E-01 | 3.943E-01           | 3.096E-02 | -0.267  |
|         |           | 592.07       |     | 1.168E+00           | 2.316E+00 | 3.923E+00           | 3.648E-01 | 0.298   |
|         |           | 646.12       | *   | -1.723E-02          | 3.983E-02 | 6.210E-02           | 5.582E-03 | -0.278  |
|         |           | 717.42       |     | 3.534E-01           | 7.846E-01 | 1.312E+00           | 1.193E-01 | 0.269   |
|         |           | 874.81       |     | 4.043E-01           | 5.521E-01 | 9.770E-01           | 9.225E-02 | 0.414   |
|         |           | 880.27       |     | -4.488E-01          | 6.981E-01 | 1.096E+00           | 1.035E-01 | -0.410  |
|         |           | 155.03       | *   | 2.042E-01           | 1.507E-01 | 2.612E-01           | 2.298E-02 | 0.782   |
|         |           | 477.96       |     | 4.582E-01           | 2.737E+00 | 4.587E+00           | 4.361E-01 | 0.100   |
|         |           | 633.10       |     | -5.295E-01          | 2.659E+00 | 4.243E+00           | 3.851E-01 | -0.125  |
| W-188   | +         | 63.58        |     | 6.365E+01           | 6.621E+01 | 7.672E+01           | 5.702E+00 | 0.830   |
|         |           | 227.08       |     | -1.742E+00          | 1.208E+01 | 1.941E+01           | 2.067E+00 | -0.090  |
| IR-192  |           | 290.67       | *   | -8.039E+00          | 7.937E+00 | 1.025E+01           | 1.216E+00 | -0.784  |
|         | +         | 295.96       |     | 1.149E+00           | 1.972E-01 | 2.754E-01           | 3.257E-02 | 4.170   |
|         |           | 308.46       |     | 1.162E-02           | 8.867E-02 | 1.419E-01           | 1.646E-02 | 0.082   |
|         |           | 316.51       | *   | -1.958E-03          | 3.306E-02 | 5.217E-02           | 5.962E-03 | -0.038  |
| AU-195  |           | 468.07       |     | -3.193E-02          | 6.643E-02 | 9.214E-02           | 9.271E-03 | -0.347  |
|         |           | 604.41       |     | -1.678E-01          | 4.543E-01 | 6.198E-01           | 8.328E-02 | -0.271  |
|         |           | 612.46       |     | 1.484E-01           | 7.064E-01 | 1.028E+00           | 1.070E-01 | 0.144   |
|         |           | 65.12        |     | -1.316E-01          | 1.587E-01 | 2.155E-01           | 1.626E-02 | -0.611  |
|         |           | 66.83        |     | -1.746E-02          | 8.862E-02 | 1.250E-01           | 9.586E-03 | -0.140  |
|         | +         | 75.70        |     | 1.340E+00           | 2.403E-01 | 3.990E-01           | 3.339E-02 | 3.357   |
| TL-200  |           | 98.88        | *   | 1.252E-01           | 1.924E-01 | 3.266E-01           | 2.876E-02 | 0.383   |
|         | +         | 129.76       |     | 4.183E+00           | 3.605E+00 | 4.530E+00           | 3.782E-01 | 0.923   |
|         |           | 367.94       | *   | 2.709E-04           | 3.605E+00 | Half-Life too short |           |         |
|         |           | 579.30       |     | 9.896E-04           | 3.605E+00 | Half-Life too short |           |         |
| TL-201  |           | 828.27       |     | 1.501E-03           | 3.605E+00 | Half-Life too short |           |         |
|         |           | 1205.75      |     | -1.093E-03          | 3.605E+00 | Half-Life too short |           |         |
|         |           | 68.90        |     | -2.089E-01          | 3.610E+00 | 6.187E+00           | 4.839E-01 | -0.034  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| TL-202  |           | 70.82        |     | -1.001E-03          | 2.293E+00 | 3.549E+00      | 2.827E-01 | 0.000   |
|         |           | 80.30        |     | 1.365E+00           | 4.286E+00 | 6.682E+00      | 5.878E-01 | 0.204   |
|         |           | 135.34       |     | -9.503E+00          | 2.006E+01 | 3.271E+01      | 2.753E+00 | -0.290  |
|         |           | 167.43       | *   | 1.880E+00           | 6.064E+00 | 1.012E+01      | 9.213E-01 | 0.186   |
|         |           | 68.90        |     | -1.920E-02          | 3.317E-01 | 5.685E-01      | 4.446E-02 | -0.034  |
|         |           | 70.82        |     | -9.172E-05          | 2.101E-01 | 3.252E-01      | 2.591E-02 | 0.000   |
| BI-207  |           | 80.30        |     | 1.251E-01           | 3.928E-01 | 6.124E-01      | 5.388E-02 | 0.204   |
|         |           | 439.56       | *   | 5.981E-02           | 6.459E-02 | 1.133E-01      | 1.069E-02 | 0.528   |
|         |           | 72.80        |     | 2.143E-01           | 1.593E-01 | 2.583E-01      | 2.098E-02 | 0.830   |
|         | +         | 74.97        |     | 7.434E-01           | 1.334E-01 | 2.051E-01      | 1.703E-02 | 3.625   |
|         | +         | 84.90        |     | 2.796E-01           | 2.247E-01 | 2.889E-01      | 2.681E-02 | 0.968   |
|         |           | 569.67       |     | 9.993E-03           | 3.031E-02 | 5.017E-02      | 4.711E-03 | 0.199   |
| TL-207  |           | 1063.62      | *   | 7.425E-03           | 5.159E-02 | 8.605E-02      | 7.586E-03 | 0.086   |
|         |           | 1770.23      |     | -2.698E+00          | 7.530E-01 | 5.380E-01      | 4.447E-02 | -5.015  |
|         |           | 81.07        |     | 1.258E-01           | 2.215E-01 | 2.836E-01      | 2.517E-02 | 0.444   |
|         | +         | 83.78        |     | 1.843E-01           | 1.481E-01 | 1.927E-01      | 1.765E-02 | 0.957   |
|         |           | 94.90        |     | 3.696E-01           | 1.960E-01 | 3.219E-01      | 2.910E-02 | 1.148   |
|         |           | 122.32       |     | 7.810E-01           | 1.491E+00 | 2.547E+00      | 2.281E-01 | 0.307   |
| PO-209  |           | 144.24       |     | 5.781E-01           | 6.250E-01 | 1.053E+00      | 1.010E-01 | 0.549   |
|         |           | 154.21       |     | 6.340E-01           | 3.577E-01 | 6.246E-01      | 6.011E-02 | 1.015   |
|         | +         | 269.46       |     | 8.587E-01           | 2.935E-01 | 3.403E-01      | 4.048E-02 | 2.523   |
|         |           | 323.87       | *   | 6.894E-02           | 6.712E-01 | 9.508E-01      | 1.819E-01 | 0.073   |
|         | +         | 338.28       |     | 7.275E+00           | 1.759E+00 | 2.414E+00      | 3.384E-01 | 3.013   |
|         |           | 445.03       |     | 1.531E+00           | 1.985E+00 | 3.459E+00      | 4.391E-01 | 0.442   |
| BI-210  |           | 260.50       |     | -1.084E+00          | 8.822E+00 | 1.406E+01      | 1.621E+00 | -0.077  |
|         |           | 262.80       |     | -7.741E+00          | 2.425E+01 | 3.814E+01      | 4.421E+00 | -0.203  |
|         |           | 896.60       | *   | 3.974E-01           | 7.244E+00 | 1.215E+01      | 1.149E+00 | 0.033   |
|         |           | 46.50        | *   | 2.707E+00           | 3.338E+00 | 5.438E+00      | 5.071E-01 | 0.498   |
|         |           | 46.50        | *   | 2.707E+00           | 3.338E+00 | 5.438E+00      | 5.071E-01 | 0.498   |
|         |           | 46.50        | *   | 2.707E+00           | 3.337E+00 | 5.438E+00      | 4.594E-01 | 0.498   |
| PB-211  |           | 404.84       | *   | -5.597E-01          | 1.008E+00 | 1.322E+00      | 8.300E-01 | -0.423  |
|         |           | 427.08       |     | -1.840E-01          | 1.853E+00 | 3.068E+00      | 1.910E+00 | -0.060  |
|         |           | 831.96       |     | -7.021E-01          | 1.145E+00 | 1.672E+00      | 1.050E+00 | -0.420  |
|         |           | 81.07        |     | 1.258E-01           | 2.215E-01 | 2.836E-01      | 2.517E-02 | 0.444   |
|         | +         | 83.78        |     | 1.843E-01           | 1.481E-01 | 1.927E-01      | 1.765E-02 | 0.957   |
|         |           | 94.90        |     | 3.696E-01           | 1.960E-01 | 3.219E-01      | 2.910E-02 | 1.148   |
| PO-215  |           | 122.32       |     | 7.810E-01           | 1.491E+00 | 2.547E+00      | 2.281E-01 | 0.307   |
|         |           | 144.24       |     | 5.781E-01           | 6.250E-01 | 1.053E+00      | 1.010E-01 | 0.549   |
|         |           | 154.21       |     | 6.340E-01           | 3.577E-01 | 6.246E-01      | 6.011E-02 | 1.015   |
|         | +         | 269.46       |     | 8.587E-01           | 2.935E-01 | 3.403E-01      | 4.048E-02 | 2.523   |
|         |           | 323.87       | *   | 6.894E-02           | 6.712E-01 | 9.508E-01      | 1.819E-01 | 0.073   |
|         | +         | 338.28       |     | 7.275E+00           | 1.759E+00 | 2.414E+00      | 3.384E-01 | 3.013   |
| RN-219  |           | 445.03       |     | 1.531E+00           | 1.985E+00 | 3.459E+00      | 4.391E-01 | 0.442   |
|         | +         | 271.23       |     | 1.102E+00           | 3.812E-01 | 4.211E-01      | 5.514E-02 | 2.617   |
|         |           | 401.81       | *   | 8.156E-02           | 3.680E-01 | 6.248E-01      | 9.637E-02 | 0.131   |
|         |           | 549.76       | *   | 5.909E+00           | 2.317E+01 | 3.874E+01      | 3.660E+00 | 0.153   |
|         |           | 81.07        |     | 1.258E-01           | 2.215E-01 | 2.836E-01      | 2.517E-02 | 0.444   |
|         | +         | 83.78        |     | 1.843E-01           | 1.481E-01 | 1.927E-01      | 1.765E-02 | 0.957   |
| RA-223  |           | 94.90        |     | 3.696E-01           | 1.960E-01 | 3.219E-01      | 2.910E-02 | 1.148   |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| AC-227  |           | 122.32       |     | 7.810E-01           | 1.491E+00 | 2.547E+00      | 2.281E-01 | 0.307   |
|         |           | 144.24       |     | 5.781E-01           | 6.250E-01 | 1.053E+00      | 1.010E-01 | 0.549   |
|         |           | 154.21       |     | 6.340E-01           | 3.577E-01 | 6.246E-01      | 6.011E-02 | 1.015   |
|         | +         | 269.46       |     | 8.587E-01           | 2.935E-01 | 3.403E-01      | 4.048E-02 | 2.523   |
|         |           | 323.87       | *   | 6.894E-02           | 6.712E-01 | 9.508E-01      | 1.819E-01 | 0.073   |
|         | +         | 338.28       |     | 7.275E+00           | 1.759E+00 | 2.414E+00      | 3.384E-01 | 3.013   |
|         |           | 445.03       |     | 1.531E+00           | 1.985E+00 | 3.459E+00      | 4.391E-01 | 0.442   |
|         |           | 79.80        |     | 9.834E-01           | 1.476E+00 | 2.312E+00      | 4.985E-01 | 0.425   |
|         |           | 236.00       |     | 2.282E-01           | 2.213E-01 | 3.366E-01      | 4.690E-02 | 0.678   |
|         |           | 256.20       | *   | -6.873E-02          | 3.508E-01 | 5.572E-01      | 9.516E-02 | -0.123  |
|         |           | 286.10       |     | 1.378E-02           | 1.442E+00 | 2.301E+00      | 3.581E-01 | 0.006   |
|         | +         | 299.80       |     | 3.603E+00           | 1.740E+00 | 2.313E+00      | 4.442E-01 | 1.558   |
| TH-227  |           | 304.40       |     | 6.104E-01           | 1.753E+00 | 2.708E+00      | 5.423E-01 | 0.225   |
|         |           | 334.20       |     | 1.960E+00           | 2.214E+00 | 3.480E+00      | 7.165E-01 | 0.563   |
|         |           | 79.80        |     | 9.834E-01           | 1.476E+00 | 2.312E+00      | 5.048E-01 | 0.425   |
|         | +         | 94.00        |     | 7.619E+00           | 3.128E+00 | 3.218E+00      | 7.072E-01 | 2.368   |
|         |           | 236.00       |     | 2.282E-01           | 2.209E-01 | 3.366E-01      | 4.349E-02 | 0.678   |
|         |           | 256.20       | *   | -6.873E-02          | 3.509E-01 | 5.572E-01      | 1.090E-01 | -0.123  |
|         |           | 286.10       |     | 1.378E-02           | 1.442E+00 | 2.301E+00      | 2.317E+00 | 0.006   |
|         | +         | 299.80       |     | 3.603E+00           | 1.740E+00 | 2.313E+00      | 4.442E-01 | 1.558   |
|         |           | 304.40       |     | 6.104E-01           | 1.753E+00 | 2.708E+00      | 5.423E-01 | 0.225   |
|         |           | 334.20       |     | 1.960E+00           | 2.214E+00 | 3.480E+00      | 7.165E-01 | 0.563   |
|         |           | 85.43        |     | 1.167E-01           | 2.226E-01 | 2.821E-01      | 2.635E-02 | 0.414   |
|         | +         | 88.47        |     | 4.152E-01           | 1.284E-01 | 1.809E-01      | 1.735E-02 | 2.295   |
| PA-231  |           | 100.00       |     | 1.320E-01           | 1.584E-01 | 2.703E-01      | 2.365E-02 | 0.488   |
|         |           | 193.63       | *   | -1.828E-02          | 4.527E-01 | 7.385E-01      | 7.206E-02 | -0.025  |
|         |           | 210.97       |     | 5.651E-01           | 7.745E-01 | 1.170E+00      | 1.195E-01 | 0.483   |
|         |           | 283.67       | *   | -4.904E-01          | 1.425E+00 | 2.224E+00      | 3.846E-01 | -0.221  |
|         | +         | 301.29       |     | 1.441E+00           | 6.723E-01 | 8.899E-01      | 1.297E-01 | 1.619   |
|         |           | 81.07        |     | 1.258E-01           | 2.215E-01 | 2.836E-01      | 2.517E-02 | 0.444   |
|         | +         | 83.78        |     | 1.843E-01           | 1.481E-01 | 1.927E-01      | 1.765E-02 | 0.957   |
|         |           | 94.90        |     | 3.696E-01           | 1.960E-01 | 3.219E-01      | 2.910E-02 | 1.148   |
|         |           | 122.32       |     | 7.810E-01           | 1.491E+00 | 2.547E+00      | 2.281E-01 | 0.307   |
|         |           | 144.24       |     | 5.781E-01           | 6.250E-01 | 1.053E+00      | 1.010E-01 | 0.549   |
|         |           | 154.21       |     | 6.340E-01           | 3.577E-01 | 6.246E-01      | 6.011E-02 | 1.015   |
|         | +         | 269.46       |     | 8.587E-01           | 2.935E-01 | 3.403E-01      | 4.048E-02 | 2.523   |
| U-231   |           | 323.87       | *   | 6.894E-02           | 6.712E-01 | 9.508E-01      | 1.819E-01 | 0.073   |
|         | +         | 338.28       |     | 7.275E+00           | 1.759E+00 | 2.414E+00      | 3.384E-01 | 3.013   |
|         |           | 445.03       |     | 1.531E+00           | 1.985E+00 | 3.459E+00      | 4.391E-01 | 0.442   |
|         | +         | 84.21        |     | 7.776E+00           | 6.249E+00 | 8.139E+00      | 7.493E-01 | 0.955   |
|         | +         | 92.29        |     | 7.370E+00           | 2.643E+00 | 3.487E+00      | 3.220E-01 | 2.114   |
|         |           | 95.87        | *   | -4.085E-01          | 9.258E-01 | 1.378E+00      | 1.237E-01 | -0.296  |
|         |           | 108.00       |     | -7.061E-01          | 1.734E+00 | 2.875E+00      | 2.435E-01 | -0.246  |
|         | +         | 75.28        |     | 2.169E+01           | 4.768E+00 | 6.031E+00      | 9.159E-01 | 3.597   |
|         | +         | 86.59        |     | 5.953E+00           | 2.382E+00 | 2.787E+00      | 7.554E-01 | 2.136   |
|         | +         | 300.12       |     | 1.004E+00           | 4.762E-01 | 6.453E-01      | 1.088E-01 | 1.557   |
|         |           | 311.98       | *   | 4.308E-02           | 6.199E-02 | 1.021E-01      | 1.194E-02 | 0.422   |
|         |           | 340.50       |     | 4.673E-01           | 6.027E-01 | 9.351E-01      | 2.313E-01 | 0.500   |
|         |           | 398.62       |     | -3.461E-01          | 1.979E+00 | 3.283E+00      | 8.816E-01 | -0.105  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key        | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA   |
|---------|-----------|--------------|------------|---------------------|-----------|----------------|-----------|-----------|
| PA-234  | +         | 415.76       |            | 8.832E-01           | 1.498E+00 | 2.574E+00      | 5.626E-01 | 0.343     |
|         |           | 63.00        |            | 1.848E+00           | 1.937E+00 | 2.282E+00      | 3.389E-01 | 0.810     |
|         |           | 94.67        |            | 3.487E-01           | 1.494E-01 | 2.423E-01      | 3.080E-02 | 1.439     |
|         |           | 98.44        |            | -2.045E-02          | 7.810E-02 | 1.269E-01      | 7.086E-02 | -0.161    |
|         |           | 99.86        |            | 5.005E-01           | 3.972E-01 | 6.860E-01      | 6.008E-02 | 0.730     |
|         |           | 111.00       |            | -5.976E-02          | 1.531E-01 | 2.534E-01      | 3.024E-02 | -0.236    |
|         |           | 131.20       |            | 1.714E-02           | 1.029E-01 | 1.555E-01      | 1.300E-02 | 0.110     |
|         |           | 152.70       |            | 1.785E-01           | 2.823E-01 | 4.769E-01      | 8.159E-02 | 0.374     |
|         |           | 186.00       |            | 4.592E+00           | 2.404E+00 | 2.426E+00      | 7.638E-01 | 1.893     |
|         |           | 226.40       |            | 2.941E-02           | 3.737E-01 | 6.073E-01      | 8.864E-02 | 0.048     |
|         |           | 227.20       |            | -2.862E-02          | 4.098E-01 | 6.611E-01      | 7.043E-02 | -0.043    |
|         |           | 248.90       |            | 2.693E-01           | 7.245E-01 | 1.186E+00      | 2.792E-01 | 0.227     |
|         |           | 293.70       |            | 7.238E+00           | 1.649E+00 | 1.530E+00      | 2.921E-01 | 4.732     |
|         |           | 369.80       |            | -2.654E-01          | 7.297E-01 | 1.199E+00      | 2.681E-01 | -0.221    |
|         |           | 568.70       |            | -6.103E-02          | 9.571E-01 | 1.541E+00      | 1.447E-01 | -0.040    |
|         |           | 569.50       |            | 9.651E-02           | 2.655E-01 | 4.406E-01      | 4.136E-02 | 0.219     |
|         |           | 574.00       |            | -5.312E-01          | 1.410E+00 | 2.238E+00      | 2.098E-01 | -0.237    |
|         |           | 699.00       |            | -3.575E-01          | 7.201E-01 | 1.108E+00      | 2.135E-01 | -0.323    |
|         | 706.10    |              | -1.182E+00 | 1.180E+00           | 1.540E+00 | 6.882E-01      | -0.767    |           |
|         | 733.00    |              | -9.385E-02 | 3.614E-01           | 5.163E-01 | 1.157E-01      | -0.182    |           |
|         | 742.81    |              | -8.877E-01 | 1.387E+00           | 1.867E+00 | 1.257E+00      | -0.475    |           |
|         | 796.30    |              | 2.459E+00  | 1.209E+00           | 1.814E+00 | 4.949E-01      | 1.356     |           |
|         | 805.60    |              | 1.357E+00  | 9.924E-01           | 1.690E+00 | 5.214E-01      | 0.803     |           |
|         | 819.60    |              | 9.109E-01  | 1.149E+00           | 1.967E+00 | 7.515E-01      | 0.463     |           |
|         | 826.30    |              | 1.571E-01  | 6.698E-01           | 1.144E+00 | 5.134E-01      | 0.137     |           |
|         | 831.60    |              | -4.156E-01 | 5.681E-01           | 8.709E-01 | 2.619E-01      | -0.477    |           |
|         | 876.40    |              | 3.267E-01  | 8.514E-01           | 1.354E+00 | 1.393E+00      | 0.241     |           |
|         | 880.51    |              | -1.988E-01 | 2.556E-01           | 3.958E-01 | 3.739E-02      | -0.502    |           |
|         | 883.24    |              | -2.385E-02 | 2.573E-01           | 4.257E-01 | 2.866E-01      | -0.056    |           |
|         | 899.00    |              | 8.521E-01  | 8.967E-01           | 1.473E+00 | 6.466E-01      | 0.578     |           |
|         | 925.00    |              | 4.000E-01  | 1.039E+00           | 1.792E+00 | 1.683E-01      | 0.223     |           |
|         | 926.50    |              | -8.643E-02 | 1.598E-01           | 2.500E-01 | 6.388E-02      | -0.346    |           |
|         | 946.00    | *            | -5.685E-02 | 2.841E-01           | 4.635E-01 | 8.854E-02      | -0.123    |           |
|         | 949.00    |              | 3.956E-01  | 4.214E-01           | 7.534E-01 | 7.027E-02      | 0.525     |           |
|         | 980.50    |              | -4.257E-01 | 6.960E-01           | 1.086E+00 | 1.001E-01      | -0.392    |           |
|         | PA-234M   |              | 1394.10    |                     | 6.525E-03 | 1.034E+00      | 1.664E+00 | 1.083E+00 |
|         |           | 766.42       |            | 1.787E+01           | 1.488E+01 | 1.925E+01      | 9.789E+00 | 0.928     |
|         |           | 1001.03      | *          | 2.639E-01           | 4.683E+00 | 7.758E+00      | 8.077E-01 | 0.034     |
| U-235   | +         | 89.95        |            | 2.646E+00           | 1.259E+00 | 1.666E+00      | 5.180E-01 | 1.588     |
|         |           | 93.35        |            | 2.370E+00           | 1.059E+00 | 1.132E+00      | 3.190E-01 | 2.095     |
|         |           | 105.00       |            | 6.448E-01           | 9.157E-01 | 1.551E+00      | 4.625E-01 | 0.416     |
|         | +         | 143.76       | *          | 1.385E-01           | 1.937E-01 | 3.225E-01      | 5.636E-02 | 0.429     |
|         |           | 163.35       |            | 1.152E-01           | 4.108E-01 | 6.851E-01      | 1.319E-01 | 0.168     |
|         |           | 185.71       |            | 1.701E-01           | 7.297E-02 | 8.990E-02      | 8.588E-03 | 1.892     |
| NP-236  |           | 205.31       |            | 5.087E-01           | 5.102E-01 | 7.729E-01      | 1.528E-01 | 0.658     |
|         |           | 94.67        |            | 2.662E-01           | 1.109E-01 | 1.840E-01      | 1.666E-02 | 1.447     |
|         |           | 98.44        |            | -1.552E-02          | 5.842E-02 | 9.596E-02      | 8.472E-03 | -0.162    |
|         |           | 111.00       |            | -4.520E-02          | 1.157E-01 | 1.916E-01      | 1.611E-02 | -0.236    |
|         |           | 160.31       | *          | -2.960E-02          | 6.835E-02 | 1.107E-01      | 9.877E-03 | -0.267    |



---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| NP-239  |           | 99.55        |     | 1.591E-01           | 1.343E-01 | 2.314E-01      | 2.030E-02 | 0.688   |
|         |           | 117.00       | *   | -1.610E-01          | 1.684E-01 | 2.713E-01      | 2.259E-02 | -0.593  |
|         | +         | 209.75       |     | 2.036E+00           | 9.850E-01 | 1.360E+00      | 1.385E-01 | 1.498   |
|         |           | 228.18       |     | 8.464E-02           | 2.142E-01 | 3.529E-01      | 3.769E-02 | 0.240   |
|         | +         | 277.60       |     | 2.183E-01           | 2.569E-01 | 2.912E-01      | 3.486E-02 | 0.750   |
| AM-241  |           | 334.30       |     | 1.004E+00           | 1.233E+00 | 1.952E+00      | 2.151E-01 | 0.514   |
|         |           | 59.54        | *   | -1.041E-01          | 1.605E-01 | 2.218E-01      | 1.741E-02 | -0.470  |
|         |           | 99.55        |     | 1.638E-01           | 1.381E-01 | 2.381E-01      | 2.089E-02 | 0.688   |
|         |           | 103.76       | *   | -2.609E-02          | 8.279E-02 | 1.380E-01      | 1.187E-02 | -0.189  |
|         |           | 117.00       |     | -1.656E-01          | 1.733E-01 | 2.791E-01      | 2.324E-02 | -0.593  |
| CM-243  | +         | 209.75       |     | 2.007E+00           | 9.710E-01 | 1.340E+00      | 1.365E-01 | 1.498   |
|         |           | 228.18       |     | 8.553E-02           | 2.165E-01 | 3.566E-01      | 3.808E-02 | 0.240   |
|         | +         | 277.60       |     | 2.201E-01           | 2.590E-01 | 2.936E-01      | 3.515E-02 | 0.750   |
|         |           | 798.80       |     | 1.880E-02           | 1.309E-01 | 1.956E-01      | 1.824E-02 | 0.096   |
|         |           | 1036.00      |     | 1.763E-01           | 2.908E-01 | 5.051E-01      | 4.529E-02 | 0.349   |
| AM-246  |           | 1062.04      |     | -2.800E-01          | 2.259E-01 | 3.255E-01      | 2.873E-02 | -0.860  |
|         |           | 1078.86      | *   | -1.474E-02          | 1.356E-01 | 2.207E-01      | 1.926E-02 | -0.067  |
|         | +         | 278.00       |     | 9.055E-01           | 1.066E+00 | 1.209E+00      | 1.449E-01 | 0.749   |
|         |           | 287.40       |     | 1.289E+00           | 1.155E+00 | 1.945E+00      | 2.316E-01 | 0.663   |
|         |           | 402.60       | *   | -7.736E-03          | 3.276E-02 | 5.412E-02      | 5.032E-03 | -0.143  |
| CF-249  |           | 252.85       |     | -1.628E-01          | 7.636E-01 | 1.212E+00      | 1.374E-01 | -0.134  |
|         |           | 333.44       |     | 1.701E-01           | 1.652E-01 | 2.645E-01      | 2.919E-02 | 0.643   |
|         |           | 387.95       | *   | 3.936E-02           | 3.772E-02 | 6.669E-02      | 6.256E-03 | 0.590   |
| CF-251  |           | 176.60       | *   | 2.805E-02           | 1.083E-01 | 1.800E-01      | 1.678E-02 | 0.156   |
|         |           | 227.00       |     | -1.345E-01          | 3.658E-01 | 5.813E-01      | 6.189E-02 | -0.231  |
|         |           | 285.00       |     | -7.657E-01          | 1.679E+00 | 2.603E+00      | 3.107E-01 | -0.294  |

## VAX/VMS Nuclide Identification Report Generated

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
*                               DETECTOR DATA                               *
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630008
* Acquisition date   : 23-JAN-2010 11:47:57 Detector SN#      :
* Detector ID        : GAM16                               Sensitivity      : 5.000
* Geometry           : CAN                               Energy tolerance: 1.500
* Elapsed live time  : 0 02:00:00.00                     Abundance limit : 75.000
* Elapsed real time  : 0 02:00:02.16                     Half life ratio  : 8.000
*****
*                               SAMPLE DATA                               *
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID
* Sample ID          : G244630008                     Analyst initials: MXR1
* Batch Number       : 941639                         Sample Quantity : 1.3522E+02 GRAM
* Recovery           : 1.00000                        Carrier Weight  : 0.00000
*****
*                               QC DATA                               *
*
* Standard Weight    : 0.00000
* CALIB. DATE/TIME   : 16-NOV-2009 11:22:16 MS Isotope      :
* MSD DPM             : 0.000                          MSD Isotope      :
* LCS DPM             : 0.000                          LCS Isotope      :
* LCSD DPM            : 0.000                          LCSD Isotope     :
*****

```

## Combined Activity-MDA Report

## ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act error | MDA<br>(pCi/GRAM ) |           |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 3.278E+01               | 3.315E+00 | 4.821E-01          | 0.000E+00 |
| CD-109  | 3.093E+00               | 9.373E-01 | 1.134E+00          | 0.000E+00 |
| SN-126  | 3.041E-01               | 9.215E-02 | 1.120E-01          | 0.000E+00 |
| HG-203  | 4.981E-02               | 5.745E-02 | 5.983E-02          | 0.000E+00 |
| TL-208  | 6.132E-01               | 9.812E-02 | 5.378E-02          | 0.000E+00 |
| BI-211  | 4.115E+00               | 5.888E-01 | 2.873E-01          | 0.000E+00 |
| BI-212  | 1.251E+00               | 4.330E-01 | 4.291E-01          | 0.000E+00 |
| PB-212  | 1.921E+00               | 2.473E-01 | 7.718E-02          | 0.000E+00 |
| PO-212  | 1.921E+00               | 2.473E-01 | 7.718E-02          | 0.000E+00 |
| BI-214  | 1.311E+00               | 2.065E-01 | 9.878E-02          | 0.000E+00 |
| PB-214  | 1.431E+00               | 2.175E-01 | 1.109E-01          | 0.000E+00 |
| PO-214  | 1.431E+00               | 2.175E-01 | 1.109E-01          | 0.000E+00 |
| PO-216  | 1.921E+00               | 2.473E-01 | 7.718E-02          | 0.000E+00 |
| PO-218  | 1.431E+00               | 2.175E-01 | 1.109E-01          | 0.000E+00 |
| RA-224  | 5.344E+00               | 1.316E+00 | 8.783E-01          | 0.000E+00 |
| RA-226  | 1.311E+00               | 2.065E-01 | 9.878E-02          | 0.000E+00 |
| AC-228  | 2.034E+00               | 3.586E-01 | 1.775E-01          | 0.000E+00 |
| RA-228  | 2.034E+00               | 3.586E-01 | 1.775E-01          | 0.000E+00 |
| TH-228  | 1.950E+00               | 2.510E-01 | 7.834E-02          | 0.000E+00 |
| TH-230  | 1.311E+00               | 2.065E-01 | 9.878E-02          | 0.000E+00 |
| TH-232  | 2.034E+00               | 3.586E-01 | 1.775E-01          | 0.000E+00 |
| TH-234  | 1.586E+00               | 1.635E+00 | 1.752E+00          | 0.000E+00 |
| U-234   | 1.311E+00               | 2.065E-01 | 9.878E-02          | 0.000E+00 |
| NP-237  | 8.930E-01               | 3.253E-01 | 3.610E-01          | 0.000E+00 |
| U-238   | 1.586E+00               | 1.635E+00 | 1.752E+00          | 0.000E+00 |
| AM-243  | 4.141E-01               | 7.281E-02 | 7.756E-02          | 0.000E+00 |
| ANH-511 | 1.465E-01               | 6.433E-02 | 3.858E-02          | 0.000E+00 |

## ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L. Act error<br>) Ided | MDA<br>(pCi/GRAM ) |
|---------|-------------------------------------|--------------------------|--------------------|
|---------|-------------------------------------|--------------------------|--------------------|

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| BE-7    | 1.366E-01  | 2.765E-01 | 4.942E-01 | 0.000E+00 | NOT IDENT. |
| NA-22   | -3.744E-02 | 4.483E-02 | 6.825E-02 | 0.000E+00 | NOT IDENT. |
| NA-24   | 0.000E+00  | 5.963E+05 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| AL-26   | -5.212E-03 | 2.338E-02 | 3.723E-02 | 0.000E+00 | NOT IDENT. |
| TI-44   | 0.000E+00  | 5.358E-02 | 7.054E-02 | 0.000E+00 | FAIL ABUN  |
| SC-46   | -1.588E-02 | 3.417E-02 | 5.640E-02 | 0.000E+00 | FAIL ABUN  |
| V-48    | 2.890E-02  | 6.607E-02 | 1.170E-01 | 0.000E+00 | NOT IDENT. |
| CR-51   | 9.744E-02  | 3.426E-01 | 5.804E-01 | 0.000E+00 | NOT IDENT. |
| MN-52   | -4.313E-02 | 1.725E-01 | 2.701E-01 | 0.000E+00 | NOT IDENT. |
| MN-54   | 3.239E-02  | 3.152E-02 | 5.887E-02 | 0.000E+00 | NOT IDENT. |
| CO-56   | -2.540E-02 | 3.542E-02 | 5.755E-02 | 0.000E+00 | NOT IDENT. |
| CO-57   | 7.677E-03  | 2.131E-02 | 3.873E-02 | 0.000E+00 | NOT IDENT. |
| CO-58   | -4.688E-02 | 3.438E-02 | 5.224E-02 | 0.000E+00 | NOT IDENT. |
| FE-59   | 1.061E-02  | 8.618E-02 | 1.471E-01 | 0.000E+00 | NOT IDENT. |
| CO-60   | -5.131E-02 | 4.149E-02 | 5.861E-02 | 0.000E+00 | NOT IDENT. |
| ZN-65   | -2.036E-02 | 1.010E-01 | 1.437E-01 | 0.000E+00 | NOT IDENT. |
| GE-68   | -2.641E-01 | 1.160E+00 | 1.921E+00 | 0.000E+00 | NOT IDENT. |
| AS-73   | 9.129E-01  | 7.070E-01 | 1.273E+00 | 0.000E+00 | NOT IDENT. |
| AS-74   | -8.136E-02 | 8.930E-02 | 1.354E-01 | 0.000E+00 | NOT IDENT. |
| SE-75   | 4.201E-02  | 4.119E-02 | 6.655E-02 | 0.000E+00 | NOT IDENT. |
| BR-77   | 5.883E+00  | 8.908E+00 | 1.599E+01 | 0.000E+00 | FAIL ABUN  |
| SR-82   | -2.623E-01 | 3.727E-01 | 5.761E-01 | 0.000E+00 | NOT IDENT. |
| RB-83   | 4.813E-02  | 6.163E-02 | 1.114E-01 | 0.000E+00 | NOT IDENT. |
| RB-84   | -2.791E-02 | 5.903E-02 | 9.732E-02 | 0.000E+00 | NOT IDENT. |
| KR-85   | 5.831E+00  | 6.212E+00 | 1.023E+01 | 0.000E+00 | NOT IDENT. |
| SR-85   | 2.986E-02  | 3.181E-02 | 5.240E-02 | 0.000E+00 | NOT IDENT. |
| RB-86   | 3.504E-01  | 7.353E-01 | 1.297E+00 | 0.000E+00 | NOT IDENT. |
| Y-88    | -9.783E-03 | 2.248E-02 | 3.315E-02 | 0.000E+00 | NOT IDENT. |
| ZR-88   | -2.362E-02 | 2.729E-02 | 4.542E-02 | 0.000E+00 | NOT IDENT. |
| Y-91    | -5.294E+00 | 1.915E+01 | 3.130E+01 | 0.000E+00 | NOT IDENT. |
| NB-94   | 2.584E-02  | 3.260E-02 | 5.754E-02 | 0.000E+00 | NOT IDENT. |
| NB-95   | 4.918E-02  | 4.089E-02 | 6.720E-02 | 0.000E+00 | NOT IDENT. |
| NB-95M  | 5.824E-02  | 1.148E-01 | 1.804E-01 | 0.000E+00 | NOT IDENT. |
| ZR-95   | 5.474E-02  | 6.705E-02 | 1.184E-01 | 0.000E+00 | NOT IDENT. |
| NB-97   | 0.000E+00  | 8.138E+04 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| ZR-97   | 0.000E+00  | 1.431E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| MO-99   | 1.151E+01  | 1.013E+01 | 1.827E+01 | 0.000E+00 | NOT IDENT. |
| TC-99M  | 0.000E+00  | 2.354E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | 1.529E-02  | 2.833E-02 | 4.996E-02 | 0.000E+00 | NOT IDENT. |
| RH-102  | -5.811E-03 | 2.554E-02 | 4.351E-02 | 0.000E+00 | FAIL ABUN  |
| RU-103  | -7.368E-03 | 3.344E-02 | 5.666E-02 | 0.000E+00 | FAIL ABUN  |
| RH-106  | 6.285E-02  | 2.910E-01 | 4.996E-01 | 0.000E+00 | FAIL ABUN  |
| RU-106  | 6.285E-02  | 2.909E-01 | 4.996E-01 | 0.000E+00 | FAIL ABUN  |
| AG-108M | -1.066E-02 | 2.935E-02 | 5.001E-02 | 0.000E+00 | NOT IDENT. |
| AG-110M | -1.157E-02 | 3.378E-02 | 5.520E-02 | 0.000E+00 | NOT IDENT. |
| IN-111  | -3.366E-01 | 9.661E-01 | 1.426E+00 | 0.000E+00 | NOT IDENT. |
| IN-113M | -2.608E-02 | 3.987E-02 | 6.740E-02 | 0.000E+00 | NOT IDENT. |
| SN-113  | -2.608E-02 | 3.987E-02 | 6.740E-02 | 0.000E+00 | NOT IDENT. |
| IN-114M | 5.689E-02  | 1.724E-01 | 2.729E-01 | 0.000E+00 | NOT IDENT. |
| CD-115  | 1.354E+00  | 8.948E+00 | 1.552E+01 | 0.000E+00 | NOT IDENT. |
| SN-117M | 4.951E-03  | 4.582E-02 | 8.105E-02 | 0.000E+00 | NOT IDENT. |
| SB-122  | -7.131E-01 | 1.771E+00 | 2.925E+00 | 0.000E+00 | NOT IDENT. |
| I-123   | 0.000E+00  | 4.105E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TE-123M | 1.481E-02  | 2.375E-02 | 4.285E-02 | 0.000E+00 | NOT IDENT. |
| I-124   | -7.927E-01 | 7.314E-01 | 9.292E-01 | 0.000E+00 | FAIL ABUN  |
| SB-124  | 1.680E-02  | 5.936E-02 | 1.056E-01 | 0.000E+00 | FAIL ABUN  |
| SB-125  | -1.286E-02 | 8.032E-02 | 1.389E-01 | 0.000E+00 | FAIL ABUN  |
| TE-125M | -1.040E+00 | 7.556E+00 | 1.357E+01 | 0.000E+00 | NOT IDENT. |
| I-126   | -1.490E-01 | 1.655E-01 | 2.558E-01 | 0.000E+00 | NOT IDENT. |
| SB-126  | -2.356E-02 | 1.311E-01 | 2.048E-01 | 0.000E+00 | FAIL ABUN  |
| SB-127  | -8.529E-02 | 1.191E+00 | 1.980E+00 | 0.000E+00 | NOT IDENT. |
| XE-127  | 1.175E-02  | 3.994E-02 | 6.995E-02 | 0.000E+00 | NOT IDENT. |
| I-131   | 1.929E-02  | 9.634E-02 | 1.726E-01 | 0.000E+00 | NOT IDENT. |
| TE-132  | 2.422E-01  | 6.253E-01 | 1.088E+00 | 0.000E+00 | NOT IDENT. |
| BA-133  | 3.487E-02  | 3.946E-02 | 6.571E-02 | 0.000E+00 | NOT IDENT. |
| I-133   | 0.000E+00  | 4.942E+03 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-134  | 0.000E+00  | 6.307E-02 | 9.531E-02 | 0.000E+00 | FAIL ABUN  |
| CS-135  | 1.489E-01  | 1.508E-01 | 2.417E-01 | 0.000E+00 | NOT IDENT. |
| I-135   | 0.000E+00  | 3.677E+15 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-136  | -6.158E-02 | 1.057E-01 | 1.698E-01 | 0.000E+00 | FAIL ABUN  |
| BA-137M | 6.615E-03  | 3.287E-02 | 5.606E-02 | 0.000E+00 | NOT IDENT. |
| CS-137  | 6.992E-03  | 3.475E-02 | 5.926E-02 | 0.000E+00 | NOT IDENT. |
| CE-139  | 2.331E-03  | 2.588E-02 | 4.559E-02 | 0.000E+00 | NOT IDENT. |
| BA-140  | -1.828E-01 | 2.489E-01 | 3.912E-01 | 0.000E+00 | NOT IDENT. |
| LA-140  | -1.118E-01 | 7.454E-02 | 9.446E-02 | 0.000E+00 | FAIL ABUN  |
| CE-141  | 3.256E-02  | 5.360E-02 | 9.708E-02 | 0.000E+00 | NOT IDENT. |
| CE-143  | 0.000E+00  | 1.644E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CE-144  | 6.060E-02  | 1.831E-01 | 2.976E-01 | 0.000E+00 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PM-144  | 2.381E-03  | 3.218E-02 | 5.408E-02 | 0.000E+00 | NOT IDENT. |
| PR-144  | 1.613E-01  | 2.181E+00 | 3.664E+00 | 0.000E+00 | NOT IDENT. |
| PM-146  | 7.455E-03  | 3.950E-02 | 6.946E-02 | 0.000E+00 | NOT IDENT. |
| ND-147  | -2.664E-01 | 4.935E-01 | 8.085E-01 | 0.000E+00 | FAIL ABUN  |
| PM-149  | -3.096E+01 | 8.252E+01 | 1.355E+02 | 0.000E+00 | NOT IDENT. |
| EU-152  | -3.308E-02 | 8.359E-02 | 1.403E-01 | 0.000E+00 | FAIL ABUN  |
| GD-153  | -8.795E-02 | 7.271E-02 | 1.096E-01 | 0.000E+00 | FAIL ABUN  |
| EU-154  | -9.950E-02 | 1.247E-01 | 1.903E-01 | 0.000E+00 | NOT IDENT. |
| EU-155  | 6.764E-03  | 9.160E-02 | 1.662E-01 | 0.000E+00 | FAIL ABUN  |
| TB-160  | -1.322E-01 | 1.272E-01 | 1.983E-01 | 0.000E+00 | FAIL ABUN  |
| HO-166M | 9.463E-03  | 5.692E-02 | 9.618E-02 | 0.000E+00 | FAIL ABUN  |
| TM-171  | -7.360E+00 | 2.623E+01 | 3.983E+01 | 0.000E+00 | NOT IDENT. |
| LU-176  | -2.428E-02 | 2.242E-02 | 3.454E-02 | 0.000E+00 | FAIL ABUN  |
| LU-177  | 0.000E+00  | 1.344E+00 | 1.929E+00 | 0.000E+00 | FAIL ABUN  |
| LU-177M | -1.278E-01 | 1.766E-01 | 2.548E-01 | 0.000E+00 | FAIL ABUN  |
| HF-181  | -7.329E-03 | 3.601E-02 | 6.134E-02 | 0.000E+00 | NOT IDENT. |
| W-181   | -2.975E-01 | 3.352E-01 | 4.909E-01 | 0.000E+00 | NOT IDENT. |
| TA-182  | 1.426E-01  | 2.049E-01 | 3.598E-01 | 0.000E+00 | FAIL ABUN  |
| RE-183  | -2.710E-02 | 9.279E-02 | 1.610E-01 | 0.000E+00 | FAIL ABUN  |
| RE-184  | -4.338E-02 | 1.993E-01 | 3.343E-01 | 0.000E+00 | NOT IDENT. |
| OS-185  | -1.723E-02 | 3.904E-02 | 6.320E-02 | 0.000E+00 | NOT IDENT. |
| RE-188  | 2.042E-01  | 1.477E-01 | 2.728E-01 | 0.000E+00 | NOT IDENT. |
| W-188   | -8.039E+00 | 7.779E+00 | 1.059E+01 | 0.000E+00 | FAIL ABUN  |
| IR-192  | -1.958E-03 | 3.240E-02 | 5.380E-02 | 0.000E+00 | FAIL ABUN  |
| AU-195  | 1.252E-01  | 1.885E-01 | 3.438E-01 | 0.000E+00 | FAIL ABUN  |
| TL-200  | 0.000E+00  | 3.644E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TL-201  | 1.880E+00  | 5.942E+00 | 1.056E+01 | 0.000E+00 | NOT IDENT. |
| TL-202  | 5.981E-02  | 6.330E-02 | 1.162E-01 | 0.000E+00 | NOT IDENT. |
| BI-207  | 7.425E-03  | 5.056E-02 | 8.677E-02 | 0.000E+00 | FAIL ABUN  |
| TL-207  | 6.894E-02  | 6.578E-01 | 9.800E-01 | 0.000E+00 | FAIL ABUN  |
| PO-209  | 3.974E-01  | 7.099E+00 | 1.229E+01 | 0.000E+00 | NOT IDENT. |
| BI-210  | 2.707E+00  | 3.272E+00 | 5.799E+00 | 0.000E+00 | NOT IDENT. |
| PB-210  | 2.707E+00  | 3.272E+00 | 5.799E+00 | 0.000E+00 | NOT IDENT. |
| PO-210  | 2.707E+00  | 3.270E+00 | 5.799E+00 | 0.000E+00 | NOT IDENT. |
| PB-211  | -5.597E-01 | 9.874E-01 | 1.358E+00 | 0.000E+00 | NOT IDENT. |
| PO-215  | 6.894E-02  | 6.578E-01 | 9.800E-01 | 0.000E+00 | FAIL ABUN  |
| RN-219  | 8.156E-02  | 3.607E-01 | 6.415E-01 | 0.000E+00 | FAIL ABUN  |
| RN-220  | 5.909E+00  | 2.270E+01 | 3.955E+01 | 0.000E+00 | NOT IDENT. |
| RA-223  | 6.894E-02  | 6.578E-01 | 9.800E-01 | 0.000E+00 | FAIL ABUN  |
| AC-227  | -6.873E-02 | 3.438E-01 | 5.768E-01 | 0.000E+00 | FAIL ABUN  |
| TH-227  | -6.873E-02 | 3.439E-01 | 5.768E-01 | 0.000E+00 | FAIL ABUN  |
| TH-229  | -1.828E-02 | 4.436E-01 | 7.683E-01 | 0.000E+00 | FAIL ABUN  |
| PA-231  | -4.904E-01 | 1.397E+00 | 2.298E+00 | 0.000E+00 | FAIL ABUN  |
| TH-231  | 6.894E-02  | 6.578E-01 | 9.800E-01 | 0.000E+00 | FAIL ABUN  |
| U-231   | -4.085E-01 | 9.073E-01 | 1.452E+00 | 0.000E+00 | FAIL ABUN  |
| PA-233  | 4.308E-02  | 6.075E-02 | 1.053E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234  | -5.685E-02 | 2.784E-01 | 4.684E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234M | 2.639E-01  | 4.590E+00 | 7.831E+00 | 0.000E+00 | NOT IDENT. |
| U-235   | 1.385E-01  | 1.899E-01 | 3.373E-01 | 0.000E+00 | FAIL ABUN  |
| NP-236  | -2.960E-02 | 6.698E-02 | 1.155E-01 | 0.000E+00 | NOT IDENT. |
| NP-239  | -1.610E-01 | 1.651E-01 | 2.847E-01 | 0.000E+00 | FAIL ABUN  |
| AM-241  | -1.041E-01 | 1.573E-01 | 2.356E-01 | 0.000E+00 | NOT IDENT. |
| CM-243  | -2.609E-02 | 8.114E-02 | 1.452E-01 | 0.000E+00 | FAIL ABUN  |
| AM-246  | -1.474E-02 | 1.329E-01 | 2.225E-01 | 0.000E+00 | NOT IDENT. |
| CM-247  | -7.736E-03 | 3.211E-02 | 5.557E-02 | 0.000E+00 | FAIL ABUN  |
| CF-249  | 3.936E-02  | 3.697E-02 | 6.851E-02 | 0.000E+00 | NOT IDENT. |
| CF-251  | 2.805E-02  | 1.061E-01 | 1.876E-01 | 0.000E+00 | NOT IDENT. |

VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 13:51:01.67

```

*****
*                               GEL Laboratories LLC                      *
*                               2040 Savage Road                        *
*                               Charleston, SC 29414                    *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630008.CNF;1
Sample date       : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 11:47:57
Sample ID        : G244630008      Sample quantity   : 1.35220E+02 GRAM
Detector name    : GAM16           Detector geometry: CAN
Elapsed live time: 0 02:00:00.00   Elapsed real time: 0 02:00:02.16  0.0%
Energy tolerance : 1.50000 keV     Analyst Initials : MXR1
Abundance limit  : 75.00000         Sensitivity      : 5.00000
Batch ID        : 941639            Detector SN#    :
Matrix Spike ID  :                  LCS ID           : 1032-A
*****

```

Nuclide Line Activity Report

Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| K-40    | 1460.81 | 1522  | 10.67* | 1.208E+00 | 3.278E+01               | 3.278E+01              | 10.32             |
| CD-109  | 88.03   | 254   | 3.72*  | 6.258E+00 | 3.025E+00               | 3.093E+00              | 30.92             |
| SN-126  | 64.28   | 77    | 9.60   | 3.558E+00 | 6.276E-01               | 6.276E-01              | 104.78            |
|         | 86.94   | 254   | 8.90   | 6.258E+00 | 1.264E+00               | 1.264E+00              | 50.91             |
|         | 87.57   | 254   | 37.00* | 6.258E+00 | 3.041E-01               | 3.041E-01              | 30.92             |
| HG-203  | 70.83   | ----- | 4.75   | 4.611E+00 | -----                   | Line Not Found         | -----             |
|         | 72.87   | ----- | 8.00   | 4.872E+00 | -----                   | Line Not Found         | -----             |
|         | 82.60   | 98    | 3.55   | 6.005E+00 | 1.283E+00               | 1.604E+00              | 81.07             |
|         | 279.20  | 52    | 77.30* | 4.688E+00 | 3.983E-02               | 4.981E-02              | 117.70            |
| TL-208  | 277.35  | 52    | 6.80   | 4.688E+00 | 4.527E-01               | 4.527E-01              | 118.01            |
|         | 510.84  | 156   | 21.60  | 2.964E+00 | 6.785E-01               | 6.785E-01              | 45.56             |
|         | 583.14  | 496   | 84.20* | 2.668E+00 | 6.132E-01               | 6.132E-01              | 16.33             |
|         | 860.37  | 89    | 12.46  | 1.919E+00 | 1.037E+00               | 1.037E+00              | 35.27             |
| BI-211  | 72.87   | ----- | 1.27   | 4.872E+00 | -----                   | Line Not Found         | -----             |
|         | 351.07  | 756   | 12.94* | 3.941E+00 | 4.115E+00               | 4.115E+00              | 14.60             |
| BI-212  | 727.18  | 118   | 11.80* | 2.221E+00 | 1.251E+00               | 1.251E+00              | 35.32             |
|         | 785.46  | ----- | 1.97   | 2.079E+00 | -----                   | Line Not Found         | -----             |
|         | 1620.62 | 24    | 2.75   | 1.116E+00 | 2.132E+00               | 2.132E+00              | 84.28             |
| PB-212  | 74.81   | 503   | 10.70  | 5.110E+00 | 2.554E+00               | 2.554E+00              | 20.23             |
|         | 77.11   | 768   | 18.00  | 5.360E+00 | 2.210E+00               | 2.210E+00              | 13.40             |
|         | 87.30   | 254   | 8.00   | 6.258E+00 | 1.406E+00               | 1.406E+00              | 32.50             |
|         | 238.63  | 1613  | 44.60* | 5.226E+00 | 1.921E+00               | 1.921E+00              | 13.13             |
|         | 300.09  | 106   | 3.41   | 4.435E+00 | 1.944E+00               | 1.944E+00              | 46.21             |
| PO-212  | 74.81   | 503   | 10.70  | 5.110E+00 | 2.554E+00               | 2.554E+00              | 20.23             |
|         | 77.11   | 768   | 18.00  | 5.360E+00 | 2.210E+00               | 2.210E+00              | 13.40             |
|         | 87.30   | 254   | 8.00   | 6.258E+00 | 1.406E+00               | 1.406E+00              | 32.50             |
|         | 115.19  | ----- | 0.60   | 7.166E+00 | -----                   | Line Not Found         | -----             |
|         | 238.63  | 1613  | 44.60* | 5.226E+00 | 1.921E+00               | 1.921E+00              | 13.13             |
|         | 300.09  | 106   | 3.41   | 4.435E+00 | 1.944E+00               | 1.944E+00              | 46.21             |
| BI-214  | 609.31  | 563   | 46.30* | 2.575E+00 | 1.311E+00               | 1.311E+00              | 16.07             |
|         | 1120.29 | 147   | 15.10  | 1.517E+00 | 1.784E+00               | 1.784E+00              | 32.85             |
|         | 1764.49 | 113   | 15.80  | 1.056E+00 | 1.887E+00               | 1.887E+00              | 22.16             |

Nuclide Type:

| Nuclide | Energy  | Area | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|------|--------|-----------|-------------------------|------------------------|-------------------|
| PB-214  | 74.81   | 503  | 6.21   | 5.110E+00 | 4.401E+00               | 4.401E+00              | 19.41             |
|         | 77.11   | 768  | 10.50  | 5.360E+00 | 3.789E+00               | 3.789E+00              | 15.42             |
|         | 87.30   | 254  | 4.67   | 6.258E+00 | 2.409E+00               | 2.409E+00              | 31.87             |
|         | 241.98  | 394  | 7.49   | 5.180E+00 | 2.818E+00               | 2.818E+00              | 25.75             |
|         | 295.21  | 468  | 19.20  | 4.487E+00 | 1.508E+00               | 1.508E+00              | 18.24             |
| PO-214  | 351.92  | 756  | 37.20* | 3.941E+00 | 1.431E+00               | 1.431E+00              | 15.51             |
|         | 74.81   | 503  | 6.21   | 5.110E+00 | 4.401E+00               | 4.401E+00              | 19.41             |
|         | 77.11   | 768  | 10.50  | 5.360E+00 | 3.789E+00               | 3.789E+00              | 15.42             |
|         | 87.30   | 254  | 4.67   | 6.258E+00 | 2.409E+00               | 2.409E+00              | 31.87             |
|         | 241.98  | 394  | 7.49   | 5.180E+00 | 2.818E+00               | 2.818E+00              | 25.75             |
| PO-216  | 295.21  | 468  | 19.20  | 4.487E+00 | 1.508E+00               | 1.508E+00              | 18.24             |
|         | 351.92  | 756  | 37.20* | 3.941E+00 | 1.431E+00               | 1.431E+00              | 15.51             |
|         | 74.81   | 503  | 10.70  | 5.110E+00 | 2.554E+00               | 2.554E+00              | 20.23             |
|         | 77.11   | 768  | 18.00  | 5.360E+00 | 2.210E+00               | 2.210E+00              | 13.40             |
|         | 87.30   | 254  | 8.00   | 6.258E+00 | 1.406E+00               | 1.406E+00              | 32.50             |
| PO-218  | 238.63  | 1613 | 44.60* | 5.226E+00 | 1.921E+00               | 1.921E+00              | 13.13             |
|         | 300.09  | 106  | 3.41   | 4.435E+00 | 1.944E+00               | 1.944E+00              | 46.21             |
|         | 74.81   | 503  | 6.21   | 5.110E+00 | 4.401E+00               | 4.401E+00              | 19.41             |
|         | 77.11   | 768  | 10.50  | 5.360E+00 | 3.789E+00               | 3.789E+00              | 15.42             |
|         | 87.30   | 254  | 4.67   | 6.258E+00 | 2.409E+00               | 2.409E+00              | 31.87             |
| RA-224  | 241.98  | 394  | 7.49   | 5.180E+00 | 2.818E+00               | 2.818E+00              | 25.75             |
|         | 295.21  | 468  | 19.20  | 4.487E+00 | 1.508E+00               | 1.508E+00              | 18.24             |
|         | 351.92  | 756  | 37.20* | 3.941E+00 | 1.431E+00               | 1.431E+00              | 15.51             |
|         | 240.98  | 394  | 3.95*  | 5.180E+00 | 5.344E+00               | 5.344E+00              | 25.14             |
|         | 609.31  | 563  | 46.30* | 2.575E+00 | 1.311E+00               | 1.311E+00              | 16.07             |
| AC-228  | 1120.29 | 147  | 15.10  | 1.517E+00 | 1.784E+00               | 1.784E+00              | 32.85             |
|         | 1764.49 | 113  | 15.80  | 1.056E+00 | 1.887E+00               | 1.887E+00              | 22.16             |
|         | 338.32  | 290  | 11.40  | 4.059E+00 | 1.742E+00               | 1.742E+00              | 46.21             |
|         | 911.07  | 370  | 27.70* | 1.825E+00 | 2.034E+00               | 2.034E+00              | 17.99             |
|         | 969.11  | 244  | 16.60  | 1.727E+00 | 2.360E+00               | 2.360E+00              | 29.08             |
| RA-228  | 338.32  | 290  | 11.40  | 4.059E+00 | 1.742E+00               | 1.742E+00              | 46.21             |
|         | 911.07  | 370  | 27.70* | 1.825E+00 | 2.034E+00               | 2.034E+00              | 17.99             |
|         | 969.11  | 244  | 16.60  | 1.727E+00 | 2.360E+00               | 2.360E+00              | 29.08             |
|         | 74.81   | 503  | 10.70  | 5.110E+00 | 2.554E+00               | 2.593E+00              | 17.98             |
|         | 77.11   | 768  | 18.00  | 5.360E+00 | 2.210E+00               | 2.244E+00              | 13.40             |
| TH-228  | 87.30   | 254  | 8.00   | 6.258E+00 | 1.406E+00               | 1.428E+00              | 30.92             |
|         | 238.63  | 1613 | 44.60* | 5.226E+00 | 1.921E+00               | 1.950E+00              | 13.13             |
|         | 300.09  | 106  | 3.41   | 4.435E+00 | 1.944E+00               | 1.973E+00              | 74.43             |
|         | 609.31  | 563  | 46.30* | 2.575E+00 | 1.311E+00               | 1.311E+00              | 16.07             |
|         | 1120.29 | 147  | 15.10  | 1.517E+00 | 1.784E+00               | 1.784E+00              | 32.85             |
| TH-230  | 1764.49 | 113  | 15.80  | 1.056E+00 | 1.887E+00               | 1.887E+00              | 22.16             |
|         | 338.32  | 290  | 11.40  | 4.059E+00 | 1.742E+00               | 1.742E+00              | 22.52             |
|         | 911.07  | 370  | 27.70* | 1.825E+00 | 2.034E+00               | 2.034E+00              | 17.99             |
|         | 969.11  | 244  | 16.60  | 1.727E+00 | 2.360E+00               | 2.360E+00              | 29.08             |
|         | 63.29   | 77   | 3.80*  | 3.558E+00 | 1.586E+00               | 1.586E+00              | 105.22            |
| TH-232  | 92.38   | 253  | 5.41   | 6.597E+00 | 1.972E+00               | 1.972E+00              | 39.22             |
|         | 609.31  | 563  | 46.30* | 2.575E+00 | 1.311E+00               | 1.311E+00              | 16.07             |
|         | 1120.29 | 147  | 15.10  | 1.517E+00 | 1.784E+00               | 1.784E+00              | 32.85             |
|         | 1764.49 | 113  | 15.80  | 1.056E+00 | 1.887E+00               | 1.887E+00              | 22.16             |
|         |         |      |        |           |                         |                        |                   |
| TH-234  |         |      |        |           |                         |                        |                   |
|         |         |      |        |           |                         |                        |                   |
|         |         |      |        |           |                         |                        |                   |
|         |         |      |        |           |                         |                        |                   |
|         |         |      |        |           |                         |                        |                   |
| U-234   |         |      |        |           |                         |                        |                   |
|         |         |      |        |           |                         |                        |                   |
|         |         |      |        |           |                         |                        |                   |
|         |         |      |        |           |                         |                        |                   |
|         |         |      |        |           |                         |                        |                   |

Nuclide Type:

| Nuclide | Energy | Area  | %Abn    | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|--------|-------|---------|-----------|-------------------------|------------------------|-------------------|
| NP-237  | 86.50  | 254   | 12.60*  | 6.258E+00 | 8.930E-01               | 8.930E-01              | 37.17             |
|         | 95.87  | ----- | 2.60    | 6.742E+00 | -----                   | Line Not Found         | -----             |
| U-238   | 63.29  | 77    | 3.80*   | 3.558E+00 | 1.586E+00               | 1.586E+00              | 105.22            |
|         | 92.38  | 253   | 5.41    | 6.597E+00 | 1.972E+00               | 1.972E+00              | 35.86             |
| AM-243  | 74.67  | 503   | 66.00*  | 5.110E+00 | 4.141E-01               | 4.141E-01              | 17.94             |
|         | 86.72  | 254   | 0.34    | 6.258E+00 | 3.349E+01               | 3.349E+01              | 30.92             |
|         | 117.66 | ----- | 0.55    | 7.175E+00 | -----                   | Line Not Found         | -----             |
|         | 142.18 | ----- | 0.13    | 6.968E+00 | -----                   | Line Not Found         | -----             |
| ANH-511 | 511.00 | 156   | 100.00* | 2.964E+00 | 1.465E-01               | 1.465E-01              | 44.79             |

Flag: "\*" = Keyline

Summary of Nuclide Activity  
Sample ID : G244630008

Page : 4  
Acquisition date : 23-JAN-2010 11:47:57

Total number of lines in spectrum 40  
Number of unidentified lines 4  
Number of lines tentatively identified by NID 36 90.00%

Nuclide Type :

| Nuclide          | Hlife     | Decay | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | Decay Corr<br>2-Sigma Error | 2-Sigma<br>%Error | Flags |
|------------------|-----------|-------|-------------------------|------------------------|-----------------------------|-------------------|-------|
| K-40             | 1.28E+09Y | 1.00  | 3.278E+01               | 3.278E+01              | 0.338E+01                   | 10.32             |       |
| CD-109           | 464.00D   | 1.02  | 3.025E+00               | 3.093E+00              | 0.956E+00                   | 30.92             |       |
| SN-126           | 1.00E+05Y | 1.00  | 3.041E-01               | 3.041E-01              | 0.940E-01                   | 30.92             |       |
| HG-203           | 46.60D    | 1.25  | 3.983E-02               | 4.981E-02              | 5.862E-02                   | 117.70            |       |
| TL-208           | 1.41E+10Y | 1.00  | 6.132E-01               | 6.132E-01              | 1.001E-01                   | 16.33             |       |
| BI-211           | 7.04E+08Y | 1.00  | 4.115E+00               | 4.115E+00              | 0.601E+00                   | 14.60             |       |
| BI-212           | 1.41E+10Y | 1.00  | 1.251E+00               | 1.251E+00              | 0.442E+00                   | 35.32             |       |
| PB-212           | 1.41E+10Y | 1.00  | 1.921E+00               | 1.921E+00              | 0.252E+00                   | 13.13             |       |
| PO-212           | 1.41E+10Y | 1.00  | 1.921E+00               | 1.921E+00              | 0.252E+00                   | 13.13             |       |
| BI-214           | 1600.00Y  | 1.00  | 1.311E+00               | 1.311E+00              | 0.211E+00                   | 16.07             |       |
| PB-214           | 1600.00Y  | 1.00  | 1.431E+00               | 1.431E+00              | 0.222E+00                   | 15.51             |       |
| PO-214           | 1600.00Y  | 1.00  | 1.431E+00               | 1.431E+00              | 0.222E+00                   | 15.51             |       |
| PO-216           | 1.41E+10Y | 1.00  | 1.921E+00               | 1.921E+00              | 0.252E+00                   | 13.13             |       |
| PO-218           | 1600.00Y  | 1.00  | 1.431E+00               | 1.431E+00              | 0.222E+00                   | 15.51             |       |
| RA-224           | 1.41E+10Y | 1.00  | 5.344E+00               | 5.344E+00              | 1.343E+00                   | 25.14             |       |
| RA-226           | 1600.00Y  | 1.00  | 1.311E+00               | 1.311E+00              | 0.211E+00                   | 16.07             |       |
| AC-228           | 1.41E+10Y | 1.00  | 2.034E+00               | 2.034E+00              | 0.366E+00                   | 17.99             |       |
| RA-228           | 1.41E+10Y | 1.00  | 2.034E+00               | 2.034E+00              | 0.366E+00                   | 17.99             |       |
| TH-228           | 1.91Y     | 1.02  | 1.921E+00               | 1.950E+00              | 0.256E+00                   | 13.13             |       |
| TH-230           | 4.47E+09Y | 1.00  | 1.311E+00               | 1.311E+00              | 0.211E+00                   | 16.07             |       |
| TH-232           | 1.41E+10Y | 1.00  | 2.034E+00               | 2.034E+00              | 0.366E+00                   | 17.99             |       |
| TH-234           | 4.47E+09Y | 1.00  | 1.586E+00               | 1.586E+00              | 1.668E+00                   | 105.22            |       |
| U-234            | 4.47E+09Y | 1.00  | 1.311E+00               | 1.311E+00              | 0.211E+00                   | 16.07             |       |
| NP-237           | 2.14E+06Y | 1.00  | 8.930E-01               | 8.930E-01              | 3.320E-01                   | 37.17             |       |
| U-238            | 4.47E+09Y | 1.00  | 1.586E+00               | 1.586E+00              | 1.668E+00                   | 105.22            |       |
| AM-243           | 7380.00Y  | 1.00  | 4.141E-01               | 4.141E-01              | 0.743E-01                   | 17.94             |       |
| ANH-511          | 1.00E+09Y | 1.00  | 1.465E-01               | 1.465E-01              | 0.656E-01                   | 44.79             |       |
| Total Activity : |           |       | 7.542E+01               | 7.553E+01              |                             |                   |       |

Grand Total Activity : 7.542E+01 7.553E+01

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit



Unidentified Energy Lines  
Sample ID : G244630008

Page : 5  
Acquisition date : 23-JAN-2010 11:47:57

| It | Energy  | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | %Eff     | Flags |
|----|---------|------|-------|------|---------|------|----|----------|------|----------|-------|
| 4  | 89.93   | 166  | 336   | 0.80 | 180.05  | 178  | 13 | 2.30E-02 | 36.0 | 6.43E+00 | T     |
| 0  | 129.25  | 82   | 389   | 0.94 | 258.69  | 255  | 8  | 1.14E-02 | 85.8 | 7.13E+00 | T     |
| 0  | 185.88  | 203  | 429   | 1.48 | 371.95  | 368  | 10 | 2.82E-02 | 41.8 | 6.14E+00 | T     |
| 0  | 209.30  | 136  | 297   | 1.12 | 418.79  | 415  | 8  | 1.88E-02 | 47.3 | 5.71E+00 | T     |
| 0  | 270.05  | 201  | 209   | 1.26 | 540.29  | 535  | 12 | 2.80E-02 | 32.0 | 4.79E+00 | T     |
| 0  | 327.72  | 74   | 156   | 1.21 | 655.62  | 652  | 8  | 1.03E-02 | 62.3 | 4.15E+00 | T     |
| 0  | 409.61  | 54   | 125   | 2.08 | 819.41  | 814  | 9  | 7.55E-03 | 79.6 | 3.51E+00 | T     |
| 0  | 462.67  | 103  | 103   | 1.14 | 925.52  | 921  | 10 | 1.42E-02 | 41.9 | 3.20E+00 | T     |
| 0  | 768.08  | 70   | 57    | 1.87 | 1536.23 | 1531 | 11 | 9.66E-03 | 48.6 | 2.12E+00 | T     |
| 0  | 794.59  | 85   | 61    | 0.97 | 1589.24 | 1583 | 11 | 1.17E-02 | 41.8 | 2.06E+00 | T     |
| 3  | 964.74  | 60   | 70    | 2.10 | 1929.45 | 1921 | 28 | 8.29E-03 | 60.2 | 1.73E+00 | T     |
| 0  | 1378.37 | 26   | 35    | 0.82 | 2756.42 | 2749 | 11 | 3.55E-03 | 98.8 | 1.27E+00 |       |
| 0  | 1508.47 | 31   | 10    | 3.96 | 3016.49 | 3009 | 12 | 4.36E-03 | 52.5 | 1.18E+00 | T     |
| 0  | 1588.53 | 17   | 21    | 0.65 | 3176.54 | 3172 | 9  | 2.39E-03 | **** | 1.13E+00 |       |
| 0  | 1630.73 | 23   | 12    | 1.41 | 3260.89 | 3255 | 12 | 3.15E-03 | 74.4 | 1.11E+00 |       |
| 0  | 1729.25 | 36   | 6     | 0.78 | 3457.82 | 3451 | 12 | 4.96E-03 | 43.3 | 1.07E+00 |       |

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630008.CNF;1
* Acquisition date   : 23-JAN-2010 11:47:57  Detector SN#      :
* Detector ID        : GAM16                      Sensitivity    : 5.00000
* Geometry           : CAN                      Energy tolerance: 1.50000
* Elapsed live time  : 0 02:00:00.00           Abundance limit  : 75.00000
* Elapsed real time  : 0 02:00:02.16           Half life ratio  : 8.00000
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 8-JAN-2010 12:00:00.  Nuclide Library : SOLID
* Sample ID          : G244630008              Analyst initials: MXR1
* Batch Number       : 941639                  Sample Quantity : 1.35220E+02 GRAM
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 16-NOV-2009 11:22:16.1MS Isotope      :
* MSD ID             :                               MSD Isotope :
* LCS ID             : 1032-A                       LCS Isotope  :
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| K-40    | 3.278E+01              | 3.383E+00 | 4.810E-01         | 4.228E-02 | 68.146  |
| CD-109  | 3.093E+00              | 9.565E-01 | 1.075E+00         | 1.036E-01 | 2.878   |
| SN-126  | 3.041E-01              | 9.403E-02 | 1.061E-01         | 1.018E-02 | 2.865   |
| HG-203  | 4.981E-02              | 5.862E-02 | 5.789E-02         | 7.055E-03 | 0.860   |
| TL-208  | 6.132E-01              | 1.001E-01 | 5.274E-02         | 5.227E-03 | 11.628  |
| BI-211  | 4.115E+00              | 6.008E-01 | 2.791E-01         | 3.051E-02 | 14.744  |
| BI-212  | 1.251E+00              | 4.419E-01 | 4.225E-01         | 4.414E-02 | 2.961   |
| PB-212  | 1.921E+00              | 2.524E-01 | 7.446E-02         | 8.816E-03 | 25.805  |
| PO-212  | 1.921E+00              | 2.524E-01 | 7.446E-02         | 8.816E-03 | 25.805  |
| BI-214  | 1.311E+00              | 2.107E-01 | 9.695E-02         | 1.025E-02 | 13.521  |
| PB-214  | 1.431E+00              | 2.220E-01 | 1.077E-01         | 1.303E-02 | 13.286  |
| PO-214  | 1.431E+00              | 2.220E-01 | 1.077E-01         | 1.303E-02 | 13.286  |
| PO-216  | 1.921E+00              | 2.524E-01 | 7.446E-02         | 8.816E-03 | 25.805  |
| PO-218  | 1.431E+00              | 2.220E-01 | 1.077E-01         | 1.303E-02 | 13.286  |
| RA-224  | 5.344E+00              | 1.343E+00 | 8.475E-01         | 9.340E-02 | 6.305   |
| RA-226  | 1.311E+00              | 2.107E-01 | 9.695E-02         | 1.025E-02 | 13.521  |
| AC-228  | 2.034E+00              | 3.659E-01 | 1.755E-01         | 2.084E-02 | 11.592  |
| RA-228  | 2.034E+00              | 3.659E-01 | 1.755E-01         | 2.084E-02 | 11.592  |

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| TH-228  | 1.950E+00              | 2.562E-01 | 7.558E-02         | 8.949E-03 | 25.805  |
| TH-230  | 1.311E+00              | 2.107E-01 | 9.695E-02         | 1.025E-02 | 13.521  |
| TH-232  | 2.034E+00              | 3.659E-01 | 1.755E-01         | 2.084E-02 | 11.592  |
| TH-234  | 1.586E+00              | 1.668E+00 | 1.652E+00         | 2.881E-01 | 0.960   |
| U-234   | 1.311E+00              | 2.107E-01 | 9.695E-02         | 1.025E-02 | 13.521  |
| NP-237  | 8.930E-01              | 3.320E-01 | 3.421E-01         | 7.767E-02 | 2.610   |
| U-238   | 1.586E+00              | 1.668E+00 | 1.652E+00         | 2.881E-01 | 0.960   |
| AM-243  | 4.141E-01              | 7.430E-02 | 7.332E-02         | 6.070E-03 | 5.648   |
| ANH-511 | 1.465E-01              | 6.564E-02 | 3.774E-02         | 3.590E-03 | 3.883   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| BE-7    | 1.366E-01                          |              | 2.822E-01 | 4.828E-01         | 4.884E-02 | 0.283   |
| NA-22   | -3.744E-02                         |              | 4.574E-02 | 6.792E-02         | 5.651E-03 | -0.551  |
| NA-24   | -3.029E-01                         |              | 3.042E-01 | Half-Life         | too short |         |
| AL-26   | -5.212E-03                         |              | 2.386E-02 | 3.730E-02         | 3.050E-03 | -0.140  |
| TI-44   | 4.079E-01                          | +            | 5.467E-02 | 6.674E-02         | 5.747E-03 | 6.112   |
| SC-46   | -1.588E-02                         |              | 3.487E-02 | 5.575E-02         | 5.270E-03 | -0.285  |
| V-48    | 2.890E-02                          |              | 6.742E-02 | 1.159E-01         | 1.067E-02 | 0.249   |
| CR-51   | 9.744E-02                          |              | 3.496E-01 | 5.630E-01         | 6.582E-02 | 0.173   |
| MN-52   | -4.313E-02                         |              | 1.760E-01 | 2.694E-01         | 2.299E-02 | -0.160  |
| MN-54   | 3.239E-02                          |              | 3.216E-02 | 5.812E-02         | 5.459E-03 | 0.557   |
| CO-56   | -2.540E-02                         |              | 3.615E-02 | 5.683E-02         | 5.347E-03 | -0.447  |
| CO-57   | 7.677E-03                          |              | 2.175E-02 | 3.693E-02         | 3.069E-03 | 0.208   |
| CO-58   | -4.688E-02                         |              | 3.508E-02 | 5.154E-02         | 4.829E-03 | -0.910  |
| FE-59   | 1.061E-02                          |              | 8.794E-02 | 1.460E-01         | 1.357E-02 | 0.073   |
| CO-60   | -5.131E-02                         |              | 4.233E-02 | 5.837E-02         | 4.924E-03 | -0.879  |
| ZN-65   | -2.036E-02                         |              | 1.030E-01 | 1.427E-01         | 1.211E-02 | -0.143  |
| GE-68   | -2.641E-01                         |              | 1.184E+00 | 1.906E+00         | 1.665E-01 | -0.139  |
| AS-73   | 9.129E-01                          |              | 7.214E-01 | 1.197E+00         | 9.132E-02 | 0.763   |
| AS-74   | -8.136E-02                         |              | 9.112E-02 | 1.328E-01         | 1.233E-02 | -0.613  |
| SE-75   | 4.201E-02                          |              | 4.203E-02 | 6.433E-02         | 7.507E-03 | 0.653   |
| BR-77   | 5.883E+00                          |              | 9.089E+00 | 1.565E+01         | 1.487E+00 | 0.376   |
| SR-82   | -2.623E-01                         |              | 3.803E-01 | 5.679E-01         | 5.266E-02 | -0.462  |
| RB-83   | 4.813E-02                          |              | 6.289E-02 | 1.090E-01         | 1.036E-02 | 0.442   |
| RB-84   | -2.791E-02                         |              | 6.024E-02 | 9.617E-02         | 9.086E-03 | -0.290  |
| KR-85   | 5.831E+00                          |              | 6.339E+00 | 1.001E+01         | 9.519E-01 | 0.582   |
| SR-85   | 2.986E-02                          |              | 3.246E-02 | 5.126E-02         | 4.874E-03 | 0.582   |
| RB-86   | 3.504E-01                          |              | 7.503E-01 | 1.286E+00         | 1.124E-01 | 0.272   |
| Y-88    | -9.783E-03                         |              | 2.294E-02 | 3.322E-02         | 2.697E-03 | -0.294  |
| ZR-88   | -2.362E-02                         |              | 2.785E-02 | 4.421E-02         | 4.090E-03 | -0.534  |
| Y-91    | -5.294E+00                         |              | 1.954E+01 | 3.112E+01         | 2.531E+00 | -0.170  |
| NB-94   | 2.584E-02                          |              | 3.327E-02 | 5.662E-02         | 5.119E-03 | 0.456   |
| NB-95   | 4.918E-02                          |              | 4.172E-02 | 6.623E-02         | 6.122E-03 | 0.743   |
| NB-95M  | 5.824E-02                          |              | 1.172E-01 | 1.740E-01         | 2.069E-02 | 0.335   |
| ZR-95   | 5.474E-02                          |              | 6.842E-02 | 1.167E-01         | 1.171E-02 | 0.469   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| NB-97   | -1.294E-02                         |              | 4.152E-02 | Half-Life         | too short |         |
| ZR-97   | 1.333E+00                          |              | 7.300E-01 | Half-Life         | too short |         |
| MO-99   | 1.151E+01                          |              | 1.034E+01 | 1.799E+01         | 2.789E+00 | 0.639   |
| TC-99M  | 2.175E+09                          |              | 1.201E+10 | Half-Life         | too short |         |
| RH-101  | 1.529E-02                          |              | 2.891E-02 | 4.805E-02         | 4.744E-03 | 0.318   |
| RH-102  | -5.811E-03                         |              | 2.606E-02 | 4.251E-02         | 4.040E-03 | -0.137  |
| RU-103  | -7.368E-03                         |              | 3.412E-02 | 5.540E-02         | 8.158E-03 | -0.133  |
| RH-106  | 6.285E-02                          |              | 2.969E-01 | 4.905E-01         | 6.721E-02 | 0.128   |
| RU-106  | 6.285E-02                          |              | 2.968E-01 | 4.905E-01         | 4.485E-02 | 0.128   |
| AG-108M | -1.066E-02                         |              | 2.995E-02 | 4.877E-02         | 4.748E-03 | -0.219  |
| AG-110M | -1.157E-02                         |              | 3.447E-02 | 5.425E-02         | 4.966E-03 | -0.213  |
| IN-111  | -3.366E-01                         |              | 9.858E-01 | 1.377E+00         | 1.533E-01 | -0.244  |
| IN-113M | -2.608E-02                         |              | 4.069E-02 | 6.561E-02         | 6.228E-03 | -0.398  |
| SN-113  | -2.608E-02                         |              | 4.069E-02 | 6.561E-02         | 6.228E-03 | -0.398  |
| IN-114M | 5.689E-02                          |              | 1.760E-01 | 2.622E-01         | 2.536E-02 | 0.217   |
| CD-115  | 1.354E+00                          |              | 9.131E+00 | 1.519E+01         | 1.442E+00 | 0.089   |
| SN-117M | 4.951E-03                          |              | 4.676E-02 | 7.764E-02         | 6.895E-03 | 0.064   |
| SB-122  | -7.131E-01                         |              | 1.808E+00 | 2.866E+00         | 2.697E-01 | -0.249  |
| I-123   | 2.560E+00                          |              | 2.094E+00 | Half-Life         | too short |         |
| TE-123M | 1.481E-02                          |              | 2.423E-02 | 4.104E-02         | 3.671E-03 | 0.361   |
| I-124   | -7.927E-01                         |              | 7.464E-01 | 9.118E-01         | 8.433E-02 | -0.869  |
| SB-124  | 1.680E-02                          |              | 6.057E-02 | 1.057E-01         | 9.254E-03 | 0.159   |
| SB-125  | -1.286E-02                         |              | 8.196E-02 | 1.354E-01         | 1.294E-02 | -0.095  |
| TE-125M | -1.040E+00                         |              | 7.710E+00 | 1.291E+01         | 1.314E+00 | -0.081  |
| I-126   | -1.490E-01                         |              | 1.688E-01 | 2.515E-01         | 2.237E-02 | -0.592  |
| SB-126  | -2.356E-02                         |              | 1.338E-01 | 2.016E-01         | 1.835E-02 | -0.117  |
| SB-127  | -8.529E-02                         |              | 1.215E+00 | 1.947E+00         | 2.262E-01 | -0.044  |
| XE-127  | 1.175E-02                          |              | 4.075E-02 | 6.730E-02         | 6.731E-03 | 0.175   |
| I-131   | 1.929E-02                          |              | 9.831E-02 | 1.678E-01         | 1.774E-02 | 0.115   |
| TE-132  | 2.422E-01                          |              | 6.380E-01 | 1.049E+00         | 1.774E-01 | 0.231   |
| BA-133  | 3.487E-02                          |              | 4.027E-02 | 6.386E-02         | 9.228E-03 | 0.546   |
| I-133   | -5.284E-03                         |              | 2.521E-03 | Half-Life         | too short |         |
| CS-134  | 1.504E-01                          | +            | 6.436E-02 | 9.401E-02         | 8.814E-03 | 1.599   |
| CS-135  | 1.489E-01                          |              | 1.538E-01 | 2.337E-01         | 2.980E-02 | 0.637   |
| I-135   | -6.359E+08                         |              | 1.876E+09 | Half-Life         | too short |         |
| CS-136  | -6.158E-02                         |              | 1.078E-01 | 1.684E-01         | 1.559E-02 | -0.366  |
| BA-137M | 6.615E-03                          |              | 3.354E-02 | 5.510E-02         | 4.890E-03 | 0.120   |
| CS-137  | 6.992E-03                          |              | 3.546E-02 | 5.824E-02         | 5.178E-03 | 0.120   |
| CE-139  | 2.331E-03                          |              | 2.641E-02 | 4.371E-02         | 3.964E-03 | 0.053   |
| BA-140  | -1.828E-01                         |              | 2.540E-01 | 3.830E-01         | 1.278E-01 | -0.477  |
| LA-140  | -1.118E-01                         |              | 7.606E-02 | 9.441E-02         | 8.041E-03 | -1.184  |
| CE-141  | 3.256E-02                          |              | 5.470E-02 | 9.284E-02         | 8.121E-03 | 0.351   |
| CE-143  | 3.946E-04                          |              | 8.386E-05 | Half-Life         | too short |         |
| CE-144  | 6.060E-02                          |              | 1.868E-01 | 2.842E-01         | 4.389E-02 | 0.213   |
| PM-144  | 2.381E-03                          |              | 3.284E-02 | 5.321E-02         | 4.799E-03 | 0.045   |
| PR-144  | 1.613E-01                          |              | 2.225E+00 | 3.605E+00         | 3.251E-01 | 0.045   |
| PM-146  | 7.455E-03                          |              | 4.031E-02 | 6.781E-02         | 7.744E-03 | 0.110   |
| ND-147  | -2.664E-01                         |              | 5.036E-01 | 7.915E-01         | 1.224E-01 | -0.337  |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| PM-149  | -3.096E+01                         |              | 8.420E+01 | 1.311E+02         | 2.307E+01 | -0.236  |
| EU-152  | -3.308E-02                         |              | 8.529E-02 | 1.363E-01         | 1.523E-02 | -0.243  |
| GD-153  | -8.795E-02                         |              | 7.419E-02 | 1.040E-01         | 9.243E-03 | -0.845  |
| EU-154  | -9.950E-02                         |              | 1.273E-01 | 1.894E-01         | 2.098E-02 | -0.525  |
| EU-155  | 6.764E-03                          |              | 9.347E-02 | 1.581E-01         | 1.368E-02 | 0.043   |
| TB-160  | -1.322E-01                         |              | 1.298E-01 | 1.960E-01         | 1.851E-02 | -0.674  |
| HO-166M | 9.463E-03                          |              | 5.808E-02 | 9.466E-02         | 8.589E-03 | 0.100   |
| TM-171  | -7.360E+00                         |              | 2.676E+01 | 3.758E+01         | 2.879E+00 | -0.196  |
| LU-176  | -2.428E-02                         |              | 2.288E-02 | 3.348E-02         | 3.883E-03 | -0.725  |
| LU-177  | 2.834E+00                          | +            | 1.371E+00 | 1.857E+00         | 1.885E-01 | 1.526   |
| LU-177M | -1.278E-01                         |              | 1.802E-01 | 2.483E-01         | 2.321E-02 | -0.515  |
| HF-181  | -7.329E-03                         |              | 3.674E-02 | 5.994E-02         | 5.701E-03 | -0.122  |
| W-181   | -2.975E-01                         |              | 3.420E-01 | 4.630E-01         | 3.496E-02 | -0.643  |
| TA-182  | 1.426E-01                          |              | 2.091E-01 | 3.578E-01         | 2.926E-02 | 0.399   |
| RE-183  | -2.710E-02                         |              | 9.468E-02 | 1.543E-01         | 1.385E-02 | -0.176  |
| RE-184  | -4.338E-02                         |              | 2.034E-01 | 3.229E-01         | 3.660E-02 | -0.134  |
| OS-185  | -1.723E-02                         |              | 3.983E-02 | 6.210E-02         | 5.582E-03 | -0.278  |
| RE-188  | 2.042E-01                          |              | 1.507E-01 | 2.612E-01         | 2.298E-02 | 0.782   |
| W-188   | -8.039E+00                         |              | 7.937E+00 | 1.025E+01         | 1.216E+00 | -0.784  |
| IR-192  | -1.958E-03                         |              | 3.306E-02 | 5.217E-02         | 5.962E-03 | -0.038  |
| AU-195  | 1.252E-01                          |              | 1.924E-01 | 3.266E-01         | 2.876E-02 | 0.383   |
| TL-200  | 2.709E-04                          |              | 1.859E-04 | Half-Life         | too short |         |
| TL-201  | 1.880E+00                          |              | 6.064E+00 | 1.012E+01         | 9.213E-01 | 0.186   |
| TL-202  | 5.981E-02                          |              | 6.459E-02 | 1.133E-01         | 1.069E-02 | 0.528   |
| BI-207  | 7.425E-03                          |              | 5.159E-02 | 8.605E-02         | 7.586E-03 | 0.086   |
| TL-207  | 6.894E-02                          |              | 6.712E-01 | 9.508E-01         | 1.819E-01 | 0.073   |
| PO-209  | 3.974E-01                          |              | 7.244E+00 | 1.215E+01         | 1.149E+00 | 0.033   |
| BI-210  | 2.707E+00                          |              | 3.338E+00 | 5.438E+00         | 5.071E-01 | 0.498   |
| PB-210  | 2.707E+00                          |              | 3.338E+00 | 5.438E+00         | 5.071E-01 | 0.498   |
| PO-210  | 2.707E+00                          |              | 3.337E+00 | 5.438E+00         | 4.594E-01 | 0.498   |
| PB-211  | -5.597E-01                         |              | 1.008E+00 | 1.322E+00         | 8.300E-01 | -0.423  |
| PO-215  | 6.894E-02                          |              | 6.712E-01 | 9.508E-01         | 1.819E-01 | 0.073   |
| RN-219  | 8.156E-02                          |              | 3.680E-01 | 6.248E-01         | 9.637E-02 | 0.131   |
| RN-220  | 5.909E+00                          |              | 2.317E+01 | 3.874E+01         | 3.660E+00 | 0.153   |
| RA-223  | 6.894E-02                          |              | 6.712E-01 | 9.508E-01         | 1.819E-01 | 0.073   |
| AC-227  | -6.873E-02                         |              | 3.508E-01 | 5.572E-01         | 9.516E-02 | -0.123  |
| TH-227  | -6.873E-02                         |              | 3.509E-01 | 5.572E-01         | 1.090E-01 | -0.123  |
| TH-229  | -1.828E-02                         |              | 4.527E-01 | 7.385E-01         | 7.206E-02 | -0.025  |
| PA-231  | -4.904E-01                         |              | 1.425E+00 | 2.224E+00         | 3.846E-01 | -0.221  |
| TH-231  | 6.894E-02                          |              | 6.712E-01 | 9.508E-01         | 1.819E-01 | 0.073   |
| U-231   | -4.085E-01                         |              | 9.258E-01 | 1.378E+00         | 1.237E-01 | -0.296  |
| PA-233  | 4.308E-02                          |              | 6.199E-02 | 1.021E-01         | 1.194E-02 | 0.422   |
| PA-234  | -5.685E-02                         |              | 2.841E-01 | 4.635E-01         | 8.854E-02 | -0.123  |
| PA-234M | 2.639E-01                          |              | 4.683E+00 | 7.758E+00         | 8.077E-01 | 0.034   |
| U-235   | 1.385E-01                          |              | 1.937E-01 | 3.225E-01         | 5.636E-02 | 0.429   |
| NP-236  | -2.960E-02                         |              | 6.835E-02 | 1.107E-01         | 9.877E-03 | -0.267  |
| NP-239  | -1.610E-01                         |              | 1.684E-01 | 2.713E-01         | 2.259E-02 | -0.593  |
| AM-241  | -1.041E-01                         |              | 1.605E-01 | 2.218E-01         | 1.741E-02 | -0.470  |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| CM-243  | -2.609E-02                         |              | 8.279E-02 | 1.380E-01         | 1.187E-02 | -0.189  |
| AM-246  | -1.474E-02                         |              | 1.356E-01 | 2.207E-01         | 1.926E-02 | -0.067  |
| CM-247  | -7.736E-03                         |              | 3.276E-02 | 5.412E-02         | 5.032E-03 | -0.143  |
| CF-249  | 3.936E-02                          |              | 3.772E-02 | 6.669E-02         | 6.256E-03 | 0.590   |
| CF-251  | 2.805E-02                          |              | 1.083E-01 | 1.800E-01         | 1.678E-02 | 0.156   |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*
*                                     DETECTOR DATA                          *
*
* Configuration      : SYSSYSROOT:[ALPHA.ARCHIVE.GAMMA]G244630008           *
* Acquisition date   : 23-JAN-2010 11:47:57 Detector SN#      :             *
* Detector ID        : GAM16 Sensitivity      : 5.000             *
* Geometry           : CAN Energy tolerance: 1.500             *
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000    *
* Elapsed real time  : 0 02:00:02.16 Half life ratio : 8.000    *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G244630008 Analyst initials: MXR1          *
* Batch Number       : 941639 Sample Quantity : 1.3522E+02 GRAM      *
* Recovery           : 1.00000 Carrier Weight : 0.00000           *
*****
*
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 16-NOV-2009 11:22:16 MS Isotope      :             *
* MSD DPM             : 0.000 MSD Isotope      :             *
* LCS DPM             : 0.000 LCS Isotope      :             *
* LCSD DPM            : 0.000 LCSD Isotope     :             *
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act Error | DLC<br>(pCi/GRAM ) | TPU       |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 3.278E+01               | 3.315E+00 | 2.412E-01          | 1.691E+00 |
| CD-109  | 3.093E+00               | 9.373E-01 | 5.672E-01          | 4.782E-01 |
| SN-126  | 3.041E-01               | 9.215E-02 | 5.602E-02          | 4.701E-02 |
| HG-203  | 4.981E-02               | 5.745E-02 | 2.993E-02          | 2.931E-02 |
| TL-208  | 6.132E-01               | 9.812E-02 | 2.691E-02          | 5.006E-02 |
| BI-211  | 4.115E+00               | 5.888E-01 | 1.437E-01          | 3.004E-01 |
| BI-212  | 1.251E+00               | 4.330E-01 | 2.147E-01          | 2.209E-01 |
| PB-212  | 1.921E+00               | 2.473E-01 | 3.861E-02          | 1.262E-01 |
| PO-212  | 1.921E+00               | 2.473E-01 | 3.861E-02          | 1.262E-01 |
| BI-214  | 1.311E+00               | 2.065E-01 | 4.942E-02          | 1.053E-01 |
| PB-214  | 1.431E+00               | 2.175E-01 | 5.547E-02          | 1.110E-01 |
| PO-214  | 1.431E+00               | 2.175E-01 | 5.547E-02          | 1.110E-01 |
| PO-216  | 1.921E+00               | 2.473E-01 | 3.861E-02          | 1.262E-01 |
| PO-218  | 1.431E+00               | 2.175E-01 | 5.547E-02          | 1.110E-01 |
| RA-224  | 5.344E+00               | 1.316E+00 | 4.394E-01          | 6.716E-01 |
| RA-226  | 1.311E+00               | 2.065E-01 | 4.942E-02          | 1.053E-01 |
| AC-228  | 2.034E+00               | 3.586E-01 | 8.879E-02          | 1.829E-01 |
| RA-228  | 2.034E+00               | 3.586E-01 | 8.879E-02          | 1.829E-01 |
| TH-228  | 1.950E+00               | 2.510E-01 | 3.919E-02          | 1.281E-01 |
| TH-230  | 1.311E+00               | 2.065E-01 | 4.942E-02          | 1.053E-01 |
| TH-232  | 2.034E+00               | 3.586E-01 | 8.879E-02          | 1.829E-01 |
| TH-234  | 1.586E+00               | 1.635E+00 | 8.767E-01          | 8.342E-01 |
| U-234   | 1.311E+00               | 2.065E-01 | 4.942E-02          | 1.053E-01 |
| NP-237  | 8.930E-01               | 3.253E-01 | 1.806E-01          | 1.660E-01 |
| U-238   | 1.586E+00               | 1.635E+00 | 8.767E-01          | 8.342E-01 |
| AM-243  | 4.141E-01               | 7.281E-02 | 3.880E-02          | 3.715E-02 |
| ANH-511 | 1.465E-01               | 6.433E-02 | 1.930E-02          | 3.282E-02 |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L Act error | DLC<br>(pCi/GRAM ) | TPU |
|---------|-------------------------------------|---------------|--------------------|-----|
|---------|-------------------------------------|---------------|--------------------|-----|

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| BE-7    | 1.366E-01  | 2.765E-01 | 2.472E-01 | 1.411E-01 | NOT IDENT. |
| NA-22   | -3.744E-02 | 4.483E-02 | 3.415E-02 | 2.287E-02 | NOT IDENT. |
| NA-24   | -3.029E+05 | 5.963E+05 | 0.000E+00 | 3.042E+05 | SHORT HLIF |
| AL-26   | -5.212E-03 | 2.338E-02 | 1.863E-02 | 1.193E-02 | NOT IDENT. |
| TI-44   | 4.079E-01  | 5.358E-02 | 3.529E-02 | 2.733E-02 | FAIL ABUN  |
| SC-46   | -1.588E-02 | 3.417E-02 | 2.822E-02 | 1.744E-02 | FAIL ABUN  |
| V-48    | 2.890E-02  | 6.607E-02 | 5.854E-02 | 3.371E-02 | NOT IDENT. |
| CR-51   | 9.744E-02  | 3.426E-01 | 2.904E-01 | 1.748E-01 | NOT IDENT. |
| MN-52   | -4.313E-02 | 1.725E-01 | 1.351E-01 | 8.801E-02 | NOT IDENT. |
| MN-54   | 3.239E-02  | 3.152E-02 | 2.945E-02 | 1.608E-02 | NOT IDENT. |
| CO-56   | -2.540E-02 | 3.542E-02 | 2.879E-02 | 1.807E-02 | NOT IDENT. |
| CO-57   | 7.677E-03  | 2.131E-02 | 1.938E-02 | 1.087E-02 | NOT IDENT. |
| CO-58   | -4.688E-02 | 3.438E-02 | 2.614E-02 | 1.754E-02 | NOT IDENT. |
| FE-59   | 1.061E-02  | 8.618E-02 | 7.361E-02 | 4.397E-02 | NOT IDENT. |
| CO-60   | -5.131E-02 | 4.149E-02 | 2.932E-02 | 2.117E-02 | NOT IDENT. |
| ZN-65   | -2.036E-02 | 1.010E-01 | 7.190E-02 | 5.151E-02 | NOT IDENT. |
| GE-68   | -2.641E-01 | 1.160E+00 | 9.613E-01 | 5.920E-01 | NOT IDENT. |
| AS-73   | 9.129E-01  | 7.070E-01 | 6.371E-01 | 3.607E-01 | NOT IDENT. |
| AS-74   | -8.136E-02 | 8.930E-02 | 6.773E-02 | 4.556E-02 | NOT IDENT. |
| SE-75   | 4.201E-02  | 4.119E-02 | 3.329E-02 | 2.101E-02 | NOT IDENT. |
| BR-77   | 5.883E+00  | 8.908E+00 | 7.998E+00 | 4.545E+00 | FAIL ABUN  |
| SR-82   | -2.623E-01 | 3.727E-01 | 2.882E-01 | 1.902E-01 | NOT IDENT. |
| RB-83   | 4.813E-02  | 6.163E-02 | 5.572E-02 | 3.145E-02 | NOT IDENT. |
| RB-84   | -2.791E-02 | 5.903E-02 | 4.869E-02 | 3.012E-02 | NOT IDENT. |
| KR-85   | 5.831E+00  | 6.212E+00 | 5.119E+00 | 3.169E+00 | NOT IDENT. |
| SR-85   | 2.986E-02  | 3.181E-02 | 2.621E-02 | 1.623E-02 | NOT IDENT. |
| RB-86   | 3.504E-01  | 7.353E-01 | 6.487E-01 | 3.752E-01 | NOT IDENT. |
| Y-88    | -9.783E-03 | 2.248E-02 | 1.659E-02 | 1.147E-02 | NOT IDENT. |
| ZR-88   | -2.362E-02 | 2.729E-02 | 2.272E-02 | 1.392E-02 | NOT IDENT. |
| Y-91    | -5.294E+00 | 1.915E+01 | 1.566E+01 | 9.772E+00 | NOT IDENT. |
| NB-94   | 2.584E-02  | 3.260E-02 | 2.879E-02 | 1.663E-02 | NOT IDENT. |
| NB-95   | 4.918E-02  | 4.089E-02 | 3.362E-02 | 2.086E-02 | NOT IDENT. |
| NB-95M  | 5.824E-02  | 1.148E-01 | 9.025E-02 | 5.858E-02 | NOT IDENT. |
| ZR-95   | 5.474E-02  | 6.705E-02 | 5.925E-02 | 3.421E-02 | NOT IDENT. |
| NB-97   | -1.294E+04 | 8.138E+04 | 0.000E+00 | 4.152E+04 | SHORT HLIF |
| ZR-97   | 1.333E+06  | 1.431E+06 | 0.000E+00 | 7.300E+05 | SHORT HLIF |
| MO-99   | 1.151E+01  | 1.013E+01 | 9.138E+00 | 5.171E+00 | NOT IDENT. |
| TC-99M  | 2.175E+15  | 2.354E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | 1.529E-02  | 2.833E-02 | 2.500E-02 | 1.445E-02 | NOT IDENT. |
| RH-102  | -5.811E-03 | 2.554E-02 | 2.177E-02 | 1.303E-02 | FAIL ABUN  |
| RU-103  | -7.368E-03 | 3.344E-02 | 2.835E-02 | 1.706E-02 | FAIL ABUN  |
| RH-106  | 6.285E-02  | 2.910E-01 | 2.499E-01 | 1.484E-01 | FAIL ABUN  |
| RU-106  | 6.285E-02  | 2.909E-01 | 2.499E-01 | 1.484E-01 | FAIL ABUN  |
| AG-108M | -1.066E-02 | 2.935E-02 | 2.502E-02 | 1.497E-02 | NOT IDENT. |
| AG-110M | -1.157E-02 | 3.378E-02 | 2.762E-02 | 1.723E-02 | NOT IDENT. |
| IN-111  | -3.366E-01 | 9.661E-01 | 7.136E-01 | 4.929E-01 | NOT IDENT. |
| IN-113M | -2.608E-02 | 3.987E-02 | 3.372E-02 | 2.034E-02 | NOT IDENT. |
| SN-113  | -2.608E-02 | 3.987E-02 | 3.372E-02 | 2.034E-02 | NOT IDENT. |
| IN-114M | 5.689E-02  | 1.724E-01 | 1.365E-01 | 8.798E-02 | NOT IDENT. |
| CD-115  | 1.354E+00  | 8.948E+00 | 7.765E+00 | 4.565E+00 | NOT IDENT. |
| SN-117M | 4.951E-03  | 4.582E-02 | 4.055E-02 | 2.338E-02 | NOT IDENT. |
| SB-122  | -7.131E-01 | 1.771E+00 | 1.463E+00 | 9.038E-01 | NOT IDENT. |
| I-123   | 2.560E+06  | 4.105E+06 | 0.000E+00 | 2.094E+06 | SHORT HLIF |
| TE-123M | 1.481E-02  | 2.375E-02 | 2.144E-02 | 1.212E-02 | NOT IDENT. |
| I-124   | -7.927E-01 | 7.314E-01 | 4.649E-01 | 3.732E-01 | FAIL ABUN  |
| SB-124  | 1.680E-02  | 5.936E-02 | 5.283E-02 | 3.028E-02 | FAIL ABUN  |
| SB-125  | -1.286E-02 | 8.032E-02 | 6.949E-02 | 4.098E-02 | FAIL ABUN  |
| TE-125M | -1.040E+00 | 7.556E+00 | 6.788E+00 | 3.855E+00 | NOT IDENT. |
| I-126   | -1.490E-01 | 1.655E-01 | 1.280E-01 | 8.442E-02 | NOT IDENT. |
| SB-126  | -2.356E-02 | 1.311E-01 | 1.024E-01 | 6.689E-02 | FAIL ABUN  |
| SB-127  | -8.529E-02 | 1.191E+00 | 9.905E-01 | 6.076E-01 | NOT IDENT. |
| XE-127  | 1.175E-02  | 3.994E-02 | 3.500E-02 | 2.038E-02 | NOT IDENT. |
| I-131   | 1.929E-02  | 9.634E-02 | 8.633E-02 | 4.915E-02 | NOT IDENT. |
| TE-132  | 2.422E-01  | 6.253E-01 | 5.444E-01 | 3.190E-01 | NOT IDENT. |
| BA-133  | 3.487E-02  | 3.946E-02 | 3.288E-02 | 2.013E-02 | NOT IDENT. |
| I-133   | -5.284E+03 | 4.942E+03 | 0.000E+00 | 2.521E+03 | SHORT HLIF |
| CS-134  | 1.504E-01  | 6.307E-02 | 4.768E-02 | 3.218E-02 | FAIL ABUN  |
| CS-135  | 1.489E-01  | 1.508E-01 | 1.209E-01 | 7.691E-02 | NOT IDENT. |
| I-135   | -6.359E+14 | 3.677E+15 | 0.000E+00 | 1.876E+15 | SHORT HLIF |
| CS-136  | -6.158E-02 | 1.057E-01 | 8.497E-02 | 5.391E-02 | FAIL ABUN  |
| BA-137M | 6.615E-03  | 3.287E-02 | 2.804E-02 | 1.677E-02 | NOT IDENT. |
| CS-137  | 6.992E-03  | 3.475E-02 | 2.965E-02 | 1.773E-02 | NOT IDENT. |
| CE-139  | 2.331E-03  | 2.588E-02 | 2.281E-02 | 1.320E-02 | NOT IDENT. |
| BA-140  | -1.828E-01 | 2.489E-01 | 1.957E-01 | 1.270E-01 | NOT IDENT. |
| LA-140  | -1.118E-01 | 7.454E-02 | 4.726E-02 | 3.803E-02 | FAIL ABUN  |
| CE-141  | 3.256E-02  | 5.360E-02 | 4.857E-02 | 2.735E-02 | NOT IDENT. |
| CE-143  | 3.946E+02  | 1.644E+02 | 0.000E+00 | 8.386E+01 | SHORT HLIF |
| CE-144  | 6.060E-02  | 1.831E-01 | 1.489E-01 | 9.341E-02 | NOT IDENT. |



|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PM-144  | 2.381E-03  | 3.218E-02 | 2.706E-02 | 1.642E-02 | NOT IDENT. |
| PR-144  | 1.613E-01  | 2.181E+00 | 1.833E+00 | 1.113E+00 | NOT IDENT. |
| PM-146  | 7.455E-03  | 3.950E-02 | 3.475E-02 | 2.015E-02 | NOT IDENT. |
| ND-147  | -2.664E-01 | 4.935E-01 | 4.045E-01 | 2.518E-01 | FAIL ABUN  |
| PM-149  | -3.096E+01 | 8.252E+01 | 6.777E+01 | 4.210E+01 | NOT IDENT. |
| EU-152  | -3.308E-02 | 8.359E-02 | 7.019E-02 | 4.265E-02 | FAIL ABUN  |
| GD-153  | -8.795E-02 | 7.271E-02 | 5.481E-02 | 3.710E-02 | FAIL ABUN  |
| EU-154  | -9.950E-02 | 1.247E-01 | 9.521E-02 | 6.363E-02 | NOT IDENT. |
| EU-155  | 6.764E-03  | 9.160E-02 | 8.316E-02 | 4.674E-02 | FAIL ABUN  |
| TB-160  | -1.322E-01 | 1.272E-01 | 9.922E-02 | 6.489E-02 | FAIL ABUN  |
| HO-166M | 9.463E-03  | 5.692E-02 | 4.812E-02 | 2.904E-02 | FAIL ABUN  |
| TM-171  | -7.360E+00 | 2.623E+01 | 1.992E+01 | 1.338E+01 | NOT IDENT. |
| LU-176  | -2.428E-02 | 2.242E-02 | 1.728E-02 | 1.144E-02 | FAIL ABUN  |
| LU-177  | 2.834E+00  | 1.344E+00 | 9.653E-01 | 6.855E-01 | FAIL ABUN  |
| LU-177M | -1.278E-01 | 1.766E-01 | 1.275E-01 | 9.010E-02 | FAIL ABUN  |
| HF-181  | -7.329E-03 | 3.601E-02 | 3.069E-02 | 1.837E-02 | NOT IDENT. |
| W-181   | -2.975E-01 | 3.352E-01 | 2.456E-01 | 1.710E-01 | NOT IDENT. |
| TA-182  | 1.426E-01  | 2.049E-01 | 1.800E-01 | 1.045E-01 | FAIL ABUN  |
| RE-183  | -2.710E-02 | 9.279E-02 | 8.056E-02 | 4.734E-02 | FAIL ABUN  |
| RE-184  | -4.338E-02 | 1.993E-01 | 1.673E-01 | 1.017E-01 | NOT IDENT. |
| OS-185  | -1.723E-02 | 3.904E-02 | 3.162E-02 | 1.992E-02 | NOT IDENT. |
| RE-188  | 2.042E-01  | 1.477E-01 | 1.365E-01 | 7.533E-02 | NOT IDENT. |
| W-188   | -8.039E+00 | 7.779E+00 | 5.297E+00 | 3.969E+00 | FAIL ABUN  |
| IR-192  | -1.958E-03 | 3.240E-02 | 2.691E-02 | 1.653E-02 | FAIL ABUN  |
| AU-195  | 1.252E-01  | 1.885E-01 | 1.720E-01 | 9.618E-02 | FAIL ABUN  |
| TL-200  | 2.709E+02  | 3.644E+02 | 0.000E+00 | 1.859E+02 | SHORT HLIF |
| TL-201  | 1.880E+00  | 5.942E+00 | 5.281E+00 | 3.032E+00 | NOT IDENT. |
| TL-202  | 5.981E-02  | 6.330E-02 | 5.811E-02 | 3.230E-02 | NOT IDENT. |
| BI-207  | 7.425E-03  | 5.056E-02 | 4.341E-02 | 2.580E-02 | FAIL ABUN  |
| TL-207  | 6.894E-02  | 6.578E-01 | 4.903E-01 | 3.356E-01 | FAIL ABUN  |
| PO-209  | 3.974E-01  | 7.099E+00 | 6.149E+00 | 3.622E+00 | NOT IDENT. |
| BI-210  | 2.707E+00  | 3.272E+00 | 2.901E+00 | 1.669E+00 | NOT IDENT. |
| PB-210  | 2.707E+00  | 3.272E+00 | 2.901E+00 | 1.669E+00 | NOT IDENT. |
| PO-210  | 2.707E+00  | 3.270E+00 | 2.901E+00 | 1.668E+00 | NOT IDENT. |
| PB-211  | -5.597E-01 | 9.874E-01 | 6.792E-01 | 5.038E-01 | NOT IDENT. |
| PO-215  | 6.894E-02  | 6.578E-01 | 4.903E-01 | 3.356E-01 | FAIL ABUN  |
| RN-219  | 8.156E-02  | 3.607E-01 | 3.210E-01 | 1.840E-01 | FAIL ABUN  |
| RN-220  | 5.909E+00  | 2.270E+01 | 1.979E+01 | 1.158E+01 | NOT IDENT. |
| RA-223  | 6.894E-02  | 6.578E-01 | 4.903E-01 | 3.356E-01 | FAIL ABUN  |
| AC-227  | -6.873E-02 | 3.438E-01 | 2.886E-01 | 1.754E-01 | FAIL ABUN  |
| TH-227  | -6.873E-02 | 3.439E-01 | 2.886E-01 | 1.754E-01 | FAIL ABUN  |
| TH-229  | -1.828E-02 | 4.436E-01 | 3.844E-01 | 2.263E-01 | FAIL ABUN  |
| PA-231  | -4.904E-01 | 1.397E+00 | 1.150E+00 | 7.127E-01 | FAIL ABUN  |
| TH-231  | 6.894E-02  | 6.578E-01 | 4.903E-01 | 3.356E-01 | FAIL ABUN  |
| U-231   | -4.085E-01 | 9.073E-01 | 7.264E-01 | 4.629E-01 | FAIL ABUN  |
| PA-233  | 4.308E-02  | 6.075E-02 | 5.270E-02 | 3.099E-02 | FAIL ABUN  |
| PA-234  | -5.685E-02 | 2.784E-01 | 2.343E-01 | 1.420E-01 | FAIL ABUN  |
| PA-234M | 2.639E-01  | 4.590E+00 | 3.918E+00 | 2.342E+00 | NOT IDENT. |
| U-235   | 1.385E-01  | 1.899E-01 | 1.687E-01 | 9.686E-02 | FAIL ABUN  |
| NP-236  | -2.960E-02 | 6.698E-02 | 5.779E-02 | 3.417E-02 | NOT IDENT. |
| NP-239  | -1.610E-01 | 1.651E-01 | 1.425E-01 | 8.421E-02 | FAIL ABUN  |
| AM-241  | -1.041E-01 | 1.573E-01 | 1.178E-01 | 8.027E-02 | NOT IDENT. |
| CM-243  | -2.609E-02 | 8.114E-02 | 7.263E-02 | 4.140E-02 | FAIL ABUN  |
| AM-246  | -1.474E-02 | 1.329E-01 | 1.113E-01 | 6.780E-02 | NOT IDENT. |
| CM-247  | -7.736E-03 | 3.211E-02 | 2.780E-02 | 1.638E-02 | FAIL ABUN  |
| CF-249  | 3.936E-02  | 3.697E-02 | 3.428E-02 | 1.886E-02 | NOT IDENT. |
| CF-251  | 2.805E-02  | 1.061E-01 | 9.385E-02 | 5.416E-02 | NOT IDENT. |

```

*****
*                                     *
*               GEL Laboratories LLC   *
*               2040 SAVAGE ROAD      *
*               CHARLESTON , SC 29417 *
*               GAMMA SPECTROSCOPY BACKGROUND REPORT *
*****

```

| ENERGY | MDA COUNTS |
|--------|------------|
| 46.50  | 230.3933   |
| 46.50  | 230.3933   |
| 46.50  | 230.3933   |
| 48.70  | 255.6488   |
| 49.72  | 263.5691   |
| 51.35  | 274.4042   |
| 52.39  | 229.7703   |
| 52.97  | 206.1846   |
| 53.15  | 206.2925   |
| 53.44  | 218.4696   |
| 54.07  | 257.3479   |
| 56.28  | 312.2044   |
| 56.28  | 312.2063   |
| 57.37  | 0.0000     |
| 57.53  | 262.2897   |
| 57.53  | 262.2909   |
| 57.60  | 262.3403   |
| 57.98  | 301.5197   |
| 57.98  | 301.5197   |
| 59.32  | 333.5327   |
| 59.32  | 333.5327   |
| 59.40  | 369.4061   |
| 59.54  | 369.5458   |
| 59.72  | 369.7242   |
| 60.01  | 347.1921   |
| 61.10  | 322.0448   |
| 61.14  | 322.0784   |
| 61.30  | 322.2141   |
| 63.00  | 294.4891   |
| 63.29  | 294.7107   |
| 63.29  | 294.7107   |
| 63.58  | 294.9313   |
| 64.28  | 283.5107   |
| 65.12  | 338.6299   |
| 65.20  | 338.6971   |
| 65.20  | 338.6971   |
| 66.05  | 326.1790   |
| 66.72  | 338.3357   |
| 66.83  | 338.4291   |
| 66.91  | 328.5417   |
| 67.20  | 312.1725   |
| 67.20  | 312.1725   |
| 67.75  | 285.5774   |
| 67.85  | 285.6490   |
| 68.90  | 350.1666   |
| 68.90  | 350.1666   |
| 69.30  | 371.5389   |
| 69.67  | 377.1364   |
| 70.82  | 369.3864   |
| 70.82  | 369.3864   |
| 70.83  | 369.3954   |
| 72.80  | 367.3422   |
| 72.87  | 367.4022   |
| 72.87  | 367.4022   |
| 74.67  | 363.8781   |
| 74.81  | 363.9942   |
| 74.81  | 363.9942   |
| 74.81  | 363.9942   |
| 74.81  | 363.9942   |
| 74.81  | 363.9942   |
| 74.81  | 363.9942   |
| 74.81  | 363.9942   |
| 74.97  | 364.1299   |
| 75.28  | 364.3905   |
| 75.70  | 364.7408   |
| 77.11  | 365.9145   |
| 77.11  | 365.9145   |

|        |          |
|--------|----------|
| 77.11  | 365.9145 |
| 77.11  | 365.9145 |
| 77.11  | 365.9145 |
| 77.11  | 365.9145 |
| 77.11  | 365.9145 |
| 78.38  | 366.9633 |
| 79.62  | 367.9793 |
| 79.80  | 368.1260 |
| 79.80  | 368.1260 |
| 80.11  | 368.3778 |
| 80.18  | 368.4348 |
| 80.30  | 368.5311 |
| 80.30  | 368.5311 |
| 80.57  | 368.7501 |
| 81.00  | 316.3699 |
| 81.07  | 316.4187 |
| 81.07  | 316.4187 |
| 81.07  | 316.4187 |
| 81.07  | 316.4187 |
| 82.60  | 317.4735 |
| 83.37  | 317.9990 |
| 83.78  | 367.4458 |
| 83.78  | 367.4458 |
| 83.78  | 367.4458 |
| 83.78  | 367.4458 |
| 84.21  | 367.7838 |
| 84.90  | 427.9814 |
| 85.43  | 428.4622 |
| 86.29  | 429.2402 |
| 86.50  | 429.4290 |
| 86.54  | 429.4643 |
| 86.59  | 429.5096 |
| 86.72  | 429.6254 |
| 86.79  | 429.6858 |
| 86.94  | 398.5644 |
| 87.30  | 396.2562 |
| 87.30  | 396.2562 |
| 87.30  | 396.2562 |
| 87.30  | 396.2562 |
| 87.30  | 396.2562 |
| 87.30  | 396.2562 |
| 87.57  | 365.1779 |
| 87.88  | 365.4129 |
| 88.03  | 365.5261 |
| 88.36  | 365.7761 |
| 88.47  | 365.8594 |
| 89.95  | 445.6067 |
| 91.11  | 307.4053 |
| 92.29  | 308.1373 |
| 92.38  | 308.1926 |
| 92.38  | 308.1926 |
| 93.35  | 308.7889 |
| 94.00  | 276.1558 |
| 94.67  | 256.6720 |
| 94.67  | 256.6750 |
| 94.90  | 250.1721 |
| 94.90  | 250.1721 |
| 94.90  | 250.1721 |
| 94.90  | 250.1721 |
| 95.87  | 307.6736 |
| 95.87  | 307.6736 |
| 96.73  | 322.8048 |
| 97.43  | 328.5613 |
| 98.44  | 298.5442 |
| 98.44  | 298.5459 |
| 98.88  | 281.0116 |
| 99.55  | 264.4529 |
| 99.55  | 264.4529 |
| 99.86  | 254.8089 |
| 100.00 | 273.5905 |
| 100.10 | 273.6452 |
| 103.18 | 329.9137 |
| 103.76 | 311.4225 |
| 105.00 | 280.6505 |
| 105.31 | 311.4120 |
| 108.00 | 319.2653 |
| 109.28 | 289.1781 |

|        |          |
|--------|----------|
| 111.00 | 290.9700 |
| 111.00 | 290.9700 |
| 111.76 | 294.0905 |
| 112.95 | 315.6884 |
| 115.19 | 263.7905 |
| 116.30 | 299.1649 |
| 117.00 | 326.1678 |
| 117.00 | 326.1678 |
| 117.66 | 303.5373 |
| 121.11 | 286.7951 |
| 121.62 | 282.4083 |
| 121.78 | 283.4089 |
| 122.06 | 268.7155 |
| 122.32 | 259.5605 |
| 122.32 | 259.5605 |
| 122.32 | 259.5605 |
| 122.32 | 259.5605 |
| 123.07 | 267.3062 |
| 127.23 | 267.7151 |
| 129.76 | 289.9044 |
| 131.20 | 296.2065 |
| 133.02 | 241.8830 |
| 133.54 | 247.7386 |
| 135.34 | 260.2574 |
| 136.00 | 285.1545 |
| 136.25 | 287.1571 |
| 136.48 | 287.2588 |
| 140.51 | 286.1511 |
| 140.51 | 0.0000   |
| 142.18 | 331.8039 |
| 142.65 | 299.5030 |
| 143.76 | 281.7829 |
| 144.24 | 275.2664 |
| 144.24 | 275.2664 |
| 144.24 | 275.2664 |
| 144.24 | 275.2664 |
| 145.22 | 276.6240 |
| 145.44 | 276.7119 |
| 147.16 | 283.1826 |
| 152.43 | 280.4715 |
| 152.70 | 261.1602 |
| 153.22 | 260.3802 |
| 154.21 | 247.1193 |
| 154.21 | 247.1193 |
| 154.21 | 247.1193 |
| 154.21 | 247.1193 |
| 155.03 | 246.4295 |
| 156.02 | 310.1684 |
| 158.56 | 255.4669 |
| 159.00 | 0.0000   |
| 159.00 | 239.9482 |
| 160.31 | 266.8701 |
| 161.27 | 287.8496 |
| 162.32 | 266.6140 |
| 162.64 | 255.9005 |
| 163.35 | 257.1316 |
| 163.89 | 256.3316 |
| 165.85 | 267.8766 |
| 167.43 | 262.4930 |
| 171.28 | 238.9282 |
| 171.86 | 247.0792 |
| 172.10 | 247.1549 |
| 176.55 | 232.5310 |
| 176.60 | 232.5475 |
| 181.06 | 280.6260 |
| 184.41 | 261.1442 |
| 185.71 | 265.6140 |
| 186.00 | 265.7100 |
| 190.27 | 235.4859 |
| 192.34 | 245.2686 |
| 193.63 | 249.7386 |
| 197.04 | 244.5780 |
| 198.01 | 211.9346 |
| 198.60 | 229.5809 |
| 200.40 | 234.1884 |
| 201.83 | 265.5776 |
| 202.84 | 228.6414 |
| 205.31 | 214.7617 |

|        |          |
|--------|----------|
| 208.36 | 238.9271 |
| 208.81 | 238.5277 |
| 209.75 | 229.9163 |
| 209.75 | 229.9163 |
| 210.97 | 244.3260 |
| 215.65 | 215.1557 |
| 216.55 | 217.4696 |
| 218.09 | 247.3017 |
| 222.10 | 242.0336 |
| 223.80 | 228.7090 |
| 226.40 | 230.4036 |
| 227.00 | 251.7980 |
| 227.08 | 243.3195 |
| 227.20 | 243.3498 |
| 228.16 | 230.8318 |
| 228.18 | 230.8362 |
| 228.18 | 230.8362 |
| 231.56 | 0.0000   |
| 235.69 | 204.2337 |
| 236.00 | 199.4736 |
| 236.00 | 199.4736 |
| 238.63 | 180.6550 |
| 238.63 | 180.6550 |
| 238.63 | 180.6550 |
| 238.63 | 180.6550 |
| 239.00 | 180.7217 |
| 240.98 | 181.0857 |
| 241.98 | 181.2686 |
| 241.98 | 181.2686 |
| 241.98 | 181.2686 |
| 244.69 | 172.0236 |
| 245.39 | 181.8889 |
| 247.94 | 166.0675 |
| 248.90 | 168.3976 |
| 249.79 | 171.8080 |
| 252.40 | 178.7894 |
| 252.85 | 173.4146 |
| 252.85 | 173.4146 |
| 254.15 | 0.0000   |
| 256.20 | 190.3913 |
| 256.20 | 190.3913 |
| 260.50 | 183.4887 |
| 260.90 | 204.4403 |
| 262.80 | 180.5862 |
| 264.65 | 135.6749 |
| 268.24 | 152.7344 |
| 268.79 | 154.4740 |
| 269.46 | 162.8807 |
| 269.46 | 162.8807 |
| 269.46 | 162.8807 |
| 269.46 | 162.8807 |
| 271.23 | 163.1469 |
| 273.65 | 156.8378 |
| 276.40 | 171.7304 |
| 277.35 | 171.8777 |
| 277.60 | 171.9184 |
| 277.60 | 171.9184 |
| 278.00 | 167.5140 |
| 278.60 | 174.3098 |
| 279.20 | 167.6941 |
| 279.53 | 162.7136 |
| 280.46 | 162.8498 |
| 281.68 | 157.9853 |
| 283.67 | 175.1064 |
| 284.30 | 176.3279 |
| 285.00 | 186.5507 |
| 285.90 | 183.3286 |
| 286.10 | 170.9845 |
| 286.10 | 170.9845 |
| 287.40 | 147.5323 |
| 288.45 | 0.0000   |
| 290.67 | 198.2195 |
| 290.80 | 198.2409 |
| 291.72 | 174.6612 |
| 293.26 | 0.0000   |
| 293.70 | 157.4100 |
| 295.21 | 157.6165 |
| 295.21 | 157.6165 |

|        |          |
|--------|----------|
| 295.21 | 157.6165 |
| 295.96 | 157.7211 |
| 296.50 | 157.7946 |
| 297.23 | 157.8936 |
| 298.57 | 158.0746 |
| 299.80 | 158.2415 |
| 299.80 | 158.2415 |
| 300.09 | 157.1423 |
| 300.09 | 157.1423 |
| 300.09 | 157.1423 |
| 300.09 | 157.1423 |
| 300.12 | 157.1479 |
| 301.29 | 160.7249 |
| 302.84 | 126.6952 |
| 303.76 | 107.9467 |
| 303.91 | 118.2421 |
| 304.40 | 141.2629 |
| 304.40 | 141.2629 |
| 304.84 | 145.4317 |
| 306.84 | 166.0632 |
| 308.46 | 146.7943 |
| 311.98 | 147.2266 |
| 316.51 | 155.8603 |
| 318.01 | 149.1169 |
| 319.02 | 143.4557 |
| 319.41 | 146.9729 |
| 320.08 | 144.7372 |
| 323.87 | 139.3774 |
| 323.87 | 139.3774 |
| 323.87 | 139.3774 |
| 323.87 | 139.3774 |
| 325.23 | 113.3691 |
| 328.77 | 145.1740 |
| 333.44 | 130.6178 |
| 334.20 | 127.8843 |
| 334.20 | 127.8843 |
| 334.30 | 127.8954 |
| 338.28 | 140.9839 |
| 338.28 | 140.9839 |
| 338.28 | 140.9839 |
| 338.28 | 140.9839 |
| 338.32 | 140.9888 |
| 338.32 | 140.9888 |
| 338.32 | 140.9888 |
| 340.50 | 142.6403 |
| 340.57 | 142.6477 |
| 344.27 | 137.5938 |
| 345.85 | 115.8147 |
| 350.59 | 0.0000   |
| 351.07 | 121.9132 |
| 351.92 | 149.5968 |
| 351.92 | 149.5968 |
| 351.92 | 149.5968 |
| 355.39 | 0.0000   |
| 356.01 | 104.3271 |
| 364.48 | 116.8524 |
| 366.43 | 119.7215 |
| 367.43 | 112.6022 |
| 367.94 | 0.0000   |
| 369.80 | 122.7250 |
| 374.96 | 109.5990 |
| 383.85 | 139.4687 |
| 387.95 | 121.5906 |
| 388.63 | 124.3914 |
| 391.69 | 140.2414 |
| 391.69 | 140.2414 |
| 392.90 | 140.3605 |
| 398.62 | 139.9974 |
| 400.65 | 117.1343 |
| 401.10 | 118.0938 |
| 401.81 | 119.0734 |
| 402.60 | 124.6797 |
| 404.84 | 131.7139 |
| 410.95 | 102.5398 |
| 411.60 | 95.1500  |
| 413.65 | 131.0117 |
| 414.70 | 117.0572 |
| 415.30 | 100.6024 |

|        |          |
|--------|----------|
| 415.76 | 108.0880 |
| 417.63 | 0.0000   |
| 418.52 | 113.8873 |
| 423.70 | 115.2149 |
| 427.08 | 113.5926 |
| 427.89 | 111.7749 |
| 432.53 | 103.6336 |
| 433.93 | 117.8703 |
| 439.47 | 98.4188  |
| 439.56 | 102.2091 |
| 439.89 | 106.9634 |
| 443.98 | 107.2428 |
| 444.90 | 87.3632  |
| 445.03 | 87.3716  |
| 445.03 | 87.3716  |
| 445.03 | 87.3716  |
| 445.03 | 87.3716  |
| 453.90 | 107.9135 |
| 463.38 | 90.6808  |
| 468.07 | 104.8123 |
| 473.00 | 95.6570  |
| 475.06 | 100.6135 |
| 475.35 | 99.6634  |
| 476.78 | 90.0639  |
| 477.59 | 87.2012  |
| 477.96 | 94.0043  |
| 482.03 | 92.2893  |
| 484.57 | 97.2931  |
| 487.03 | 83.7941  |
| 490.36 | 0.0000   |
| 492.35 | 78.1921  |
| 497.08 | 84.2888  |
| 507.63 | 0.0000   |
| 510.53 | 0.0000   |
| 510.84 | 75.0781  |
| 511.00 | 75.0850  |
| 511.85 | 75.1204  |
| 511.85 | 75.1204  |
| 513.99 | 71.2529  |
| 513.99 | 71.2529  |
| 520.41 | 80.4488  |
| 520.65 | 80.4611  |
| 527.90 | 80.7849  |
| 528.96 | 0.0000   |
| 529.64 | 110.8137 |
| 529.87 | 0.0000   |
| 531.02 | 93.9139  |
| 537.32 | 108.2736 |
| 543.00 | 85.4773  |
| 546.56 | 0.0000   |
| 549.76 | 78.7260  |
| 552.65 | 77.8365  |
| 555.20 | 89.0769  |
| 563.23 | 78.2736  |
| 563.90 | 92.5357  |
| 568.70 | 90.7301  |
| 569.32 | 87.7007  |
| 569.50 | 87.7086  |
| 569.67 | 90.7763  |
| 573.80 | 98.1270  |
| 574.00 | 98.1357  |
| 574.64 | 99.1906  |
| 578.91 | 88.5463  |
| 579.30 | 0.0000   |
| 583.14 | 84.2197  |
| 585.48 | 67.4558  |
| 591.81 | 76.3396  |
| 592.07 | 76.3486  |
| 593.00 | 77.4170  |
| 595.88 | 102.3385 |
| 600.56 | 73.5676  |
| 602.52 | 0.0000   |
| 602.71 | 112.8541 |
| 602.71 | 112.8541 |
| 603.60 | 96.3004  |
| 604.41 | 89.6959  |
| 604.70 | 89.7091  |
| 609.31 | 80.1300  |

|        |          |
|--------|----------|
| 609.31 | 80.1300  |
| 609.31 | 80.1300  |
| 609.31 | 80.1300  |
| 610.33 | 80.1700  |
| 612.46 | 83.3813  |
| 614.37 | 78.4519  |
| 618.01 | 82.5633  |
| 621.84 | 78.5294  |
| 621.84 | 78.5294  |
| 631.29 | 78.8887  |
| 633.02 | 83.1660  |
| 633.10 | 84.2212  |
| 634.78 | 76.9142  |
| 635.90 | 81.1710  |
| 636.97 | 91.7605  |
| 645.85 | 77.3174  |
| 646.12 | 82.6251  |
| 656.30 | 67.0529  |
| 657.75 | 93.7256  |
| 657.90 | 0.0000   |
| 661.65 | 80.0240  |
| 661.65 | 80.0240  |
| 664.57 | 0.0000   |
| 666.33 | 93.0269  |
| 666.33 | 93.0269  |
| 675.00 | 64.4110  |
| 677.61 | 77.3855  |
| 685.20 | 72.2589  |
| 692.80 | 83.3258  |
| 695.00 | 72.5758  |
| 696.49 | 82.3782  |
| 696.49 | 82.3782  |
| 697.00 | 84.5651  |
| 697.49 | 84.5841  |
| 698.33 | 91.1239  |
| 698.50 | 95.4712  |
| 699.00 | 99.8333  |
| 702.63 | 79.3425  |
| 706.10 | 106.6761 |
| 706.58 | 0.0000   |
| 706.67 | 108.8806 |
| 709.31 | 71.9438  |
| 711.68 | 76.3831  |
| 713.82 | 89.5599  |
| 717.42 | 59.0707  |
| 720.50 | 63.8443  |
| 721.93 | 0.0000   |
| 722.20 | 59.6312  |
| 722.78 | 52.6289  |
| 722.78 | 52.6289  |
| 722.89 | 52.6318  |
| 722.95 | 56.1422  |
| 723.30 | 56.1500  |
| 724.18 | 50.9058  |
| 727.18 | 73.6002  |
| 733.00 | 63.1388  |
| 735.90 | 65.0534  |
| 739.58 | 51.9025  |
| 742.81 | 74.0909  |
| 744.21 | 70.8145  |
| 747.13 | 54.2831  |
| 751.79 | 89.9088  |
| 752.31 | 92.1490  |
| 753.82 | 59.9903  |
| 755.35 | 64.4747  |
| 756.15 | 63.3840  |
| 756.87 | 56.7291  |
| 763.93 | 39.2681  |
| 765.79 | 53.5884  |
| 766.42 | 58.9633  |
| 766.84 | 60.7601  |
| 776.49 | 85.2194  |
| 778.00 | 62.8325  |
| 778.57 | 72.9465  |
| 778.89 | 72.9564  |
| 783.80 | 61.8549  |
| 785.46 | 56.7200  |
| 792.07 | 46.6388  |



|         |         |
|---------|---------|
| 795.84  | 58.7634 |
| 796.30  | 55.7605 |
| 798.80  | 55.8147 |
| 801.93  | 74.3105 |
| 805.60  | 48.0998 |
| 810.29  | 73.6475 |
| 810.76  | 77.2990 |
| 815.85  | 59.2284 |
| 817.79  | 61.0966 |
| 818.51  | 51.0795 |
| 819.60  | 50.1888 |
| 826.30  | 47.5744 |
| 828.27  | 0.0000  |
| 831.60  | 72.4250 |
| 831.96  | 69.6840 |
| 834.83  | 51.4021 |
| 836.80  | 0.0000  |
| 846.75  | 71.9215 |
| 848.13  | 61.8114 |
| 856.28  | 0.0000  |
| 856.80  | 53.9911 |
| 860.37  | 67.9658 |
| 867.32  | 54.5905 |
| 867.82  | 60.9254 |
| 871.10  | 71.6480 |
| 873.19  | 54.0097 |
| 874.81  | 54.0422 |
| 875.33  | 0.0000  |
| 876.40  | 56.8703 |
| 879.36  | 71.8660 |
| 880.27  | 63.4877 |
| 880.51  | 66.2938 |
| 881.50  | 56.9775 |
| 883.24  | 57.0133 |
| 884.67  | 49.5620 |
| 889.25  | 59.9484 |
| 896.60  | 65.7429 |
| 898.02  | 64.8374 |
| 899.00  | 54.5209 |
| 903.28  | 65.9019 |
| 911.07  | 47.2034 |
| 911.07  | 47.2034 |
| 911.07  | 47.2034 |
| 919.63  | 60.6047 |
| 920.93  | 52.1063 |
| 925.00  | 48.3853 |
| 925.24  | 50.2866 |
| 926.50  | 60.7516 |
| 935.52  | 64.7511 |
| 937.48  | 73.3718 |
| 944.10  | 60.1699 |
| 946.00  | 62.1198 |
| 949.00  | 49.7478 |
| 962.29  | 64.0690 |
| 964.01  | 59.6190 |
| 966.15  | 59.6629 |
| 968.20  | 59.7038 |
| 969.11  | 59.7234 |
| 969.11  | 59.7234 |
| 969.11  | 59.7234 |
| 977.42  | 45.0784 |
| 980.50  | 64.7868 |
| 983.50  | 54.2049 |
| 989.30  | 61.0989 |
| 996.32  | 63.1846 |
| 1001.03 | 62.3094 |
| 1001.68 | 59.4020 |
| 1004.76 | 57.5120 |
| 1021.30 | 0.0000  |
| 1024.50 | 0.0000  |
| 1034.80 | 45.2790 |
| 1036.00 | 52.1900 |
| 1037.82 | 64.0415 |
| 1038.57 | 60.1154 |
| 1038.76 | 0.0000  |
| 1045.16 | 59.2559 |
| 1046.59 | 65.2104 |
| 1048.07 | 70.1818 |

|         |          |
|---------|----------|
| 1050.47 | 63.3125  |
| 1050.47 | 63.3125  |
| 1062.04 | 74.4653  |
| 1063.62 | 59.6016  |
| 1076.63 | 51.8629  |
| 1077.35 | 58.8588  |
| 1078.86 | 57.8867  |
| 1085.78 | 43.0084  |
| 1099.22 | 58.2492  |
| 1112.02 | 65.5332  |
| 1112.84 | 73.9564  |
| 1115.52 | 72.3315  |
| 1120.29 | 74.7949  |
| 1120.29 | 74.7949  |
| 1120.29 | 74.7949  |
| 1120.29 | 74.7949  |
| 1120.51 | 74.7985  |
| 1121.28 | 80.8828  |
| 1124.00 | 0.0000   |
| 1129.67 | 71.9638  |
| 1131.51 | 0.0000   |
| 1147.95 | 0.0000   |
| 1167.94 | 50.2250  |
| 1173.22 | 73.9125  |
| 1175.09 | 49.3031  |
| 1177.93 | 85.3222  |
| 1189.05 | 66.0000  |
| 1204.90 | 80.7993  |
| 1205.75 | 0.0000   |
| 1213.00 | 71.6414  |
| 1221.42 | 74.9320  |
| 1230.97 | 83.4766  |
| 1235.34 | 105.5174 |
| 1236.41 | 0.0000   |
| 1238.25 | 73.1890  |
| 1246.25 | 70.2093  |
| 1260.41 | 0.0000   |
| 1271.85 | 49.5933  |
| 1274.45 | 66.5253  |
| 1274.54 | 67.5813  |
| 1291.56 | 27.5806  |
| 1298.22 | 0.0000   |
| 1312.09 | 43.7287  |
| 1325.50 | 34.2500  |
| 1325.50 | 34.2500  |
| 1332.49 | 48.2498  |
| 1333.61 | 47.1926  |
| 1360.21 | 32.3965  |
| 1362.66 | 0.0000   |
| 1365.15 | 29.1938  |
| 1368.21 | 34.6266  |
| 1368.53 | 0.0000   |
| 1376.25 | 27.1069  |
| 1384.27 | 24.4457  |
| 1394.10 | 25.0507  |
| 1395.20 | 38.1309  |
| 1407.95 | 22.9513  |
| 1434.06 | 18.6992  |
| 1436.60 | 14.6751  |
| 1457.56 | 0.0000   |
| 1460.81 | 23.0642  |
| 1489.15 | 19.5046  |
| 1509.49 | 20.7976  |
| 1596.49 | 31.4128  |
| 1620.62 | 17.2258  |
| 1678.03 | 0.0000   |
| 1691.02 | 10.6876  |
| 1691.02 | 10.6876  |
| 1706.46 | 0.0000   |
| 1750.46 | 0.0000   |
| 1764.49 | 6.9057   |
| 1764.49 | 6.9057   |
| 1764.49 | 6.9057   |
| 1764.49 | 6.9057   |
| 1770.23 | 79.0137  |
| 1771.40 | 24.6979  |
| 1791.20 | 0.0000   |
| 1808.65 | 10.9490  |

1836.01

9.0070

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G244630008

|                             |            |      |
|-----------------------------|------------|------|
| Total Uranium Activity      | 4.7809E+00 | ug/g |
| Total Uranium Counting Unc. | 4.8647E+00 | ug/g |
| Total Uranium Tpu           | 2.4820E-06 | ug/g |
| Total Uranium Mda           | 2.6092E+00 | ug/g |

```

*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON ,SC 29417                *
*               GROSS GAMMA REPORT                  *
*
*****
*
*  BATCH ID      : 941639                          SAMPLE ID   : G244630008
*  ANALYST       : MXR1                             DETECTOR    : GAM16
*  SAMPLE DATE   : 8-JAN-2010 12:00:00.00          COUNT TIME   : 0 02:00:00.00
*  ANALYSIS DATE : 23-JAN-2010 11:47:57.72          SAMPLE ALQT  : 135.220 GRAM
*
*****

```

```

GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.099E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.549E+00
GROSS GAMMA MDA     (pCi/GRAM ) : 3.898E+00
GROSS GAMMA DLC     (pCi/GRAM ) : 1.887E+00

```

## VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 13:51:55.20

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630009.CNF;1
Sample date        : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 11:48:23
Sample ID          : G244630009          Sample quantity  : 1.34720E+02 GRAM
Detector name      : GAM17              Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00      Elapsed real time: 0 02:00:09.63 0.1%
Energy tolerance   : 1.50000 keV        Analyst Initials : MXR1
Abundance limit    : 75.00000           Sensitivity      : 5.00000
Batch ID          : 941639              Detector SN#     :
Matrix Spike ID    :                    LCS ID          : 1032-A
*****

```

| Pk | It | Energy   | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | Fit      |
|----|----|----------|------|-------|------|---------|------|----|----------|------|----------|
| 1  | 0  | 46.55*   | 152  | 458   | 0.89 | 92.73   | 89   | 8  | 2.11E-02 | 26.9 |          |
| 2  | 0  | 63.33*   | 218  | 730   | 0.89 | 126.31  | 123  | 8  | 3.03E-02 | 23.0 |          |
| 3  | 4  | 74.84*   | 942  | 633   | 1.09 | 149.33  | 143  | 15 | 1.31E-01 | 5.5  | 4.17E+00 |
| 4  | 4  | 77.12*   | 1267 | 485   | 1.02 | 153.88  | 143  | 15 | 1.76E-01 | 4.0  |          |
| 5  | 4  | 84.17*   | 103  | 389   | 0.89 | 168.00  | 163  | 28 | 1.43E-02 | 30.3 | 1.54E+00 |
| 6  | 4  | 87.23    | 429  | 500   | 1.16 | 174.12  | 163  | 28 | 5.96E-02 | 9.8  |          |
| 7  | 4  | 89.94    | 261  | 465   | 1.18 | 179.54  | 163  | 28 | 3.62E-02 | 15.3 |          |
| 8  | 4  | 92.84*   | 456  | 488   | 1.36 | 185.33  | 163  | 28 | 6.33E-02 | 10.4 |          |
| 9  | 0  | 129.10   | 158  | 333   | 0.80 | 257.88  | 254  | 8  | 2.19E-02 | 21.5 |          |
| 10 | 2  | 183.68   | 52   | 129   | 1.02 | 367.09  | 365  | 12 | 7.26E-03 | 33.5 | 2.40E+00 |
| 11 | 2  | 185.80*  | 235  | 234   | 1.18 | 371.33  | 365  | 12 | 3.27E-02 | 13.2 |          |
| 12 | 0  | 209.66   | 151  | 407   | 1.14 | 419.07  | 412  | 13 | 2.10E-02 | 28.9 |          |
| 13 | 6  | 238.51*  | 1419 | 173   | 1.04 | 476.80  | 471  | 16 | 1.97E-01 | 3.1  | 4.28E+00 |
| 14 | 6  | 241.48   | 414  | 198   | 1.81 | 482.74  | 471  | 16 | 5.74E-02 | 9.2  |          |
| 15 | 0  | 270.33   | 113  | 175   | 1.09 | 540.46  | 536  | 9  | 1.57E-02 | 23.2 |          |
| 16 | 0  | 277.58   | 85   | 180   | 1.01 | 554.97  | 551  | 9  | 1.17E-02 | 30.6 |          |
| 17 | 0  | 295.04*  | 454  | 155   | 1.09 | 589.90  | 586  | 9  | 6.30E-02 | 6.9  |          |
| 18 | 0  | 299.81   | 111  | 152   | 1.30 | 599.45  | 595  | 8  | 1.54E-02 | 21.5 |          |
| 19 | 0  | 327.76   | 99   | 217   | 1.65 | 655.36  | 650  | 12 | 1.37E-02 | 31.4 |          |
| 20 | 0  | 338.05*  | 275  | 137   | 1.22 | 675.95  | 671  | 9  | 3.81E-02 | 10.0 |          |
| 21 | 0  | 351.65*  | 770  | 211   | 1.18 | 703.16  | 697  | 13 | 1.07E-01 | 5.3  |          |
| 22 | 0  | 409.96   | 60   | 136   | 2.92 | 819.85  | 814  | 11 | 8.38E-03 | 39.7 |          |
| 23 | 0  | 462.76   | 90   | 90    | 1.47 | 925.50  | 921  | 10 | 1.25E-02 | 22.4 |          |
| 24 | 0  | 510.59*  | 142  | 135   | 1.47 | 1021.21 | 1015 | 14 | 1.97E-02 | 21.6 |          |
| 25 | 0  | 582.77*  | 414  | 133   | 1.25 | 1165.64 | 1160 | 13 | 5.75E-02 | 7.7  |          |
| 26 | 0  | 608.92   | 529  | 86    | 1.42 | 1217.97 | 1211 | 15 | 7.34E-02 | 5.8  |          |
| 27 | 0  | 726.27   | 132  | 84    | 1.77 | 1452.81 | 1445 | 14 | 1.83E-02 | 17.1 |          |
| 28 | 0  | 768.00   | 69   | 39    | 1.65 | 1536.31 | 1532 | 9  | 9.59E-03 | 20.4 |          |
| 29 | 0  | 784.99   | 27   | 45    | 0.99 | 1570.33 | 1564 | 10 | 3.77E-03 | 50.0 |          |
| 30 | 0  | 795.10   | 60   | 85    | 1.60 | 1590.55 | 1584 | 14 | 8.36E-03 | 35.3 |          |
| 31 | 0  | 859.74   | 61   | 54    | 1.47 | 1719.91 | 1713 | 13 | 8.48E-03 | 28.1 |          |
| 32 | 0  | 910.35*  | 299  | 28    | 1.94 | 1821.20 | 1816 | 11 | 4.15E-02 | 6.9  |          |
| 33 | 0  | 933.60   | 48   | 24    | 1.89 | 1867.73 | 1863 | 10 | 6.63E-03 | 24.3 |          |
| 34 | 1  | 963.82   | 69   | 29    | 1.83 | 1928.21 | 1924 | 23 | 9.58E-03 | 17.4 | 1.27E+00 |
| 35 | 1  | 968.27*  | 148  | 28    | 1.83 | 1937.13 | 1924 | 23 | 2.06E-02 | 11.4 |          |
| 36 | 0  | 1119.49  | 100  | 78    | 1.18 | 2239.79 | 2233 | 14 | 1.39E-02 | 21.1 |          |
| 37 | 0  | 1459.48* | 992  | 18    | 1.88 | 2920.31 | 2911 | 18 | 1.38E-01 | 3.3  |          |
| 38 | 1  | 1586.84  | 32   | 18    | 2.16 | 3175.27 | 3168 | 24 | 4.39E-03 | 29.8 | 3.02E+00 |

| Pk | It | Energy   | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | Fit |
|----|----|----------|------|-------|------|---------|------|----|----------|------|-----|
| 39 | 1  | 1591.40  | 41   | 14    | 2.16 | 3184.39 | 3168 | 24 | 5.69E-03 | 22.9 |     |
| 40 | 0  | 1728.53  | 18   | 13    | 1.01 | 3458.92 | 3452 | 11 | 2.44E-03 | 47.2 |     |
| 41 | 0  | 1763.20* | 61   | 19    | 2.23 | 3528.33 | 3521 | 15 | 8.51E-03 | 20.7 |     |

Flag: "\*" = Peak area was modified by background subtraction

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630009.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 8-JAN-2010 12:00:00 Acquisition date : 23-JAN-2010 11:48:23
Sample ID        : G244630009 Sample quantity : 134.72 GRAM
Sample type      : SOLID Sample geometry :
Detector name    : GAMMA17 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:09.63 0.1%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 0.00 %
Efficiency type  : Empirical Efficiencies at : Peak Energy
Abundance limit  : 75.00 WTM error limit : 3.00

```

## Full Combined Activity-MDA Report

## ---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| K-40    | +         | 1460.81      | *   | 3.328E+01           | 3.697E+00 | 6.318E-01      | 5.609E-02 | 52.684  |
| CD-109  | +         | 88.03        | *   | 4.922E+00           | 1.080E+00 | 1.052E+00      | 1.027E-01 | 4.678   |
| SN-126  | +         | 64.28        |     | 9.338E-01           | 4.546E-01 | 4.559E-01      | 7.277E-02 | 2.048   |
|         | +         | 86.94        |     | 2.011E+00           | 9.256E-01 | 4.285E-01      | 1.783E-01 | 4.694   |
|         | +         | 87.57        | *   | 4.838E-01           | 1.061E-01 | 1.033E-01      | 1.008E-02 | 4.685   |
| TL-208  | +         | 277.35       |     | 9.713E-01           | 6.077E-01 | 7.074E-01      | 9.007E-02 | 1.373   |
|         | +         | 510.84       |     | 8.912E-01           | 4.006E-01 | 2.648E-01      | 3.235E-02 | 3.365   |
|         | +         | 583.14       | *   | 7.555E-01           | 1.359E-01 | 7.302E-02      | 6.906E-03 | 10.347  |
|         | +         | 860.37       |     | 1.094E+00           | 6.238E-01 | 5.884E-01      | 5.536E-02 | 1.859   |
| BI-210  | +         | 46.50        | *   | 1.655E+00           | 9.067E-01 | 8.857E-01      | 9.608E-02 | 1.868   |
| PB-210  | +         | 46.50        | *   | 1.655E+00           | 9.067E-01 | 8.857E-01      | 9.608E-02 | 1.868   |
| PO-210  | +         | 46.50        | *   | 1.655E+00           | 9.044E-01 | 8.857E-01      | 8.948E-02 | 1.868   |
| BI-211  |           | 72.87        |     | 6.793E+00           | 2.240E+00 | 3.914E+00      | 3.827E-01 | 1.736   |
|         | +         | 351.07       | *   | 5.699E+00           | 8.084E-01 | 3.938E-01      | 3.675E-02 | 14.472  |
| BI-212  | +         | 727.18       | *   | 2.128E+00           | 7.583E-01 | 6.415E-01      | 6.437E-02 | 3.316   |
|         | +         | 785.46       |     | 2.823E+00           | 2.835E+00 | 3.774E+00      | 3.307E-01 | 0.748   |
|         |           | 1620.62      |     | 4.245E-01           | 1.461E+00 | 2.538E+00      | 2.187E-01 | 0.167   |
| PB-212  | +         | 74.81        |     | 3.608E+00           | 6.298E-01 | 3.874E-01      | 5.235E-02 | 9.314   |
|         | +         | 77.11        |     | 2.891E+00           | 3.659E-01 | 2.313E-01      | 2.255E-02 | 12.499  |
|         | +         | 87.30        |     | 2.238E+00           | 5.395E-01 | 4.773E-01      | 6.668E-02 | 4.689   |
|         | +         | 238.63       | *   | 2.203E+00           | 2.606E-01 | 1.009E-01      | 1.018E-02 | 21.832  |
|         | +         | 300.09       |     | 2.713E+00           | 1.201E+00 | 1.340E+00      | 1.460E-01 | 2.024   |
| PO-212  | +         | 74.81        |     | 3.608E+00           | 6.298E-01 | 3.874E-01      | 5.235E-02 | 9.314   |
|         | +         | 77.11        |     | 2.891E+00           | 3.659E-01 | 2.313E-01      | 2.255E-02 | 12.499  |
|         | +         | 87.30        |     | 2.238E+00           | 5.395E-01 | 4.773E-01      | 6.668E-02 | 4.689   |
|         |           | 115.19       |     | 3.078E+00           | 3.687E+00 | 6.284E+00      | 7.075E-01 | 0.490   |
|         | +         | 238.63       | *   | 2.203E+00           | 2.606E-01 | 1.009E-01      | 1.018E-02 | 21.832  |
|         | +         | 300.09       |     | 2.713E+00           | 1.201E+00 | 1.340E+00      | 1.460E-01 | 2.024   |
| BI-214  | +         | 609.31       | *   | 1.832E+00           | 2.836E-01 | 1.353E-01      | 1.376E-02 | 13.537  |
|         | +         | 1120.29      |     | 1.889E+00           | 8.238E-01 | 6.360E-01      | 6.799E-02 | 2.970   |
|         | +         | 1764.49      |     | 1.609E+00           | 6.799E-01 | 4.274E-01      | 3.614E-02 | 3.766   |
| PB-214  | +         | 74.81        |     | 6.217E+00           | 1.026E+00 | 6.675E-01      | 8.179E-02 | 9.314   |
|         | +         | 77.11        |     | 4.957E+00           | 7.322E-01 | 3.966E-01      | 4.906E-02 | 12.499  |
|         | +         | 87.30        |     | 3.833E+00           | 8.913E-01 | 8.176E-01      | 1.017E-01 | 4.689   |



----- Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PO-214  | +         | 241.98       |     | 3.860E+00           | 8.194E-01 | 5.888E-01      | 6.269E-02 | 6.556   |
|         | +         | 295.21       |     | 1.944E+00           | 3.447E-01 | 2.484E-01      | 2.759E-02 | 7.826   |
|         | +         | 351.92       | *   | 1.982E+00           | 2.996E-01 | 1.373E-01      | 1.467E-02 | 14.437  |
|         | +         | 74.81        |     | 6.217E+00           | 1.026E+00 | 6.675E-01      | 8.179E-02 | 9.314   |
|         | +         | 77.11        |     | 4.957E+00           | 7.322E-01 | 3.966E-01      | 4.906E-02 | 12.499  |
|         | +         | 87.30        |     | 3.833E+00           | 8.913E-01 | 8.176E-01      | 1.017E-01 | 4.689   |
| PO-216  | +         | 241.98       |     | 3.860E+00           | 8.194E-01 | 5.888E-01      | 6.269E-02 | 6.556   |
|         | +         | 295.21       |     | 1.944E+00           | 3.447E-01 | 2.484E-01      | 2.759E-02 | 7.826   |
|         | +         | 351.92       | *   | 1.982E+00           | 2.996E-01 | 1.373E-01      | 1.467E-02 | 14.437  |
|         | +         | 74.81        |     | 3.608E+00           | 6.298E-01 | 3.874E-01      | 5.235E-02 | 9.314   |
|         | +         | 77.11        |     | 2.891E+00           | 3.659E-01 | 2.313E-01      | 2.255E-02 | 12.499  |
|         | +         | 87.30        |     | 2.238E+00           | 5.395E-01 | 4.773E-01      | 6.668E-02 | 4.689   |
| PO-218  | +         | 238.63       | *   | 2.203E+00           | 2.606E-01 | 1.009E-01      | 1.018E-02 | 21.832  |
|         | +         | 300.09       |     | 2.713E+00           | 1.201E+00 | 1.340E+00      | 1.460E-01 | 2.024   |
|         | +         | 74.81        |     | 6.217E+00           | 1.026E+00 | 6.675E-01      | 8.179E-02 | 9.314   |
|         | +         | 77.11        |     | 4.957E+00           | 7.322E-01 | 3.966E-01      | 4.906E-02 | 12.499  |
|         | +         | 87.30        |     | 3.833E+00           | 8.913E-01 | 8.176E-01      | 1.017E-01 | 4.689   |
|         | +         | 241.98       |     | 3.860E+00           | 8.194E-01 | 5.888E-01      | 6.269E-02 | 6.556   |
| RA-224  | +         | 295.21       |     | 1.944E+00           | 3.447E-01 | 2.484E-01      | 2.759E-02 | 7.826   |
|         | +         | 351.92       | *   | 1.982E+00           | 2.996E-01 | 1.373E-01      | 1.467E-02 | 14.437  |
|         | +         | 240.98       | *   | 7.320E+00           | 1.499E+00 | 1.150E+00      | 1.040E-01 | 6.367   |
|         | +         | 609.31       | *   | 1.832E+00           | 2.836E-01 | 1.353E-01      | 1.376E-02 | 13.537  |
|         | +         | 1120.29      |     | 1.889E+00           | 8.238E-01 | 6.360E-01      | 6.799E-02 | 2.970   |
|         | +         | 1764.49      |     | 1.609E+00           | 6.799E-01 | 4.274E-01      | 3.614E-02 | 3.766   |
| AC-228  | +         | 338.32       |     | 2.228E+00           | 1.022E+00 | 4.152E-01      | 1.717E-01 | 5.366   |
|         | +         | 911.07       | *   | 2.544E+00           | 4.548E-01 | 3.038E-01      | 3.445E-02 | 8.377   |
|         | +         | 969.11       |     | 2.227E+00           | 7.287E-01 | 4.590E-01      | 1.073E-01 | 4.852   |
|         | +         | 338.32       |     | 2.228E+00           | 1.022E+00 | 4.152E-01      | 1.717E-01 | 5.366   |
|         | +         | 911.07       | *   | 2.544E+00           | 4.548E-01 | 3.038E-01      | 3.445E-02 | 8.377   |
|         | +         | 969.11       |     | 2.227E+00           | 7.287E-01 | 4.590E-01      | 1.073E-01 | 4.852   |
| TH-228  | +         | 74.81        |     | 3.662E+00           | 5.415E-01 | 3.932E-01      | 3.864E-02 | 9.314   |
|         | +         | 77.11        |     | 2.935E+00           | 3.714E-01 | 2.348E-01      | 2.289E-02 | 12.499  |
|         | +         | 87.30        |     | 2.271E+00           | 4.983E-01 | 4.844E-01      | 4.727E-02 | 4.689   |
|         | +         | 238.63       | *   | 2.237E+00           | 2.645E-01 | 1.024E-01      | 1.033E-02 | 21.832  |
|         | +         | 300.09       |     | 2.754E+00           | 2.017E+00 | 1.361E+00      | 8.077E-01 | 2.024   |
|         | +         | 609.31       | *   | 1.832E+00           | 2.836E-01 | 1.353E-01      | 1.376E-02 | 13.537  |
| TH-230  | +         | 1120.29      |     | 1.889E+00           | 8.238E-01 | 6.359E-01      | 6.799E-02 | 2.970   |
|         | +         | 1764.49      |     | 1.609E+00           | 6.799E-01 | 4.273E-01      | 3.614E-02 | 3.766   |
|         | +         | 338.32       |     | 2.228E+00           | 4.867E-01 | 4.152E-01      | 3.741E-02 | 5.366   |
|         | +         | 911.07       | *   | 2.544E+00           | 4.548E-01 | 3.038E-01      | 3.445E-02 | 8.377   |
|         | +         | 969.11       |     | 2.227E+00           | 7.287E-01 | 4.590E-01      | 1.073E-01 | 4.852   |
|         | +         | 63.29        | *   | 2.359E+00           | 1.171E+00 | 1.123E+00      | 2.097E-01 | 2.100   |
| TH-234  | +         | 92.38        |     | 3.561E+00           | 9.993E-01 | 7.173E-01      | 1.346E-01 | 4.965   |
|         | +         | 609.31       | *   | 1.832E+00           | 2.836E-01 | 1.353E-01      | 1.376E-02 | 13.537  |
|         | +         | 1120.29      |     | 1.889E+00           | 8.238E-01 | 6.359E-01      | 6.799E-02 | 2.970   |
|         | +         | 1764.49      |     | 1.609E+00           | 6.799E-01 | 4.273E-01      | 3.614E-02 | 3.766   |
|         | +         | 86.50        | *   | 1.421E+00           | 4.279E-01 | 3.023E-01      | 6.900E-02 | 4.700   |
|         | +         | 95.87        |     | 2.798E-01           | 8.780E-01 | 1.335E+00      | 3.365E-01 | 0.210   |
| U-238   | +         | 63.29        | *   | 2.359E+00           | 1.171E+00 | 1.123E+00      | 2.097E-01 | 2.100   |

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| AM-243  | +         | 92.38        |     | 3.561E+00           | 8.235E-01 | 7.173E-01      | 7.149E-02 | 4.965   |
|         | +         | 74.67        | *   | 5.850E-01           | 8.624E-02 | 6.279E-02      | 6.129E-03 | 9.317   |
|         | +         | 86.72        |     | 5.328E+01           | 1.169E+01 | 1.134E+01      | 1.106E+00 | 4.697   |
|         |           | 117.66       |     | -1.420E+00          | 3.949E+00 | 6.439E+00      | 7.352E-01 | -0.220  |
| ANH-511 |           | 142.18       |     | -2.113E+00          | 1.881E+01 | 3.072E+01      | 3.168E+00 | -0.069  |
|         | +         | 511.00       | *   | 1.925E-01           | 8.503E-02 | 5.722E-02      | 5.110E-03 | 3.364   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| BE-7    |           | 477.59       | *   | -2.363E-01          | 4.216E-01 | 6.620E-01           | 6.299E-02 | -0.357  |
| NA-22   |           | 1274.54      | *   | 1.219E-02           | 6.540E-02 | 1.072E-01           | 9.027E-03 | 0.114   |
| NA-24   |           | 1368.53      | *   | -7.998E-01          | 6.540E-02 | Half-Life too short |           |         |
| AL-26   |           | 1129.67      |     | 1.892E+00           | 2.360E+00 | 4.125E+00           | 3.447E-01 | 0.459   |
|         |           | 1808.65      | *   | 1.596E-02           | 3.836E-02 | 6.824E-02           | 5.719E-03 | 0.234   |
| TI-44   |           | 67.85        |     | 1.624E-02           | 2.857E-02 | 4.710E-02           | 4.639E-03 | 0.345   |
|         | +         | 78.38        | *   | 5.336E-01           | 6.753E-02 | 6.688E-02           | 6.516E-03 | 7.978   |
| SC-46   |           | 889.25       | *   | -1.901E-02          | 5.182E-02 | 8.258E-02           | 7.229E-03 | -0.230  |
|         | +         | 1120.51      |     | 3.230E-01           | 1.392E-01 | 1.910E-01           | 1.603E-02 | 1.691   |
| V-48    |           | 944.10       |     | -6.617E-01          | 1.182E+00 | 1.832E+00           | 1.603E-01 | -0.361  |
|         |           | 983.50       | *   | 1.409E-02           | 8.997E-02 | 1.502E-01           | 1.310E-02 | 0.094   |
|         |           | 1312.09      |     | 8.968E-02           | 1.016E-01 | 1.868E-01           | 1.585E-02 | 0.480   |
| CR-51   |           | 320.08       | *   | -4.614E-02          | 4.314E-01 | 7.215E-01           | 6.890E-02 | -0.064  |
| MN-52   |           | 744.21       |     | 1.387E-01           | 2.938E-01 | 5.124E-01           | 4.453E-02 | 0.271   |
|         |           | 848.13       |     | 1.715E+00           | 7.974E+00 | 1.353E+01           | 1.190E+00 | 0.127   |
|         |           | 935.52       |     | 1.811E-01           | 3.812E-01 | 5.799E-01           | 5.075E-02 | 0.312   |
|         |           | 1246.25      |     | 5.370E-01           | 9.958E+00 | 1.612E+01           | 1.347E+00 | 0.033   |
|         |           | 1333.61      |     | -1.121E+00          | 6.531E+00 | 1.071E+01           | 9.133E-01 | -0.105  |
|         |           | 1434.06      | *   | -2.191E-02          | 2.732E-01 | 4.491E-01           | 3.872E-02 | -0.049  |
| MN-54   |           | 834.83       | *   | 4.019E-03           | 5.094E-02 | 8.529E-02           | 7.499E-03 | 0.047   |
| CO-56   |           | 846.75       | *   | 6.982E-04           | 4.679E-02 | 7.786E-02           | 6.844E-03 | 0.009   |
|         |           | 977.42       |     | 4.340E+00           | 4.353E+00 | 7.461E+00           | 6.512E-01 | 0.582   |
|         |           | 1037.82      |     | 4.346E-01           | 4.581E-01 | 8.121E-01           | 7.385E-02 | 0.535   |
|         |           | 1175.09      |     | -1.322E+00          | 3.094E+00 | 4.779E+00           | 3.906E-01 | -0.277  |
|         |           | 1238.25      |     | 1.909E-01           | 1.372E-01 | 2.440E-01           | 2.097E-02 | 0.782   |
|         |           | 1360.21      |     | 7.223E-01           | 1.311E+00 | 2.339E+00           | 2.002E-01 | 0.309   |
|         |           | 1771.40      |     | -8.950E-02          | 3.124E-01 | 4.805E-01           | 4.058E-02 | -0.186  |
| CO-57   |           | 122.06       | *   | 1.482E-02           | 2.610E-02 | 4.407E-02           | 5.163E-03 | 0.336   |
|         |           | 136.48       |     | -7.078E-02          | 2.247E-01 | 3.642E-01           | 4.100E-02 | -0.194  |
| CO-58   |           | 810.76       | *   | -4.914E-02          | 4.654E-02 | 6.853E-02           | 6.035E-03 | -0.717  |
| FE-59   |           | 142.65       |     | 1.957E-01           | 2.962E+00 | 4.832E+00           | 4.966E-01 | 0.040   |
|         |           | 192.34       |     | 3.336E-01           | 1.085E+00 | 1.775E+00           | 2.384E-01 | 0.188   |
|         |           | 1099.22      | *   | -1.182E-01          | 1.386E-01 | 2.059E-01           | 1.890E-02 | -0.574  |
|         |           | 1291.56      |     | -9.506E-02          | 1.740E-01 | 2.599E-01           | 2.504E-02 | -0.366  |
| CO-60   |           | 1173.22      |     | -3.853E-02          | 6.372E-02 | 9.635E-02           | 7.870E-03 | -0.400  |
|         |           | 1332.49      | *   | -1.861E-02          | 5.339E-02 | 8.572E-02           | 7.306E-03 | -0.217  |
| ZN-65   |           | 1115.52      | *   | -5.211E-02          | 1.495E-01 | 1.995E-01           | 1.679E-02 | -0.261  |
| GE-68   |           | 1077.35      | *   | 4.339E-01           | 1.697E+00 | 2.839E+00           | 2.423E-01 | 0.153   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| AS-73   |           | 53.44        | *   | 1.373E-01           | 2.513E-01 | 4.334E-01           | 4.336E-02 | 0.317   |
| AS-74   |           | 595.88       | *   | 2.332E-02           | 1.121E-01 | 1.842E-01           | 1.623E-02 | 0.127   |
|         |           | 634.78       |     | -4.970E-01          | 5.266E-01 | 7.550E-01           | 6.502E-02 | -0.658  |
| SE-75   |           | 66.05        |     | 6.186E-01           | 3.019E+00 | 4.610E+00           | 5.302E-01 | 0.134   |
|         |           | 96.73        |     | -6.935E-01          | 7.609E-01 | 1.077E+00           | 1.579E-01 | -0.644  |
|         |           | 121.11       |     | -3.489E-02          | 1.425E-01 | 2.331E-01           | 3.190E-02 | -0.150  |
|         |           | 136.00       |     | -1.637E-02          | 4.224E-02 | 6.826E-02           | 7.381E-03 | -0.240  |
|         |           | 198.60       |     | -1.009E+00          | 2.114E+00 | 3.326E+00           | 3.205E-01 | -0.303  |
|         |           | 264.65       | *   | -1.995E-02          | 5.325E-02 | 7.789E-02           | 7.157E-03 | -0.256  |
|         |           | 279.53       |     | 4.119E-02           | 1.317E-01 | 2.018E-01           | 1.914E-02 | 0.204   |
|         |           | 303.91       |     | 1.174E+00           | 2.474E+00 | 3.819E+00           | 4.542E-01 | 0.307   |
|         |           | 400.65       |     | -2.292E-01          | 3.149E-01 | 4.961E-01           | 5.461E-02 | -0.462  |
| BR-77   | +         | 87.88        |     | 1.025E+03           | 2.250E+02 | 3.153E+02           | 3.078E+01 | 3.252   |
|         |           | 200.40       |     | 6.686E+01           | 1.825E+02 | 2.989E+02           | 2.606E+01 | 0.224   |
|         | +         | 239.00       |     | 3.412E+02           | 3.734E+01 | 4.634E+01           | 4.185E+00 | 7.362   |
|         |           | 249.79       |     | -7.957E+00          | 7.279E+01 | 1.149E+02           | 1.044E+01 | -0.069  |
|         |           | 281.68       |     | -2.479E+01          | 1.101E+02 | 1.623E+02           | 1.490E+01 | -0.153  |
|         |           | 297.23       |     | 1.763E+02           | 8.773E+01 | 1.164E+02           | 1.068E+01 | 1.515   |
|         |           | 303.76       |     | 1.051E+02           | 2.038E+02 | 3.156E+02           | 2.894E+01 | 0.333   |
|         |           | 439.47       |     | 2.001E+02           | 1.743E+02 | 3.078E+02           | 2.682E+01 | 0.650   |
|         |           | 484.57       |     | -2.617E+02          | 2.681E+02 | 4.023E+02           | 3.574E+01 | -0.650  |
|         |           | 520.65       | *   | 8.946E+00           | 1.225E+01 | 2.110E+01           | 1.886E+00 | 0.424   |
|         |           | 574.64       |     | 2.425E+02           | 2.488E+02 | 4.341E+02           | 3.855E+01 | 0.559   |
|         |           | 578.91       |     | -3.709E+01          | 1.209E+02 | 1.645E+02           | 1.459E+01 | -0.225  |
|         |           | 585.48       |     | 6.170E+02           | 2.623E+02 | 4.445E+02           | 3.932E+01 | 1.388   |
|         |           | 755.35       |     | 1.994E+02           | 2.029E+02 | 3.665E+02           | 3.195E+01 | 0.544   |
|         |           | 817.79       |     | -2.046E+00          | 1.623E+02 | 2.700E+02           | 2.373E+01 | -0.008  |
| SR-82   |           | 698.33       |     | 2.312E+01           | 4.540E+01 | 7.926E+01           | 6.788E+00 | 0.292   |
|         |           | 776.49       | *   | -2.664E-01          | 4.523E-01 | 7.123E-01           | 6.233E-02 | -0.374  |
|         |           | 1395.20      |     | -1.835E+01          | 1.480E+01 | 2.016E+01           | 1.732E+00 | -0.910  |
| RB-83   |           | 520.41       | *   | 5.966E-02           | 8.376E-02 | 1.441E-01           | 1.288E-02 | 0.414   |
|         |           | 529.64       |     | 6.446E-02           | 1.395E-01 | 2.349E-01           | 2.100E-02 | 0.274   |
|         |           | 552.65       |     | 3.523E-02           | 2.490E-01 | 4.001E-01           | 3.571E-02 | 0.088   |
| RB-84   |           | 881.50       | *   | -8.495E-03          | 9.139E-02 | 1.497E-01           | 1.312E-02 | -0.057  |
| KR-85   |           | 513.99       | *   | 1.541E+01           | 8.964E+00 | 1.501E+01           | 1.341E+00 | 1.027   |
| SR-85   |           | 513.99       | *   | 7.892E-02           | 4.590E-02 | 7.686E-02           | 6.866E-03 | 1.027   |
| RB-86   |           | 1076.63      | *   | -2.031E-01          | 1.116E+00 | 1.785E+00           | 1.523E-01 | -0.114  |
| Y-88    |           | 898.02       |     | -3.359E-02          | 5.803E-02 | 9.057E-02           | 7.955E-03 | -0.371  |
|         |           | 1836.01      | *   | -6.550E-03          | 4.424E-02 | 6.970E-02           | 5.812E-03 | -0.094  |
| ZR-88   |           | 392.90       | *   | -1.221E-04          | 3.671E-02 | 6.096E-02           | 5.136E-03 | -0.002  |
| Y-91    |           | 1204.90      | *   | -8.078E+00          | 2.940E+01 | 4.628E+01           | 3.820E+00 | -0.175  |
| NB-94   |           | 702.63       | *   | -9.904E-03          | 4.129E-02 | 6.818E-02           | 5.848E-03 | -0.145  |
|         |           | 871.10       |     | 3.200E-03           | 4.573E-02 | 7.631E-02           | 6.696E-03 | 0.042   |
| NB-95   |           | 765.79       | *   | 8.344E-02           | 7.047E-02 | 1.140E-01           | 9.962E-03 | 0.732   |
| NB-95M  |           | 235.69       | *   | 7.973E-02           | 1.494E-01 | 2.196E-01           | 2.242E-02 | 0.363   |
| ZR-95   |           | 724.18       |     | 3.053E-01           | 1.596E-01 | 2.705E-01           | 2.539E-02 | 1.129   |
|         |           | 756.15       | *   | 5.617E-02           | 9.307E-02 | 1.634E-01           | 1.565E-02 | 0.344   |
| NB-97   |           | 657.90       | *   | -1.075E-01          | 9.307E-02 | Half-Life too short |           |         |
|         |           | 1024.50      |     | 4.361E+00           | 9.307E-02 | Half-Life too short |           |         |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| ZR-97   | 254.15    |              |     | 1.721E+00           | 9.307E-02 | Half-Life      | too short |         |
|         | 355.39    |              |     | 1.244E+00           | 9.307E-02 | Half-Life      | too short |         |
|         | 507.63    | *            |     | 2.782E+00           | 9.307E-02 | Half-Life      | too short |         |
|         | 602.52    |              |     | -1.715E+00          | 9.307E-02 | Half-Life      | too short |         |
|         | 1021.30   |              |     | 4.923E+00           | 9.307E-02 | Half-Life      | too short |         |
|         | 1147.95   |              |     | -2.170E+00          | 9.307E-02 | Half-Life      | too short |         |
|         | 1362.66   |              |     | 2.878E+00           | 9.307E-02 | Half-Life      | too short |         |
|         | 1750.46   |              |     | 5.828E+00           | 9.307E-02 | Half-Life      | too short |         |
| MO-99   | 140.51    |              |     | -2.196E+01          | 2.824E+01 | 4.302E+01      | 1.218E+01 | -0.511  |
|         | 181.06    |              |     | 1.644E+01           | 1.999E+01 | 3.006E+01      | 5.482E+00 | 0.547   |
|         | 366.43    |              |     | 1.439E+01           | 9.189E+01 | 1.549E+02      | 1.356E+01 | 0.093   |
|         | 739.58    | *            |     | 9.447E-02           | 1.352E+01 | 2.270E+01      | 3.454E+00 | 0.004   |
|         | 778.00    |              |     | 6.990E+00           | 4.344E+01 | 6.739E+01      | 5.899E+00 | 0.104   |
| TC-99M  | 140.51    | *            |     | -2.332E+10          | 4.344E+01 | Half-Life      | too short |         |
| RH-101  | 127.23    |              |     | 1.768E-02           | 3.692E-02 | 5.588E-02      | 6.356E-03 | 0.316   |
|         | 198.01    | *            |     | 1.035E-02           | 3.783E-02 | 6.174E-02      | 5.367E-03 | 0.168   |
|         | 325.23    |              |     | 1.419E-01           | 2.785E-01 | 4.289E-01      | 3.898E-02 | 0.331   |
| RH-102  | 418.52    |              |     | -1.849E-02          | 3.531E-01 | 5.820E-01      | 5.004E-02 | -0.032  |
|         | 475.06    | *            |     | 9.519E-03           | 3.763E-02 | 6.281E-02      | 5.563E-03 | 0.152   |
|         | 631.29    |              |     | 5.681E-02           | 7.515E-02 | 1.282E-01      | 1.107E-02 | 0.443   |
|         | 697.49    |              |     | 3.685E-03           | 1.029E-01 | 1.739E-01      | 1.489E-02 | 0.021   |
|         | 766.84    |              |     | 4.116E-01           | 1.719E-01 | 2.903E-01      | 2.536E-02 | 1.418   |
|         | 1046.59   |              |     | -2.672E-02          | 1.662E-01 | 2.672E-01      | 2.302E-02 | -0.100  |
|         | 1112.84   |              |     | 4.598E-02           | 3.766E-01 | 5.375E-01      | 4.526E-02 | 0.086   |
| RU-103  | 497.08    | *            |     | 6.146E-02           | 5.152E-02 | 9.047E-02      | 1.297E-02 | 0.679   |
|         | 610.33    |              |     | 1.974E+01           | 4.030E+00 | 3.912E+00      | 6.554E-01 | 5.044   |
| RH-106  | 511.85    |              |     | 9.613E-01           | 4.246E-01 | 5.500E-01      | 4.913E-02 | 1.748   |
|         | 621.84    | *            |     | 7.565E-02           | 4.278E-01 | 6.983E-01      | 9.358E-02 | 0.108   |
|         | 1050.47   |              |     | 6.931E-01           | 3.267E+00 | 5.448E+00      | 4.689E-01 | 0.127   |
| RU-106  | 511.85    |              |     | 9.613E-01           | 4.246E-01 | 5.500E-01      | 4.913E-02 | 1.748   |
|         | 621.84    | *            |     | 7.565E-02           | 4.277E-01 | 6.983E-01      | 6.067E-02 | 0.108   |
|         | 1050.47   |              |     | 6.931E-01           | 3.267E+00 | 5.448E+00      | 4.689E-01 | 0.127   |
| AG-108M | 433.93    | *            |     | 1.515E-02           | 3.934E-02 | 6.664E-02      | 6.015E-03 | 0.227   |
|         | 614.37    |              |     | -1.157E-02          | 5.434E-02 | 7.424E-02      | 6.727E-03 | -0.156  |
|         | 722.95    |              |     | 4.407E-02           | 6.335E-02 | 9.949E-02      | 8.930E-03 | 0.443   |
| AG-110M | 657.75    | *            |     | -5.056E-02          | 5.130E-02 | 7.483E-02      | 6.522E-03 | -0.676  |
|         | 677.61    |              |     | -3.172E-01          | 4.091E-01 | 6.018E-01      | 5.256E-02 | -0.527  |
|         | 706.67    |              |     | -3.332E-02          | 2.676E-01 | 4.462E-01      | 3.940E-02 | -0.075  |
|         | 763.93    |              |     | 2.218E-01           | 2.354E-01 | 3.794E-01      | 3.404E-02 | 0.584   |
|         | 884.67    |              |     | 4.885E-02           | 6.185E-02 | 1.102E-01      | 9.957E-03 | 0.443   |
|         | 937.48    |              |     | -1.141E-01          | 1.562E-01 | 1.954E-01      | 1.770E-02 | -0.584  |
|         | 1384.27   |              |     | 2.249E-01           | 2.050E-01 | 3.883E-01      | 3.427E-02 | 0.579   |
| IN-111  | 171.28    |              |     | -1.618E-01          | 1.102E+00 | 1.778E+00      | 1.493E-01 | -0.091  |
|         | 245.39    | *            |     | 8.808E-01           | 1.217E+00 | 1.819E+00      | 1.649E-01 | 0.484   |
| IN-113M | 391.69    | *            |     | 7.042E-03           | 5.415E-02 | 9.069E-02      | 7.880E-03 | 0.078   |
| SN-113  | 391.69    | *            |     | 7.042E-03           | 5.415E-02 | 9.069E-02      | 7.880E-03 | 0.078   |
| IN-114M | 190.27    | *            |     | -8.486E-02          | 2.335E-01 | 3.282E-01      | 2.827E-02 | -0.259  |
| CD-115  | 260.90    |              |     | -2.195E+01          | 1.501E+02 | 2.357E+02      | 2.154E+01 | -0.093  |
|         | 492.35    |              |     | -2.734E+01          | 4.309E+01 | 6.678E+01      | 5.945E+00 | -0.409  |

---- Non-Identified Nuclides ----

| Nuclide  | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|----------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| SN-117M  | 527.90    | *            |     | -4.808E+00          | 1.402E+01 | 2.220E+01      | 1.985E+00 | -0.217  |
|          | 156.02    |              |     | 8.404E-01           | 2.508E+00 | 4.153E+00      | 3.823E-01 | 0.202   |
|          | 158.56    | *            |     | -6.076E-02          | 6.057E-02 | 9.389E-02      | 8.440E-03 | -0.647  |
| SB-122   | 563.90    | *            |     | 6.273E-01           | 2.577E+00 | 4.257E+00      | 3.790E-01 | 0.147   |
|          | 692.80    |              |     | 2.861E+00           | 5.678E+01 | 9.610E+01      | 8.211E+00 | 0.030   |
| I-123    | 159.00    | *            |     | -3.946E+00          | 5.678E+01 | Half-Life      | too short |         |
|          | 528.96    |              |     | -3.592E+02          | 5.678E+01 | Half-Life      | too short |         |
| TE-123M  | 159.00    | *            |     | -2.282E-02          | 3.082E-02 | 4.843E-02      | 4.359E-03 | -0.471  |
| I-124    | 602.71    | *            |     | 2.203E-01           | 8.887E-01 | 1.289E+00      | 1.132E-01 | 0.171   |
|          | 722.78    |              |     | 5.219E+00           | 6.337E+00 | 1.009E+01      | 8.713E-01 | 0.517   |
|          | 1325.50   |              |     | 1.431E-01           | 4.817E+01 | 8.076E+01      | 6.874E+00 | 0.002   |
|          | 1376.25   |              |     | 5.827E+01           | 3.888E+01 | 7.551E+01      | 6.475E+00 | 0.772   |
|          | 1509.49   |              |     | 1.560E+01           | 1.860E+01 | 3.464E+01      | 2.995E+00 | 0.450   |
|          | 1691.02   |              |     | -3.250E+00          | 4.932E+00 | 7.332E+00      | 6.271E-01 | -0.443  |
|          | 602.71    |              |     | 1.305E-02           | 5.266E-02 | 7.638E-02      | 6.708E-03 | 0.171   |
|          | 645.85    |              |     | 7.195E-02           | 6.622E-01 | 1.072E+00      | 9.716E-02 | 0.067   |
|          | 709.31    |              |     | 4.419E-01           | 3.912E+00 | 6.645E+00      | 5.714E-01 | 0.067   |
|          | 713.82    |              |     | 7.234E-01           | 2.182E+00 | 3.762E+00      | 4.527E-01 | 0.192   |
| + SB-124 | 722.78    |              |     | 4.482E-01           | 5.444E-01 | 8.663E-01      | 7.645E-02 | 0.517   |
|          | 968.20    |              |     | 2.290E+01           | 5.608E+00 | 9.908E+00      | 8.656E-01 | 2.311   |
|          | 1045.16   |              |     | 1.005E+00           | 3.413E+00 | 5.741E+00      | 4.948E-01 | 0.175   |
|          | 1325.50   |              |     | 1.313E-02           | 4.419E+00 | 7.409E+00      | 6.306E-01 | 0.002   |
|          | 1368.21   |              |     | -2.169E+00          | 1.932E+00 | 2.560E+00      | 3.441E-01 | -0.847  |
|          | 1436.60   |              |     | 5.721E-01           | 4.898E+00 | 8.290E+00      | 7.148E-01 | 0.069   |
|          | 1691.02   | *            |     | -6.585E-02          | 9.994E-02 | 1.485E-01      | 1.322E-02 | -0.443  |
|          | 427.89    | *            |     | 5.040E-02           | 1.148E-01 | 1.950E-01      | 1.720E-02 | 0.258   |
|          | 463.38    |              |     | 1.084E+00           | 4.953E-01 | 7.147E-01      | 6.775E-02 | 1.516   |
|          | 600.56    |              |     | -1.719E-02          | 2.223E-01 | 3.559E-01      | 3.351E-02 | -0.048  |
| TE-125M  | 635.90    |              |     | -2.815E-01          | 4.053E-01 | 5.967E-01      | 5.551E-02 | -0.472  |
|          | 109.28    | *            |     | 4.283E+00           | 9.069E+00 | 1.533E+01      | 1.883E+00 | 0.279   |
| I-126    | 388.63    |              |     | -1.653E-02          | 2.485E-01 | 4.114E-01      | 3.482E-02 | -0.040  |
|          | 666.33    | *            |     | 1.966E-02           | 2.481E-01 | 3.995E-01      | 3.373E-02 | 0.049   |
| SB-126   | 753.82    |              |     | 2.419E+00           | 1.992E+00 | 3.633E+00      | 3.165E-01 | 0.666   |
|          | 223.80    |              |     | 9.456E-01           | 4.275E+00 | 6.924E+00      | 6.181E-01 | 0.137   |
|          | 278.60    |              |     | 6.377E+00           | 3.950E+00 | 5.217E+00      | 4.789E-01 | 1.222   |
|          | 296.50    |              |     | 1.922E+01           | 3.189E+00 | 4.356E+00      | 3.999E-01 | 4.411   |
|          | 414.70    |              |     | 7.819E-02           | 1.060E-01 | 1.639E-01      | 1.405E-02 | 0.477   |
|          | 415.30    |              |     | 9.024E+00           | 8.294E+00 | 1.374E+01      | 1.179E+00 | 0.657   |
|          | 555.20    |              |     | -7.510E+00          | 5.303E+00 | 7.484E+00      | 6.675E-01 | -1.004  |
|          | 573.80    |              |     | 8.902E-01           | 1.372E+00 | 2.331E+00      | 2.070E-01 | 0.382   |
|          | 593.00    |              |     | -9.733E-01          | 1.193E+00 | 1.778E+00      | 1.569E-01 | -0.547  |
|          | 656.30    |              |     | -2.524E+00          | 4.707E+00 | 7.174E+00      | 6.072E-01 | -0.352  |
| + SB-126 | 666.33    |              |     | 8.212E-03           | 1.036E-01 | 1.669E-01      | 1.409E-02 | 0.049   |
|          | 675.00    |              |     | -1.423E+00          | 2.548E+00 | 3.838E+00      | 3.254E-01 | -0.371  |
|          | 695.00    |              |     | 2.294E-02           | 1.031E-01 | 1.766E-01      | 1.511E-02 | 0.130   |
|          | 697.00    |              |     | 1.240E-01           | 3.550E-01 | 6.134E-01      | 5.250E-02 | 0.202   |
|          | 720.50    | *            |     | 2.729E-02           | 2.107E-01 | 3.132E-01      | 2.704E-02 | 0.087   |
|          | 856.80    |              |     | 8.891E-01           | 5.951E-01 | 1.034E+00      | 9.087E-02 | 0.860   |
|          | 989.30    |              |     | 1.021E+00           | 1.636E+00 | 2.854E+00      | 2.488E-01 | 0.358   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| SB-127  |           | 1034.80      |     | -3.593E+00          | 1.302E+01 | 2.070E+01      | 1.789E+00 | -0.174  |
|         |           | 1213.00      |     | -1.718E+00          | 6.954E+00 | 1.096E+01      | 9.069E-01 | -0.157  |
|         |           | 61.10        |     | 5.268E+00           | 2.853E+01 | 4.405E+01      | 5.392E+00 | 0.120   |
|         |           | 252.40       |     | 1.200E+00           | 4.928E+00 | 7.899E+00      | 3.327E+00 | 0.152   |
|         |           | 290.80       |     | -1.238E+01          | 2.564E+01 | 3.686E+01      | 4.263E+00 | -0.336  |
|         |           | 411.60       |     | -1.138E+00          | 1.713E+01 | 2.478E+01      | 3.882E+00 | -0.046  |
|         |           | 444.90       |     | -5.928E+00          | 1.178E+01 | 1.866E+01      | 2.349E+00 | -0.318  |
|         |           | 473.00       |     | 1.128E-01           | 2.090E+00 | 3.443E+00      | 4.472E-01 | 0.033   |
|         |           | 543.00       |     | -1.569E+01          | 1.984E+01 | 2.972E+01      | 4.326E+00 | -0.528  |
|         |           | 603.60       |     | -1.498E+01          | 1.704E+01 | 2.129E+01      | 2.679E+00 | -0.704  |
| XE-127  |           | 685.20       | *   | 1.506E-01           | 1.946E+00 | 3.126E+00      | 3.523E-01 | 0.048   |
|         |           | 698.50       |     | 1.218E+01           | 1.974E+01 | 3.461E+01      | 5.454E+00 | 0.352   |
|         |           | 722.20       |     | 3.367E+01           | 4.381E+01 | 6.925E+01      | 7.712E+00 | 0.486   |
|         | +         | 783.80       |     | 5.667E+00           | 5.714E+00 | 8.061E+00      | 1.006E+00 | 0.703   |
|         |           | 57.60        |     | 4.998E-01           | 2.356E+00 | 4.043E+00      | 4.060E-01 | 0.124   |
|         |           | 145.22       |     | 5.123E-01           | 7.633E-01 | 1.272E+00      | 1.283E-01 | 0.403   |
|         |           | 172.10       |     | -8.887E-03          | 1.344E-01 | 2.177E-01      | 1.830E-02 | -0.041  |
|         |           | 202.84       | *   | -6.003E-02          | 5.851E-02 | 8.416E-02      | 7.358E-03 | -0.713  |
|         |           | 374.96       |     | 4.059E-02           | 2.260E-01 | 3.809E-01      | 3.295E-02 | 0.107   |
|         |           | 80.18        |     | -2.545E+00          | 4.879E+00 | 5.676E+00      | 5.556E-01 | -0.448  |
| I-131   |           | 284.30       |     | -7.927E-01          | 1.673E+00 | 2.762E+00      | 2.653E-01 | -0.287  |
|         |           | 364.48       | *   | -3.254E-02          | 1.295E-01 | 2.126E-01      | 1.963E-02 | -0.153  |
|         |           | 636.97       |     | 1.277E+00           | 2.093E+00 | 3.531E+00      | 3.206E-01 | 0.362   |
|         |           | 722.89       |     | 8.659E+00           | 1.033E+01 | 1.647E+01      | 1.431E+00 | 0.526   |
|         |           | 49.72        |     | 1.087E+00           | 4.405E+00 | 6.887E+00      | 8.246E-01 | 0.158   |
|         |           | 111.76       |     | -6.245E+00          | 2.871E+01 | 4.724E+01      | 6.064E+00 | -0.132  |
|         |           | 116.30       |     | 2.581E+01           | 2.779E+01 | 4.740E+01      | 6.202E+00 | 0.544   |
|         |           | 228.16       | *   | 3.252E-01           | 7.408E-01 | 1.210E+00      | 1.922E-01 | 0.269   |
|         |           | 53.15        |     | 3.710E-01           | 1.071E+00 | 1.838E+00      | 1.839E-01 | 0.202   |
|         |           | 79.62        |     | 3.266E-01           | 1.278E+00 | 1.567E+00      | 2.490E-01 | 0.208   |
| BA-133  |           | 81.00        |     | -8.247E-02          | 1.067E-01 | 1.209E-01      | 1.996E-02 | -0.682  |
|         | +         | 276.40       |     | 9.599E-01           | 6.048E-01 | 7.859E-01      | 1.162E-01 | 1.221   |
|         |           | 302.84       |     | 1.606E-01           | 1.672E-01 | 2.659E-01      | 3.630E-02 | 0.604   |
|         |           | 356.01       | *   | 3.507E-02           | 5.534E-02 | 8.558E-02      | 1.143E-02 | 0.410   |
|         |           | 383.85       |     | -1.660E-01          | 3.673E-01 | 5.927E-01      | 7.434E-02 | -0.280  |
|         | +         | 510.53       |     | 1.772E+00           | 3.673E-01 | Half-Life      | too short |         |
|         |           | 529.87       | *   | 4.695E-03           | 3.673E-01 | Half-Life      | too short |         |
|         |           | 706.58       |     | -4.843E-02          | 3.673E-01 | Half-Life      | too short |         |
|         |           | 856.28       |     | 4.991E-01           | 3.673E-01 | Half-Life      | too short |         |
|         |           | 875.33       |     | 1.453E-02           | 3.673E-01 | Half-Life      | too short |         |
| CS-134  |           | 1236.41      |     | 9.218E-01           | 3.673E-01 | Half-Life      | too short |         |
|         |           | 1298.22      |     | 2.058E-01           | 3.673E-01 | Half-Life      | too short |         |
|         |           | 475.35       |     | 1.130E+00           | 2.421E+00 | 4.100E+00      | 3.632E-01 | 0.276   |
|         |           | 563.23       |     | -4.849E-02          | 4.868E-01 | 7.825E-01      | 7.031E-02 | -0.062  |
|         |           | 569.32       |     | 4.422E-03           | 2.637E-01 | 4.273E-01      | 3.849E-02 | 0.010   |
|         |           | 604.70       |     | -1.622E-02          | 4.880E-02 | 6.589E-02      | 5.794E-03 | -0.246  |
|         | +         | 795.84       | *   | 1.646E-01           | 1.171E-01 | 1.362E-01      | 1.204E-02 | 1.208   |
|         |           | 801.93       |     | -9.870E-02          | 5.759E-01 | 8.627E-01      | 7.615E-02 | -0.114  |
|         |           | 1038.57      |     | 1.922E+00           | 5.838E+00 | 9.833E+00      | 8.489E-01 | 0.195   |

---- Non-Identified Nuclides ----

| Nuclide                               | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------------------------------------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| CS-135<br>I-135                       |           | 1167.94      |     | 5.701E-01           | 3.779E+00 | 6.203E+00      | 5.082E-01 | 0.092   |
|                                       |           | 1365.15      |     | -1.265E+00          | 1.389E+00 | 1.966E+00      | 1.761E-01 | -0.643  |
|                                       |           | 268.24       | *   | 1.372E-01           | 1.952E-01 | 2.893E-01      | 3.019E-02 | 0.474   |
|                                       |           | 288.45       |     | -7.209E+09          | 1.952E-01 | Half-Life      | too short |         |
|                                       |           | 417.63       |     | -1.308E+10          | 1.952E-01 | Half-Life      | too short |         |
|                                       |           | 546.56       |     | 1.305E+10           | 1.952E-01 | Half-Life      | too short |         |
|                                       |           | 836.80       |     | 2.871E+10           | 1.952E-01 | Half-Life      | too short |         |
|                                       |           | 1038.76      |     | 7.166E+09           | 1.952E-01 | Half-Life      | too short |         |
|                                       |           | 1124.00      |     | -1.434E+10          | 1.952E-01 | Half-Life      | too short |         |
|                                       |           | 1131.51      |     | 1.801E+09           | 1.952E-01 | Half-Life      | too short |         |
|                                       |           | 1260.41      | *   | -4.382E+09          | 1.952E-01 | Half-Life      | too short |         |
|                                       |           | 1457.56      |     | 9.439E+11           | 1.952E-01 | Half-Life      | too short |         |
|                                       |           | 1678.03      |     | -1.111E+09          | 1.952E-01 | Half-Life      | too short |         |
|                                       |           | 1706.46      |     | 3.249E+09           | 1.952E-01 | Half-Life      | too short |         |
| CS-136                                |           | 1791.20      |     | 1.892E+10           | 1.952E-01 | Half-Life      | too short |         |
|                                       | +         | 66.91        |     | 4.432E-01           | 4.971E-01 | 7.710E-01      | 1.246E-01 | 0.575   |
|                                       |           | 86.29        |     | 6.273E+00           | 1.500E+00 | 1.857E+00      | 2.532E-01 | 3.379   |
|                                       |           | 153.22       |     | 3.650E-01           | 7.349E-01 | 1.225E+00      | 1.271E-01 | 0.298   |
|                                       |           | 163.89       |     | 1.563E-01           | 1.210E+00 | 1.982E+00      | 1.895E-01 | 0.079   |
|                                       |           | 176.55       |     | -8.351E-02          | 4.011E-01 | 6.440E-01      | 5.774E-02 | -0.130  |
|                                       |           | 273.65       |     | 3.084E-01           | 6.886E-01 | 7.991E-01      | 7.757E-02 | 0.386   |
|                                       |           | 340.57       |     | 9.777E-02           | 1.501E-01 | 2.330E-01      | 2.151E-02 | 0.420   |
|                                       |           | 818.51       |     | -2.276E-02          | 9.637E-02 | 1.569E-01      | 1.380E-02 | -0.145  |
|                                       |           | 1048.07      | *   | -6.972E-02          | 1.542E-01 | 2.401E-01      | 2.156E-02 | -0.290  |
| BA-137M<br>CS-137<br>CE-139<br>BA-140 |           | 1235.34      |     | 6.165E-01           | 9.321E-01 | 1.576E+00      | 1.834E-01 | 0.391   |
|                                       |           | 661.65       | *   | 3.122E-02           | 5.543E-02 | 9.194E-02      | 7.745E-03 | 0.340   |
|                                       |           | 661.65       | *   | 3.300E-02           | 5.859E-02 | 9.719E-02      | 8.203E-03 | 0.340   |
|                                       |           | 165.85       | *   | -2.359E-02          | 3.354E-02 | 5.274E-02      | 4.398E-03 | -0.447  |
| LA-140                                |           | 162.64       |     | 6.328E-01           | 8.322E-01 | 1.398E+00      | 1.277E-01 | 0.453   |
|                                       |           | 304.84       |     | 5.865E-01           | 1.371E+00 | 2.283E+00      | 6.438E-01 | 0.257   |
|                                       |           | 423.70       |     | -1.265E+00          | 2.405E+00 | 3.775E+00      | 1.224E+00 | -0.335  |
|                                       | +         | 537.32       | *   | 3.698E-01           | 3.385E-01 | 5.616E-01      | 1.866E-01 | 0.659   |
|                                       |           | 328.77       |     | 9.792E-01           | 6.228E-01 | 6.912E-01      | 6.589E-02 | 1.417   |
|                                       |           | 432.53       |     | -7.990E-01          | 2.479E+00 | 3.995E+00      | 3.634E-01 | -0.200  |
|                                       |           | 487.03       |     | 3.296E-02           | 1.662E-01 | 2.762E-01      | 2.599E-02 | 0.119   |
|                                       |           | 751.79       |     | -6.849E-01          | 2.333E+00 | 3.816E+00      | 3.672E-01 | -0.179  |
|                                       |           | 815.85       |     | 4.214E-01           | 4.179E-01 | 7.554E-01      | 7.376E-02 | 0.558   |
|                                       |           | 867.82       |     | 2.277E-01           | 1.802E+00 | 3.024E+00      | 2.791E-01 | 0.075   |
|                                       |           | 919.63       |     | -2.354E+00          | 4.298E+00 | 6.793E+00      | 7.305E-01 | -0.347  |
|                                       |           | 925.24       |     | -3.597E-01          | 1.633E+00 | 2.639E+00      | 2.450E-01 | -0.136  |
|                                       |           | 1596.49      | *   | 5.661E-03           | 1.172E-01 | 1.682E-01      | 1.452E-02 | 0.034   |
|                                       |           | 145.44       | *   | -8.179E-03          | 7.057E-02 | 1.141E-01      | 1.164E-02 | -0.072  |
| CE-141<br>CE-143                      |           | 57.37        |     | 1.809E-05           | 7.057E-02 | Half-Life      | too short |         |
|                                       |           | 231.56       |     | -2.303E-03          | 7.057E-02 | Half-Life      | too short |         |
|                                       |           | 293.26       | *   | 8.358E-04           | 7.057E-02 | Half-Life      | too short |         |
|                                       | +         | 350.59       |     | 4.242E-02           | 7.057E-02 | Half-Life      | too short |         |
|                                       |           | 490.36       |     | -6.162E-04          | 7.057E-02 | Half-Life      | too short |         |
|                                       |           | 664.57       |     | -6.864E-04          | 7.057E-02 | Half-Life      | too short |         |
|                                       |           | 721.93       |     | 1.194E-03           | 7.057E-02 | Half-Life      | too short |         |

## ---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| CE-144  |           | 80.11        |     | -1.190E+00          | 2.267E+00 | 2.637E+00      | 2.568E-01 | -0.451  |
|         |           | 133.54       | *   | 9.628E-02           | 2.314E-01 | 3.695E-01      | 6.268E-02 | 0.261   |
| PM-144  |           | 476.78       |     | -1.733E-02          | 9.009E-02 | 1.457E-01      | 1.406E-02 | -0.119  |
|         |           | 618.01       |     | 1.224E-02           | 4.292E-02 | 7.070E-02      | 6.323E-03 | 0.173   |
|         |           | 696.49       | *   | 1.065E-02           | 4.626E-02 | 7.927E-02      | 6.786E-03 | 0.134   |
|         |           | 778.57       |     | 3.392E-01           | 3.057E+00 | 4.515E+00      | 3.953E-01 | 0.075   |
| PR-144  |           | 696.49       | *   | 7.219E-01           | 3.134E+00 | 5.371E+00      | 4.596E-01 | 0.134   |
|         |           | 1489.15      |     | -2.222E+01          | 1.656E+01 | 2.119E+01      | 1.831E+00 | -1.049  |
| PM-146  |           | 453.90       | *   | 2.024E-02           | 5.408E-02 | 9.125E-02      | 9.904E-03 | 0.222   |
|         |           | 633.02       |     | 2.932E-01           | 1.983E+00 | 3.219E+00      | 1.203E+00 | 0.091   |
|         |           | 735.90       |     | -6.909E-02          | 1.781E-01 | 2.865E-01      | 8.198E-02 | -0.241  |
|         |           | 747.13       |     | -1.087E-01          | 1.210E-01 | 1.855E-01      | 2.613E-02 | -0.586  |
| ND-147  | +         | 91.11        |     | 1.010E+00           | 3.265E-01 | 4.660E-01      | 4.908E-02 | 2.167   |
|         |           | 319.41       |     | 6.216E-01           | 3.793E+00 | 6.440E+00      | 5.873E-01 | 0.097   |
|         |           | 439.89       |     | 1.137E+01           | 7.336E+00 | 1.321E+01      | 1.152E+00 | 0.861   |
|         |           | 531.02       | *   | 3.631E-01           | 7.352E-01 | 1.238E+00      | 1.875E-01 | 0.293   |
| PM-149  |           | 285.90       | *   | -8.588E+00          | 9.534E+01 | 1.607E+02      | 2.549E+01 | -0.053  |
| EU-152  |           | 121.78       |     | -1.757E-02          | 7.724E-02 | 1.265E-01      | 1.604E-02 | -0.139  |
|         |           | 244.69       |     | 8.458E-02           | 3.931E-01 | 5.655E-01      | 5.126E-02 | 0.150   |
|         |           | 344.27       | *   | -1.049E-02          | 1.080E-01 | 1.798E-01      | 1.701E-02 | -0.058  |
|         |           | 443.98       |     | -1.297E+00          | 1.208E+00 | 1.827E+00      | 1.596E-01 | -0.710  |
|         |           | 778.89       |     | -5.606E-02          | 3.559E-01 | 5.060E-01      | 4.430E-02 | -0.111  |
|         |           | 867.32       |     | 1.440E-01           | 1.100E+00 | 1.800E+00      | 1.580E-01 | 0.080   |
|         | +         | 964.01       |     | 1.194E+00           | 4.277E-01 | 7.893E-01      | 6.899E-02 | 1.512   |
|         |           | 1085.78      |     | 9.490E-02           | 5.151E-01 | 8.560E-01      | 7.285E-02 | 0.111   |
|         |           | 1112.02      |     | 4.585E-02           | 4.985E-01 | 7.424E-01      | 6.253E-02 | 0.062   |
|         |           | 1407.95      |     | -2.123E-02          | 2.745E-01 | 4.538E-01      | 3.904E-02 | -0.047  |
| GD-153  |           | 69.67        |     | -1.193E+00          | 1.157E+00 | 1.683E+00      | 1.652E-01 | -0.709  |
|         | +         | 83.37        |     | 2.021E+01           | 1.239E+01 | 2.082E+01      | 2.028E+00 | 0.971   |
|         |           | 97.43        | *   | -9.900E-02          | 8.044E-02 | 1.113E-01      | 1.138E-02 | -0.890  |
|         |           | 103.18       |     | -8.004E-02          | 1.023E-01 | 1.648E-01      | 1.736E-02 | -0.486  |
| EU-154  |           | 123.07       |     | 1.186E-02           | 5.464E-02 | 9.106E-02      | 1.257E-02 | 0.130   |
|         |           | 247.94       |     | -1.129E-01          | 4.048E-01 | 6.321E-01      | 7.475E-02 | -0.179  |
|         |           | 591.81       |     | -4.298E-02          | 8.124E-01 | 1.305E+00      | 1.543E-01 | -0.033  |
|         |           | 723.30       |     | 2.519E-01           | 2.704E-01 | 4.326E-01      | 4.130E-02 | 0.582   |
|         |           | 756.87       |     | -4.374E-02          | 9.749E-01 | 1.627E+00      | 1.960E-01 | -0.027  |
|         |           | 873.19       |     | 8.568E-02           | 3.947E-01 | 6.675E-01      | 8.246E-02 | 0.128   |
|         |           | 996.32       |     | -7.537E-02          | 5.056E-01 | 8.166E-01      | 1.454E-01 | -0.092  |
|         |           | 1004.76      |     | 2.667E-02           | 2.800E-01 | 4.635E-01      | 5.420E-02 | 0.058   |
|         |           | 1274.45      | *   | 3.404E-02           | 1.827E-01 | 2.993E-01      | 3.339E-02 | 0.114   |
| EU-155  |           | 48.70        |     | -1.396E-01          | 5.136E-01 | 7.846E-01      | 7.881E-02 | -0.178  |
|         |           | 60.01        |     | 1.825E+00           | 2.389E+00 | 3.768E+00      | 3.790E-01 | 0.484   |
|         | +         | 86.54        |     | 5.827E-01           | 1.280E-01 | 1.792E-01      | 1.761E-02 | 3.252   |
|         |           | 105.31       | *   | 2.014E-01           | 1.079E-01 | 1.884E-01      | 2.025E-02 | 1.069   |
| TB-160  | +         | 86.79        |     | 1.555E+00           | 3.410E-01 | 4.810E-01      | 4.692E-02 | 3.232   |
|         |           | 197.04       |     | -1.569E-01          | 6.615E-01 | 1.054E+00      | 9.156E-02 | -0.149  |
|         |           | 215.65       |     | 5.046E-01           | 8.446E-01 | 1.394E+00      | 1.235E-01 | 0.362   |
|         | +         | 298.57       |     | 3.943E-01           | 1.730E-01 | 2.470E-01      | 2.267E-02 | 1.596   |
|         |           | 879.36       | *   | -3.084E-02          | 1.812E-01 | 2.951E-01      | 2.587E-02 | -0.105  |



----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| HO-166M |           | 962.29       |     | 1.093E+00           | 8.613E-01 | 1.399E+00      | 1.223E-01 | 0.781   |
|         |           | 966.15       |     | 1.628E+00           | 3.825E-01 | 7.416E-01      | 6.481E-02 | 2.195   |
|         |           | 1177.93      |     | -3.170E-01          | 5.223E-01 | 7.922E-01      | 6.481E-02 | -0.400  |
|         |           | 1271.85      |     | -1.267E-02          | 1.067E+00 | 1.712E+00      | 1.440E-01 | -0.007  |
|         |           | 80.57        |     | 1.539E-02           | 2.777E-01 | 3.360E-01      | 3.273E-02 | 0.046   |
|         | +         | 184.41       |     | 4.178E-02           | 2.822E-02 | 7.815E-02      | 6.681E-03 | 0.535   |
|         |           | 280.46       |     | 6.294E-02           | 1.014E-01 | 1.586E-01      | 1.456E-02 | 0.397   |
|         | +         | 410.95       |     | 5.932E-01           | 4.739E-01 | 5.406E-01      | 4.623E-02 | 1.097   |
|         |           | 711.68       | *   | 5.498E-02           | 8.488E-02 | 1.493E-01      | 1.285E-02 | 0.368   |
|         |           | 752.31       |     | 3.279E-01           | 3.542E-01 | 6.368E-01      | 5.546E-02 | 0.515   |
| TM-171  |           | 810.29       |     | -8.815E-02          | 7.373E-02 | 1.072E-01      | 9.422E-03 | -0.822  |
|         |           | 51.35        |     | -3.307E+00          | 7.743E+00 | 1.306E+01      | 1.307E+00 | -0.253  |
|         |           | 52.39        |     | 8.533E-01           | 4.420E+00 | 7.553E+00      | 7.556E-01 | 0.113   |
|         |           | 59.40        |     | -2.158E+00          | 1.270E+01 | 1.935E+01      | 1.950E+00 | -0.112  |
|         |           | 66.72        | *   | 1.377E+01           | 1.809E+01 | 2.812E+01      | 2.776E+00 | 0.490   |
| LU-176  | +         | 88.36        |     | 1.148E+00           | 2.517E-01 | 3.454E-01      | 3.377E-02 | 3.323   |
|         |           | 201.83       |     | -2.424E-02          | 3.368E-02 | 5.223E-02      | 4.561E-03 | -0.464  |
|         |           | 306.84       | *   | -4.042E-02          | 2.713E-02 | 4.127E-02      | 3.781E-03 | -0.979  |
| LU-177  |           | 401.10       |     | -3.712E+00          | 8.133E+00 | 1.308E+01      | 1.110E+00 | -0.284  |
|         |           | 112.95       |     | -2.951E-01          | 1.602E+00 | 2.638E+00      | 2.933E-01 | -0.112  |
| LU-177M | +         | 208.36       | *   | 4.095E+00           | 2.391E+00 | 2.306E+00      | 2.028E-01 | 1.776   |
|         |           | 52.97        |     | 1.628E-01           | 4.785E-01 | 8.209E-01      | 8.213E-02 | 0.198   |
| HF-181  |           | 54.07        |     | 1.262E-01           | 2.709E-01 | 4.660E-01      | 4.664E-02 | 0.271   |
|         |           | 61.30        |     | 6.770E-02           | 7.730E-01 | 1.189E+00      | 1.191E-01 | 0.057   |
|         |           | 121.62       |     | -1.060E-01          | 3.950E-01 | 6.457E-01      | 7.541E-02 | -0.164  |
|         |           | 147.16       |     | -2.498E-01          | 7.054E-01 | 1.137E+00      | 1.129E-01 | -0.220  |
|         |           | 171.86       |     | -1.155E-01          | 5.459E-01 | 8.780E-01      | 7.379E-02 | -0.132  |
|         |           | 218.09       |     | 5.049E-01           | 9.684E-01 | 1.592E+00      | 1.414E-01 | 0.317   |
|         |           | 268.79       |     | 1.927E+00           | 1.038E+00 | 1.641E+00      | 1.504E-01 | 1.174   |
|         |           | 319.02       |     | 1.449E-01           | 2.991E-01 | 5.163E-01      | 4.708E-02 | 0.281   |
|         |           | 367.43       |     | 7.026E-02           | 1.024E+00 | 1.716E+00      | 1.500E-01 | 0.041   |
|         |           | 413.65       | *   | 1.467E-01           | 2.416E-01 | 3.702E-01      | 3.172E-02 | 0.396   |
|         |           | 56.28        |     | -1.747E-01          | 3.369E-01 | 5.648E-01      | 5.661E-02 | -0.309  |
|         |           | 57.53        |     | 3.228E-02           | 1.972E-01 | 3.380E-01      | 3.395E-02 | 0.095   |
|         |           | 65.20        |     | -1.990E-01          | 5.795E-01 | 8.668E-01      | 8.584E-02 | -0.230  |
|         |           | 133.02       |     | 6.589E-02           | 7.868E-02 | 1.207E-01      | 1.325E-02 | 0.546   |
|         |           | 136.25       |     | -2.013E-01          | 4.920E-01 | 7.941E-01      | 8.535E-02 | -0.254  |
| W-181   |           | 345.85       |     | -9.505E-02          | 2.446E-01 | 3.484E-01      | 3.119E-02 | -0.273  |
|         |           | 482.03       | *   | -1.832E-02          | 5.078E-02 | 8.074E-02      | 7.168E-03 | -0.227  |
|         |           | 56.28        |     | -6.821E-02          | 1.321E-01 | 2.214E-01      | 2.220E-02 | -0.308  |
|         |           | 57.53        |     | 1.255E-02           | 7.736E-02 | 1.326E-01      | 1.331E-02 | 0.095   |
|         |           | 65.20        | *   | -7.745E-02          | 2.255E-01 | 3.373E-01      | 3.341E-02 | -0.230  |
| TA-182  |           | 67.75        |     | 3.776E-02           | 7.234E-02 | 1.125E-01      | 1.108E-02 | 0.336   |
|         |           | 100.10       |     | 2.298E-01           | 1.657E-01 | 2.854E-01      | 2.958E-02 | 0.805   |
|         |           | 152.43       |     | -1.156E-01          | 3.710E-01 | 5.981E-01      | 5.686E-02 | -0.193  |
|         |           | 222.10       |     | -2.133E-02          | 3.796E-01 | 6.058E-01      | 5.399E-02 | -0.035  |
|         |           | 1001.68      |     | -6.852E-01          | 2.790E+00 | 4.462E+00      | 3.881E-01 | -0.154  |
|         |           | 1121.28      |     | 9.824E-01           | 2.832E-01 | 5.149E-01      | 4.319E-02 | 1.908   |
|         |           | 1189.05      |     | -2.109E-01          | 4.513E-01 | 6.954E-01      | 5.711E-02 | -0.303  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| RE-183  | 1221.42   | *            |     | 2.810E-03           | 2.766E-01 | 4.465E-01      | 3.704E-02 | 0.006   |
|         | 1230.97   |              |     | -4.201E-01          | 7.243E-01 | 1.104E+00      | 9.186E-02 | -0.380  |
|         | 57.98     |              |     | 1.133E-02           | 7.915E-02 | 1.355E-01      | 1.362E-02 | 0.084   |
|         | 59.32     |              |     | -1.026E-02          | 5.193E-02 | 7.907E-02      | 7.967E-03 | -0.130  |
|         | 67.20     |              |     | 8.797E-02           | 1.285E-01 | 1.993E-01      | 1.965E-02 | 0.441   |
| RE-184  | 162.32    | *            |     | 1.156E-01           | 1.222E-01 | 2.067E-01      | 1.789E-02 | 0.559   |
|         | 208.81    |              |     | 3.725E+00           | 2.175E+00 | 2.118E+00      | 1.864E-01 | 1.758   |
|         | 291.72    |              |     | 1.175E-01           | 1.096E+00 | 1.651E+00      | 1.517E-01 | 0.071   |
|         | 57.98     |              |     | 4.177E-02           | 2.919E-01 | 4.997E-01      | 5.022E-02 | 0.084   |
|         | 59.32     |              |     | -3.781E-02          | 1.913E-01 | 2.913E-01      | 2.935E-02 | -0.130  |
| OS-185  | 67.20     |              |     | 3.243E-01           | 4.737E-01 | 7.347E-01      | 7.244E-02 | 0.441   |
|         | 161.27    |              |     | -9.343E-02          | 3.914E-01 | 6.311E-01      | 5.522E-02 | -0.148  |
|         | 216.55    |              |     | -2.013E-02          | 3.067E-01 | 4.899E-01      | 4.344E-02 | -0.041  |
|         | 252.85    | *            |     | -8.229E-02          | 2.779E-01 | 4.334E-01      | 3.946E-02 | -0.190  |
|         | 318.01    |              |     | 2.941E-01           | 5.165E-01 | 8.953E-01      | 8.169E-02 | 0.329   |
| RE-188  | 792.07    |              |     | 1.335E+00           | 1.667E+00 | 2.618E+00      | 2.296E-01 | 0.510   |
|         | 903.28    |              |     | 4.712E-01           | 1.589E+00 | 2.549E+00      | 2.229E-01 | 0.185   |
|         | 920.93    |              |     | 3.594E-01           | 6.993E-01 | 1.203E+00      | 1.053E-01 | 0.299   |
|         | 59.72     |              |     | 1.018E-01           | 1.385E-01 | 2.183E-01      | 2.199E-02 | 0.466   |
|         | 61.14     |              |     | 1.624E-02           | 8.308E-02 | 1.283E-01      | 1.286E-02 | 0.127   |
| W-188   | 69.30     |              |     | -2.760E-01          | 2.080E-01 | 2.980E-01      | 2.927E-02 | -0.926  |
|         | 592.07    |              |     | -1.280E+00          | 3.298E+00 | 5.139E+00      | 4.534E-01 | -0.249  |
|         | 646.12    | *            |     | 1.277E-02           | 5.555E-02 | 9.095E-02      | 7.766E-03 | 0.140   |
|         | 717.42    |              |     | -1.079E+00          | 1.212E+00 | 1.822E+00      | 1.571E-01 | -0.592  |
|         | 874.81    |              |     | 3.462E-02           | 7.834E-01 | 1.304E+00      | 1.144E-01 | 0.027   |
| IR-192  | 880.27    |              |     | -1.776E-01          | 1.008E+00 | 1.636E+00      | 1.434E-01 | -0.109  |
|         | 155.03    | *            |     | 1.557E-01           | 1.929E-01 | 3.250E-01      | 3.019E-02 | 0.479   |
|         | 477.96    |              |     | -1.217E+00          | 3.989E+00 | 6.392E+00      | 5.667E-01 | -0.190  |
|         | 633.10    |              |     | 6.409E-01           | 4.002E+00 | 6.511E+00      | 5.615E-01 | 0.098   |
|         | 63.58     |              |     | 9.470E+01           | 4.456E+01 | 5.622E+01      | 5.591E+00 | 1.684   |
| AU-195  | 227.08    |              |     | 4.754E+00           | 1.386E+01 | 2.257E+01      | 2.021E+00 | 0.211   |
|         | 290.67    | *            |     | -3.944E+00          | 9.084E+00 | 1.312E+01      | 1.205E+00 | -0.301  |
|         | 295.96    |              |     | 1.480E+00           | 2.461E-01 | 3.626E-01      | 3.351E-02 | 4.082   |
|         | 308.46    |              |     | -2.442E-02          | 1.043E-01 | 1.735E-01      | 1.596E-02 | -0.141  |
|         | 316.51    | *            |     | -5.098E-03          | 3.979E-02 | 6.652E-02      | 6.086E-03 | -0.077  |
| TL-200  | 468.07    |              |     | 1.901E-02           | 9.030E-02 | 1.328E-01      | 1.254E-02 | 0.143   |
|         | 604.41    |              |     | -2.472E-01          | 6.576E-01 | 8.822E-01      | 1.158E-01 | -0.280  |
|         | 612.46    |              |     | -3.733E-01          | 9.447E-01 | 1.258E+00      | 1.258E-01 | -0.297  |
|         | 65.12     |              |     | -1.860E-02          | 1.047E-01 | 1.577E-01      | 1.562E-02 | -0.118  |
|         | 66.83     |              |     | 5.471E-02           | 5.961E-02 | 9.312E-02      | 9.188E-03 | 0.588   |
| TL-201  | 75.70     |              |     | 1.892E+00           | 2.790E-01 | 3.944E-01      | 3.848E-02 | 4.797   |
|         | 98.88     | *            |     | -1.962E-02          | 2.098E-01 | 3.457E-01      | 3.561E-02 | -0.057  |
|         | 129.76    |              |     | 9.767E+00           | 4.349E+00 | 5.681E+00      | 6.364E-01 | 1.719   |
|         | 367.94    | *            |     | 2.075E-04           | 4.349E+00 | Half-Life      | too short |         |
|         | 579.30    |              |     | -6.834E-04          | 4.349E+00 | Half-Life      | too short |         |
| TL-201  | 828.27    |              |     | 3.593E-04           | 4.349E+00 | Half-Life      | too short |         |
|         | 1205.75   |              |     | 1.787E-04           | 4.349E+00 | Half-Life      | too short |         |
|         | 68.90     |              |     | -2.184E+00          | 2.959E+00 | 4.663E+00      | 4.583E-01 | -0.468  |
|         | 70.82     |              |     | 5.149E-01           | 1.840E+00 | 2.831E+00      | 2.775E-01 | 0.182   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| TL-202  |           | 80.30        |     | 9.403E-01           | 4.985E+00 | 6.086E+00      | 5.928E-01 | 0.155   |
|         |           | 135.34       |     | -2.137E+01          | 2.699E+01 | 4.275E+01      | 4.622E+00 | -0.500  |
|         |           | 167.43       | *   | 1.354E+00           | 7.646E+00 | 1.254E+01      | 1.047E+00 | 0.108   |
|         |           | 68.90        |     | -2.006E-01          | 2.718E-01 | 4.284E-01      | 4.211E-02 | -0.468  |
|         |           | 70.82        |     | 4.718E-02           | 1.686E-01 | 2.594E-01      | 2.543E-02 | 0.182   |
| HG-203  |           | 80.30        |     | 8.618E-02           | 4.569E-01 | 5.578E-01      | 5.433E-02 | 0.155   |
|         |           | 439.56       | *   | 1.046E-01           | 8.726E-02 | 1.545E-01      | 1.346E-02 | 0.677   |
|         |           | 70.83        |     | 2.121E-01           | 7.350E-01 | 1.131E+00      | 1.627E-01 | 0.188   |
|         |           | 72.87        |     | 1.349E+00           | 4.648E-01 | 7.770E-01      | 1.087E-01 | 1.736   |
|         |           | 82.60        |     | -2.135E-01          | 9.545E-01 | 1.429E+00      | 2.068E-01 | -0.149  |
| BI-207  |           | 279.20       | *   | 4.202E-02           | 5.066E-02 | 8.003E-02      | 7.532E-03 | 0.525   |
|         |           | 72.80        |     | 3.556E-01           | 1.283E-01 | 2.246E-01      | 2.196E-02 | 1.584   |
|         | +         | 74.97        |     | 1.050E+00           | 1.548E-01 | 1.958E-01      | 1.911E-02 | 5.362   |
|         | +         | 84.90        |     | 2.615E-01           | 1.603E-01 | 2.778E-01      | 2.707E-02 | 0.941   |
|         |           | 569.67       |     | 1.099E-02           | 4.064E-02 | 6.718E-02      | 5.973E-03 | 0.164   |
| TL-207  |           | 1063.62      | *   | -6.525E-02          | 7.995E-02 | 1.197E-01      | 1.026E-02 | -0.545  |
|         |           | 1770.23      |     | -1.401E+00          | 8.263E-01 | 9.257E-01      | 7.819E-02 | -1.513  |
|         |           | 81.07        |     | -1.854E-01          | 2.343E-01 | 2.667E-01      | 2.598E-02 | -0.695  |
|         | +         | 83.78        |     | 1.724E-01           | 1.057E-01 | 1.808E-01      | 1.762E-02 | 0.954   |
|         |           | 94.90        |     | 5.472E-01           | 2.231E-01 | 3.626E-01      | 3.659E-02 | 1.509   |
| PO-209  |           | 122.32       |     | 1.429E+00           | 1.828E+00 | 3.106E+00      | 3.780E-01 | 0.460   |
|         |           | 144.24       |     | 2.678E-01           | 7.593E-01 | 1.252E+00      | 1.382E-01 | 0.214   |
|         |           | 154.21       |     | 3.530E-01           | 4.454E-01 | 7.498E-01      | 7.614E-02 | 0.471   |
|         | +         | 269.46       |     | 6.345E-01           | 2.998E-01 | 4.059E-01      | 3.788E-02 | 1.563   |
|         | +         | 323.87       | *   | 2.170E-02           | 8.217E-01 | 1.221E+00      | 2.190E-01 | 0.018   |
| PB-211  |           | 338.28       |     | 9.303E+00           | 2.191E+00 | 3.120E+00      | 3.928E-01 | 2.982   |
|         |           | 445.03       |     | -1.307E+00          | 2.814E+00 | 4.473E+00      | 5.446E-01 | -0.292  |
|         |           | 260.50       |     | 9.163E-02           | 1.138E+01 | 1.805E+01      | 1.649E+00 | 0.005   |
|         |           | 262.80       |     | 1.747E+01           | 3.088E+01 | 5.053E+01      | 4.621E+00 | 0.346   |
|         |           | 896.60       | *   | -1.155E+01          | 1.013E+01 | 1.473E+01      | 1.288E+00 | -0.784  |
| PO-215  |           | 404.84       | *   | -8.909E-02          | 1.320E+00 | 1.910E+00      | 1.197E+00 | -0.047  |
|         |           | 427.08       |     | -5.618E-01          | 2.581E+00 | 4.162E+00      | 2.586E+00 | -0.135  |
|         |           | 831.96       |     | -1.018E+00          | 1.649E+00 | 2.365E+00      | 1.483E+00 | -0.430  |
|         |           | 81.07        |     | -1.854E-01          | 2.343E-01 | 2.667E-01      | 2.598E-02 | -0.695  |
|         | +         | 83.78        |     | 1.724E-01           | 1.057E-01 | 1.808E-01      | 1.762E-02 | 0.954   |
| RN-219  |           | 94.90        |     | 5.472E-01           | 2.231E-01 | 3.626E-01      | 3.659E-02 | 1.509   |
|         |           | 122.32       |     | 1.429E+00           | 1.828E+00 | 3.106E+00      | 3.780E-01 | 0.460   |
|         |           | 144.24       |     | 2.678E-01           | 7.593E-01 | 1.252E+00      | 1.382E-01 | 0.214   |
|         |           | 154.21       |     | 3.530E-01           | 4.454E-01 | 7.498E-01      | 7.614E-02 | 0.471   |
|         | +         | 269.46       |     | 6.345E-01           | 2.998E-01 | 4.059E-01      | 3.788E-02 | 1.563   |
| RN-220  |           | 323.87       | *   | 2.170E-02           | 8.217E-01 | 1.221E+00      | 2.190E-01 | 0.018   |
|         |           | 338.28       |     | 9.303E+00           | 2.191E+00 | 3.120E+00      | 3.928E-01 | 2.982   |
|         |           | 445.03       |     | -1.307E+00          | 2.814E+00 | 4.473E+00      | 5.446E-01 | -0.292  |
|         | +         | 271.23       |     | 8.141E-01           | 3.871E-01 | 5.253E-01      | 5.660E-02 | 1.550   |
|         |           | 401.81       | *   | 1.185E-01           | 4.993E-01 | 8.403E-01      | 1.256E-01 | 0.141   |
| RA-223  |           | 549.76       | *   | -7.905E+00          | 3.302E+01 | 5.248E+01      | 4.685E+00 | -0.151  |
|         |           | 81.07        |     | -1.854E-01          | 2.343E-01 | 2.667E-01      | 2.598E-02 | -0.695  |
|         | +         | 83.78        |     | 1.724E-01           | 1.057E-01 | 1.808E-01      | 1.762E-02 | 0.954   |
|         |           | 94.90        |     | 5.472E-01           | 2.231E-01 | 3.626E-01      | 3.659E-02 | 1.509   |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| AC-227  |           | 122.32       |     | 1.429E+00           | 1.828E+00 | 3.106E+00      | 3.780E-01 | 0.460   |
|         |           | 144.24       |     | 2.678E-01           | 7.593E-01 | 1.252E+00      | 1.382E-01 | 0.214   |
|         |           | 154.21       |     | 3.530E-01           | 4.454E-01 | 7.498E-01      | 7.614E-02 | 0.471   |
|         | +         | 269.46       |     | 6.345E-01           | 2.998E-01 | 4.059E-01      | 3.788E-02 | 1.563   |
|         |           | 323.87       | *   | 2.170E-02           | 8.217E-01 | 1.221E+00      | 2.190E-01 | 0.018   |
|         | +         | 338.28       |     | 9.303E+00           | 2.191E+00 | 3.120E+00      | 3.928E-01 | 2.982   |
|         |           | 445.03       |     | -1.307E+00          | 2.814E+00 | 4.473E+00      | 5.446E-01 | -0.292  |
|         |           | 79.80        |     | 4.067E-01           | 1.626E+00 | 1.993E+00      | 4.379E-01 | 0.204   |
|         |           | 236.00       |     | 4.630E-01           | 2.949E-01 | 4.536E-01      | 5.680E-02 | 1.021   |
|         |           | 256.20       | *   | 4.995E-02           | 4.629E-01 | 7.388E-01      | 1.155E-01 | 0.068   |
|         |           | 286.10       |     | 4.396E-01           | 1.628E+00 | 2.795E+00      | 3.795E-01 | 0.157   |
|         | +         | 299.80       |     | 5.028E+00           | 2.335E+00 | 3.294E+00      | 5.853E-01 | 1.527   |
|         |           | 304.40       |     | 7.396E-01           | 2.108E+00 | 3.381E+00      | 6.321E-01 | 0.219   |
|         |           | 334.20       |     | 4.772E-02           | 3.174E+00 | 4.385E+00      | 8.595E-01 | 0.011   |
| TH-227  |           | 79.80        |     | 4.067E-01           | 1.626E+00 | 1.993E+00      | 4.433E-01 | 0.204   |
|         | +         | 94.00        |     | 1.376E+01           | 4.207E+00 | 3.776E+00      | 8.451E-01 | 3.644   |
|         |           | 236.00       |     | 4.630E-01           | 2.939E-01 | 4.536E-01      | 5.164E-02 | 1.021   |
|         |           | 256.20       | *   | 4.995E-02           | 4.629E-01 | 7.388E-01      | 1.352E-01 | 0.068   |
|         |           | 286.10       |     | 4.396E-01           | 1.685E+00 | 2.795E+00      | 2.807E+00 | 0.157   |
|         | +         | 299.80       |     | 5.028E+00           | 2.335E+00 | 3.294E+00      | 5.853E-01 | 1.527   |
|         |           | 304.40       |     | 7.396E-01           | 2.108E+00 | 3.381E+00      | 6.321E-01 | 0.219   |
|         |           | 334.20       |     | 4.772E-02           | 3.174E+00 | 4.385E+00      | 8.595E-01 | 0.011   |
| TH-229  | +         | 85.43        |     | 2.581E-01           | 1.583E-01 | 2.823E-01      | 2.752E-02 | 0.914   |
|         | +         | 88.47        |     | 6.606E-01           | 1.449E-01 | 1.967E-01      | 1.925E-02 | 3.358   |
|         |           | 100.00       |     | 1.373E-01           | 1.736E-01 | 2.946E-01      | 3.052E-02 | 0.466   |
|         |           | 193.63       | *   | 1.146E-03           | 6.084E-01 | 9.818E-01      | 8.492E-02 | 0.001   |
| PA-231  | +         | 210.97       |     | 2.920E+00           | 1.705E+00 | 1.417E+00      | 1.249E-01 | 2.061   |
|         |           | 283.67       | *   | -6.858E-02          | 1.657E+00 | 2.802E+00      | 4.346E-01 | -0.024  |
| TH-231  | +         | 301.29       |     | 2.011E+00           | 8.996E-01 | 1.243E+00      | 1.571E-01 | 1.619   |
|         |           | 81.07        |     | -1.854E-01          | 2.343E-01 | 2.667E-01      | 2.598E-02 | -0.695  |
| U-231   | +         | 83.78        |     | 1.724E-01           | 1.057E-01 | 1.808E-01      | 1.762E-02 | 0.954   |
|         |           | 94.90        |     | 5.472E-01           | 2.231E-01 | 3.626E-01      | 3.659E-02 | 1.509   |
|         |           | 122.32       |     | 1.429E+00           | 1.828E+00 | 3.106E+00      | 3.780E-01 | 0.460   |
|         |           | 144.24       |     | 2.678E-01           | 7.593E-01 | 1.252E+00      | 1.382E-01 | 0.214   |
|         |           | 154.21       |     | 3.530E-01           | 4.454E-01 | 7.498E-01      | 7.614E-02 | 0.471   |
|         | +         | 269.46       |     | 6.345E-01           | 2.998E-01 | 4.059E-01      | 3.788E-02 | 1.563   |
|         |           | 323.87       | *   | 2.170E-02           | 8.217E-01 | 1.221E+00      | 2.190E-01 | 0.018   |
|         | +         | 338.28       |     | 9.303E+00           | 2.191E+00 | 3.120E+00      | 3.928E-01 | 2.982   |
|         |           | 445.03       |     | -1.307E+00          | 2.814E+00 | 4.473E+00      | 5.446E-01 | -0.292  |
|         | +         | 84.21        |     | 7.272E+00           | 4.459E+00 | 7.692E+00      | 7.496E-01 | 0.945   |
| PA-233  | +         | 92.29        |     | 1.331E+01           | 3.078E+00 | 3.972E+00      | 3.957E-01 | 3.352   |
|         |           | 95.87        | *   | 3.106E-01           | 9.720E-01 | 1.482E+00      | 1.503E-01 | 0.210   |
|         |           | 108.00       |     | -5.666E-01          | 1.975E+00 | 3.246E+00      | 3.511E-01 | -0.175  |
|         | +         | 75.28        |     | 3.064E+01           | 5.962E+00 | 5.971E+00      | 9.562E-01 | 5.132   |
|         | +         | 86.59        |     | 9.472E+00           | 3.179E+00 | 2.918E+00      | 7.938E-01 | 3.246   |
|         | +         | 300.12       |     | 1.402E+00           | 6.381E-01 | 9.110E-01      | 1.385E-01 | 1.539   |
|         |           | 311.98       | *   | 4.822E-02           | 7.131E-02 | 1.245E-01      | 1.167E-02 | 0.387   |
|         |           | 340.50       |     | 6.943E-01           | 7.617E-01 | 1.179E+00      | 2.827E-01 | 0.589   |
|         |           | 398.62       |     | -1.174E+00          | 2.517E+00 | 4.017E+00      | 1.068E+00 | -0.292  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PA-234  | +         | 415.76       |     | 8.961E-01           | 2.157E+00 | 3.538E+00      | 7.619E-01 | 0.253   |
|         |           | 63.00        |     | 2.750E+00           | 1.342E+00 | 1.626E+00      | 2.648E-01 | 1.691   |
|         |           | 94.67        |     | 5.644E-01           | 1.772E-01 | 2.775E-01      | 3.734E-02 | 2.034   |
|         |           | 98.44        |     | -1.571E-02          | 8.441E-02 | 1.379E-01      | 7.729E-02 | -0.114  |
|         |           | 99.86        |     | 3.548E-01           | 4.394E-01 | 7.460E-01      | 7.723E-02 | 0.476   |
|         |           | 111.00       |     | -1.305E-01          | 1.835E-01 | 2.946E-01      | 4.090E-02 | -0.443  |
|         |           | 131.20       |     | 4.243E-02           | 1.265E-01 | 1.897E-01      | 2.106E-02 | 0.224   |
|         | +         | 152.70       |     | -8.070E-02          | 3.624E-01 | 5.863E-01      | 1.026E-01 | -0.138  |
|         |           | 186.00       |     | 6.823E+00           | 2.784E+00 | 3.009E+00      | 9.387E-01 | 2.268   |
|         |           | 226.40       |     | -8.840E-02          | 4.413E-01 | 6.973E-01      | 9.356E-02 | -0.127  |
|         |           | 227.20       |     | 1.403E-01           | 4.720E-01 | 7.668E-01      | 6.864E-02 | 0.183   |
|         | +         | 248.90       |     | 2.310E-01           | 9.001E-01 | 1.451E+00      | 3.279E-01 | 0.159   |
|         |           | 293.70       |     | 9.329E+00           | 2.087E+00 | 2.102E+00      | 3.697E-01 | 4.438   |
|         |           | 369.80       |     | 1.134E-01           | 9.700E-01 | 1.629E+00      | 3.554E-01 | 0.070   |
|         |           | 568.70       |     | 3.942E-01           | 1.306E+00 | 2.165E+00      | 1.926E-01 | 0.182   |
|         | +         | 569.50       |     | 9.755E-02           | 3.583E-01 | 5.925E-01      | 5.268E-02 | 0.165   |
|         |           | 574.00       |     | 2.136E+00           | 1.914E+00 | 3.362E+00      | 2.985E-01 | 0.635   |
|         |           | 699.00       |     | 4.151E-01           | 9.416E-01 | 1.633E+00      | 3.111E-01 | 0.254   |
|         |           | 706.10       |     | -1.044E-01          | 1.290E+00 | 2.157E+00      | 9.617E-01 | -0.048  |
|         |           | 733.00       |     | -1.100E-01          | 4.837E-01 | 7.485E-01      | 1.663E-01 | -0.147  |
|         |           | 742.81       |     | 6.899E-01           | 1.781E+00 | 2.983E+00      | 2.006E+00 | 0.231   |
|         |           | 796.30       |     | 3.200E+00           | 2.420E+00 | 2.479E+00      | 6.719E-01 | 1.291   |
|         |           | 805.60       |     | 4.088E-01           | 1.242E+00 | 2.125E+00      | 6.522E-01 | 0.192   |
|         |           | 819.60       |     | -9.978E-01          | 1.669E+00 | 2.549E+00      | 9.704E-01 | -0.391  |
|         |           | 826.30       |     | 5.771E-01           | 1.136E+00 | 1.926E+00      | 8.625E-01 | 0.300   |
|         |           | 831.60       |     | -1.093E+00          | 8.784E-01 | 1.181E+00      | 3.530E-01 | -0.926  |
|         |           | 876.40       |     | -2.925E-01          | 1.147E+00 | 1.787E+00      | 1.838E+00 | -0.164  |
|         |           | 880.51       |     | -1.228E-01          | 3.734E-01 | 5.969E-01      | 5.232E-02 | -0.206  |
|         |           | 883.24       |     | -1.155E-02          | 3.725E-01 | 6.148E-01      | 4.134E-01 | -0.019  |
|         |           | 899.00       |     | 8.997E-01           | 1.261E+00 | 2.111E+00      | 9.234E-01 | 0.426   |
|         |           | 925.00       |     | -3.260E-01          | 1.742E+00 | 2.824E+00      | 2.472E-01 | -0.115  |
|         | +         | 926.50       |     | -2.769E-01          | 2.657E-01 | 3.637E-01      | 9.211E-02 | -0.761  |
|         |           | 946.00       | *   | 1.205E-01           | 3.974E-01 | 6.733E-01      | 1.267E-01 | 0.179   |
|         |           | 949.00       |     | 3.245E-01           | 6.129E-01 | 1.059E+00      | 9.263E-02 | 0.306   |
|         |           | 980.50       |     | -8.468E-01          | 1.033E+00 | 1.549E+00      | 1.352E-01 | -0.547  |
| PA-234M |           | 1394.10      |     | -6.366E-01          | 1.582E+00 | 2.400E+00      | 1.562E+00 | -0.265  |
|         |           | 766.42       |     | 2.138E+01           | 2.191E+01 | 3.073E+01      | 1.560E+01 | 0.696   |
|         |           | 1001.03      | *   | -2.475E+00          | 6.546E+00 | 1.033E+01      | 1.037E+00 | -0.239  |
| U-235   | +         | 89.95        |     | 4.054E+00           | 1.772E+00 | 1.806E+00      | 5.639E-01 | 2.245   |
|         |           | 93.35        |     | 4.281E+00           | 1.511E+00 | 1.305E+00      | 3.718E-01 | 3.280   |
|         | +         | 105.00       |     | 2.191E+00           | 1.239E+00 | 1.871E+00      | 5.705E-01 | 1.171   |
|         |           | 143.76       | *   | 4.075E-02           | 2.332E-01 | 3.818E-01      | 7.000E-02 | 0.107   |
|         |           | 163.35       |     | 1.995E-01           | 5.215E-01 | 8.619E-01      | 1.642E-01 | 0.232   |
|         |           | 185.71       |     | 2.527E-01           | 6.990E-02 | 1.109E-01      | 9.498E-03 | 2.278   |
| NP-236  | +         | 205.31       |     | 3.133E-01           | 6.658E-01 | 9.785E-01      | 1.873E-01 | 0.320   |
|         |           | 94.67        |     | 4.314E-01           | 1.291E-01 | 2.108E-01      | 2.125E-02 | 2.046   |
|         | +         | 98.44        |     | -1.193E-02          | 6.347E-02 | 1.042E-01      | 1.071E-02 | -0.114  |
|         |           | 111.00       |     | -9.871E-02          | 1.386E-01 | 2.228E-01      | 2.451E-02 | -0.443  |
|         |           | 160.31       | *   | -7.202E-03          | 8.768E-02 | 1.424E-01      | 1.259E-02 | -0.051  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| NP-239  |           | 99.55        |     | 1.291E-01           | 1.464E-01 | 2.491E-01      | 2.575E-02 | 0.518   |
|         |           | 117.00       | *   | -2.648E-02          | 1.972E-01 | 3.249E-01      | 3.696E-02 | -0.081  |
|         | +         | 209.75       |     | 2.942E+00           | 1.718E+00 | 1.702E+00      | 1.499E-01 | 1.729   |
|         |           | 228.18       |     | 1.092E-01           | 2.484E-01 | 4.064E-01      | 3.641E-02 | 0.269   |
|         | +         | 277.60       |     | 4.684E-01           | 2.901E-01 | 3.819E-01      | 3.505E-02 | 1.227   |
| AM-241  |           | 334.30       |     | -2.693E-02          | 1.796E+00 | 2.474E+00      | 2.236E-01 | -0.011  |
|         |           | 59.54        | *   | -9.056E-03          | 7.433E-02 | 1.135E-01      | 1.205E-02 | -0.080  |
| CM-243  |           | 99.55        |     | 1.328E-01           | 1.506E-01 | 2.563E-01      | 2.649E-02 | 0.518   |
|         |           | 103.76       | *   | -1.358E-02          | 9.620E-02 | 1.594E-01      | 1.685E-02 | -0.085  |
|         |           | 117.00       |     | -2.724E-02          | 2.029E-01 | 3.343E-01      | 3.802E-02 | -0.081  |
|         | +         | 209.75       |     | 2.900E+00           | 1.693E+00 | 1.677E+00      | 1.477E-01 | 1.729   |
|         |           | 228.18       |     | 1.104E-01           | 2.510E-01 | 4.107E-01      | 3.679E-02 | 0.269   |
| AM-246  | +         | 277.60       |     | 4.723E-01           | 2.925E-01 | 3.850E-01      | 3.534E-02 | 1.227   |
|         |           | 798.80       |     | -3.441E-02          | 2.105E-01 | 2.991E-01      | 2.625E-02 | -0.115  |
|         |           | 1036.00      |     | 1.506E-01           | 4.442E-01 | 7.493E-01      | 6.473E-02 | 0.201   |
|         |           | 1062.04      |     | 3.423E-01           | 3.493E-01 | 6.182E-01      | 5.302E-02 | 0.554   |
|         |           | 1078.86      | *   | 4.962E-02           | 2.003E-01 | 3.346E-01      | 2.854E-02 | 0.148   |
| CM-247  | +         | 278.00       |     | 1.943E+00           | 1.203E+00 | 1.617E+00      | 1.484E-01 | 1.201   |
|         |           | 287.40       |     | 5.799E-01           | 1.326E+00 | 2.296E+00      | 2.109E-01 | 0.253   |
|         |           | 402.60       | *   | 4.125E-02           | 4.412E-02 | 7.729E-02      | 6.566E-03 | 0.534   |
| CF-249  |           | 252.85       |     | -3.089E-01          | 1.043E+00 | 1.627E+00      | 1.482E-01 | -0.190  |
|         |           | 333.44       |     | 3.399E-02           | 2.986E-01 | 3.264E-01      | 2.951E-02 | 0.104   |
|         |           | 387.95       | *   | 5.944E-05           | 4.907E-02 | 8.159E-02      | 6.912E-03 | 0.001   |
| CF-251  |           | 176.60       | *   | -2.741E-02          | 1.393E-01 | 2.238E-01      | 1.893E-02 | -0.122  |
|         |           | 227.00       |     | 1.307E-01           | 4.158E-01 | 6.762E-01      | 6.052E-02 | 0.193   |
|         |           | 285.00       |     | -9.396E-01          | 1.944E+00 | 3.206E+00      | 2.945E-01 | -0.293  |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630009      *
* Acquisition date   : 23-JAN-2010 11:48:23 Detector SN#                   *
* Detector ID        : GAM17 Sensitivity : 5.000                          *
* Geometry           : CAN Energy tolerance: 1.500                        *
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000             *
* Elapsed real time  : 0 02:00:09.63 Half life ratio : 8.000              *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G244630009 Analyst initials: MXR1                  *
* Batch Number       : 941639 Sample Quantity : 1.3472E+02 GRAM           *
* Recovery           : 1.00000 Carrier Weight : 0.00000                  *
*****
*
*                                     QC DATA                               *
*
* Standard Weight    : 0.00000                                             *
* CALIB. DATE/TIME   : 6-JAN-2010 11:41:36 MS Isotope :                   *
* MSD DPM             : 0.000 MSD Isotope :                               *
* LCS DPM             : 0.000 LCS Isotope :                               *
* LCSD DPM            : 0.000 LCSD Isotope :                               *
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act error | MDA<br>(pCi/GRAM ) |           |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 3.328E+01               | 3.623E+00 | 6.331E-01          | 0.000E+00 |
| CD-109  | 4.922E+00               | 1.058E+00 | 1.109E+00          | 0.000E+00 |
| SN-126  | 4.838E-01               | 1.040E-01 | 1.089E-01          | 0.000E+00 |
| TL-208  | 7.555E-01               | 1.332E-01 | 7.443E-02          | 0.000E+00 |
| BI-210  | 1.655E+00               | 8.886E-01 | 9.437E-01          | 0.000E+00 |
| PB-210  | 1.655E+00               | 8.886E-01 | 9.437E-01          | 0.000E+00 |
| PO-210  | 1.655E+00               | 8.863E-01 | 9.437E-01          | 0.000E+00 |
| BI-211  | 5.699E+00               | 7.922E-01 | 4.051E-01          | 0.000E+00 |
| BI-212  | 2.128E+00               | 7.432E-01 | 6.513E-01          | 0.000E+00 |
| PB-212  | 2.203E+00               | 2.554E-01 | 1.046E-01          | 0.000E+00 |
| PO-212  | 2.203E+00               | 2.554E-01 | 1.046E-01          | 0.000E+00 |
| BI-214  | 1.832E+00               | 2.780E-01 | 1.378E-01          | 0.000E+00 |
| PB-214  | 1.982E+00               | 2.936E-01 | 1.413E-01          | 0.000E+00 |
| PO-214  | 1.982E+00               | 2.936E-01 | 1.413E-01          | 0.000E+00 |
| PO-216  | 2.203E+00               | 2.554E-01 | 1.046E-01          | 0.000E+00 |
| PO-218  | 1.982E+00               | 2.936E-01 | 1.413E-01          | 0.000E+00 |
| RA-224  | 7.320E+00               | 1.469E+00 | 1.191E+00          | 0.000E+00 |
| RA-226  | 1.832E+00               | 2.780E-01 | 1.378E-01          | 0.000E+00 |
| AC-228  | 2.544E+00               | 4.457E-01 | 3.071E-01          | 0.000E+00 |
| RA-228  | 2.544E+00               | 4.457E-01 | 3.071E-01          | 0.000E+00 |
| TH-228  | 2.237E+00               | 2.592E-01 | 1.061E-01          | 0.000E+00 |
| TH-230  | 1.832E+00               | 2.780E-01 | 1.378E-01          | 0.000E+00 |
| TH-232  | 2.544E+00               | 4.457E-01 | 3.071E-01          | 0.000E+00 |
| TH-234  | 2.359E+00               | 1.147E+00 | 1.191E+00          | 0.000E+00 |
| U-234   | 1.832E+00               | 2.780E-01 | 1.378E-01          | 0.000E+00 |
| NP-237  | 1.421E+00               | 4.193E-01 | 3.187E-01          | 0.000E+00 |
| U-238   | 2.359E+00               | 1.147E+00 | 1.191E+00          | 0.000E+00 |
| AM-243  | 5.850E-01               | 8.452E-02 | 6.636E-02          | 0.000E+00 |
| ANH-511 | 1.925E-01               | 8.333E-02 | 5.847E-02          | 0.000E+00 |

---- Non-Identified Nuclides ----

| Key-Line<br>Activity | K.L. Act error | MDA |
|----------------------|----------------|-----|
|----------------------|----------------|-----|

| Nuclide | (pCi/GRAM  | ) Ided    | (pCi/GRAM | )                    |
|---------|------------|-----------|-----------|----------------------|
| BE-7    | -2.363E-01 | 4.131E-01 | 6.772E-01 | 0.000E+00 NOT IDENT. |
| NA-22   | 1.219E-02  | 6.409E-02 | 1.077E-01 | 0.000E+00 NOT IDENT. |
| NA-24   | 0.000E+00  | 6.944E+05 | 0.000E+00 | 0.000E+00 SHORT HLIF |
| AL-26   | 1.596E-02  | 3.759E-02 | 6.811E-02 | 0.000E+00 NOT IDENT. |
| TI-44   | 0.000E+00  | 6.618E-02 | 7.063E-02 | 0.000E+00 FAIL ABUN  |
| SC-46   | -1.901E-02 | 5.078E-02 | 8.353E-02 | 0.000E+00 FAIL ABUN  |
| V-48    | 1.409E-02  | 8.817E-02 | 1.517E-01 | 0.000E+00 NOT IDENT. |
| CR-51   | -4.614E-02 | 4.227E-01 | 7.435E-01 | 0.000E+00 NOT IDENT. |
| MN-52   | -2.191E-02 | 2.677E-01 | 4.503E-01 | 0.000E+00 NOT IDENT. |
| MN-54   | 4.019E-03  | 4.992E-02 | 8.637E-02 | 0.000E+00 NOT IDENT. |
| CO-56   | 6.982E-04  | 4.586E-02 | 7.882E-02 | 0.000E+00 NOT IDENT. |
| CO-57   | 1.482E-02  | 2.557E-02 | 4.619E-02 | 0.000E+00 NOT IDENT. |
| CO-58   | -4.914E-02 | 4.561E-02 | 6.943E-02 | 0.000E+00 NOT IDENT. |
| FE-59   | -1.182E-01 | 1.359E-01 | 2.075E-01 | 0.000E+00 NOT IDENT. |
| CO-60   | -1.861E-02 | 5.232E-02 | 8.605E-02 | 0.000E+00 NOT IDENT. |
| ZN-65   | -5.211E-02 | 1.465E-01 | 2.009E-01 | 0.000E+00 NOT IDENT. |
| GE-68   | 4.339E-01  | 1.663E+00 | 2.862E+00 | 0.000E+00 NOT IDENT. |
| AS-73   | 1.373E-01  | 2.463E-01 | 4.607E-01 | 0.000E+00 NOT IDENT. |
| AS-74   | 2.332E-02  | 1.099E-01 | 1.877E-01 | 0.000E+00 NOT IDENT. |
| SE-75   | -1.995E-02 | 5.219E-02 | 8.054E-02 | 0.000E+00 NOT IDENT. |
| BR-77   | 8.946E+00  | 1.201E+01 | 2.156E+01 | 0.000E+00 FAIL ABUN  |
| SR-82   | -2.664E-01 | 4.433E-01 | 7.223E-01 | 0.000E+00 NOT IDENT. |
| RB-83   | 5.966E-02  | 8.209E-02 | 1.472E-01 | 0.000E+00 NOT IDENT. |
| RB-84   | -8.495E-03 | 8.956E-02 | 1.514E-01 | 0.000E+00 NOT IDENT. |
| KR-85   | 0.000E+00  | 8.785E+00 | 1.534E+01 | 0.000E+00 NOT IDENT. |
| SR-85   | 0.000E+00  | 4.498E-02 | 7.853E-02 | 0.000E+00 NOT IDENT. |
| RB-86   | -2.031E-01 | 1.094E+00 | 1.799E+00 | 0.000E+00 NOT IDENT. |
| Y-88    | -6.550E-03 | 4.336E-02 | 6.955E-02 | 0.000E+00 NOT IDENT. |
| ZR-88   | -1.221E-04 | 3.597E-02 | 6.259E-02 | 0.000E+00 NOT IDENT. |
| Y-91    | -8.078E+00 | 2.881E+01 | 4.655E+01 | 0.000E+00 NOT IDENT. |
| NB-94   | -9.904E-03 | 4.047E-02 | 6.927E-02 | 0.000E+00 NOT IDENT. |
| NB-95   | 8.344E-02  | 6.906E-02 | 1.157E-01 | 0.000E+00 NOT IDENT. |
| NB-95M  | 7.973E-02  | 1.464E-01 | 2.275E-01 | 0.000E+00 NOT IDENT. |
| ZR-95   | 5.617E-02  | 9.121E-02 | 1.658E-01 | 0.000E+00 NOT IDENT. |
| NB-97   | 0.000E+00  | 1.235E+05 | 0.000E+00 | 0.000E+00 SHORT HLIF |
| ZR-97   | 0.000E+00  | 2.154E+06 | 0.000E+00 | 0.000E+00 SHORT HLIF |
| MO-99   | 9.447E-02  | 1.325E+01 | 2.304E+01 | 0.000E+00 NOT IDENT. |
| TC-99M  | 0.000E+00  | 2.945E+16 | 0.000E+00 | 0.000E+00 SHORT HLIF |
| RH-101  | 1.035E-02  | 3.707E-02 | 6.416E-02 | 0.000E+00 NOT IDENT. |
| RH-102  | 9.519E-03  | 3.687E-02 | 6.426E-02 | 0.000E+00 FAIL ABUN  |
| RU-103  | 6.146E-02  | 5.049E-02 | 9.249E-02 | 0.000E+00 FAIL ABUN  |
| RH-106  | 7.565E-02  | 4.193E-01 | 7.110E-01 | 0.000E+00 FAIL ABUN  |
| RU-106  | 7.565E-02  | 4.192E-01 | 7.110E-01 | 0.000E+00 FAIL ABUN  |
| AG-108M | 1.515E-02  | 3.855E-02 | 6.829E-02 | 0.000E+00 NOT IDENT. |
| AG-110M | -5.056E-02 | 5.028E-02 | 7.611E-02 | 0.000E+00 NOT IDENT. |
| IN-111  | 8.808E-01  | 1.193E+00 | 1.883E+00 | 0.000E+00 NOT IDENT. |
| IN-113M | 7.042E-03  | 5.306E-02 | 9.312E-02 | 0.000E+00 NOT IDENT. |
| SN-113  | 7.042E-03  | 5.306E-02 | 9.312E-02 | 0.000E+00 NOT IDENT. |
| IN-114M | -8.486E-02 | 2.288E-01 | 3.414E-01 | 0.000E+00 NOT IDENT. |
| CD-115  | -4.808E+00 | 1.374E+01 | 2.267E+01 | 0.000E+00 NOT IDENT. |
| SN-117M | -6.076E-02 | 5.936E-02 | 9.796E-02 | 0.000E+00 NOT IDENT. |
| SB-122  | 6.273E-01  | 2.526E+00 | 4.342E+00 | 0.000E+00 NOT IDENT. |
| I-123   | 0.000E+00  | 5.222E+06 | 0.000E+00 | 0.000E+00 SHORT HLIF |
| TE-123M | -2.282E-02 | 3.020E-02 | 5.053E-02 | 0.000E+00 NOT IDENT. |
| I-124   | 2.203E-01  | 8.709E-01 | 1.313E+00 | 0.000E+00 NOT IDENT. |
| SB-124  | -6.585E-02 | 9.794E-02 | 1.484E-01 | 0.000E+00 FAIL ABUN  |
| SB-125  | 5.040E-02  | 1.125E-01 | 1.999E-01 | 0.000E+00 FAIL ABUN  |
| TE-125M | 4.283E+00  | 8.887E+00 | 1.609E+01 | 0.000E+00 NOT IDENT. |
| I-126   | 1.966E-02  | 2.431E-01 | 4.062E-01 | 0.000E+00 NOT IDENT. |
| SB-126  | 2.729E-02  | 2.065E-01 | 3.180E-01 | 0.000E+00 FAIL ABUN  |
| SB-127  | 1.506E-01  | 1.907E+00 | 3.177E+00 | 0.000E+00 FAIL ABUN  |
| XE-127  | -6.003E-02 | 5.734E-02 | 8.743E-02 | 0.000E+00 NOT IDENT. |
| I-131   | -3.254E-02 | 1.270E-01 | 2.186E-01 | 0.000E+00 NOT IDENT. |
| TE-132  | 3.252E-01  | 7.260E-01 | 1.254E+00 | 0.000E+00 NOT IDENT. |
| BA-133  | 3.507E-02  | 5.424E-02 | 8.802E-02 | 0.000E+00 FAIL ABUN  |
| I-133   | 0.000E+00  | 7.049E+03 | 0.000E+00 | 0.000E+00 SHORT HLIF |
| CS-134  | 0.000E+00  | 1.148E-01 | 1.381E-01 | 0.000E+00 FAIL ABUN  |
| CS-135  | 1.372E-01  | 1.913E-01 | 2.991E-01 | 0.000E+00 NOT IDENT. |
| I-135   | 0.000E+00  | 5.993E+15 | 0.000E+00 | 0.000E+00 SHORT HLIF |
| CS-136  | -6.972E-02 | 1.511E-01 | 2.421E-01 | 0.000E+00 FAIL ABUN  |
| BA-137M | 3.122E-02  | 5.432E-02 | 9.350E-02 | 0.000E+00 NOT IDENT. |
| CS-137  | 3.300E-02  | 5.742E-02 | 9.884E-02 | 0.000E+00 NOT IDENT. |
| CE-139  | -2.359E-02 | 3.287E-02 | 5.499E-02 | 0.000E+00 NOT IDENT. |
| BA-140  | 3.698E-01  | 3.317E-01 | 5.733E-01 | 0.000E+00 NOT IDENT. |
| LA-140  | 5.661E-03  | 1.148E-01 | 1.683E-01 | 0.000E+00 FAIL ABUN  |
| CE-141  | -8.179E-03 | 6.916E-02 | 1.193E-01 | 0.000E+00 NOT IDENT. |



|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| CE-143  | 0.000E+00  | 2.561E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CE-144  | 9.628E-02  | 2.268E-01 | 3.867E-01 | 0.000E+00 | NOT IDENT. |
| PM-144  | 1.065E-02  | 4.533E-02 | 8.054E-02 | 0.000E+00 | NOT IDENT. |
| PR-144  | 7.219E-01  | 3.072E+00 | 5.458E+00 | 0.000E+00 | NOT IDENT. |
| PM-146  | 2.024E-02  | 5.300E-02 | 9.344E-02 | 0.000E+00 | NOT IDENT. |
| ND-147  | 3.631E-01  | 7.205E-01 | 1.265E+00 | 0.000E+00 | FAIL ABUN  |
| PM-149  | -8.588E+00 | 9.343E+01 | 1.659E+02 | 0.000E+00 | NOT IDENT. |
| EU-152  | -1.049E-02 | 1.058E-01 | 1.851E-01 | 0.000E+00 | FAIL ABUN  |
| GD-153  | -9.900E-02 | 7.884E-02 | 1.171E-01 | 0.000E+00 | FAIL ABUN  |
| EU-154  | 3.404E-02  | 1.790E-01 | 3.007E-01 | 0.000E+00 | NOT IDENT. |
| EU-155  | 0.000E+00  | 1.058E-01 | 1.980E-01 | 0.000E+00 | FAIL ABUN  |
| TB-160  | -3.084E-02 | 1.776E-01 | 2.985E-01 | 0.000E+00 | FAIL ABUN  |
| HO-166M | 5.498E-02  | 8.318E-02 | 1.516E-01 | 0.000E+00 | FAIL ABUN  |
| TM-171  | 1.377E+01  | 1.772E+01 | 2.978E+01 | 0.000E+00 | NOT IDENT. |
| LU-176  | -4.042E-02 | 2.659E-02 | 4.256E-02 | 0.000E+00 | FAIL ABUN  |
| LU-177  | 0.000E+00  | 2.343E+00 | 2.394E+00 | 0.000E+00 | FAIL ABUN  |
| LU-177M | 1.467E-01  | 2.368E-01 | 3.798E-01 | 0.000E+00 | NOT IDENT. |
| HF-181  | -1.832E-02 | 4.976E-02 | 8.259E-02 | 0.000E+00 | NOT IDENT. |
| W-181   | -7.745E-02 | 2.210E-01 | 3.573E-01 | 0.000E+00 | NOT IDENT. |
| TA-182  | 2.810E-03  | 2.711E-01 | 4.490E-01 | 0.000E+00 | NOT IDENT. |
| RE-183  | 1.156E-01  | 1.197E-01 | 2.156E-01 | 0.000E+00 | FAIL ABUN  |
| RE-184  | -8.229E-02 | 2.724E-01 | 4.485E-01 | 0.000E+00 | NOT IDENT. |
| OS-185  | 1.277E-02  | 5.444E-02 | 9.254E-02 | 0.000E+00 | NOT IDENT. |
| RE-188  | 1.557E-01  | 1.891E-01 | 3.392E-01 | 0.000E+00 | NOT IDENT. |
| W-188   | -3.944E+00 | 8.902E+00 | 1.354E+01 | 0.000E+00 | FAIL ABUN  |
| IR-192  | -5.098E-03 | 3.900E-02 | 6.856E-02 | 0.000E+00 | FAIL ABUN  |
| AU-195  | -1.962E-02 | 2.056E-01 | 3.637E-01 | 0.000E+00 | FAIL ABUN  |
| TL-200  | 0.000E+00  | 4.524E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TL-201  | 1.354E+00  | 7.493E+00 | 1.307E+01 | 0.000E+00 | NOT IDENT. |
| TL-202  | 1.046E-01  | 8.552E-02 | 1.583E-01 | 0.000E+00 | NOT IDENT. |
| HG-203  | 4.202E-02  | 4.965E-02 | 8.267E-02 | 0.000E+00 | NOT IDENT. |
| BI-207  | -6.525E-02 | 7.835E-02 | 1.207E-01 | 0.000E+00 | FAIL ABUN  |
| TL-207  | 2.170E-02  | 8.053E-01 | 1.258E+00 | 0.000E+00 | FAIL ABUN  |
| PO-209  | -1.155E+01 | 9.929E+00 | 1.490E+01 | 0.000E+00 | NOT IDENT. |
| PB-211  | -8.909E-02 | 1.294E+00 | 1.960E+00 | 0.000E+00 | NOT IDENT. |
| PO-215  | 2.170E-02  | 8.053E-01 | 1.258E+00 | 0.000E+00 | FAIL ABUN  |
| RN-219  | 1.185E-01  | 4.894E-01 | 8.624E-01 | 0.000E+00 | FAIL ABUN  |
| RN-220  | -7.905E+00 | 3.236E+01 | 5.355E+01 | 0.000E+00 | NOT IDENT. |
| RA-223  | 2.170E-02  | 8.053E-01 | 1.258E+00 | 0.000E+00 | FAIL ABUN  |
| AC-227  | 4.995E-02  | 4.536E-01 | 7.643E-01 | 0.000E+00 | FAIL ABUN  |
| TH-227  | 4.995E-02  | 4.536E-01 | 7.643E-01 | 0.000E+00 | FAIL ABUN  |
| TH-229  | 1.146E-03  | 5.962E-01 | 1.021E+00 | 0.000E+00 | FAIL ABUN  |
| PA-231  | -6.858E-02 | 1.624E+00 | 2.894E+00 | 0.000E+00 | FAIL ABUN  |
| TH-231  | 2.170E-02  | 8.053E-01 | 1.258E+00 | 0.000E+00 | FAIL ABUN  |
| U-231   | 3.106E-01  | 9.525E-01 | 1.559E+00 | 0.000E+00 | FAIL ABUN  |
| PA-233  | 4.822E-02  | 6.989E-02 | 1.283E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234  | 1.205E-01  | 3.894E-01 | 6.803E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234M | -2.475E+00 | 6.415E+00 | 1.043E+01 | 0.000E+00 | NOT IDENT. |
| U-235   | 4.075E-02  | 2.285E-01 | 3.990E-01 | 0.000E+00 | FAIL ABUN  |
| NP-236  | -7.202E-03 | 8.592E-02 | 1.486E-01 | 0.000E+00 | NOT IDENT. |
| NP-239  | -2.648E-02 | 1.933E-01 | 3.408E-01 | 0.000E+00 | FAIL ABUN  |
| AM-241  | -9.056E-03 | 7.284E-02 | 1.204E-01 | 0.000E+00 | NOT IDENT. |
| CM-243  | -1.358E-02 | 9.428E-02 | 1.675E-01 | 0.000E+00 | FAIL ABUN  |
| AM-246  | 4.962E-02  | 1.963E-01 | 3.372E-01 | 0.000E+00 | NOT IDENT. |
| CM-247  | 4.125E-02  | 4.324E-02 | 7.932E-02 | 0.000E+00 | FAIL ABUN  |
| CF-249  | 5.944E-05  | 4.809E-02 | 8.378E-02 | 0.000E+00 | NOT IDENT. |
| CF-251  | -2.741E-02 | 1.365E-01 | 2.331E-01 | 0.000E+00 | NOT IDENT. |

## VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 13:51:56.32

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                          *
*                                     Charleston, SC 29414                      *
*****
Configuration      : DKAl00:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630009.CNF;1
Sample date        : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 11:48:23
Sample ID          : G244630009          Sample quantity  : 1.34720E+02 GRAM
Detector name      : GAM17              Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00      Elapsed real time: 0 02:00:09.63  0.1%
Energy tolerance   : 1.50000 keV        Analyst Initials  : MXR1
Abundance limit    : 75.00000           Sensitivity        : 5.00000
Batch ID           : 941639             Detector SN#       :
Matrix Spike ID    :                    LCS ID            : 1032-A
*****

```

## Nuclide Line Activity Report

## Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| K-40    | 1460.81 | 992   | 10.67* | 7.784E-01 | 3.328E+01               | 3.328E+01              | 11.11             |
| CD-109  | 88.03   | 429   | 3.72*  | 6.675E+00 | 4.812E+00               | 4.922E+00              | 21.94             |
| SN-126  | 64.28   | 218   | 9.60   | 6.777E+00 | 9.338E-01               | 9.338E-01              | 48.69             |
|         | 86.94   | 429   | 8.90   | 6.675E+00 | 2.011E+00               | 2.011E+00              | 46.01             |
|         | 87.57   | 429   | 37.00* | 6.675E+00 | 4.838E-01               | 4.838E-01              | 21.94             |
| TL-208  | 277.35  | 85    | 6.80   | 3.565E+00 | 9.713E-01               | 9.713E-01              | 62.56             |
|         | 510.84  | 142   | 21.60  | 2.058E+00 | 8.912E-01               | 8.912E-01              | 44.95             |
|         | 583.14  | 414   | 84.20* | 1.812E+00 | 7.555E-01               | 7.555E-01              | 17.99             |
|         | 860.37  | 61    | 12.46  | 1.248E+00 | 1.094E+00               | 1.094E+00              | 57.03             |
| BI-210  | 46.50   | 152   | 4.05*  | 6.315E+00 | 1.653E+00               | 1.655E+00              | 54.80             |
| PB-210  | 46.50   | 152   | 4.05*  | 6.315E+00 | 1.653E+00               | 1.655E+00              | 54.80             |
| PO-210  | 46.50   | 152   | 4.05*  | 6.315E+00 | 1.653E+00               | 1.655E+00              | 54.66             |
| BI-211  | 72.87   | ----- | 1.27   | 6.803E+00 | -----                   | Line Not Found         | -----             |
|         | 351.07  | 770   | 12.94* | 2.909E+00 | 5.699E+00               | 5.699E+00              | 14.19             |
| BI-212  | 727.18  | 132   | 11.80* | 1.466E+00 | 2.128E+00               | 2.128E+00              | 35.64             |
|         | 785.46  | 27    | 1.97   | 1.360E+00 | 2.823E+00               | 2.823E+00              | 100.43            |
|         | 1620.62 | ----- | 2.75   | 7.161E-01 | -----                   | Line Not Found         | -----             |
| PB-212  | 74.81   | 942   | 10.70  | 6.795E+00 | 3.608E+00               | 3.608E+00              | 17.46             |
|         | 77.11   | 1267  | 18.00  | 6.782E+00 | 2.891E+00               | 2.891E+00              | 12.66             |
|         | 87.30   | 429   | 8.00   | 6.675E+00 | 2.238E+00               | 2.238E+00              | 24.11             |
|         | 238.63  | 1419  | 44.60* | 4.023E+00 | 2.203E+00               | 2.203E+00              | 11.83             |
|         | 300.09  | 111   | 3.41   | 3.343E+00 | 2.713E+00               | 2.713E+00              | 44.26             |
| PO-212  | 74.81   | 942   | 10.70  | 6.795E+00 | 3.608E+00               | 3.608E+00              | 17.46             |
|         | 77.11   | 1267  | 18.00  | 6.782E+00 | 2.891E+00               | 2.891E+00              | 12.66             |
|         | 87.30   | 429   | 8.00   | 6.675E+00 | 2.238E+00               | 2.238E+00              | 24.11             |
|         | 115.19  | ----- | 0.60   | 6.177E+00 | -----                   | Line Not Found         | -----             |
|         | 238.63  | 1419  | 44.60* | 4.023E+00 | 2.203E+00               | 2.203E+00              | 11.83             |
|         | 300.09  | 111   | 3.41   | 3.343E+00 | 2.713E+00               | 2.713E+00              | 44.26             |
| BI-214  | 609.31  | 529   | 46.30* | 1.737E+00 | 1.832E+00               | 1.832E+00              | 15.48             |
|         | 1120.29 | 100   | 15.10  | 9.775E-01 | 1.889E+00               | 1.889E+00              | 43.61             |
|         | 1764.49 | 61    | 15.80  | 6.718E-01 | 1.609E+00               | 1.609E+00              | 42.25             |
| PB-214  | 74.81   | 942   | 6.21   | 6.795E+00 | 6.217E+00               | 6.217E+00              | 16.50             |

Nuclide Type:

| Nuclide | Energy  | Area | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|------|--------|-----------|-------------------------|------------------------|-------------------|
| PO-214  | 77.11   | 1267 | 10.50  | 6.782E+00 | 4.957E+00               | 4.957E+00              | 14.77             |
|         | 87.30   | 429  | 4.67   | 6.675E+00 | 3.833E+00               | 3.833E+00              | 23.25             |
|         | 241.98  | 414  | 7.49   | 3.985E+00 | 3.860E+00               | 3.860E+00              | 21.23             |
|         | 295.21  | 454  | 19.20  | 3.389E+00 | 1.944E+00               | 1.944E+00              | 17.73             |
|         | 351.92  | 770  | 37.20* | 2.909E+00 | 1.982E+00               | 1.982E+00              | 15.12             |
|         | 74.81   | 942  | 6.21   | 6.795E+00 | 6.217E+00               | 6.217E+00              | 16.50             |
|         | 77.11   | 1267 | 10.50  | 6.782E+00 | 4.957E+00               | 4.957E+00              | 14.77             |
|         | 87.30   | 429  | 4.67   | 6.675E+00 | 3.833E+00               | 3.833E+00              | 23.25             |
|         | 241.98  | 414  | 7.49   | 3.985E+00 | 3.860E+00               | 3.860E+00              | 21.23             |
|         | 295.21  | 454  | 19.20  | 3.389E+00 | 1.944E+00               | 1.944E+00              | 17.73             |
| PO-216  | 351.92  | 770  | 37.20* | 2.909E+00 | 1.982E+00               | 1.982E+00              | 15.12             |
|         | 74.81   | 942  | 10.70  | 6.795E+00 | 3.608E+00               | 3.608E+00              | 17.46             |
|         | 77.11   | 1267 | 18.00  | 6.782E+00 | 2.891E+00               | 2.891E+00              | 12.66             |
|         | 87.30   | 429  | 8.00   | 6.675E+00 | 2.238E+00               | 2.238E+00              | 24.11             |
|         | 238.63  | 1419 | 44.60* | 4.023E+00 | 2.203E+00               | 2.203E+00              | 11.83             |
|         | 300.09  | 111  | 3.41   | 3.343E+00 | 2.713E+00               | 2.713E+00              | 44.26             |
|         | 74.81   | 942  | 6.21   | 6.795E+00 | 6.217E+00               | 6.217E+00              | 16.50             |
|         | 77.11   | 1267 | 10.50  | 6.782E+00 | 4.957E+00               | 4.957E+00              | 14.77             |
|         | 87.30   | 429  | 4.67   | 6.675E+00 | 3.833E+00               | 3.833E+00              | 23.25             |
|         | 241.98  | 414  | 7.49   | 3.985E+00 | 3.860E+00               | 3.860E+00              | 21.23             |
| RA-224  | 295.21  | 454  | 19.20  | 3.389E+00 | 1.944E+00               | 1.944E+00              | 17.73             |
|         | 351.92  | 770  | 37.20* | 2.909E+00 | 1.982E+00               | 1.982E+00              | 15.12             |
|         | 240.98  | 414  | 3.95*  | 3.985E+00 | 7.320E+00               | 7.320E+00              | 20.47             |
|         | 609.31  | 529  | 46.30* | 1.737E+00 | 1.832E+00               | 1.832E+00              | 15.48             |
|         | 1120.29 | 100  | 15.10  | 9.775E-01 | 1.889E+00               | 1.889E+00              | 43.61             |
|         | 1764.49 | 61   | 15.80  | 6.718E-01 | 1.609E+00               | 1.609E+00              | 42.25             |
|         | 338.32  | 275  | 11.40  | 3.013E+00 | 2.228E+00               | 2.228E+00              | 45.89             |
|         | 911.07  | 299  | 27.70* | 1.182E+00 | 2.544E+00               | 2.544E+00              | 17.88             |
|         | 969.11  | 148  | 16.60  | 1.116E+00 | 2.227E+00               | 2.227E+00              | 32.72             |
|         | 338.32  | 275  | 11.40  | 3.013E+00 | 2.228E+00               | 2.228E+00              | 45.89             |
| RA-226  | 911.07  | 299  | 27.70* | 1.182E+00 | 2.544E+00               | 2.544E+00              | 17.88             |
|         | 969.11  | 148  | 16.60  | 1.116E+00 | 2.227E+00               | 2.227E+00              | 32.72             |
|         | 74.81   | 942  | 10.70  | 6.795E+00 | 3.608E+00               | 3.662E+00              | 14.79             |
|         | 77.11   | 1267 | 18.00  | 6.782E+00 | 2.891E+00               | 2.935E+00              | 12.66             |
|         | 87.30   | 429  | 8.00   | 6.675E+00 | 2.238E+00               | 2.271E+00              | 21.94             |
|         | 238.63  | 1419 | 44.60* | 4.023E+00 | 2.203E+00               | 2.237E+00              | 11.83             |
|         | 300.09  | 111  | 3.41   | 3.343E+00 | 2.713E+00               | 2.754E+00              | 73.25             |
|         | 609.31  | 529  | 46.30* | 1.737E+00 | 1.832E+00               | 1.832E+00              | 15.48             |
|         | 1120.29 | 100  | 15.10  | 9.775E-01 | 1.889E+00               | 1.889E+00              | 43.61             |
|         | 1764.49 | 61   | 15.80  | 6.718E-01 | 1.609E+00               | 1.609E+00              | 42.25             |
| TH-230  | 338.32  | 275  | 11.40  | 3.013E+00 | 2.228E+00               | 2.228E+00              | 21.85             |
|         | 911.07  | 299  | 27.70* | 1.182E+00 | 2.544E+00               | 2.544E+00              | 17.88             |
|         | 969.11  | 148  | 16.60  | 1.116E+00 | 2.227E+00               | 2.227E+00              | 32.72             |
|         | 63.29   | 218  | 3.80*  | 6.777E+00 | 2.359E+00               | 2.359E+00              | 49.63             |
|         | 92.38   | 456  | 5.41   | 6.593E+00 | 3.561E+00               | 3.561E+00              | 28.06             |
|         | 609.31  | 529  | 46.30* | 1.737E+00 | 1.832E+00               | 1.832E+00              | 15.48             |
|         | 1120.29 | 100  | 15.10  | 9.775E-01 | 1.889E+00               | 1.889E+00              | 43.61             |
|         | 1764.49 | 61   | 15.80  | 6.718E-01 | 1.609E+00               | 1.609E+00              | 42.25             |
|         | 86.50   | 429  | 12.60* | 6.675E+00 | 1.421E+00               | 1.421E+00              | 30.12             |
|         |         |      |        |           |                         |                        |                   |

Nuclide Type:

| Nuclide | Energy | Area  | %Abn    | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|--------|-------|---------|-----------|-------------------------|------------------------|-------------------|
|         | 95.87  | ----- | 2.60    | 6.543E+00 | -----                   | Line Not Found         | -----             |
| U-238   | 63.29  | 218   | 3.80*   | 6.777E+00 | 2.359E+00               | 2.359E+00              | 49.63             |
|         | 92.38  | 456   | 5.41    | 6.593E+00 | 3.561E+00               | 3.561E+00              | 23.12             |
| AM-243  | 74.67  | 942   | 66.00*  | 6.795E+00 | 5.850E-01               | 5.850E-01              | 14.74             |
|         | 86.72  | 429   | 0.34    | 6.675E+00 | 5.328E+01               | 5.328E+01              | 21.94             |
|         | 117.66 | ----- | 0.55    | 6.127E+00 | -----                   | Line Not Found         | -----             |
|         | 142.18 | ----- | 0.13    | 5.624E+00 | -----                   | Line Not Found         | -----             |
| ANH-511 | 511.00 | 142   | 100.00* | 2.058E+00 | 1.925E-01               | 1.925E-01              | 44.17             |

Flag: "\*" = Keyline

Total number of lines in spectrum 41  
Number of unidentified lines 4  
Number of lines tentatively identified by NID 37 90.24%

Nuclide Type :

| Nuclide | Hlife     | Decay | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | Decay Corr<br>2-Sigma Error | 2-Sigma<br>%Error | Flags |
|---------|-----------|-------|-------------------------|------------------------|-----------------------------|-------------------|-------|
| K-40    | 1.28E+09Y | 1.00  | 3.328E+01               | 3.328E+01              | 0.370E+01                   | 11.11             |       |
| CD-109  | 464.00D   | 1.02  | 4.812E+00               | 4.922E+00              | 1.080E+00                   | 21.94             |       |
| SN-126  | 1.00E+05Y | 1.00  | 4.838E-01               | 4.838E-01              | 1.061E-01                   | 21.94             |       |
| TL-208  | 1.41E+10Y | 1.00  | 7.555E-01               | 7.555E-01              | 1.359E-01                   | 17.99             |       |
| BI-210  | 22.26Y    | 1.00  | 1.653E+00               | 1.655E+00              | 0.907E+00                   | 54.80             |       |
| PB-210  | 22.26Y    | 1.00  | 1.653E+00               | 1.655E+00              | 0.907E+00                   | 54.80             |       |
| PO-210  | 22.26Y    | 1.00  | 1.653E+00               | 1.655E+00              | 0.904E+00                   | 54.66             |       |
| BI-211  | 7.04E+08Y | 1.00  | 5.699E+00               | 5.699E+00              | 0.808E+00                   | 14.19             |       |
| BI-212  | 1.41E+10Y | 1.00  | 2.128E+00               | 2.128E+00              | 0.758E+00                   | 35.64             |       |
| PB-212  | 1.41E+10Y | 1.00  | 2.203E+00               | 2.203E+00              | 0.261E+00                   | 11.83             |       |
| PO-212  | 1.41E+10Y | 1.00  | 2.203E+00               | 2.203E+00              | 0.261E+00                   | 11.83             |       |
| BI-214  | 1600.00Y  | 1.00  | 1.832E+00               | 1.832E+00              | 0.284E+00                   | 15.48             |       |
| PB-214  | 1600.00Y  | 1.00  | 1.982E+00               | 1.982E+00              | 0.300E+00                   | 15.12             |       |
| PO-214  | 1600.00Y  | 1.00  | 1.982E+00               | 1.982E+00              | 0.300E+00                   | 15.12             |       |
| PO-216  | 1.41E+10Y | 1.00  | 2.203E+00               | 2.203E+00              | 0.261E+00                   | 11.83             |       |
| PO-218  | 1600.00Y  | 1.00  | 1.982E+00               | 1.982E+00              | 0.300E+00                   | 15.12             |       |
| RA-224  | 1.41E+10Y | 1.00  | 7.320E+00               | 7.320E+00              | 1.499E+00                   | 20.47             |       |
| RA-226  | 1600.00Y  | 1.00  | 1.832E+00               | 1.832E+00              | 0.284E+00                   | 15.48             |       |
| AC-228  | 1.41E+10Y | 1.00  | 2.544E+00               | 2.544E+00              | 0.455E+00                   | 17.88             |       |
| RA-228  | 1.41E+10Y | 1.00  | 2.544E+00               | 2.544E+00              | 0.455E+00                   | 17.88             |       |
| TH-228  | 1.91Y     | 1.02  | 2.203E+00               | 2.237E+00              | 0.265E+00                   | 11.83             |       |
| TH-230  | 4.47E+09Y | 1.00  | 1.832E+00               | 1.832E+00              | 0.284E+00                   | 15.48             |       |
| TH-232  | 1.41E+10Y | 1.00  | 2.544E+00               | 2.544E+00              | 0.455E+00                   | 17.88             |       |
| TH-234  | 4.47E+09Y | 1.00  | 2.359E+00               | 2.359E+00              | 1.171E+00                   | 49.63             |       |
| U-234   | 4.47E+09Y | 1.00  | 1.832E+00               | 1.832E+00              | 0.284E+00                   | 15.48             |       |
| NP-237  | 2.14E+06Y | 1.00  | 1.421E+00               | 1.421E+00              | 0.428E+00                   | 30.12             |       |
| U-238   | 4.47E+09Y | 1.00  | 2.359E+00               | 2.359E+00              | 1.171E+00                   | 49.63             |       |
| AM-243  | 7380.00Y  | 1.00  | 5.850E-01               | 5.850E-01              | 0.862E-01                   | 14.74             |       |
| ANH-511 | 1.00E+09Y | 1.00  | 1.925E-01               | 1.925E-01              | 0.850E-01                   | 44.17             |       |

Total Activity : 9.608E+01 9.623E+01

Grand Total Activity : 9.608E+01 9.623E+01

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

Unidentified Energy Lines  
Sample ID : G244630009

Page : 5  
Acquisition date : 23-JAN-2010 11:48:23

| It | Energy  | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | %Eff     | Flags |
|----|---------|------|-------|------|---------|------|----|----------|------|----------|-------|
| 4  | 84.17   | 103  | 389   | 0.89 | 168.00  | 163  | 28 | 1.43E-02 | 60.5 | 6.71E+00 | T     |
| 4  | 89.94   | 261  | 465   | 1.18 | 179.54  | 163  | 28 | 3.62E-02 | 30.6 | 6.64E+00 | T     |
| 0  | 129.10  | 158  | 333   | 0.80 | 257.88  | 254  | 8  | 2.19E-02 | 43.1 | 5.89E+00 | T     |
| 2  | 183.68  | 52   | 129   | 1.02 | 367.09  | 365  | 12 | 7.26E-03 | 67.0 | 4.84E+00 | T     |
| 2  | 185.80  | 235  | 234   | 1.18 | 371.33  | 365  | 12 | 3.27E-02 | 26.3 | 4.81E+00 | T     |
| 0  | 209.66  | 151  | 407   | 1.14 | 419.07  | 412  | 13 | 2.10E-02 | 57.7 | 4.43E+00 | T     |
| 0  | 270.33  | 113  | 175   | 1.09 | 540.46  | 536  | 9  | 1.57E-02 | 46.3 | 3.64E+00 | T     |
| 0  | 327.76  | 99   | 217   | 1.65 | 655.36  | 650  | 12 | 1.37E-02 | 62.9 | 3.10E+00 | T     |
| 0  | 409.96  | 60   | 136   | 2.92 | 819.85  | 814  | 11 | 8.38E-03 | 79.4 | 2.53E+00 | T     |
| 0  | 462.76  | 90   | 90    | 1.47 | 925.50  | 921  | 10 | 1.25E-02 | 44.7 | 2.26E+00 | T     |
| 0  | 768.00  | 69   | 39    | 1.65 | 1536.31 | 1532 | 9  | 9.59E-03 | 40.9 | 1.39E+00 | T     |
| 0  | 795.10  | 60   | 85    | 1.60 | 1590.55 | 1584 | 14 | 8.36E-03 | 70.6 | 1.34E+00 | T     |
| 0  | 933.60  | 48   | 24    | 1.89 | 1867.73 | 1863 | 10 | 6.63E-03 | 48.6 | 1.15E+00 |       |
| 1  | 963.82  | 69   | 29    | 1.83 | 1928.21 | 1924 | 23 | 9.58E-03 | 34.7 | 1.12E+00 | T     |
| 1  | 1586.84 | 32   | 18    | 2.16 | 3175.27 | 3168 | 24 | 4.39E-03 | 59.6 | 7.28E-01 |       |
| 1  | 1591.40 | 41   | 14    | 2.16 | 3184.39 | 3168 | 24 | 5.69E-03 | 45.8 | 7.26E-01 |       |
| 0  | 1728.53 | 18   | 13    | 1.01 | 3458.92 | 3452 | 11 | 2.44E-03 | 94.5 | 6.82E-01 |       |

Flags: "T" = Tentatively associated

VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 13:52:01.72

```

*****
*                                     GEL Laboratories LLC
*                                     2040 Savage Road
*                                     Charleston, SC 29414
*****
*
*                               DETECTOR DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630009.CNF;1
* Acquisition date   : 23-JAN-2010 11:48:23   Detector SN#      :
* Detector ID        : GAM17                   Sensitivity         : 5.00000
* Geometry           : CAN                     Energy tolerance    : 1.50000
* Elapsed live time  : 0 02:00:00.00           Abundance limit     : 75.00000
* Elapsed real time  : 0 02:00:09.63           Half life ratio     : 8.00000
*****
*
*                               SAMPLE DATA
*
* Sample date        : 8-JAN-2010 12:00:00.   Nuclide Library : SOLID
* Sample ID          : G244630009             Analyst initials: MXR1
* Batch Number       : 941639                 Sample Quantity  : 1.34720E+02 GRAM
*****
*
*                               QC DATA
*
* CALIB. DATE/TIME   : 6-JAN-2010 11:41:36.18MS Isotope      :
* MSD ID             :                               MSD Isotope :
* LCS ID             : 1032-A                       LCS Isotope   :
*****

```

Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| K-40    | 3.328E+01              | 3.697E+00 | 6.318E-01         | 5.609E-02 | 52.684  |
| CD-109  | 4.922E+00              | 1.080E+00 | 1.052E+00         | 1.027E-01 | 4.678   |
| SN-126  | 4.838E-01              | 1.061E-01 | 1.033E-01         | 1.008E-02 | 4.685   |
| TL-208  | 7.555E-01              | 1.359E-01 | 7.302E-02         | 6.906E-03 | 10.347  |
| BI-210  | 1.655E+00              | 9.067E-01 | 8.857E-01         | 9.608E-02 | 1.868   |
| PB-210  | 1.655E+00              | 9.067E-01 | 8.857E-01         | 9.608E-02 | 1.868   |
| PO-210  | 1.655E+00              | 9.044E-01 | 8.857E-01         | 8.948E-02 | 1.868   |
| BI-211  | 5.699E+00              | 8.084E-01 | 3.938E-01         | 3.675E-02 | 14.472  |
| BI-212  | 2.128E+00              | 7.583E-01 | 6.415E-01         | 6.437E-02 | 3.316   |
| PB-212  | 2.203E+00              | 2.606E-01 | 1.009E-01         | 1.018E-02 | 21.832  |
| PO-212  | 2.203E+00              | 2.606E-01 | 1.009E-01         | 1.018E-02 | 21.832  |
| BI-214  | 1.832E+00              | 2.836E-01 | 1.353E-01         | 1.376E-02 | 13.537  |
| PB-214  | 1.982E+00              | 2.996E-01 | 1.373E-01         | 1.467E-02 | 14.437  |
| PO-214  | 1.982E+00              | 2.996E-01 | 1.373E-01         | 1.467E-02 | 14.437  |
| PO-216  | 2.203E+00              | 2.606E-01 | 1.009E-01         | 1.018E-02 | 21.832  |
| PO-218  | 1.982E+00              | 2.996E-01 | 1.373E-01         | 1.467E-02 | 14.437  |
| RA-224  | 7.320E+00              | 1.499E+00 | 1.150E+00         | 1.040E-01 | 6.367   |
| RA-226  | 1.832E+00              | 2.836E-01 | 1.353E-01         | 1.376E-02 | 13.537  |

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| AC-228  | 2.544E+00              | 4.548E-01 | 3.038E-01         | 3.445E-02 | 8.377   |
| RA-228  | 2.544E+00              | 4.548E-01 | 3.038E-01         | 3.445E-02 | 8.377   |
| TH-228  | 2.237E+00              | 2.645E-01 | 1.024E-01         | 1.033E-02 | 21.832  |
| TH-230  | 1.832E+00              | 2.836E-01 | 1.353E-01         | 1.376E-02 | 13.537  |
| TH-232  | 2.544E+00              | 4.548E-01 | 3.038E-01         | 3.445E-02 | 8.377   |
| TH-234  | 2.359E+00              | 1.171E+00 | 1.123E+00         | 2.097E-01 | 2.100   |
| U-234   | 1.832E+00              | 2.836E-01 | 1.353E-01         | 1.376E-02 | 13.537  |
| NP-237  | 1.421E+00              | 4.279E-01 | 3.023E-01         | 6.900E-02 | 4.700   |
| U-238   | 2.359E+00              | 1.171E+00 | 1.123E+00         | 2.097E-01 | 2.100   |
| AM-243  | 5.850E-01              | 8.624E-02 | 6.279E-02         | 6.129E-03 | 9.317   |
| ANH-511 | 1.925E-01              | 8.503E-02 | 5.722E-02         | 5.110E-03 | 3.364   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| BE-7    | -2.363E-01                         |              | 4.216E-01 | 6.620E-01           | 6.299E-02 | -0.357  |
| NA-22   | 1.219E-02                          |              | 6.540E-02 | 1.072E-01           | 9.027E-03 | 0.114   |
| NA-24   | -7.998E-01                         |              | 3.543E-01 | Half-Life too short |           |         |
| AL-26   | 1.596E-02                          |              | 3.836E-02 | 6.824E-02           | 5.719E-03 | 0.234   |
| TI-44   | 5.336E-01                          | +            | 6.753E-02 | 6.688E-02           | 6.516E-03 | 7.978   |
| SC-46   | -1.901E-02                         |              | 5.182E-02 | 8.258E-02           | 7.229E-03 | -0.230  |
| V-48    | 1.409E-02                          |              | 8.997E-02 | 1.502E-01           | 1.310E-02 | 0.094   |
| CR-51   | -4.614E-02                         |              | 4.314E-01 | 7.215E-01           | 6.890E-02 | -0.064  |
| MN-52   | -2.191E-02                         |              | 2.732E-01 | 4.491E-01           | 3.872E-02 | -0.049  |
| MN-54   | 4.019E-03                          |              | 5.094E-02 | 8.529E-02           | 7.499E-03 | 0.047   |
| CO-56   | 6.982E-04                          |              | 4.679E-02 | 7.786E-02           | 6.844E-03 | 0.009   |
| CO-57   | 1.482E-02                          |              | 2.610E-02 | 4.407E-02           | 5.163E-03 | 0.336   |
| CO-58   | -4.914E-02                         |              | 4.654E-02 | 6.853E-02           | 6.035E-03 | -0.717  |
| FE-59   | -1.182E-01                         |              | 1.386E-01 | 2.059E-01           | 1.890E-02 | -0.574  |
| CO-60   | -1.861E-02                         |              | 5.339E-02 | 8.572E-02           | 7.306E-03 | -0.217  |
| ZN-65   | -5.211E-02                         |              | 1.495E-01 | 1.995E-01           | 1.679E-02 | -0.261  |
| GE-68   | 4.339E-01                          |              | 1.697E+00 | 2.839E+00           | 2.423E-01 | 0.153   |
| AS-73   | 1.373E-01                          |              | 2.513E-01 | 4.334E-01           | 4.336E-02 | 0.317   |
| AS-74   | 2.332E-02                          |              | 1.121E-01 | 1.842E-01           | 1.623E-02 | 0.127   |
| SE-75   | -1.995E-02                         |              | 5.325E-02 | 7.789E-02           | 7.157E-03 | -0.256  |
| BR-77   | 8.946E+00                          |              | 1.225E+01 | 2.110E+01           | 1.886E+00 | 0.424   |
| SR-82   | -2.664E-01                         |              | 4.523E-01 | 7.123E-01           | 6.233E-02 | -0.374  |
| RB-83   | 5.966E-02                          |              | 8.376E-02 | 1.441E-01           | 1.288E-02 | 0.414   |
| RB-84   | -8.495E-03                         |              | 9.139E-02 | 1.497E-01           | 1.312E-02 | -0.057  |
| KR-85   | 1.541E+01                          |              | 8.964E+00 | 1.501E+01           | 1.341E+00 | 1.027   |
| SR-85   | 7.892E-02                          |              | 4.590E-02 | 7.686E-02           | 6.866E-03 | 1.027   |
| RB-86   | -2.031E-01                         |              | 1.116E+00 | 1.785E+00           | 1.523E-01 | -0.114  |
| Y-88    | -6.550E-03                         |              | 4.424E-02 | 6.970E-02           | 5.812E-03 | -0.094  |
| ZR-88   | -1.221E-04                         |              | 3.671E-02 | 6.096E-02           | 5.136E-03 | -0.002  |
| Y-91    | -8.078E+00                         |              | 2.940E+01 | 4.628E+01           | 3.820E+00 | -0.175  |
| NB-94   | -9.904E-03                         |              | 4.129E-02 | 6.818E-02           | 5.848E-03 | -0.145  |
| NB-95   | 8.344E-02                          |              | 7.047E-02 | 1.140E-01           | 9.962E-03 | 0.732   |



----- Non-Identified Nuclides -----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| NB-95M  | 7.973E-02                          |              | 1.494E-01 | 2.196E-01           | 2.242E-02 | 0.363   |
| ZR-95   | 5.617E-02                          |              | 9.307E-02 | 1.634E-01           | 1.565E-02 | 0.344   |
| NB-97   | -1.075E-01                         |              | 6.302E-02 | Half-Life too short |           |         |
| ZR-97   | 2.782E+00                          |              | 1.099E+00 | Half-Life too short |           |         |
| MO-99   | 9.447E-02                          |              | 1.352E+01 | 2.270E+01           | 3.454E+00 | 0.004   |
| TC-99M  | -2.332E+10                         |              | 1.503E+10 | Half-Life too short |           |         |
| RH-101  | 1.035E-02                          |              | 3.783E-02 | 6.174E-02           | 5.367E-03 | 0.168   |
| RH-102  | 9.519E-03                          |              | 3.763E-02 | 6.281E-02           | 5.563E-03 | 0.152   |
| RU-103  | 6.146E-02                          |              | 5.152E-02 | 9.047E-02           | 1.297E-02 | 0.679   |
| RH-106  | 7.565E-02                          |              | 4.278E-01 | 6.983E-01           | 9.358E-02 | 0.108   |
| RU-106  | 7.565E-02                          |              | 4.277E-01 | 6.983E-01           | 6.067E-02 | 0.108   |
| AG-108M | 1.515E-02                          |              | 3.934E-02 | 6.664E-02           | 6.015E-03 | 0.227   |
| AG-110M | -5.056E-02                         |              | 5.130E-02 | 7.483E-02           | 6.522E-03 | -0.676  |
| IN-111  | 8.808E-01                          |              | 1.217E+00 | 1.819E+00           | 1.649E-01 | 0.484   |
| IN-113M | 7.042E-03                          |              | 5.415E-02 | 9.069E-02           | 7.880E-03 | 0.078   |
| SN-113  | 7.042E-03                          |              | 5.415E-02 | 9.069E-02           | 7.880E-03 | 0.078   |
| IN-114M | -8.486E-02                         |              | 2.335E-01 | 3.282E-01           | 2.827E-02 | -0.259  |
| CD-115  | -4.808E+00                         |              | 1.402E+01 | 2.220E+01           | 1.985E+00 | -0.217  |
| SN-117M | -6.076E-02                         |              | 6.057E-02 | 9.389E-02           | 8.440E-03 | -0.647  |
| SB-122  | 6.273E-01                          |              | 2.577E+00 | 4.257E+00           | 3.790E-01 | 0.147   |
| I-123   | -3.946E+00                         |              | 2.664E+00 | Half-Life too short |           |         |
| TE-123M | -2.282E-02                         |              | 3.082E-02 | 4.843E-02           | 4.359E-03 | -0.471  |
| I-124   | 2.203E-01                          |              | 8.887E-01 | 1.289E+00           | 1.132E-01 | 0.171   |
| SB-124  | -6.585E-02                         |              | 9.994E-02 | 1.485E-01           | 1.322E-02 | -0.443  |
| SB-125  | 5.040E-02                          |              | 1.148E-01 | 1.950E-01           | 1.720E-02 | 0.258   |
| TE-125M | 4.283E+00                          |              | 9.069E+00 | 1.533E+01           | 1.883E+00 | 0.279   |
| I-126   | 1.966E-02                          |              | 2.481E-01 | 3.995E-01           | 3.373E-02 | 0.049   |
| SB-126  | 2.729E-02                          |              | 2.107E-01 | 3.132E-01           | 2.704E-02 | 0.087   |
| SB-127  | 1.506E-01                          |              | 1.946E+00 | 3.126E+00           | 3.523E-01 | 0.048   |
| XE-127  | -6.003E-02                         |              | 5.851E-02 | 8.416E-02           | 7.358E-03 | -0.713  |
| I-131   | -3.254E-02                         |              | 1.295E-01 | 2.126E-01           | 1.963E-02 | -0.153  |
| TE-132  | 3.252E-01                          |              | 7.408E-01 | 1.210E+00           | 1.922E-01 | 0.269   |
| BA-133  | 3.507E-02                          |              | 5.534E-02 | 8.558E-02           | 1.143E-02 | 0.410   |
| I-133   | 4.695E-03                          |              | 3.596E-03 | Half-Life too short |           |         |
| CS-134  | 1.646E-01                          | +            | 1.171E-01 | 1.362E-01           | 1.204E-02 | 1.208   |
| CS-135  | 1.372E-01                          |              | 1.952E-01 | 2.893E-01           | 3.019E-02 | 0.474   |
| I-135   | -4.382E+09                         |              | 3.058E+09 | Half-Life too short |           |         |
| CS-136  | -6.972E-02                         |              | 1.542E-01 | 2.401E-01           | 2.156E-02 | -0.290  |
| BA-137M | 3.122E-02                          |              | 5.543E-02 | 9.194E-02           | 7.745E-03 | 0.340   |
| CS-137  | 3.300E-02                          |              | 5.859E-02 | 9.719E-02           | 8.203E-03 | 0.340   |
| CE-139  | -2.359E-02                         |              | 3.354E-02 | 5.274E-02           | 4.398E-03 | -0.447  |
| BA-140  | 3.698E-01                          |              | 3.385E-01 | 5.616E-01           | 1.866E-01 | 0.659   |
| LA-140  | 5.661E-03                          |              | 1.172E-01 | 1.682E-01           | 1.452E-02 | 0.034   |
| CE-141  | -8.179E-03                         |              | 7.057E-02 | 1.141E-01           | 1.164E-02 | -0.072  |
| CE-143  | 8.358E-04                          |              | 1.306E-04 | Half-Life too short |           |         |
| CE-144  | 9.628E-02                          |              | 2.314E-01 | 3.695E-01           | 6.268E-02 | 0.261   |
| PM-144  | 1.065E-02                          |              | 4.626E-02 | 7.927E-02           | 6.786E-03 | 0.134   |
| PR-144  | 7.219E-01                          |              | 3.134E+00 | 5.371E+00           | 4.596E-01 | 0.134   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| PM-146  | 2.024E-02                          |              | 5.408E-02 | 9.125E-02           | 9.904E-03 | 0.222   |
| ND-147  | 3.631E-01                          |              | 7.352E-01 | 1.238E+00           | 1.875E-01 | 0.293   |
| PM-149  | -8.588E+00                         |              | 9.534E+01 | 1.607E+02           | 2.549E+01 | -0.053  |
| EU-152  | -1.049E-02                         |              | 1.080E-01 | 1.798E-01           | 1.701E-02 | -0.058  |
| GD-153  | -9.900E-02                         |              | 8.044E-02 | 1.113E-01           | 1.138E-02 | -0.890  |
| EU-154  | 3.404E-02                          |              | 1.827E-01 | 2.993E-01           | 3.339E-02 | 0.114   |
| EU-155  | 2.014E-01                          |              | 1.079E-01 | 1.884E-01           | 2.025E-02 | 1.069   |
| TB-160  | -3.084E-02                         |              | 1.812E-01 | 2.951E-01           | 2.587E-02 | -0.105  |
| HO-166M | 5.498E-02                          |              | 8.488E-02 | 1.493E-01           | 1.285E-02 | 0.368   |
| TM-171  | 1.377E+01                          |              | 1.809E+01 | 2.812E+01           | 2.776E+00 | 0.490   |
| LU-176  | -4.042E-02                         |              | 2.713E-02 | 4.127E-02           | 3.781E-03 | -0.979  |
| LU-177  | 4.095E+00                          | +            | 2.391E+00 | 2.306E+00           | 2.028E-01 | 1.776   |
| LU-177M | 1.467E-01                          |              | 2.416E-01 | 3.702E-01           | 3.172E-02 | 0.396   |
| HF-181  | -1.832E-02                         |              | 5.078E-02 | 8.074E-02           | 7.168E-03 | -0.227  |
| W-181   | -7.745E-02                         |              | 2.255E-01 | 3.373E-01           | 3.341E-02 | -0.230  |
| TA-182  | 2.810E-03                          |              | 2.766E-01 | 4.465E-01           | 3.704E-02 | 0.006   |
| RE-183  | 1.156E-01                          |              | 1.222E-01 | 2.067E-01           | 1.789E-02 | 0.559   |
| RE-184  | -8.229E-02                         |              | 2.779E-01 | 4.334E-01           | 3.946E-02 | -0.190  |
| OS-185  | 1.277E-02                          |              | 5.555E-02 | 9.095E-02           | 7.766E-03 | 0.140   |
| RE-188  | 1.557E-01                          |              | 1.929E-01 | 3.250E-01           | 3.019E-02 | 0.479   |
| W-188   | -3.944E+00                         |              | 9.084E+00 | 1.312E+01           | 1.205E+00 | -0.301  |
| IR-192  | -5.098E-03                         |              | 3.979E-02 | 6.652E-02           | 6.086E-03 | -0.077  |
| AU-195  | -1.962E-02                         |              | 2.098E-01 | 3.457E-01           | 3.561E-02 | -0.057  |
| TL-200  | 2.075E-04                          |              | 2.308E-04 | Half-Life too short |           |         |
| TL-201  | 1.354E+00                          |              | 7.646E+00 | 1.254E+01           | 1.047E+00 | 0.108   |
| TL-202  | 1.046E-01                          |              | 8.726E-02 | 1.545E-01           | 1.346E-02 | 0.677   |
| HG-203  | 4.202E-02                          |              | 5.066E-02 | 8.003E-02           | 7.532E-03 | 0.525   |
| BI-207  | -6.525E-02                         |              | 7.995E-02 | 1.197E-01           | 1.026E-02 | -0.545  |
| TL-207  | 2.170E-02                          |              | 8.217E-01 | 1.221E+00           | 2.190E-01 | 0.018   |
| PO-209  | -1.155E+01                         |              | 1.013E+01 | 1.473E+01           | 1.288E+00 | -0.784  |
| PB-211  | -8.909E-02                         |              | 1.320E+00 | 1.910E+00           | 1.197E+00 | -0.047  |
| PO-215  | 2.170E-02                          |              | 8.217E-01 | 1.221E+00           | 2.190E-01 | 0.018   |
| RN-219  | 1.185E-01                          |              | 4.993E-01 | 8.403E-01           | 1.256E-01 | 0.141   |
| RN-220  | -7.905E+00                         |              | 3.302E+01 | 5.248E+01           | 4.685E+00 | -0.151  |
| RA-223  | 2.170E-02                          |              | 8.217E-01 | 1.221E+00           | 2.190E-01 | 0.018   |
| AC-227  | 4.995E-02                          |              | 4.629E-01 | 7.388E-01           | 1.155E-01 | 0.068   |
| TH-227  | 4.995E-02                          |              | 4.629E-01 | 7.388E-01           | 1.352E-01 | 0.068   |
| TH-229  | 1.146E-03                          |              | 6.084E-01 | 9.818E-01           | 8.492E-02 | 0.001   |
| PA-231  | -6.858E-02                         |              | 1.657E+00 | 2.802E+00           | 4.346E-01 | -0.024  |
| TH-231  | 2.170E-02                          |              | 8.217E-01 | 1.221E+00           | 2.190E-01 | 0.018   |
| U-231   | 3.106E-01                          |              | 9.720E-01 | 1.482E+00           | 1.503E-01 | 0.210   |
| PA-233  | 4.822E-02                          |              | 7.131E-02 | 1.245E-01           | 1.167E-02 | 0.387   |
| PA-234  | 1.205E-01                          |              | 3.974E-01 | 6.733E-01           | 1.267E-01 | 0.179   |
| PA-234M | -2.475E+00                         |              | 6.546E+00 | 1.033E+01           | 1.037E+00 | -0.239  |
| U-235   | 4.075E-02                          |              | 2.332E-01 | 3.818E-01           | 7.000E-02 | 0.107   |
| NP-236  | -7.202E-03                         |              | 8.768E-02 | 1.424E-01           | 1.259E-02 | -0.051  |
| NP-239  | -2.648E-02                         |              | 1.972E-01 | 3.249E-01           | 3.696E-02 | -0.081  |
| AM-241  | -9.056E-03                         |              | 7.433E-02 | 1.135E-01           | 1.205E-02 | -0.080  |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| CM-243  | -1.358E-02                         |              | 9.620E-02 | 1.594E-01         | 1.685E-02 | -0.085  |
| AM-246  | 4.962E-02                          |              | 2.003E-01 | 3.346E-01         | 2.854E-02 | 0.148   |
| CM-247  | 4.125E-02                          |              | 4.412E-02 | 7.729E-02         | 6.566E-03 | 0.534   |
| CF-249  | 5.944E-05                          |              | 4.907E-02 | 8.159E-02         | 6.912E-03 | 0.001   |
| CF-251  | -2.741E-02                         |              | 1.393E-01 | 2.238E-01         | 1.893E-02 | -0.122  |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : SYS$SYSROOT:[ALPHA.ARCHIVE.GAMMA]G244630009          *
* Acquisition date   : 23-JAN-2010 11:48:23 Detector SN# :                  *
* Detector ID        : GAM17 Sensitivity      : 5.000                      *
* Geometry           : CAN Energy tolerance: 1.500                      *
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000             *
* Elapsed real time  : 0 02:00:09.63 Half life ratio : 8.000             *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G244630009 Analyst initials: MXR1                 *
* Batch Number       : 941639 Sample Quantity : 1.3472E+02 GRAM          *
* Recovery           : 1.00000 Carrier Weight : 0.00000                  *
*****
*                                     QC DATA                                *
*
* CALIB. DATE/TIME   : 6-JAN-2010 11:41:36 MS Isotope :                   *
* MSD DPM             : 0.000 MSD Isotope :                               *
* LCS DPM             : 0.000 LCS Isotope :                               *
* LCSD DPM            : 0.000 LCSD Isotope :                               *
*****

```

## Combined Activity-MDA Report

### ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act Error | DLC<br>(pCi/GRAM ) | TPU       |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 3.328E+01               | 3.623E+00 | 3.167E-01          | 1.848E+00 |
| CD-109  | 4.922E+00               | 1.058E+00 | 5.547E-01          | 5.398E-01 |
| SN-126  | 4.838E-01               | 1.040E-01 | 5.446E-02          | 5.307E-02 |
| TL-208  | 7.555E-01               | 1.332E-01 | 3.724E-02          | 6.797E-02 |
| BI-210  | 1.655E+00               | 8.886E-01 | 4.721E-01          | 4.534E-01 |
| PB-210  | 1.655E+00               | 8.886E-01 | 4.721E-01          | 4.534E-01 |
| PO-210  | 1.655E+00               | 8.863E-01 | 4.721E-01          | 4.522E-01 |
| BI-211  | 5.699E+00               | 7.922E-01 | 2.027E-01          | 4.042E-01 |
| BI-212  | 2.128E+00               | 7.432E-01 | 3.259E-01          | 3.792E-01 |
| PB-212  | 2.203E+00               | 2.554E-01 | 5.231E-02          | 1.303E-01 |
| PO-212  | 2.203E+00               | 2.554E-01 | 5.231E-02          | 1.303E-01 |
| BI-214  | 1.832E+00               | 2.780E-01 | 6.896E-02          | 1.418E-01 |
| PB-214  | 1.982E+00               | 2.936E-01 | 7.067E-02          | 1.498E-01 |
| PO-214  | 1.982E+00               | 2.936E-01 | 7.067E-02          | 1.498E-01 |
| PO-216  | 2.203E+00               | 2.554E-01 | 5.231E-02          | 1.303E-01 |
| PO-218  | 1.982E+00               | 2.936E-01 | 7.067E-02          | 1.498E-01 |
| RA-224  | 7.320E+00               | 1.469E+00 | 5.957E-01          | 7.493E-01 |
| RA-226  | 1.832E+00               | 2.780E-01 | 6.896E-02          | 1.418E-01 |
| AC-228  | 2.544E+00               | 4.457E-01 | 1.536E-01          | 2.274E-01 |
| RA-228  | 2.544E+00               | 4.457E-01 | 1.536E-01          | 2.274E-01 |
| TH-228  | 2.237E+00               | 2.592E-01 | 5.309E-02          | 1.323E-01 |
| TH-230  | 1.832E+00               | 2.780E-01 | 6.895E-02          | 1.418E-01 |
| TH-232  | 2.544E+00               | 4.457E-01 | 1.536E-01          | 2.274E-01 |
| TH-234  | 2.359E+00               | 1.147E+00 | 5.956E-01          | 5.854E-01 |
| U-234   | 1.832E+00               | 2.780E-01 | 6.895E-02          | 1.418E-01 |
| NP-237  | 1.421E+00               | 4.193E-01 | 1.595E-01          | 2.139E-01 |
| U-238   | 2.359E+00               | 1.147E+00 | 5.956E-01          | 5.854E-01 |
| AM-243  | 5.850E-01               | 8.452E-02 | 3.320E-02          | 4.312E-02 |
| ANH-511 | 1.925E-01               | 8.333E-02 | 2.925E-02          | 4.251E-02 |

### ---- Non-Identified Nuclides ----

| Key-Line<br>Activity | K.L Act error | DLC | TPU |
|----------------------|---------------|-----|-----|
|----------------------|---------------|-----|-----|

| Nuclide | (pCi/GRAM ) |           | (pCi/GRAM ) |           |            |
|---------|-------------|-----------|-------------|-----------|------------|
| BE-7    | -2.363E-01  | 4.131E-01 | 3.388E-01   | 2.108E-01 | NOT IDENT. |
| NA-22   | 1.219E-02   | 6.409E-02 | 5.386E-02   | 3.270E-02 | NOT IDENT. |
| NA-24   | -7.998E+05  | 6.944E+05 | 0.000E+00   | 3.543E+05 | SHORT HLIF |
| AL-26   | 1.596E-02   | 3.759E-02 | 3.407E-02   | 1.918E-02 | NOT IDENT. |
| TI-44   | 5.336E-01   | 6.618E-02 | 3.534E-02   | 3.376E-02 | FAIL ABUN  |
| SC-46   | -1.901E-02  | 5.078E-02 | 4.179E-02   | 2.591E-02 | FAIL ABUN  |
| V-48    | 1.409E-02   | 8.817E-02 | 7.587E-02   | 4.499E-02 | NOT IDENT. |
| CR-51   | -4.614E-02  | 4.227E-01 | 3.720E-01   | 2.157E-01 | NOT IDENT. |
| MN-52   | -2.191E-02  | 2.677E-01 | 2.253E-01   | 1.366E-01 | NOT IDENT. |
| MN-54   | 4.019E-03   | 4.992E-02 | 4.321E-02   | 2.547E-02 | NOT IDENT. |
| CO-56   | 6.982E-04   | 4.586E-02 | 3.944E-02   | 2.340E-02 | NOT IDENT. |
| CO-57   | 1.482E-02   | 2.557E-02 | 2.311E-02   | 1.305E-02 | NOT IDENT. |
| CO-58   | -4.914E-02  | 4.561E-02 | 3.474E-02   | 2.327E-02 | NOT IDENT. |
| FE-59   | -1.182E-01  | 1.359E-01 | 1.038E-01   | 6.932E-02 | NOT IDENT. |
| CO-60   | -1.861E-02  | 5.232E-02 | 4.305E-02   | 2.669E-02 | NOT IDENT. |
| ZN-65   | -5.211E-02  | 1.465E-01 | 1.005E-01   | 7.474E-02 | NOT IDENT. |
| GE-68   | 4.339E-01   | 1.663E+00 | 1.432E+00   | 8.486E-01 | NOT IDENT. |
| AS-73   | 1.373E-01   | 2.463E-01 | 2.305E-01   | 1.257E-01 | NOT IDENT. |
| AS-74   | 2.332E-02   | 1.099E-01 | 9.393E-02   | 5.607E-02 | NOT IDENT. |
| SE-75   | -1.995E-02  | 5.219E-02 | 4.029E-02   | 2.663E-02 | NOT IDENT. |
| BR-77   | 8.946E+00   | 1.201E+01 | 1.079E+01   | 6.126E+00 | FAIL ABUN  |
| SR-82   | -2.664E-01  | 4.433E-01 | 3.614E-01   | 2.262E-01 | NOT IDENT. |
| RB-83   | 5.966E-02   | 8.209E-02 | 7.366E-02   | 4.188E-02 | NOT IDENT. |
| RB-84   | -8.495E-03  | 8.956E-02 | 7.575E-02   | 4.569E-02 | NOT IDENT. |
| KR-85   | 1.541E+01   | 8.785E+00 | 7.672E+00   | 4.482E+00 | NOT IDENT. |
| SR-85   | 7.892E-02   | 4.498E-02 | 3.929E-02   | 2.295E-02 | NOT IDENT. |
| RB-86   | -2.031E-01  | 1.094E+00 | 8.999E-01   | 5.579E-01 | NOT IDENT. |
| Y-88    | -6.550E-03  | 4.336E-02 | 3.479E-02   | 2.212E-02 | NOT IDENT. |
| ZR-88   | -1.221E-04  | 3.597E-02 | 3.131E-02   | 1.835E-02 | NOT IDENT. |
| Y-91    | -8.078E+00  | 2.881E+01 | 2.329E+01   | 1.470E+01 | NOT IDENT. |
| NB-94   | -9.904E-03  | 4.047E-02 | 3.465E-02   | 2.065E-02 | NOT IDENT. |
| NB-95   | 8.344E-02   | 6.906E-02 | 5.787E-02   | 3.523E-02 | NOT IDENT. |
| NB-95M  | 7.973E-02   | 1.464E-01 | 1.138E-01   | 7.468E-02 | NOT IDENT. |
| ZR-95   | 5.617E-02   | 9.121E-02 | 8.293E-02   | 4.653E-02 | NOT IDENT. |
| NB-97   | -1.075E+05  | 1.235E+05 | 0.000E+00   | 6.302E+04 | SHORT HLIF |
| ZR-97   | 2.782E+06   | 2.154E+06 | 0.000E+00   | 1.099E+06 | SHORT HLIF |
| MO-99   | 9.447E-02   | 1.325E+01 | 1.153E+01   | 6.758E+00 | NOT IDENT. |
| TC-99M  | -2.332E+16  | 2.945E+16 | 0.000E+00   | 0.000E+00 | SHORT HLIF |
| RH-101  | 1.035E-02   | 3.707E-02 | 3.210E-02   | 1.891E-02 | NOT IDENT. |
| RH-102  | 9.519E-03   | 3.687E-02 | 3.215E-02   | 1.881E-02 | FAIL ABUN  |
| RU-103  | 6.146E-02   | 5.049E-02 | 4.627E-02   | 2.576E-02 | FAIL ABUN  |
| RH-106  | 7.565E-02   | 4.193E-01 | 3.557E-01   | 2.139E-01 | FAIL ABUN  |
| RU-106  | 7.565E-02   | 4.192E-01 | 3.557E-01   | 2.139E-01 | FAIL ABUN  |
| AG-108M | 1.515E-02   | 3.855E-02 | 3.417E-02   | 1.967E-02 | NOT IDENT. |
| AG-110M | -5.056E-02  | 5.028E-02 | 3.808E-02   | 2.565E-02 | NOT IDENT. |
| IN-111  | 8.808E-01   | 1.193E+00 | 9.421E-01   | 6.086E-01 | NOT IDENT. |
| IN-113M | 7.042E-03   | 5.306E-02 | 4.659E-02   | 2.707E-02 | NOT IDENT. |
| SN-113  | 7.042E-03   | 5.306E-02 | 4.659E-02   | 2.707E-02 | NOT IDENT. |
| IN-114M | -8.486E-02  | 2.288E-01 | 1.708E-01   | 1.167E-01 | NOT IDENT. |
| CD-115  | -4.808E+00  | 1.374E+01 | 1.134E+01   | 7.010E+00 | NOT IDENT. |
| SN-117M | -6.076E-02  | 5.936E-02 | 4.901E-02   | 3.029E-02 | NOT IDENT. |
| SB-122  | 6.273E-01   | 2.526E+00 | 2.172E+00   | 1.289E+00 | NOT IDENT. |
| I-123   | -3.946E+06  | 5.222E+06 | 0.000E+00   | 2.664E+06 | SHORT HLIF |
| TE-123M | -2.282E-02  | 3.020E-02 | 2.528E-02   | 1.541E-02 | NOT IDENT. |
| I-124   | 2.203E-01   | 8.709E-01 | 6.570E-01   | 4.443E-01 | NOT IDENT. |
| SB-124  | -6.585E-02  | 9.794E-02 | 7.426E-02   | 4.997E-02 | FAIL ABUN  |
| SB-125  | 5.040E-02   | 1.125E-01 | 1.000E-01   | 5.739E-02 | FAIL ABUN  |
| TE-125M | 4.283E+00   | 8.887E+00 | 8.051E+00   | 4.534E+00 | NOT IDENT. |
| I-126   | 1.966E-02   | 2.431E-01 | 2.032E-01   | 1.240E-01 | NOT IDENT. |
| SB-126  | 2.729E-02   | 2.065E-01 | 1.591E-01   | 1.053E-01 | FAIL ABUN  |
| SB-127  | 1.506E-01   | 1.907E+00 | 1.590E+00   | 9.730E-01 | FAIL ABUN  |
| XE-127  | -6.003E-02  | 5.734E-02 | 4.374E-02   | 2.926E-02 | NOT IDENT. |
| I-131   | -3.254E-02  | 1.270E-01 | 1.094E-01   | 6.477E-02 | NOT IDENT. |
| TE-132  | 3.252E-01   | 7.260E-01 | 6.275E-01   | 3.704E-01 | NOT IDENT. |
| BA-133  | 3.507E-02   | 5.424E-02 | 4.403E-02   | 2.767E-02 | FAIL ABUN  |
| I-133   | 4.695E+03   | 7.049E+03 | 0.000E+00   | 3.596E+03 | SHORT HLIF |
| CS-134  | 1.646E-01   | 1.148E-01 | 6.909E-02   | 5.856E-02 | FAIL ABUN  |
| CS-135  | 1.372E-01   | 1.913E-01 | 1.496E-01   | 9.761E-02 | NOT IDENT. |
| I-135   | -4.382E+15  | 5.993E+15 | 0.000E+00   | 3.058E+15 | SHORT HLIF |
| CS-136  | -6.972E-02  | 1.511E-01 | 1.211E-01   | 7.710E-02 | FAIL ABUN  |
| BA-137M | 3.122E-02   | 5.432E-02 | 4.678E-02   | 2.771E-02 | NOT IDENT. |
| CS-137  | 3.300E-02   | 5.742E-02 | 4.945E-02   | 2.930E-02 | NOT IDENT. |
| CE-139  | -2.359E-02  | 3.287E-02 | 2.751E-02   | 1.677E-02 | NOT IDENT. |
| BA-140  | 3.698E-01   | 3.317E-01 | 2.868E-01   | 1.692E-01 | NOT IDENT. |
| LA-140  | 5.661E-03   | 1.148E-01 | 8.421E-02   | 5.859E-02 | FAIL ABUN  |
| CE-141  | -8.179E-03  | 6.916E-02 | 5.967E-02   | 3.529E-02 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| CE-143  | 8.358E+02  | 2.561E+02 | 0.000E+00 | 1.306E+02 | SHORT HLIF |
| CE-144  | 9.628E-02  | 2.268E-01 | 1.935E-01 | 1.157E-01 | NOT IDENT. |
| PM-144  | 1.065E-02  | 4.533E-02 | 4.030E-02 | 2.313E-02 | NOT IDENT. |
| PR-144  | 7.219E-01  | 3.072E+00 | 2.730E+00 | 1.567E+00 | NOT IDENT. |
| PM-146  | 2.024E-02  | 5.300E-02 | 4.675E-02 | 2.704E-02 | NOT IDENT. |
| ND-147  | 3.631E-01  | 7.205E-01 | 6.327E-01 | 3.676E-01 | FAIL ABUN  |
| PM-149  | -8.588E+00 | 9.343E+01 | 8.301E+01 | 4.767E+01 | NOT IDENT. |
| EU-152  | -1.049E-02 | 1.058E-01 | 9.259E-02 | 5.400E-02 | FAIL ABUN  |
| GD-153  | -9.900E-02 | 7.884E-02 | 5.858E-02 | 4.022E-02 | FAIL ABUN  |
| EU-154  | 3.404E-02  | 1.790E-01 | 1.504E-01 | 9.135E-02 | NOT IDENT. |
| EU-155  | 2.014E-01  | 1.058E-01 | 9.906E-02 | 5.397E-02 | FAIL ABUN  |
| TB-160  | -3.084E-02 | 1.776E-01 | 1.493E-01 | 9.061E-02 | FAIL ABUN  |
| HO-166M | 5.498E-02  | 8.318E-02 | 7.587E-02 | 4.244E-02 | FAIL ABUN  |
| TM-171  | 1.377E+01  | 1.772E+01 | 1.490E+01 | 9.043E+00 | NOT IDENT. |
| LU-176  | -4.042E-02 | 2.659E-02 | 2.129E-02 | 1.356E-02 | FAIL ABUN  |
| LU-177  | 4.095E+00  | 2.343E+00 | 1.195E+00 | 1.195E+00 | FAIL ABUN  |
| LU-177M | 1.467E-01  | 2.368E-01 | 1.900E-01 | 1.208E-01 | NOT IDENT. |
| HF-181  | -1.832E-02 | 4.976E-02 | 4.132E-02 | 2.539E-02 | NOT IDENT. |
| W-181   | -7.745E-02 | 2.210E-01 | 1.788E-01 | 1.128E-01 | NOT IDENT. |
| TA-182  | 2.810E-03  | 2.711E-01 | 2.246E-01 | 1.383E-01 | NOT IDENT. |
| RE-183  | 1.156E-01  | 1.197E-01 | 1.078E-01 | 6.108E-02 | FAIL ABUN  |
| RE-184  | -8.229E-02 | 2.724E-01 | 2.244E-01 | 1.390E-01 | NOT IDENT. |
| OS-185  | 1.277E-02  | 5.444E-02 | 4.630E-02 | 2.778E-02 | NOT IDENT. |
| RE-188  | 1.557E-01  | 1.891E-01 | 1.697E-01 | 9.647E-02 | NOT IDENT. |
| W-188   | -3.944E+00 | 8.902E+00 | 6.776E+00 | 4.542E+00 | FAIL ABUN  |
| IR-192  | -5.098E-03 | 3.900E-02 | 3.430E-02 | 1.990E-02 | FAIL ABUN  |
| AU-195  | -1.962E-02 | 2.056E-01 | 1.819E-01 | 1.049E-01 | FAIL ABUN  |
| TL-200  | 2.075E+02  | 4.524E+02 | 0.000E+00 | 2.308E+02 | SHORT HLIF |
| TL-201  | 1.354E+00  | 7.493E+00 | 6.538E+00 | 3.823E+00 | NOT IDENT. |
| TL-202  | 1.046E-01  | 8.552E-02 | 7.918E-02 | 4.363E-02 | NOT IDENT. |
| HG-203  | 4.202E-02  | 4.965E-02 | 4.136E-02 | 2.533E-02 | NOT IDENT. |
| BI-207  | -6.525E-02 | 7.835E-02 | 6.037E-02 | 3.997E-02 | FAIL ABUN  |
| TL-207  | 2.170E-02  | 8.053E-01 | 6.293E-01 | 4.109E-01 | FAIL ABUN  |
| PO-209  | -1.155E+01 | 9.929E+00 | 7.454E+00 | 5.066E+00 | NOT IDENT. |
| PB-211  | -8.909E-02 | 1.294E+00 | 9.808E-01 | 6.602E-01 | NOT IDENT. |
| PO-215  | 2.170E-02  | 8.053E-01 | 6.293E-01 | 4.109E-01 | FAIL ABUN  |
| RN-219  | 1.185E-01  | 4.894E-01 | 4.314E-01 | 2.497E-01 | FAIL ABUN  |
| RN-220  | -7.905E+00 | 3.236E+01 | 2.679E+01 | 1.651E+01 | NOT IDENT. |
| RA-223  | 2.170E-02  | 8.053E-01 | 6.293E-01 | 4.109E-01 | FAIL ABUN  |
| AC-227  | 4.995E-02  | 4.536E-01 | 3.824E-01 | 2.314E-01 | FAIL ABUN  |
| TH-227  | 4.995E-02  | 4.536E-01 | 3.824E-01 | 2.314E-01 | FAIL ABUN  |
| TH-229  | 1.146E-03  | 5.962E-01 | 5.107E-01 | 3.042E-01 | FAIL ABUN  |
| PA-231  | -6.858E-02 | 1.624E+00 | 1.448E+00 | 8.286E-01 | FAIL ABUN  |
| TH-231  | 2.170E-02  | 8.053E-01 | 6.293E-01 | 4.109E-01 | FAIL ABUN  |
| U-231   | 3.106E-01  | 9.525E-01 | 7.802E-01 | 4.860E-01 | FAIL ABUN  |
| PA-233  | 4.822E-02  | 6.989E-02 | 6.419E-02 | 3.566E-02 | FAIL ABUN  |
| PA-234  | 1.205E-01  | 3.894E-01 | 3.404E-01 | 1.987E-01 | FAIL ABUN  |
| PA-234M | -2.475E+00 | 6.415E+00 | 5.218E+00 | 3.273E+00 | NOT IDENT. |
| U-235   | 4.075E-02  | 2.285E-01 | 1.996E-01 | 1.166E-01 | FAIL ABUN  |
| NP-236  | -7.202E-03 | 8.592E-02 | 7.434E-02 | 4.384E-02 | NOT IDENT. |
| NP-239  | -2.648E-02 | 1.933E-01 | 1.705E-01 | 9.861E-02 | FAIL ABUN  |
| AM-241  | -9.056E-03 | 7.284E-02 | 6.026E-02 | 3.716E-02 | NOT IDENT. |
| CM-243  | -1.358E-02 | 9.428E-02 | 8.382E-02 | 4.810E-02 | FAIL ABUN  |
| AM-246  | 4.962E-02  | 1.963E-01 | 1.687E-01 | 1.002E-01 | NOT IDENT. |
| CM-247  | 4.125E-02  | 4.324E-02 | 3.969E-02 | 2.206E-02 | FAIL ABUN  |
| CF-249  | 5.944E-05  | 4.809E-02 | 4.192E-02 | 2.454E-02 | NOT IDENT. |
| CF-251  | -2.741E-02 | 1.365E-01 | 1.166E-01 | 6.965E-02 | NOT IDENT. |

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 SAVAGE ROAD                               *
*                               CHARLESTON , SC 29417                           *
*                               GAMMA SPECTROSCOPY BACKGROUND REPORT             *
*****

```

| ENERGY | MDA COUNTS |
|--------|------------|
|--------|------------|

|       |          |
|-------|----------|
| 46.50 | 304.6035 |
| 46.50 | 304.6035 |
| 46.50 | 304.6035 |
| 48.70 | 330.4826 |
| 49.72 | 323.9049 |
| 51.35 | 374.8057 |
| 52.39 | 361.5138 |
| 52.97 | 366.3402 |
| 53.15 | 366.5226 |
| 53.44 | 356.6287 |
| 54.07 | 364.9036 |
| 56.28 | 409.8767 |
| 56.28 | 409.8792 |
| 57.37 | 0.0000   |
| 57.53 | 410.3837 |
| 57.53 | 410.3862 |
| 57.60 | 410.4591 |
| 57.98 | 418.6060 |
| 57.98 | 418.6060 |
| 59.32 | 455.4338 |
| 59.32 | 455.4338 |
| 59.40 | 455.5278 |
| 59.54 | 455.6930 |
| 59.72 | 407.9821 |
| 60.01 | 418.6553 |
| 61.10 | 461.4131 |
| 61.14 | 461.4591 |
| 61.30 | 481.1522 |
| 63.00 | 498.0089 |
| 63.29 | 498.3667 |
| 63.29 | 498.3667 |
| 63.58 | 498.7246 |
| 64.28 | 525.3488 |
| 65.12 | 522.4896 |
| 65.20 | 522.5906 |
| 65.20 | 522.5906 |
| 66.05 | 494.7192 |
| 66.72 | 473.1103 |
| 66.83 | 461.3724 |
| 66.91 | 461.4605 |
| 67.20 | 471.0165 |
| 67.20 | 471.0165 |
| 67.75 | 484.8403 |
| 67.85 | 479.9366 |
| 68.90 | 526.6914 |
| 68.90 | 526.6914 |
| 69.30 | 564.8420 |
| 69.67 | 545.4266 |
| 70.82 | 489.6597 |
| 70.82 | 489.6597 |
| 70.83 | 489.6709 |
| 72.80 | 470.4890 |
| 72.87 | 470.5615 |
| 72.87 | 470.5615 |
| 74.67 | 472.4629 |
| 74.81 | 472.6079 |
| 74.81 | 472.6079 |
| 74.81 | 472.6079 |
| 74.81 | 472.6079 |
| 74.81 | 472.6079 |
| 74.81 | 472.6079 |
| 74.97 | 472.7771 |
| 75.28 | 473.0994 |
| 75.70 | 473.5398 |
| 77.11 | 475.0007 |
| 77.11 | 475.0007 |

|        |          |
|--------|----------|
| 77.11  | 475.0007 |
| 77.11  | 475.0007 |
| 77.11  | 475.0007 |
| 77.11  | 475.0007 |
| 77.11  | 475.0007 |
| 78.38  | 465.4808 |
| 79.62  | 412.4475 |
| 79.80  | 412.6052 |
| 79.80  | 412.6052 |
| 80.11  | 494.3654 |
| 80.18  | 494.4404 |
| 80.30  | 434.7827 |
| 80.30  | 434.7827 |
| 80.57  | 435.0293 |
| 81.00  | 495.2957 |
| 81.07  | 495.3679 |
| 81.07  | 495.3679 |
| 81.07  | 495.3679 |
| 81.07  | 495.3679 |
| 82.60  | 458.7264 |
| 83.37  | 383.7903 |
| 83.78  | 384.1180 |
| 83.78  | 384.1180 |
| 83.78  | 384.1180 |
| 83.78  | 384.1180 |
| 84.21  | 384.4563 |
| 84.90  | 384.9980 |
| 85.43  | 385.4135 |
| 86.29  | 386.0858 |
| 86.50  | 386.2486 |
| 86.54  | 386.2785 |
| 86.59  | 386.3192 |
| 86.72  | 386.4199 |
| 86.79  | 386.4713 |
| 86.94  | 386.5890 |
| 87.30  | 386.8695 |
| 87.30  | 386.8695 |
| 87.30  | 386.8695 |
| 87.30  | 386.8695 |
| 87.30  | 386.8695 |
| 87.30  | 386.8695 |
| 87.30  | 386.8695 |
| 87.57  | 387.0772 |
| 87.88  | 387.3171 |
| 88.03  | 387.4327 |
| 88.36  | 387.6854 |
| 88.47  | 387.7710 |
| 89.95  | 388.9038 |
| 91.11  | 389.7839 |
| 92.29  | 390.6747 |
| 92.38  | 390.7432 |
| 92.38  | 390.7432 |
| 93.35  | 391.4712 |
| 94.00  | 391.9552 |
| 94.67  | 278.2572 |
| 94.67  | 278.2602 |
| 94.90  | 278.3817 |
| 94.90  | 278.3817 |
| 94.90  | 278.3817 |
| 94.90  | 278.3817 |
| 95.87  | 290.1020 |
| 95.87  | 290.1020 |
| 96.73  | 338.2976 |
| 97.43  | 342.9537 |
| 98.44  | 309.7980 |
| 98.44  | 309.7980 |
| 98.88  | 314.7475 |
| 99.55  | 283.1505 |
| 99.55  | 283.1505 |
| 99.86  | 285.1937 |
| 100.00 | 285.2661 |
| 100.10 | 259.8955 |
| 103.18 | 339.9332 |
| 103.76 | 334.5966 |
| 105.00 | 268.8362 |
| 105.31 | 268.9830 |
| 108.00 | 315.1305 |
| 109.28 | 287.1155 |



|        |          |
|--------|----------|
| 111.00 | 316.7552 |
| 111.00 | 316.7552 |
| 111.76 | 306.5910 |
| 112.95 | 303.3538 |
| 115.19 | 284.1889 |
| 116.30 | 273.0885 |
| 117.00 | 298.6100 |
| 117.00 | 298.6100 |
| 117.66 | 301.8444 |
| 121.11 | 289.8654 |
| 121.62 | 290.1025 |
| 121.78 | 290.1765 |
| 122.06 | 259.0263 |
| 122.32 | 259.1328 |
| 122.32 | 259.1328 |
| 122.32 | 259.1328 |
| 122.32 | 259.1328 |
| 123.07 | 280.9799 |
| 127.23 | 271.9725 |
| 129.76 | 307.1582 |
| 131.20 | 287.0115 |
| 133.02 | 266.9213 |
| 133.54 | 275.7845 |
| 135.34 | 308.2456 |
| 136.00 | 288.5767 |
| 136.25 | 288.6825 |
| 136.48 | 285.7818 |
| 140.51 | 288.4685 |
| 140.51 | 0.0000   |
| 142.18 | 283.1181 |
| 142.65 | 272.2165 |
| 143.76 | 274.6673 |
| 144.24 | 271.8212 |
| 144.24 | 271.8212 |
| 144.24 | 271.8212 |
| 144.24 | 271.8212 |
| 145.22 | 253.9848 |
| 145.44 | 285.4395 |
| 147.16 | 284.0987 |
| 152.43 | 283.1033 |
| 152.70 | 288.3196 |
| 153.22 | 274.1995 |
| 154.21 | 264.3224 |
| 154.21 | 264.3224 |
| 154.21 | 264.3224 |
| 154.21 | 264.3224 |
| 155.03 | 263.5881 |
| 156.02 | 267.0194 |
| 158.56 | 284.4116 |
| 159.00 | 0.0000   |
| 159.00 | 266.0179 |
| 160.31 | 259.2472 |
| 161.27 | 262.6739 |
| 162.32 | 239.2174 |
| 162.64 | 244.4961 |
| 163.35 | 247.8327 |
| 163.89 | 269.7965 |
| 165.85 | 277.7610 |
| 167.43 | 254.3454 |
| 171.28 | 255.5864 |
| 171.86 | 256.8183 |
| 172.10 | 250.6043 |
| 176.55 | 239.3355 |
| 176.60 | 239.3517 |
| 181.06 | 213.0861 |
| 184.41 | 220.3292 |
| 185.71 | 220.6682 |
| 186.00 | 220.7440 |
| 190.27 | 257.2168 |
| 192.34 | 237.4226 |
| 193.63 | 264.6732 |
| 197.04 | 265.7017 |
| 198.01 | 240.0438 |
| 198.60 | 268.3336 |
| 200.40 | 236.3529 |
| 201.83 | 266.0497 |
| 202.84 | 276.5679 |
| 205.31 | 230.5568 |

|        |          |
|--------|----------|
| 208.36 | 237.3416 |
| 208.81 | 237.4585 |
| 209.75 | 237.7014 |
| 209.75 | 237.7014 |
| 210.97 | 195.7864 |
| 215.65 | 199.5227 |
| 216.55 | 220.6787 |
| 218.09 | 198.9331 |
| 222.10 | 192.0011 |
| 223.80 | 174.5488 |
| 226.40 | 190.6233 |
| 227.00 | 176.2392 |
| 227.08 | 176.2536 |
| 227.20 | 179.6232 |
| 228.16 | 177.5649 |
| 228.18 | 177.5681 |
| 228.18 | 177.5681 |
| 231.56 | 0.0000   |
| 235.69 | 189.0410 |
| 236.00 | 189.1008 |
| 236.00 | 189.1008 |
| 238.63 | 195.2357 |
| 238.63 | 195.2357 |
| 238.63 | 195.2357 |
| 238.63 | 195.2357 |
| 239.00 | 195.3061 |
| 240.98 | 195.6862 |
| 241.98 | 183.4217 |
| 241.98 | 183.4217 |
| 241.98 | 183.4217 |
| 244.69 | 156.6608 |
| 245.39 | 141.4303 |
| 247.94 | 167.3997 |
| 248.90 | 150.4564 |
| 249.79 | 167.6958 |
| 252.40 | 163.5370 |
| 252.85 | 185.3448 |
| 252.85 | 185.3448 |
| 254.15 | 0.0000   |
| 256.20 | 182.4851 |
| 256.20 | 182.4851 |
| 260.50 | 170.5408 |
| 260.90 | 176.3677 |
| 262.80 | 150.1168 |
| 264.65 | 163.7884 |
| 268.24 | 142.7393 |
| 268.79 | 137.5846 |
| 269.46 | 139.4092 |
| 269.46 | 139.4092 |
| 269.46 | 139.4092 |
| 269.46 | 139.4092 |
| 271.23 | 179.7754 |
| 273.65 | 139.9341 |
| 276.40 | 155.7062 |
| 277.35 | 175.4913 |
| 277.60 | 175.5310 |
| 277.60 | 175.5310 |
| 278.00 | 175.5920 |
| 278.60 | 146.1687 |
| 279.20 | 150.4661 |
| 279.53 | 150.5079 |
| 280.46 | 137.9608 |
| 281.68 | 167.7040 |
| 283.67 | 148.2279 |
| 284.30 | 168.6143 |
| 285.00 | 162.5330 |
| 285.90 | 147.6310 |
| 286.10 | 135.2781 |
| 286.10 | 135.2781 |
| 287.40 | 136.3150 |
| 288.45 | 0.0000   |
| 290.67 | 159.0641 |
| 290.80 | 159.0805 |
| 291.72 | 137.8840 |
| 293.26 | 0.0000   |
| 293.70 | 139.5399 |
| 295.21 | 155.3995 |
| 295.21 | 155.3995 |

|        |          |
|--------|----------|
| 295.21 | 155.3995 |
| 295.96 | 135.5258 |
| 296.50 | 135.5861 |
| 297.23 | 135.6696 |
| 298.57 | 135.8226 |
| 299.80 | 137.3906 |
| 299.80 | 137.3906 |
| 300.09 | 138.8573 |
| 300.09 | 138.8573 |
| 300.09 | 138.8573 |
| 300.09 | 138.8573 |
| 300.12 | 138.8597 |
| 301.29 | 144.7264 |
| 302.84 | 111.9117 |
| 303.76 | 122.0485 |
| 303.91 | 122.0630 |
| 304.40 | 123.3100 |
| 304.40 | 123.3100 |
| 304.84 | 120.1033 |
| 306.84 | 156.5458 |
| 308.46 | 134.2287 |
| 311.98 | 121.9647 |
| 316.51 | 143.2646 |
| 318.01 | 129.8185 |
| 319.02 | 132.6489 |
| 319.41 | 137.2331 |
| 320.08 | 144.5790 |
| 323.87 | 129.8735 |
| 323.87 | 129.8735 |
| 323.87 | 129.8735 |
| 323.87 | 129.8735 |
| 325.23 | 127.0909 |
| 328.77 | 147.3999 |
| 333.44 | 135.9858 |
| 334.20 | 139.7423 |
| 334.20 | 139.7423 |
| 334.30 | 139.7539 |
| 338.28 | 120.9960 |
| 338.28 | 120.9960 |
| 338.28 | 120.9960 |
| 338.28 | 120.9960 |
| 338.32 | 121.0000 |
| 338.32 | 121.0000 |
| 338.32 | 121.0000 |
| 340.50 | 116.7661 |
| 340.57 | 116.7719 |
| 344.27 | 121.3593 |
| 345.85 | 127.6248 |
| 350.59 | 0.0000   |
| 351.07 | 131.2860 |
| 351.92 | 131.3678 |
| 351.92 | 131.3678 |
| 351.92 | 131.3678 |
| 355.39 | 0.0000   |
| 356.01 | 107.6519 |
| 364.48 | 112.8278 |
| 366.43 | 103.5698 |
| 367.43 | 106.4703 |
| 367.94 | 0.0000   |
| 369.80 | 106.6496 |
| 374.96 | 106.0920 |
| 383.85 | 127.7188 |
| 387.95 | 122.3438 |
| 388.63 | 122.4004 |
| 391.69 | 115.9485 |
| 391.69 | 115.9485 |
| 392.90 | 113.1674 |
| 398.62 | 118.4168 |
| 400.65 | 129.1827 |
| 401.10 | 122.4712 |
| 401.81 | 110.9518 |
| 402.60 | 96.5302  |
| 404.84 | 122.1954 |
| 410.95 | 132.0052 |
| 411.60 | 124.2930 |
| 413.65 | 101.1245 |
| 414.70 | 104.3064 |
| 415.30 | 96.0410  |

|        |          |
|--------|----------|
| 415.76 | 109.0520 |
| 417.63 | 0.0000   |
| 418.52 | 109.2468 |
| 423.70 | 118.4189 |
| 427.08 | 109.8467 |
| 427.89 | 100.0903 |
| 432.53 | 102.3528 |
| 433.93 | 90.6229  |
| 439.47 | 86.9835  |
| 439.56 | 86.9875  |
| 439.89 | 81.0741  |
| 443.98 | 116.9629 |
| 444.90 | 104.1364 |
| 445.03 | 104.1444 |
| 445.03 | 104.1444 |
| 445.03 | 104.1444 |
| 445.03 | 104.1444 |
| 453.90 | 91.7459  |
| 463.38 | 89.8625  |
| 468.07 | 85.2865  |
| 473.00 | 94.8147  |
| 475.06 | 93.9181  |
| 475.35 | 87.8748  |
| 476.78 | 107.1548 |
| 477.59 | 108.2164 |
| 477.96 | 102.1697 |
| 482.03 | 86.1880  |
| 484.57 | 95.4544  |
| 487.03 | 80.3356  |
| 490.36 | 0.0000   |
| 492.35 | 91.8004  |
| 497.08 | 69.5460  |
| 507.63 | 0.0000   |
| 510.53 | 0.0000   |
| 510.84 | 82.4506  |
| 511.00 | 82.4579  |
| 511.85 | 82.4969  |
| 511.85 | 82.4969  |
| 513.99 | 56.1635  |
| 513.99 | 56.1635  |
| 520.41 | 66.3086  |
| 520.65 | 66.3164  |
| 527.90 | 94.6658  |
| 528.96 | 0.0000   |
| 529.64 | 81.2183  |
| 529.87 | 0.0000   |
| 531.02 | 79.1937  |
| 537.32 | 59.5953  |
| 543.00 | 80.7480  |
| 546.56 | 0.0000   |
| 549.76 | 78.9299  |
| 552.65 | 66.4011  |
| 555.20 | 101.3174 |
| 563.23 | 90.0790  |
| 563.90 | 77.3887  |
| 568.70 | 78.6408  |
| 569.32 | 86.1070  |
| 569.50 | 79.7356  |
| 569.67 | 80.8057  |
| 573.80 | 74.5822  |
| 574.00 | 62.8676  |
| 574.64 | 59.6914  |
| 578.91 | 82.0383  |
| 579.30 | 0.0000   |
| 583.14 | 73.8621  |
| 585.48 | 68.5898  |
| 591.81 | 76.3302  |
| 592.07 | 79.5645  |
| 593.00 | 82.8276  |
| 595.88 | 65.7098  |
| 600.56 | 74.4980  |
| 602.52 | 0.0000   |
| 602.71 | 65.7133  |
| 602.71 | 65.7133  |
| 603.60 | 93.4216  |
| 604.41 | 83.0742  |
| 604.70 | 83.0859  |
| 609.31 | 70.4768  |

|        |         |
|--------|---------|
| 609.31 | 70.4768 |
| 609.31 | 70.4768 |
| 609.31 | 70.4768 |
| 610.33 | 70.5106 |
| 612.46 | 71.2355 |
| 614.37 | 71.2996 |
| 618.01 | 72.9480 |
| 621.84 | 71.9901 |
| 621.84 | 71.9901 |
| 631.29 | 65.7367 |
| 633.02 | 78.9478 |
| 633.10 | 78.9521 |
| 634.78 | 91.0852 |
| 635.90 | 88.9373 |
| 636.97 | 65.9125 |
| 645.85 | 66.1835 |
| 646.12 | 62.8813 |
| 656.30 | 85.3396 |
| 657.75 | 97.5955 |
| 657.90 | 0.0000  |
| 661.65 | 84.4354 |
| 661.65 | 84.4354 |
| 664.57 | 0.0000  |
| 666.33 | 75.7073 |
| 666.33 | 75.7073 |
| 675.00 | 68.1764 |
| 677.61 | 73.8492 |
| 685.20 | 77.4650 |
| 692.80 | 77.4966 |
| 695.00 | 74.8662 |
| 696.49 | 75.8153 |
| 696.49 | 75.8153 |
| 697.00 | 73.1254 |
| 697.49 | 78.5570 |
| 698.33 | 72.2637 |
| 698.50 | 69.5594 |
| 699.00 | 70.4761 |
| 702.63 | 68.7767 |
| 706.10 | 66.1616 |
| 706.58 | 0.0000  |
| 706.67 | 71.6169 |
| 709.31 | 71.6960 |
| 711.68 | 70.8608 |
| 713.82 | 67.2883 |
| 717.42 | 78.9268 |
| 720.50 | 65.3503 |
| 721.93 | 0.0000  |
| 722.20 | 63.8767 |
| 722.78 | 62.3708 |
| 722.78 | 62.3708 |
| 722.89 | 62.3742 |
| 722.95 | 66.9382 |
| 723.30 | 66.9489 |
| 724.18 | 70.0182 |
| 727.18 | 73.1543 |
| 733.00 | 59.5823 |
| 735.90 | 56.9004 |
| 739.58 | 53.3102 |
| 742.81 | 54.3013 |
| 744.21 | 52.4912 |
| 747.13 | 73.7598 |
| 751.79 | 72.9766 |
| 752.31 | 50.8173 |
| 753.82 | 53.6217 |
| 755.35 | 48.1038 |
| 756.15 | 56.4488 |
| 756.87 | 59.2422 |
| 763.93 | 52.6034 |
| 765.79 | 72.7701 |
| 766.42 | 77.4353 |
| 766.84 | 77.4475 |
| 776.49 | 56.9105 |
| 778.00 | 49.3432 |
| 778.57 | 46.6858 |
| 778.89 | 49.8047 |
| 783.80 | 61.7525 |
| 785.46 | 60.8566 |
| 792.07 | 70.4004 |

|         |         |
|---------|---------|
| 795.84  | 58.2839 |
| 796.30  | 53.2799 |
| 798.80  | 62.7425 |
| 801.93  | 57.8832 |
| 805.60  | 48.1238 |
| 810.29  | 62.3906 |
| 810.76  | 55.7835 |
| 815.85  | 42.6292 |
| 817.79  | 50.2452 |
| 818.51  | 55.9492 |
| 819.60  | 60.7156 |
| 826.30  | 51.3580 |
| 828.27  | 0.0000  |
| 831.60  | 71.4734 |
| 831.96  | 60.0453 |
| 834.83  | 64.8806 |
| 836.80  | 0.0000  |
| 846.75  | 44.0841 |
| 848.13  | 42.1889 |
| 856.28  | 0.0000  |
| 856.80  | 27.2542 |
| 860.37  | 49.7632 |
| 867.32  | 48.2800 |
| 867.82  | 49.2543 |
| 871.10  | 51.2467 |
| 873.19  | 48.3826 |
| 874.81  | 51.3153 |
| 875.33  | 0.0000  |
| 876.40  | 53.2826 |
| 879.36  | 50.4296 |
| 880.27  | 47.5357 |
| 880.51  | 51.4201 |
| 881.50  | 47.5561 |
| 883.24  | 48.5571 |
| 884.67  | 36.9220 |
| 889.25  | 53.5270 |
| 896.60  | 64.3999 |
| 898.02  | 62.4797 |
| 899.00  | 50.7825 |
| 903.28  | 63.5734 |
| 911.07  | 58.8428 |
| 911.07  | 58.8428 |
| 911.07  | 58.8428 |
| 919.63  | 67.8697 |
| 920.93  | 60.0275 |
| 925.00  | 62.0833 |
| 925.24  | 60.1169 |
| 926.50  | 66.8263 |
| 935.52  | 46.1540 |
| 937.48  | 47.8342 |
| 944.10  | 53.5623 |
| 946.00  | 44.6638 |
| 949.00  | 46.6959 |
| 962.29  | 54.8872 |
| 964.01  | 42.9370 |
| 966.15  | 42.9675 |
| 968.20  | 42.9958 |
| 969.11  | 43.0094 |
| 969.11  | 43.0094 |
| 969.11  | 43.0094 |
| 977.42  | 41.3719 |
| 980.50  | 60.2388 |
| 983.50  | 41.2032 |
| 989.30  | 38.2607 |
| 996.32  | 52.4761 |
| 1001.03 | 60.6416 |
| 1001.68 | 55.6002 |
| 1004.76 | 45.5361 |
| 1021.30 | 0.0000  |
| 1024.50 | 0.0000  |
| 1034.80 | 58.2302 |
| 1036.00 | 52.1206 |
| 1037.82 | 44.9926 |
| 1038.57 | 54.2085 |
| 1038.76 | 0.0000  |
| 1045.16 | 46.1206 |
| 1046.59 | 55.3685 |
| 1048.07 | 57.4465 |

|         |         |
|---------|---------|
| 1050.47 | 49.2773 |
| 1050.47 | 49.2773 |
| 1062.04 | 48.4228 |
| 1063.62 | 68.0303 |
| 1076.63 | 52.7780 |
| 1077.35 | 44.5096 |
| 1078.86 | 47.6352 |
| 1085.78 | 40.4720 |
| 1099.22 | 68.7650 |
| 1112.02 | 53.7891 |
| 1112.84 | 55.7943 |
| 1115.52 | 62.8184 |
| 1120.29 | 52.4219 |
| 1120.29 | 52.4219 |
| 1120.29 | 52.4219 |
| 1120.29 | 52.4219 |
| 1120.51 | 52.4243 |
| 1121.28 | 43.6971 |
| 1124.00 | 0.0000  |
| 1129.67 | 43.1041 |
| 1131.51 | 0.0000  |
| 1147.95 | 0.0000  |
| 1167.94 | 60.5875 |
| 1173.22 | 57.4857 |
| 1175.09 | 56.4497 |
| 1177.93 | 63.9580 |
| 1189.05 | 65.2265 |
| 1204.90 | 74.1042 |
| 1205.75 | 0.0000  |
| 1213.00 | 68.8906 |
| 1221.42 | 59.3372 |
| 1230.97 | 78.9633 |
| 1235.34 | 76.8901 |
| 1236.41 | 0.0000  |
| 1238.25 | 61.7788 |
| 1246.25 | 51.0505 |
| 1260.41 | 0.0000  |
| 1271.85 | 49.2122 |
| 1274.45 | 47.0564 |
| 1274.54 | 47.0585 |
| 1291.56 | 45.0700 |
| 1298.22 | 0.0000  |
| 1312.09 | 24.8654 |
| 1325.50 | 36.9645 |
| 1325.50 | 36.9645 |
| 1332.49 | 36.1039 |
| 1333.61 | 32.4109 |
| 1360.21 | 23.3063 |
| 1362.66 | 0.0000  |
| 1365.15 | 25.2015 |
| 1368.21 | 25.2202 |
| 1368.53 | 0.0000  |
| 1376.25 | 17.7831 |
| 1384.27 | 16.8809 |
| 1394.10 | 27.2618 |
| 1395.20 | 35.7332 |
| 1407.95 | 34.8998 |
| 1434.06 | 18.9844 |
| 1436.60 | 21.8451 |
| 1457.56 | 0.0000  |
| 1460.81 | 16.3756 |
| 1489.15 | 30.7708 |
| 1509.49 | 13.5249 |
| 1596.49 | 15.1975 |
| 1620.62 | 11.8823 |
| 1678.03 | 0.0000  |
| 1691.02 | 14.0706 |
| 1691.02 | 14.0706 |
| 1706.46 | 0.0000  |
| 1750.46 | 0.0000  |
| 1764.49 | 12.2427 |
| 1764.49 | 12.2427 |
| 1764.49 | 12.2427 |
| 1764.49 | 12.2427 |
| 1770.23 | 33.7063 |
| 1771.40 | 14.3031 |
| 1791.20 | 0.0000  |
| 1808.65 | 8.2334  |

1836.01

11.3818



TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G244630009

|                             |            |      |
|-----------------------------|------------|------|
| Total Uranium Activity      | 7.0370E+00 | ug/g |
| Total Uranium Counting Unc. | 3.4154E+00 | ug/g |
| Total Uranium Tpu           | 1.7425E-06 | ug/g |
| Total Uranium Mda           | 1.7744E+00 | ug/g |

```

*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON ,SC 29417                *
*               GROSS GAMMA REPORT                  *
*
*****
*
*  BATCH ID      : 941639                          SAMPLE ID   : G244630009
*  ANALYST       : MXR1                             DETECTOR    : GAM17
*  SAMPLE DATE   : 8-JAN-2010 12:00:00.00          COUNT TIME   : 0 02:00:00.00
*  ANALYSIS DATE : 23-JAN-2010 11:48:23.10          SAMPLE ALQT  : 134.720 GRAM
*
*****

```

```

GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.326E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.739E+00
GROSS GAMMA MDA     (pCi/GRAM ) : 6.318E+00
GROSS GAMMA DLC     (pCi/GRAM ) : 3.076E+00

```

## VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 13:52:49.26

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630010.CNF;1
Sample date   : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 11:48:51
Sample ID     : G244630010           Sample quantity  : 1.16460E+02 GRAM
Detector name : GAM25                Detector geometry: CAN
Elapsed live time: 0 02:00:00.00      Elapsed real time: 0 02:00:01.99  0.0%
Energy tolerance: 1.50000 keV         Analyst Initials : MXR1
Abundance limit: 75.00000             Sensitivity      : 5.00000
Batch ID      : 941639                Detector SN#     :
Matrix Spike ID :                      LCS ID          : 1032-A
*****

```

| Pk | It | Energy   | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | Fit      |
|----|----|----------|------|-------|------|---------|------|----|----------|------|----------|
| 1  | 0  | 46.52*   | 378  | 377   | 0.94 | 92.61   | 89   | 7  | 5.24E-02 | 10.5 |          |
| 2  | 0  | 63.29*   | 507  | 705   | 0.80 | 126.13  | 122  | 9  | 7.05E-02 | 10.7 |          |
| 3  | 2  | 74.84*   | 766  | 509   | 0.87 | 149.23  | 145  | 21 | 1.06E-01 | 5.7  | 1.74E+00 |
| 4  | 2  | 77.06*   | 1248 | 429   | 0.87 | 153.67  | 145  | 21 | 1.73E-01 | 3.9  |          |
| 5  | 0  | 84.28*   | 135  | 450   | 1.11 | 168.11  | 165  | 6  | 1.87E-02 | 26.7 |          |
| 6  | 3  | 87.17    | 453  | 384   | 0.86 | 173.90  | 171  | 22 | 6.30E-02 | 7.7  | 5.07E+00 |
| 7  | 3  | 89.90    | 338  | 401   | 1.07 | 179.36  | 171  | 22 | 4.70E-02 | 10.6 |          |
| 8  | 3  | 92.67*   | 699  | 374   | 1.10 | 184.90  | 171  | 22 | 9.70E-02 | 6.5  |          |
| 9  | 0  | 129.47   | 109  | 434   | 0.87 | 258.48  | 254  | 9  | 1.51E-02 | 36.0 |          |
| 10 | 0  | 143.83*  | 81   | 232   | 1.18 | 287.20  | 285  | 6  | 1.12E-02 | 32.9 |          |
| 11 | 0  | 186.11*  | 350  | 424   | 1.16 | 371.76  | 367  | 11 | 4.86E-02 | 13.0 |          |
| 12 | 0  | 209.26   | 189  | 300   | 1.22 | 418.06  | 413  | 10 | 2.62E-02 | 18.7 |          |
| 13 | 2  | 238.60*  | 1518 | 188   | 0.98 | 476.72  | 472  | 18 | 2.11E-01 | 3.0  | 1.94E+00 |
| 14 | 2  | 240.95   | 178  | 187   | 1.20 | 481.44  | 472  | 18 | 2.48E-02 | 18.8 |          |
| 15 | 2  | 242.05   | 204  | 182   | 1.19 | 483.63  | 472  | 18 | 2.84E-02 | 14.7 |          |
| 16 | 0  | 270.14   | 125  | 212   | 1.66 | 539.79  | 535  | 10 | 1.74E-02 | 23.5 |          |
| 17 | 0  | 277.36   | 27   | 217   | 0.86 | 554.25  | 549  | 9  | 3.78E-03 | 99.4 |          |
| 18 | 0  | 295.16   | 442  | 150   | 0.99 | 589.84  | 586  | 8  | 6.14E-02 | 6.8  |          |
| 19 | 0  | 328.20   | 63   | 165   | 1.03 | 655.91  | 652  | 8  | 8.77E-03 | 37.5 |          |
| 20 | 0  | 338.31*  | 291  | 180   | 1.22 | 676.13  | 671  | 10 | 4.04E-02 | 10.5 |          |
| 21 | 0  | 351.88*  | 672  | 231   | 1.13 | 703.27  | 697  | 12 | 9.33E-02 | 6.0  |          |
| 22 | 0  | 462.92   | 114  | 107   | 0.96 | 925.33  | 921  | 10 | 1.59E-02 | 19.3 |          |
| 23 | 0  | 510.63*  | 159  | 180   | 1.80 | 1020.76 | 1013 | 17 | 2.20E-02 | 22.7 |          |
| 24 | 0  | 583.31*  | 442  | 101   | 1.39 | 1166.11 | 1161 | 13 | 6.14E-02 | 6.8  |          |
| 25 | 0  | 609.32*  | 457  | 96    | 1.37 | 1218.13 | 1213 | 13 | 6.35E-02 | 6.6  |          |
| 26 | 0  | 661.49*  | 571  | 64    | 1.40 | 1322.47 | 1317 | 10 | 7.93E-02 | 5.1  |          |
| 27 | 0  | 727.52   | 132  | 86    | 1.92 | 1454.53 | 1446 | 19 | 1.83E-02 | 19.0 |          |
| 28 | 0  | 768.27   | 36   | 58    | 1.49 | 1536.03 | 1532 | 8  | 5.02E-03 | 40.1 |          |
| 29 | 0  | 794.67   | 58   | 31    | 0.72 | 1588.83 | 1585 | 9  | 8.08E-03 | 21.7 |          |
| 30 | 0  | 860.09*  | 64   | 42    | 1.97 | 1719.67 | 1713 | 13 | 8.89E-03 | 25.1 |          |
| 31 | 0  | 911.10*  | 283  | 80    | 1.78 | 1821.68 | 1813 | 19 | 3.93E-02 | 9.8  |          |
| 32 | 4  | 964.52   | 71   | 40    | 2.62 | 1928.53 | 1922 | 30 | 9.93E-03 | 22.4 | 1.41E+00 |
| 33 | 4  | 968.89*  | 181  | 24    | 1.68 | 1937.26 | 1922 | 30 | 2.52E-02 | 9.3  |          |
| 34 | 0  | 1120.56* | 99   | 66    | 1.87 | 2240.62 | 2232 | 17 | 1.38E-02 | 21.8 |          |
| 35 | 0  | 1238.99  | 30   | 62    | 1.68 | 2477.48 | 2472 | 13 | 4.12E-03 | 57.7 |          |
| 36 | 0  | 1378.92  | 29   | 30    | 2.36 | 2757.35 | 2746 | 15 | 3.98E-03 | 45.7 |          |
| 37 | 0  | 1460.65* | 998  | 37    | 1.73 | 2920.83 | 2912 | 19 | 1.39E-01 | 3.5  |          |
| 38 | 0  | 1730.20  | 29   | 5     | 1.06 | 3459.97 | 3454 | 13 | 3.96E-03 | 26.0 |          |

| Pk | It | Energy   | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | Fit |
|----|----|----------|------|-------|------|---------|------|----|----------|------|-----|
| 39 | 0  | 1764.66* | 58   | 20    | 2.52 | 3528.89 | 3521 | 14 | 8.00E-03 | 22.3 |     |

Flag: "\*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 23-JAN-2010 13:52:52

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630010.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 8-JAN-2010 12:00:00   Acquisition date : 23-JAN-2010 11:48:51
Sample ID        : G244630010             Sample quantity  : 116.46 GRAM
Sample type      : SOLID                  Sample geometry   :
Detector name    : GAMMA25                Detector geometry: CAN
Elapsed live time: 0 02:00:00.00          Elapsed real time: 0 02:00:01.99    0.0%
Peak Width (FWHM): 3.00                   Confidence level  : 5.00 %
Energy tolerance : 1.50 keV               Half life ratio   : 8.00
Errors propagated: Yes                    Systematic Error  : 0.00 %
Efficiency type  : Empirical              Efficiencies at   : Peak Energy
Abundance limit  : 75.00                 WTM error limit   : 3.00
  
```

Full Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| K-40    | +         | 1460.81      | *   | 2.720E+01           | 3.007E+00 | 6.380E-01      | 5.434E-02 | 42.625  |
| CD-109  | +         | 88.03        | *   | 4.271E+00           | 8.007E-01 | 7.977E-01      | 8.573E-02 | 5.354   |
| SN-126  | +         | 64.28        |     | 1.743E+00           | 4.649E-01 | 3.173E-01      | 5.056E-02 | 5.492   |
|         | +         | 86.94        |     | 1.745E+00           | 7.782E-01 | 3.244E-01      | 1.357E-01 | 5.380   |
|         | +         | 87.57        | *   | 4.199E-01           | 7.871E-02 | 7.826E-02      | 8.392E-03 | 5.365   |
| BA-137M | +         | 661.65       | *   | 9.180E-01           | 1.382E-01 | 8.176E-02      | 9.057E-03 | 11.228  |
| CS-137  | +         | 661.65       | *   | 9.705E-01           | 1.462E-01 | 8.643E-02      | 9.586E-03 | 11.228  |
| TL-208  | +         | 277.35       |     | 2.720E-01           | 5.420E-01 | 5.564E-01      | 7.904E-02 | 0.489   |
|         | +         | 510.84       |     | 8.426E-01           | 3.980E-01 | 2.415E-01      | 3.198E-02 | 3.489   |
|         | +         | 583.14       | *   | 6.775E-01           | 1.202E-01 | 6.383E-02      | 7.195E-03 | 10.615  |
|         | +         | 860.37       |     | 9.375E-01           | 4.803E-01 | 4.688E-01      | 4.901E-02 | 2.000   |
| BI-210  | +         | 46.50        | *   | 3.274E+00           | 7.674E-01 | 6.476E-01      | 6.677E-02 | 5.055   |
| PB-210  | +         | 46.50        | *   | 3.274E+00           | 7.674E-01 | 6.476E-01      | 6.677E-02 | 5.055   |
| PO-210  | +         | 46.50        | *   | 3.274E+00           | 7.564E-01 | 6.476E-01      | 6.168E-02 | 5.055   |
| BI-211  |           | 72.87        |     | 1.664E+00           | 1.845E+00 | 2.768E+00      | 2.794E-01 | 0.601   |
|         | +         | 351.07       | *   | 4.304E+00           | 6.865E-01 | 3.446E-01      | 3.631E-02 | 12.492  |
| PB-212  | +         | 74.81        |     | 2.380E+00           | 4.248E-01 | 3.107E-01      | 4.290E-02 | 7.660   |
|         | +         | 77.11        |     | 2.314E+00           | 2.967E-01 | 1.862E-01      | 1.908E-02 | 12.428  |
|         | +         | 87.30        |     | 1.942E+00           | 4.126E-01 | 3.615E-01      | 5.297E-02 | 5.371   |
|         | +         | 238.63       | *   | 2.054E+00           | 2.640E-01 | 8.839E-02      | 1.006E-02 | 23.242  |
|         |           | 300.09       |     | 1.463E+00           | 8.918E-01 | 1.502E+00      | 1.870E-01 | 0.974   |
| PO-212  | +         | 74.81        |     | 2.380E+00           | 4.248E-01 | 3.107E-01      | 4.290E-02 | 7.660   |
|         | +         | 77.11        |     | 2.314E+00           | 2.967E-01 | 1.862E-01      | 1.908E-02 | 12.428  |
|         | +         | 87.30        |     | 1.942E+00           | 4.126E-01 | 3.615E-01      | 5.297E-02 | 5.371   |
|         |           | 115.19       |     | 1.087E+00           | 2.907E+00 | 4.988E+00      | 6.185E-01 | 0.218   |
|         | +         | 238.63       | *   | 2.054E+00           | 2.640E-01 | 8.839E-02      | 1.006E-02 | 23.242  |
|         |           | 300.09       |     | 1.463E+00           | 8.918E-01 | 1.502E+00      | 1.870E-01 | 0.974   |
| BI-214  | +         | 609.31       | *   | 1.325E+00           | 2.363E-01 | 1.237E-01      | 1.493E-02 | 10.712  |
|         | +         | 1120.29      |     | 1.515E+00           | 6.820E-01 | 4.894E-01      | 5.312E-02 | 3.095   |
|         | +         | 1764.49      |     | 1.249E+00           | 5.676E-01 | 4.169E-01      | 3.435E-02 | 2.996   |
| PB-214  | +         | 74.81        |     | 4.102E+00           | 6.937E-01 | 5.354E-01      | 6.733E-02 | 7.660   |
|         | +         | 77.11        |     | 3.967E+00           | 5.916E-01 | 3.192E-01      | 4.077E-02 | 12.428  |
|         | +         | 87.30        |     | 3.327E+00           | 6.743E-01 | 6.193E-01      | 8.172E-02 | 5.371   |
|         | +         | 241.98       |     | 1.665E+00           | 5.277E-01 | 5.332E-01      | 6.360E-02 | 3.123   |

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PO-214  | +         | 295.21       |     | 1.648E+00           | 3.054E-01 | 2.163E-01      | 2.744E-02 | 7.619   |
|         | +         | 351.92       | *   | 1.497E+00           | 2.513E-01 | 1.202E-01      | 1.411E-02 | 12.461  |
|         | +         | 74.81        |     | 4.102E+00           | 6.937E-01 | 5.354E-01      | 6.733E-02 | 7.660   |
|         | +         | 77.11        |     | 3.967E+00           | 5.916E-01 | 3.192E-01      | 4.077E-02 | 12.428  |
|         | +         | 87.30        |     | 3.327E+00           | 6.743E-01 | 6.193E-01      | 8.172E-02 | 5.371   |
|         | +         | 241.98       |     | 1.665E+00           | 5.277E-01 | 5.332E-01      | 6.360E-02 | 3.123   |
| PO-216  | +         | 295.21       |     | 1.648E+00           | 3.054E-01 | 2.163E-01      | 2.744E-02 | 7.619   |
|         | +         | 351.92       | *   | 1.497E+00           | 2.513E-01 | 1.202E-01      | 1.411E-02 | 12.461  |
|         | +         | 74.81        |     | 2.380E+00           | 4.248E-01 | 3.107E-01      | 4.290E-02 | 7.660   |
|         | +         | 77.11        |     | 2.314E+00           | 2.967E-01 | 1.862E-01      | 1.908E-02 | 12.428  |
|         | +         | 87.30        |     | 1.942E+00           | 4.126E-01 | 3.615E-01      | 5.297E-02 | 5.371   |
|         | +         | 238.63       | *   | 2.054E+00           | 2.640E-01 | 8.839E-02      | 1.006E-02 | 23.242  |
| PO-218  | +         | 300.09       |     | 1.463E+00           | 8.918E-01 | 1.502E+00      | 1.870E-01 | 0.974   |
|         | +         | 74.81        |     | 4.102E+00           | 6.937E-01 | 5.354E-01      | 6.733E-02 | 7.660   |
|         | +         | 77.11        |     | 3.967E+00           | 5.916E-01 | 3.192E-01      | 4.077E-02 | 12.428  |
|         | +         | 87.30        |     | 3.327E+00           | 6.743E-01 | 6.193E-01      | 8.172E-02 | 5.371   |
|         | +         | 241.98       |     | 1.665E+00           | 5.277E-01 | 5.332E-01      | 6.360E-02 | 3.123   |
|         | +         | 295.21       |     | 1.648E+00           | 3.054E-01 | 2.163E-01      | 2.744E-02 | 7.619   |
| RA-224  | +         | 351.92       | *   | 1.497E+00           | 2.513E-01 | 1.202E-01      | 1.411E-02 | 12.461  |
| RA-226  | +         | 240.98       | *   | 2.746E+00           | 1.074E+00 | 1.007E+00      | 1.058E-01 | 2.727   |
|         | +         | 609.31       | *   | 1.325E+00           | 2.363E-01 | 1.237E-01      | 1.493E-02 | 10.712  |
| AC-228  | +         | 1120.29      |     | 1.515E+00           | 6.820E-01 | 4.894E-01      | 5.312E-02 | 3.095   |
|         | +         | 1764.49      |     | 1.249E+00           | 5.676E-01 | 4.169E-01      | 3.435E-02 | 2.996   |
|         | +         | 338.32       |     | 2.047E+00           | 9.560E-01 | 3.995E-01      | 1.665E-01 | 5.124   |
|         | +         | 911.07       | *   | 1.962E+00           | 4.481E-01 | 2.118E-01      | 2.519E-02 | 9.262   |
| RA-228  | +         | 969.11       |     | 2.217E+00           | 6.659E-01 | 3.588E-01      | 8.469E-02 | 6.179   |
|         | +         | 338.32       |     | 2.047E+00           | 9.560E-01 | 3.995E-01      | 1.665E-01 | 5.124   |
|         | +         | 911.07       | *   | 1.962E+00           | 4.481E-01 | 2.118E-01      | 2.519E-02 | 9.262   |
| TH-228  | +         | 969.11       |     | 2.217E+00           | 6.659E-01 | 3.588E-01      | 8.469E-02 | 6.179   |
|         | +         | 74.81        |     | 2.416E+00           | 3.684E-01 | 3.154E-01      | 3.225E-02 | 7.660   |
|         | +         | 77.11        |     | 2.349E+00           | 3.011E-01 | 1.890E-01      | 1.937E-02 | 12.428  |
|         | +         | 87.30        |     | 1.971E+00           | 3.695E-01 | 3.670E-01      | 3.930E-02 | 5.371   |
| TH-230  | +         | 238.63       | *   | 2.085E+00           | 2.680E-01 | 8.972E-02      | 1.021E-02 | 23.242  |
|         | +         | 300.09       |     | 1.485E+00           | 1.253E+00 | 1.524E+00      | 9.095E-01 | 0.974   |
|         | +         | 609.31       | *   | 1.325E+00           | 2.363E-01 | 1.237E-01      | 1.493E-02 | 10.712  |
|         | +         | 1120.29      |     | 1.515E+00           | 6.820E-01 | 4.894E-01      | 5.312E-02 | 3.095   |
| TH-232  | +         | 1764.49      |     | 1.249E+00           | 5.676E-01 | 4.169E-01      | 3.435E-02 | 2.996   |
|         | +         | 338.32       |     | 2.047E+00           | 4.813E-01 | 3.995E-01      | 4.164E-02 | 5.124   |
|         | +         | 911.07       | *   | 1.962E+00           | 4.481E-01 | 2.118E-01      | 2.519E-02 | 9.262   |
| TH-234  | +         | 969.11       |     | 2.217E+00           | 6.659E-01 | 3.588E-01      | 8.469E-02 | 6.179   |
|         | +         | 63.29        | *   | 4.402E+00           | 1.249E+00 | 8.005E-01      | 1.490E-01 | 5.500   |
|         | +         | 92.38        |     | 4.503E+00           | 1.051E+00 | 5.516E-01      | 1.066E-01 | 8.163   |
| U-234   | +         | 609.31       | *   | 1.325E+00           | 2.363E-01 | 1.237E-01      | 1.493E-02 | 10.712  |
|         | +         | 1120.29      |     | 1.515E+00           | 6.820E-01 | 4.894E-01      | 5.312E-02 | 3.095   |
|         | +         | 1764.49      |     | 1.249E+00           | 5.676E-01 | 4.169E-01      | 3.435E-02 | 2.996   |
| U-235   | +         | 89.95        |     | 4.329E+00           | 1.645E+00 | 1.084E+00      | 3.421E-01 | 3.993   |
|         | +         | 93.35        |     | 5.414E+00           | 1.714E+00 | 6.662E-01      | 1.923E-01 | 8.126   |
|         | +         | 105.00       |     | 1.270E+00           | 8.859E-01 | 1.432E+00      | 4.423E-01 | 0.887   |
|         | +         | 143.76       | *   | 3.273E-01           | 2.242E-01 | 3.034E-01      | 5.729E-02 | 1.079   |

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 163.35       |     | 3.006E-01           | 4.371E-01 | 7.278E-01      | 1.408E-01 | 0.413   |
|         | +         | 185.71       |     | 3.257E-01           | 8.996E-02 | 6.701E-02      | 6.274E-03 | 4.861   |
|         |           | 205.31       |     | 5.067E-01           | 5.575E-01 | 8.427E-01      | 1.655E-01 | 0.601   |
| NP-237  | +         | 86.50        | *   | 1.233E+00           | 3.437E-01 | 2.537E-01      | 5.893E-02 | 4.860   |
|         |           | 95.87        |     | -1.703E-01          | 6.937E-01 | 1.057E+00      | 2.709E-01 | -0.161  |
| U-238   | +         | 63.29        | *   | 4.402E+00           | 1.249E+00 | 8.005E-01      | 1.490E-01 | 5.500   |
|         | +         | 92.38        |     | 4.503E+00           | 7.692E-01 | 5.516E-01      | 6.055E-02 | 8.163   |
| AM-243  | +         | 74.67        | *   | 3.859E-01           | 5.867E-02 | 5.036E-02      | 5.114E-03 | 7.664   |
|         | +         | 86.72        |     | 4.623E+01           | 8.668E+00 | 8.586E+00      | 9.169E-01 | 5.385   |
|         |           | 117.66       |     | -2.691E+00          | 3.009E+00 | 4.865E+00      | 6.118E-01 | -0.553  |
|         |           | 142.18       |     | -5.513E+00          | 1.746E+01 | 2.537E+01      | 2.864E+00 | -0.217  |
| ANH-511 | +         | 511.00       | *   | 1.820E-01           | 8.461E-02 | 5.218E-02      | 5.371E-03 | 3.488   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| BE-7    |           | 477.59       | *   | 1.315E-01           | 3.555E-01 | 5.943E-01           | 6.292E-02 | 0.221   |
| NA-22   |           | 1274.54      | *   | 2.170E-03           | 4.396E-02 | 7.270E-02           | 5.961E-03 | 0.030   |
| NA-24   |           | 1368.53      | *   | 3.577E-02           | 4.396E-02 | Half-Life too short |           |         |
| AL-26   |           | 1129.67      |     | 4.329E-01           | 2.035E+00 | 3.302E+00           | 2.819E-01 | 0.131   |
|         |           | 1808.65      | *   | 1.967E-02           | 3.089E-02 | 5.770E-02           | 4.728E-03 | 0.341   |
| TI-44   |           | 67.85        |     | 1.009E-02           | 2.183E-02 | 3.510E-02           | 3.493E-03 | 0.287   |
|         | +         | 78.38        | *   | 4.271E-01           | 5.474E-02 | 4.705E-02           | 4.846E-03 | 9.076   |
| SC-46   |           | 889.25       | *   | 6.782E-03           | 4.098E-02 | 6.785E-02           | 6.498E-03 | 0.100   |
|         | +         | 1120.51      |     | 2.590E-01           | 1.154E-01 | 1.469E-01           | 1.263E-02 | 1.763   |
| V-48    |           | 944.10       |     | -3.656E-02          | 1.016E+00 | 1.637E+00           | 1.536E-01 | -0.022  |
|         |           | 983.50       | *   | -8.055E-02          | 7.629E-02 | 1.067E-01           | 9.885E-03 | -0.755  |
|         |           | 1312.09      |     | 1.247E-02           | 9.074E-02 | 1.511E-01           | 1.231E-02 | 0.083   |
| CR-51   |           | 320.08       | *   | -1.600E-01          | 3.789E-01 | 6.231E-01           | 6.919E-02 | -0.257  |
| MN-52   |           | 744.21       |     | 1.092E-01           | 2.612E-01 | 4.470E-01           | 4.829E-02 | 0.244   |
|         |           | 848.13       |     | -1.778E+00          | 7.514E+00 | 1.200E+01           | 1.202E+00 | -0.148  |
|         |           | 935.52       |     | 3.675E-01           | 2.980E-01 | 5.335E-01           | 5.016E-02 | 0.689   |
|         |           | 1246.25      |     | 2.115E+00           | 9.424E+00 | 1.375E+01           | 1.129E+00 | 0.154   |
|         |           | 1333.61      |     | 8.296E-01           | 5.470E+00 | 9.122E+00           | 7.410E-01 | 0.091   |
|         |           | 1434.06      | *   | 1.714E-01           | 2.559E-01 | 4.553E-01           | 3.752E-02 | 0.376   |
| MN-54   |           | 834.83       | *   | 1.058E-02           | 4.618E-02 | 7.695E-02           | 7.809E-03 | 0.137   |
| CO-56   |           | 846.75       | *   | 1.819E-02           | 4.440E-02 | 7.529E-02           | 7.554E-03 | 0.242   |
|         |           | 977.42       |     | 1.266E+00           | 3.265E+00 | 4.841E+00           | 4.496E-01 | 0.262   |
|         |           | 1037.82      |     | -1.814E-02          | 3.599E-01 | 6.009E-01           | 5.702E-02 | -0.030  |
|         |           | 1175.09      |     | -1.013E+00          | 2.457E+00 | 3.907E+00           | 3.216E-01 | -0.259  |
|         | +         | 1238.25      |     | 1.273E-01           | 1.472E-01 | 1.883E-01           | 1.596E-02 | 0.676   |
|         |           | 1360.21      |     | -2.928E-01          | 1.111E+00 | 1.749E+00           | 1.427E-01 | -0.167  |
|         |           | 1771.40      |     | -4.262E-01          | 3.628E-01 | 4.908E-01           | 4.040E-02 | -0.868  |
| CO-57   |           | 122.06       | *   | -6.283E-03          | 2.082E-02 | 3.466E-02           | 4.470E-03 | -0.181  |
|         |           | 136.48       |     | 2.174E-02           | 1.748E-01 | 2.943E-01           | 3.608E-02 | 0.074   |
| CO-58   |           | 810.76       | *   | -1.722E-02          | 4.364E-02 | 6.888E-02           | 7.147E-03 | -0.250  |
| FE-59   | +         | 142.65       |     | 4.214E+00           | 2.815E+00 | 4.093E+00           | 4.604E-01 | 1.030   |
|         |           | 192.34       |     | 1.446E-01           | 9.018E-01 | 1.484E+00           | 2.080E-01 | 0.097   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         | 1099.22   | *            |     | -9.547E-02          | 1.099E-01 | 1.682E-01      | 1.585E-02 | -0.567  |
|         | 1291.56   |              |     | 5.277E-02           | 1.345E-01 | 2.304E-01      | 2.164E-02 | 0.229   |
| CO-60   | 1173.22   |              |     | -3.279E-03          | 4.954E-02 | 8.159E-02      | 6.716E-03 | -0.040  |
|         | 1332.49   | *            |     | -7.109E-03          | 4.288E-02 | 6.866E-02      | 5.576E-03 | -0.104  |
| ZN-65   | 1115.52   | *            |     | -6.586E-02          | 1.262E-01 | 1.690E-01      | 1.460E-02 | -0.390  |
| GE-68   | 1077.35   | *            |     | 2.291E-01           | 1.461E+00 | 2.476E+00      | 2.192E-01 | 0.093   |
| AS-73   | 53.44     | *            |     | 9.150E-02           | 1.921E-01 | 3.141E-01      | 3.015E-02 | 0.291   |
| AS-74   | 595.88    | *            |     | 9.423E-02           | 1.046E-01 | 1.786E-01      | 1.935E-02 | 0.528   |
|         | 634.78    |              |     | -6.411E-02          | 4.156E-01 | 6.898E-01      | 7.587E-02 | -0.093  |
| SE-75   | 66.05     |              |     | -2.808E+00          | 2.287E+00 | 3.102E+00      | 3.576E-01 | -0.905  |
|         | 96.73     |              |     | -4.556E-01          | 5.983E-01 | 8.828E-01      | 1.360E-01 | -0.516  |
|         | 121.11    |              |     | -7.066E-02          | 1.120E-01 | 1.833E-01      | 2.693E-02 | -0.386  |
|         | 136.00    |              |     | 1.355E-02           | 3.223E-02 | 5.490E-02      | 6.514E-03 | 0.247   |
|         | 198.60    |              |     | 3.160E-02           | 1.818E+00 | 2.926E+00      | 3.071E-01 | 0.011   |
|         | 264.65    | *            |     | 1.267E-02           | 4.536E-02 | 7.000E-02      | 7.671E-03 | 0.181   |
|         | 279.53    |              |     | -1.196E-02          | 1.215E-01 | 1.696E-01      | 1.935E-02 | -0.070  |
|         | 303.91    |              |     | -1.959E+00          | 2.160E+00 | 3.458E+00      | 4.603E-01 | -0.567  |
|         | 400.65    |              |     | 2.763E-01           | 2.870E-01 | 4.989E-01      | 5.771E-02 | 0.554   |
| BR-77   | 87.88     | +            |     | 8.900E+02           | 1.668E+02 | 2.541E+02      | 2.729E+01 | 3.503   |
|         | 200.40    |              |     | 2.222E+02           | 1.577E+02 | 2.707E+02      | 2.623E+01 | 0.821   |
|         | 239.00    | +            |     | 3.181E+02           | 3.832E+01 | 4.126E+01      | 4.321E+00 | 7.710   |
|         | 249.79    |              |     | -7.423E+01          | 6.476E+01 | 9.568E+01      | 1.021E+01 | -0.776  |
|         | 281.68    |              |     | -4.372E+01          | 9.646E+01 | 1.300E+02      | 1.449E+01 | -0.336  |
|         | 297.23    |              |     | 6.280E+00           | 6.720E+01 | 1.012E+02      | 1.115E+01 | 0.062   |
|         | 303.76    |              |     | -1.931E+02          | 1.809E+02 | 2.874E+02      | 3.146E+01 | -0.672  |
|         | 439.47    |              |     | 1.444E+02           | 1.573E+02 | 2.725E+02      | 2.625E+01 | 0.530   |
|         | 484.57    |              |     | 4.327E+01           | 2.325E+02 | 3.838E+02      | 3.865E+01 | 0.113   |
|         | 520.65    | *            |     | 6.868E-01           | 1.117E+01 | 1.814E+01      | 1.881E+00 | 0.038   |
|         | 574.64    |              |     | 7.680E+01           | 2.418E+02 | 3.966E+02      | 4.254E+01 | 0.194   |
|         | 578.91    |              |     | 1.977E+01           | 1.071E+02 | 1.526E+02      | 1.640E+01 | 0.130   |
|         | 585.48    |              |     | 1.545E+03           | 3.050E+02 | 5.182E+02      | 5.588E+01 | 2.983   |
|         | 755.35    |              |     | 2.192E+02           | 1.735E+02 | 3.147E+02      | 3.381E+01 | 0.697   |
|         | 817.79    |              |     | 2.038E+01           | 1.335E+02 | 2.223E+02      | 2.290E+01 | 0.092   |
| SR-82   | 698.33    |              |     | -1.196E+01          | 3.873E+01 | 6.290E+01      | 6.916E+00 | -0.190  |
|         | 776.49    | *            |     | -1.477E-01          | 4.274E-01 | 6.825E-01      | 7.243E-02 | -0.216  |
|         | 1395.20   |              |     | -2.005E+01          | 1.256E+01 | 1.511E+01      | 1.239E+00 | -1.327  |
| RB-83   | 520.41    | *            |     | 1.270E-02           | 7.661E-02 | 1.255E-01      | 1.301E-02 | 0.101   |
|         | 529.64    |              |     | -9.590E-02          | 1.163E-01 | 1.739E-01      | 1.815E-02 | -0.551  |
|         | 552.65    |              |     | -4.468E-01          | 2.322E-01 | 3.015E-01      | 3.193E-02 | -1.482  |
| RB-84   | 881.50    | *            |     | -3.750E-02          | 6.913E-02 | 1.052E-01      | 1.017E-02 | -0.356  |
| KR-85   | 513.99    | *            |     | 8.305E+00           | 9.243E+00 | 1.413E+01      | 1.458E+00 | 0.588   |
| SR-85   | 513.99    | *            |     | 4.253E-02           | 4.733E-02 | 7.234E-02      | 7.464E-03 | 0.588   |
| RB-86   | 1076.63   | *            |     | 4.400E-01           | 8.813E-01 | 1.539E+00      | 1.363E-01 | 0.286   |
| Y-88    | 898.02    |              |     | -6.203E-03          | 4.978E-02 | 7.994E-02      | 7.603E-03 | -0.078  |
|         | 1836.01   | *            |     | -6.880E-03          | 4.580E-02 | 7.345E-02      | 6.003E-03 | -0.094  |
| ZR-88   | 392.90    | *            |     | 9.622E-04           | 3.122E-02 | 5.185E-02      | 4.719E-03 | 0.019   |
| Y-91    | 1204.90   | *            |     | 5.925E+00           | 2.248E+01 | 3.798E+01      | 3.126E+00 | 0.156   |
| NB-94   | 702.63    | *            |     | 1.113E-02           | 4.009E-02 | 6.697E-02      | 7.354E-03 | 0.166   |
|         | 871.10    |              |     | -2.026E-02          | 3.858E-02 | 5.945E-02      | 5.815E-03 | -0.341  |



---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| NB-95   | 765.79    | *            |     | 2.257E-02           | 5.701E-02 | 8.503E-02      | 9.082E-03 | 0.265   |
| NB-95M  | 235.69    | *            |     | -9.972E-03          | 1.329E-01 | 1.893E-01      | 2.170E-02 | -0.053  |
| ZR-95   | 724.18    |              |     | 1.043E-01           | 1.150E-01 | 1.817E-01      | 2.089E-02 | 0.574   |
|         | 756.15    | *            |     | 9.087E-02           | 7.880E-02 | 1.415E-01      | 1.621E-02 | 0.642   |
| NB-97   | 657.90    | *            |     | 7.720E-02           | 7.880E-02 | Half-Life      | too short |         |
|         | 1024.50   |              |     | -4.291E+00          | 7.880E-02 | Half-Life      | too short |         |
| ZR-97   | 254.15    |              |     | 2.724E+00           | 7.880E-02 | Half-Life      | too short |         |
|         | 355.39    |              |     | -1.312E+00          | 7.880E-02 | Half-Life      | too short |         |
|         | 507.63    | *            |     | 2.155E+00           | 7.880E-02 | Half-Life      | too short |         |
|         | 602.52    |              |     | 1.039E+00           | 7.880E-02 | Half-Life      | too short |         |
|         | 1021.30   |              |     | 2.729E+00           | 7.880E-02 | Half-Life      | too short |         |
|         | 1147.95   |              |     | -8.050E-01          | 7.880E-02 | Half-Life      | too short |         |
|         | 1362.66   |              |     | 6.621E-01           | 7.880E-02 | Half-Life      | too short |         |
|         | 1750.46   |              |     | 6.611E+00           | 7.880E-02 | Half-Life      | too short |         |
| MO-99   | 140.51    |              |     | 2.204E+01           | 2.485E+01 | 3.751E+01      | 1.076E+01 | 0.588   |
|         | 181.06    |              |     | -7.899E+00          | 1.705E+01 | 2.419E+01      | 4.498E+00 | -0.327  |
|         | 366.43    |              |     | -4.374E+01          | 8.587E+01 | 1.384E+02      | 1.357E+01 | -0.316  |
|         | 739.58    | *            |     | -1.168E+01          | 1.263E+01 | 1.892E+01      | 3.130E+00 | -0.617  |
|         | 778.00    |              |     | -2.572E+01          | 3.722E+01 | 5.734E+01      | 6.080E+00 | -0.449  |
| TC-99M  | 140.51    | *            |     | 2.343E+10           | 3.722E+01 | Half-Life      | too short |         |
| RH-101  | 127.23    |              |     | 9.528E-03           | 2.980E-02 | 4.579E-02      | 5.731E-03 | 0.208   |
|         | 198.01    | *            |     | -4.518E-03          | 3.261E-02 | 5.206E-02      | 5.016E-03 | -0.087  |
|         | 325.23    |              |     | -1.867E-01          | 2.588E-01 | 3.617E-01      | 3.853E-02 | -0.516  |
| RH-102  | 418.52    |              |     | 9.804E-02           | 3.246E-01 | 5.449E-01      | 5.124E-02 | 0.180   |
|         | 475.06    | *            |     | -3.720E-02          | 3.300E-02 | 4.888E-02      | 4.880E-03 | -0.761  |
|         | 631.29    |              |     | 6.791E-02           | 5.952E-02 | 1.077E-01      | 1.183E-02 | 0.631   |
|         | 697.49    |              |     | 2.924E-02           | 8.609E-02 | 1.469E-01      | 1.615E-02 | 0.199   |
| +       | 766.84    |              |     | 1.773E-01           | 1.434E-01 | 2.342E-01      | 2.500E-02 | 0.757   |
|         | 1046.59   |              |     | 4.003E-02           | 1.224E-01 | 2.114E-01      | 1.905E-02 | 0.189   |
|         | 1112.84   |              |     | 1.446E-01           | 2.884E-01 | 4.410E-01      | 3.813E-02 | 0.328   |
| RU-103  | 497.08    | *            |     | 2.288E-02           | 4.545E-02 | 7.634E-02      | 1.157E-02 | 0.300   |
| +       | 610.33    |              |     | 1.427E+01           | 3.177E+00 | 3.332E+00      | 5.988E-01 | 4.284   |
| RH-106  | 511.85    | +            |     | 9.088E-01           | 4.225E-01 | 4.883E-01      | 5.029E-02 | 1.861   |
|         | 621.84    | *            |     | -2.781E-02          | 3.386E-01 | 5.658E-01      | 8.469E-02 | -0.049  |
|         | 1050.47   |              |     | -1.578E-01          | 2.480E+00 | 4.128E+00      | 3.711E-01 | -0.038  |
| RU-106  | 511.85    | +            |     | 9.088E-01           | 4.225E-01 | 4.883E-01      | 5.029E-02 | 1.861   |
|         | 621.84    | *            |     | -2.781E-02          | 3.386E-01 | 5.658E-01      | 6.196E-02 | -0.049  |
|         | 1050.47   |              |     | -1.578E-01          | 2.480E+00 | 4.128E+00      | 3.711E-01 | -0.038  |
| AG-108M | 433.93    | *            |     | -9.432E-03          | 3.594E-02 | 5.797E-02      | 5.728E-03 | -0.163  |
|         | 614.37    |              |     | -1.490E-02          | 4.603E-02 | 6.425E-02      | 7.189E-03 | -0.232  |
|         | 722.95    |              |     | 5.905E-03           | 5.157E-02 | 7.527E-02      | 8.411E-03 | 0.078   |
| AG-110M | 657.75    | *            |     | 2.232E-02           | 4.497E-02 | 6.883E-02      | 7.756E-03 | 0.324   |
|         | 677.61    |              |     | 1.002E-01           | 3.209E-01 | 5.491E-01      | 6.172E-02 | 0.183   |
|         | 706.67    |              |     | -1.393E-01          | 2.506E-01 | 3.985E-01      | 4.445E-02 | -0.350  |
|         | 763.93    |              |     | 1.995E-01           | 1.957E-01 | 3.132E-01      | 3.411E-02 | 0.637   |
|         | 884.67    |              |     | -1.210E-02          | 4.946E-02 | 7.823E-02      | 7.728E-03 | -0.155  |
|         | 937.48    |              |     | -4.777E-02          | 1.349E-01 | 2.107E-01      | 2.041E-02 | -0.227  |
|         | 1384.27   |              |     | -8.182E-02          | 2.281E-01 | 2.964E-01      | 2.503E-02 | -0.276  |
| IN-111  | 171.28    |              |     | -3.364E-01          | 8.717E-01 | 1.409E+00      | 1.273E-01 | -0.239  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         | 245.39    | *            |     | 7.409E-01           | 1.111E+00 | 1.661E+00      | 1.759E-01 | 0.446   |
| IN-113M | 391.69    | *            |     | -8.960E-03          | 4.537E-02 | 7.423E-02      | 6.933E-03 | -0.121  |
| SN-113  | 391.69    | *            |     | -8.960E-03          | 4.537E-02 | 7.423E-02      | 6.933E-03 | -0.121  |
| IN-114M | 190.27    | *            |     | 1.866E-01           | 1.889E-01 | 2.919E-01      | 2.763E-02 | 0.639   |
| CD-115  | 260.90    |              |     | -6.058E+01          | 1.308E+02 | 2.025E+02      | 2.200E+01 | -0.299  |
|         | 492.35    |              |     | 8.459E+00           | 3.634E+01 | 6.013E+01      | 6.096E+00 | 0.141   |
|         | 527.90    | *            |     | -2.957E+00          | 1.091E+01 | 1.719E+01      | 1.792E+00 | -0.172  |
| SN-117M | 156.02    |              |     | -1.843E+00          | 2.090E+00 | 3.298E+00      | 3.288E-01 | -0.559  |
|         | 158.56    | *            |     | 5.787E-03           | 4.969E-02 | 8.276E-02      | 8.035E-03 | 0.070   |
| SB-122  | 563.90    | *            |     | 1.323E+00           | 2.375E+00 | 3.966E+00      | 4.228E-01 | 0.334   |
|         | 692.80    |              |     | 2.463E+00           | 4.859E+01 | 8.123E+01      | 8.945E+00 | 0.030   |
| I-123   | 159.00    | *            |     | 3.311E-01           | 4.859E+01 | Half-Life      | too short |         |
|         | 528.96    |              |     | -2.823E+02          | 4.859E+01 | Half-Life      | too short |         |
| TE-123M | 159.00    | *            |     | 1.914E-03           | 2.558E-02 | 4.253E-02      | 4.130E-03 | 0.045   |
| I-124   | 602.71    | *            |     | 1.730E-01           | 7.342E-01 | 1.193E+00      | 1.297E-01 | 0.145   |
|         | 722.78    |              |     | -1.447E+00          | 5.485E+00 | 7.654E+00      | 8.348E-01 | -0.189  |
|         | 1325.50   |              |     | 1.754E+00           | 3.873E+01 | 6.378E+01      | 5.186E+00 | 0.028   |
|         | 1376.25   |              |     | 5.859E+01           | 3.737E+01 | 7.058E+01      | 5.773E+00 | 0.830   |
|         | 1509.49   |              |     | 4.576E+00           | 1.600E+01 | 2.705E+01      | 2.243E+00 | 0.169   |
| SB-124  | 1691.02   |              |     | -8.475E-02          | 4.045E+00 | 6.689E+00      | 5.545E-01 | -0.013  |
|         | 602.71    |              |     | 1.025E-02           | 4.350E-02 | 7.069E-02      | 7.684E-03 | 0.145   |
|         | 645.85    |              |     | -7.406E-01          | 5.452E-01 | 7.980E-01      | 9.130E-02 | -0.928  |
|         | 709.31    |              |     | 1.325E+00           | 3.355E+00 | 5.730E+00      | 6.279E-01 | 0.231   |
|         | 713.82    |              |     | -1.289E+00          | 1.939E+00 | 3.038E+00      | 4.191E-01 | -0.424  |
|         | 722.78    |              |     | -1.243E-01          | 4.711E-01 | 6.574E-01      | 7.267E-02 | -0.189  |
| +       | 968.20    |              |     | 2.279E+01           | 4.735E+00 | 8.738E+00      | 8.140E-01 | 2.608   |
|         | 1045.16   |              |     | -1.271E+00          | 2.717E+00 | 4.343E+00      | 3.916E-01 | -0.293  |
|         | 1325.50   |              |     | 1.609E-01           | 3.553E+00 | 5.851E+00      | 4.757E-01 | 0.028   |
|         | 1368.21   |              |     | 3.693E-01           | 2.093E+00 | 3.253E+00      | 4.291E-01 | 0.114   |
|         | 1436.60   |              |     | -5.881E-01          | 4.212E+00 | 6.696E+00      | 5.520E-01 | -0.088  |
| SB-125  | 1691.02   | *            |     | -1.717E-03          | 8.194E-02 | 1.355E-01      | 1.171E-02 | -0.013  |
|         | 427.89    | *            |     | 6.427E-02           | 9.921E-02 | 1.699E-01      | 1.642E-02 | 0.378   |
| +       | 463.38    |              |     | 1.173E+00           | 4.681E-01 | 6.812E-01      | 7.131E-02 | 1.722   |
|         | 600.56    |              |     | -1.673E-01          | 2.033E-01 | 2.997E-01      | 3.407E-02 | -0.558  |
|         | 635.90    |              |     | -6.869E-03          | 3.096E-01 | 5.188E-01      | 5.994E-02 | -0.013  |
| TE-125M | 109.28    | *            |     | 6.601E+00           | 6.945E+00 | 1.214E+01      | 1.613E+00 | 0.544   |
| I-126   | 388.63    |              |     | 8.785E-02           | 2.086E-01 | 3.550E-01      | 3.259E-02 | 0.247   |
|         | 666.33    | *            |     | 1.459E-01           | 2.479E-01 | 3.806E-01      | 4.214E-02 | 0.383   |
|         | 753.82    |              |     | -9.415E-01          | 1.592E+00 | 2.486E+00      | 2.673E-01 | -0.379  |
| SB-126  | 223.80    |              |     | 1.217E+00           | 3.749E+00 | 6.157E+00      | 6.265E-01 | 0.198   |
| +       | 278.60    |              |     | 1.786E+00           | 3.555E+00 | 4.278E+00      | 4.770E-01 | 0.417   |
| +       | 296.50    |              |     | 1.630E+01           | 2.843E+00 | 3.854E+00      | 4.249E-01 | 4.228   |
|         | 414.70    |              |     | -6.561E-02          | 8.256E-02 | 1.287E-01      | 1.205E-02 | -0.510  |
|         | 415.30    |              |     | -3.569E+00          | 6.916E+00 | 1.102E+01      | 1.032E+00 | -0.324  |
|         | 555.20    |              |     | 2.875E+00           | 4.252E+00 | 7.208E+00      | 7.646E-01 | 0.399   |
|         | 573.80    |              |     | 5.898E-01           | 1.232E+00 | 2.044E+00      | 2.191E-01 | 0.289   |
|         | 593.00    |              |     | -2.536E-01          | 1.083E+00 | 1.695E+00      | 1.835E-01 | -0.150  |
|         | 656.30    |              |     | -6.970E-01          | 3.857E+00 | 5.489E+00      | 6.073E-01 | -0.127  |
|         | 666.33    |              |     | 6.097E-02           | 1.036E-01 | 1.590E-01      | 1.760E-02 | 0.383   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-------------------------|-----------|----------------|-----------|---------|
| SB-127  |           | 675.00       | -5.645E-01              | 2.178E+00 | 3.559E+00      | 3.934E-01 | -0.159  |
|         |           | 695.00       | -2.003E-02              | 8.863E-02 | 1.450E-01      | 1.596E-02 | -0.138  |
|         |           | 697.00       | 1.340E-02               | 3.012E-01 | 5.031E-01      | 5.533E-02 | 0.027   |
|         |           | 720.50       | * 3.361E-02             | 1.783E-01 | 2.627E-01      | 2.867E-02 | 0.128   |
|         |           | 856.80       | 6.424E-02               | 5.802E-01 | 8.317E-01      | 8.261E-02 | 0.077   |
|         |           | 989.30       | 1.297E-01               | 1.286E+00 | 2.095E+00      | 1.937E-01 | 0.062   |
|         |           | 1034.80      | 7.520E+00               | 9.988E+00 | 1.784E+01      | 1.617E+00 | 0.422   |
|         |           | 1213.00      | -1.029E-01              | 5.500E+00 | 9.072E+00      | 7.464E-01 | -0.011  |
|         |           | 61.10        | 5.622E+00               | 2.197E+01 | 3.262E+01      | 3.946E+00 | 0.172   |
|         |           | 252.40       | 7.162E-01               | 4.299E+00 | 6.923E+00      | 2.942E+00 | 0.103   |
|         |           | 290.80       | -3.958E+00              | 2.239E+01 | 3.315E+01      | 4.349E+00 | -0.119  |
|         |           | 411.60       | -6.662E-01              | 1.332E+01 | 2.192E+01      | 3.528E+00 | -0.030  |
|         |           | 444.90       | -1.530E+00              | 1.129E+01 | 1.835E+01      | 2.432E+00 | -0.083  |
|         |           | 473.00       | 1.211E+00               | 1.813E+00 | 3.085E+00      | 4.249E-01 | 0.392   |
|         |           | 543.00       | 2.736E+00               | 1.824E+01 | 2.972E+01      | 4.632E+00 | 0.092   |
|         |           | 603.60       | 1.141E+01               | 1.316E+01 | 2.092E+01      | 2.955E+00 | 0.545   |
|         |           | 685.20       | * 7.825E-01             | 1.480E+00 | 2.564E+00      | 3.403E-01 | 0.305   |
| XE-127  |           | 698.50       | -6.691E+00              | 1.694E+01 | 2.727E+01      | 4.691E+00 | -0.245  |
|         |           | 722.20       | -2.150E+01              | 3.806E+01 | 5.105E+01      | 6.625E+00 | -0.421  |
|         |           | 783.80       | 5.643E+00               | 4.209E+00 | 7.536E+00      | 1.041E+00 | 0.749   |
|         |           | 57.60        | -1.462E+00              | 1.791E+00 | 2.734E+00      | 2.666E-01 | -0.535  |
|         | +         | 145.22       | 1.079E+00               | 7.208E-01 | 1.059E+00      | 1.167E-01 | 1.019   |
|         |           | 172.10       | -8.891E-02              | 1.092E-01 | 1.724E-01      | 1.561E-02 | -0.516  |
| I-131   |           | 202.84       | * -1.879E-02            | 4.749E-02 | 7.580E-02      | 7.383E-03 | -0.248  |
|         |           | 374.96       | -3.142E-01              | 2.089E-01 | 3.099E-01      | 2.967E-02 | -1.014  |
|         |           | 80.18        | -4.181E+00              | 3.196E+00 | 4.259E+00      | 4.438E-01 | -0.982  |
|         |           | 284.30       | -5.373E-01              | 1.542E+00 | 2.383E+00      | 2.735E-01 | -0.225  |
| TE-132  |           | 364.48       | * -4.912E-02            | 1.234E-01 | 2.008E-01      | 2.060E-02 | -0.245  |
|         |           | 636.97       | -2.328E-01              | 1.764E+00 | 2.931E+00      | 3.338E-01 | -0.079  |
|         |           | 722.89       | -2.147E+00              | 8.946E+00 | 1.252E+01      | 1.371E+00 | -0.171  |
|         |           | 49.72        | -7.790E-01              | 3.205E+00 | 4.699E+00      | 5.431E-01 | -0.166  |
| BA-133  |           | 111.76       | -1.096E+01              | 2.271E+01 | 3.773E+01      | 5.213E+00 | -0.290  |
|         |           | 116.30       | -2.141E+01              | 2.182E+01 | 3.511E+01      | 4.947E+00 | -0.610  |
|         |           | 228.16       | * 8.085E-01             | 6.615E-01 | 1.112E+00      | 1.852E-01 | 0.727   |
|         |           | 53.15        | 4.847E-01               | 8.130E-01 | 1.336E+00      | 1.281E-01 | 0.363   |
|         |           | 79.62        | -1.396E+00              | 9.122E-01 | 1.171E+00      | 1.905E-01 | -1.192  |
| I-133   |           | 81.00        | -1.066E-01              | 7.113E-02 | 9.126E-02      | 1.544E-02 | -1.168  |
|         | +         | 276.40       | 2.688E-01               | 5.359E-01 | 6.424E-01      | 1.032E-01 | 0.418   |
|         |           | 302.84       | -8.792E-02              | 1.536E-01 | 2.518E-01      | 3.755E-02 | -0.349  |
|         |           | 356.01       | * -4.959E-02            | 5.257E-02 | 7.053E-02      | 1.000E-02 | -0.703  |
|         |           | 383.85       | -4.802E-02              | 3.168E-01 | 5.209E-01      | 6.821E-02 | -0.092  |
| CS-134  |           | 510.53       | 1.676E+00               | 3.168E-01 | Half-Life      | too short |         |
|         |           | 529.87       | * -6.513E-03            | 3.168E-01 | Half-Life      | too short |         |
|         |           | 706.58       | -2.462E-01              | 3.168E-01 | Half-Life      | too short |         |
|         |           | 856.28       | 5.644E-02               | 3.168E-01 | Half-Life      | too short |         |
|         |           | 875.33       | 2.715E-02               | 3.168E-01 | Half-Life      | too short |         |
|         |           | 1236.41      | 8.106E-01               | 3.168E-01 | Half-Life      | too short |         |
|         |           | 1298.22      | -1.200E-01              | 3.168E-01 | Half-Life      | too short |         |
|         |           | 475.35       | -2.726E+00              | 2.205E+00 | 3.238E+00      | 3.234E-01 | -0.842  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 563.23       |     | 4.015E-01           | 4.201E-01 | 7.201E-01      | 7.723E-02 | 0.558   |
|         |           | 569.32       |     | -1.504E-01          | 2.428E-01 | 3.627E-01      | 3.913E-02 | -0.415  |
|         |           | 604.70       |     | 2.076E-02           | 4.029E-02 | 6.218E-02      | 6.775E-03 | 0.334   |
|         | +         | 795.84       | *   | 1.306E-01           | 5.840E-02 | 1.002E-01      | 1.055E-02 | 1.303   |
|         |           | 801.93       |     | -2.092E-01          | 4.857E-01 | 7.424E-01      | 7.772E-02 | -0.282  |
|         |           | 1038.57      |     | 5.741E-01           | 4.377E+00 | 7.428E+00      | 6.720E-01 | 0.077   |
|         |           | 1167.94      |     | -4.611E-01          | 2.881E+00 | 4.707E+00      | 3.893E-01 | -0.098  |
|         |           | 1365.15      |     | 2.421E-01           | 1.379E+00 | 2.304E+00      | 1.977E-01 | 0.105   |
| CS-135  |           | 268.24       | *   | 2.118E-01           | 1.788E-01 | 2.730E-01      | 3.295E-02 | 0.776   |
| I-135   |           | 288.45       |     | 1.243E+10           | 1.788E-01 | Half-Life      | too short |         |
|         |           | 417.63       |     | -5.150E+09          | 1.788E-01 | Half-Life      | too short |         |
|         |           | 546.56       |     | -1.295E+09          | 1.788E-01 | Half-Life      | too short |         |
|         |           | 836.80       |     | 6.427E+09           | 1.788E-01 | Half-Life      | too short |         |
|         |           | 1038.76      |     | 1.220E+09           | 1.788E-01 | Half-Life      | too short |         |
|         |           | 1124.00      |     | 9.435E+09           | 1.788E-01 | Half-Life      | too short |         |
|         |           | 1131.51      |     | 2.092E+09           | 1.788E-01 | Half-Life      | too short |         |
|         |           | 1260.41      | *   | -2.335E+09          | 1.788E-01 | Half-Life      | too short |         |
|         |           | 1457.56      |     | 4.856E+11           | 1.788E-01 | Half-Life      | too short |         |
|         |           | 1678.03      |     | 1.745E+09           | 1.788E-01 | Half-Life      | too short |         |
|         |           | 1706.46      |     | -1.457E+10          | 1.788E-01 | Half-Life      | too short |         |
|         |           | 1791.20      |     | 2.353E+09           | 1.788E-01 | Half-Life      | too short |         |
| CS-136  |           | 66.91        |     | 8.955E-03           | 3.755E-01 | 5.481E-01      | 8.882E-02 | 0.016   |
|         | +         | 86.29        |     | 5.443E+00           | 1.145E+00 | 1.526E+00      | 2.182E-01 | 3.567   |
|         |           | 153.22       |     | 8.734E-01           | 5.959E-01 | 1.037E+00      | 1.153E-01 | 0.842   |
|         |           | 163.89       |     | 2.269E-01           | 9.979E-01 | 1.642E+00      | 1.662E-01 | 0.138   |
|         |           | 176.55       |     | 1.323E-01           | 3.388E-01 | 5.668E-01      | 5.456E-02 | 0.233   |
|         |           | 273.65       |     | -2.154E-01          | 6.267E-01 | 6.602E-01      | 7.606E-02 | -0.326  |
|         |           | 340.57       |     | 2.319E-01           | 1.474E-01 | 2.390E-01      | 2.531E-02 | 0.970   |
|         |           | 818.51       |     | -2.005E-02          | 7.982E-02 | 1.276E-01      | 1.314E-02 | -0.157  |
|         |           | 1048.07      | *   | 5.341E-02           | 1.128E-01 | 1.974E-01      | 1.847E-02 | 0.270   |
|         |           | 1235.34      |     | 2.449E-01           | 7.309E-01 | 1.079E+00      | 1.247E-01 | 0.227   |
| CE-139  |           | 165.85       | *   | -7.208E-03          | 2.775E-02 | 4.531E-02      | 4.040E-03 | -0.159  |
| BA-140  |           | 162.64       |     | 2.467E-01           | 6.848E-01 | 1.134E+00      | 1.104E-01 | 0.218   |
|         |           | 304.84       |     | -4.521E-01          | 1.256E+00 | 2.073E+00      | 5.975E-01 | -0.218  |
|         |           | 423.70       |     | -1.681E+00          | 2.160E+00 | 3.255E+00      | 1.063E+00 | -0.517  |
|         |           | 537.32       | *   | -1.590E-01          | 2.894E-01 | 4.368E-01      | 1.471E-01 | -0.364  |
| LA-140  | +         | 328.77       |     | 5.438E-01           | 4.121E-01 | 5.948E-01      | 6.538E-02 | 0.914   |
|         |           | 432.53       |     | -1.195E+00          | 2.193E+00 | 3.459E+00      | 3.438E-01 | -0.345  |
|         |           | 487.03       |     | 1.787E-02           | 1.405E-01 | 2.308E-01      | 2.435E-02 | 0.077   |
|         |           | 751.79       |     | -2.582E+00          | 1.844E+00 | 2.599E+00      | 2.993E-01 | -0.993  |
|         |           | 815.85       |     | 1.014E-01           | 3.198E-01 | 5.416E-01      | 6.043E-02 | 0.187   |
|         |           | 867.82       |     | 1.040E+00           | 1.587E+00 | 2.683E+00      | 2.742E-01 | 0.388   |
|         |           | 919.63       |     | 2.016E+00           | 3.129E+00 | 4.827E+00      | 5.464E-01 | 0.418   |
|         |           | 925.24       |     | -2.224E-01          | 1.178E+00 | 1.868E+00      | 1.853E-01 | -0.119  |
|         |           | 1596.49      | *   | -2.068E-02          | 9.710E-02 | 1.571E-01      | 1.306E-02 | -0.132  |
| CE-141  |           | 145.44       | *   | 3.832E-02           | 6.028E-02 | 9.317E-02      | 1.036E-02 | 0.411   |
| CE-143  |           | 57.37        |     | -4.212E-04          | 6.028E-02 | Half-Life      | too short |         |
|         |           | 231.56       |     | -1.198E-03          | 6.028E-02 | Half-Life      | too short |         |
|         |           | 293.26       | *   | 4.456E-04           | 6.028E-02 | Half-Life      | too short |         |

Sample ID : G244630010

Acquisition date : 23-JAN-2010 11:48:51

## ---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         | +         | 350.59       |     | 3.204E-02           | 6.028E-02 | Half-Life      | too short |         |
|         |           | 490.36       |     | -8.389E-04          | 6.028E-02 | Half-Life      | too short |         |
|         |           | 664.57       |     | 5.913E-03           | 6.028E-02 | Half-Life      | too short |         |
|         |           | 721.93       |     | -1.040E-03          | 6.028E-02 | Half-Life      | too short |         |
| CE-144  |           | 80.11        |     | -1.991E+00          | 1.484E+00 | 1.973E+00      | 2.046E-01 | -1.009  |
|         |           | 133.54       | *   | -4.077E-03          | 1.855E-01 | 2.791E-01      | 4.935E-02 | -0.015  |
| PM-144  |           | 476.78       |     | 2.050E-02           | 7.480E-02 | 1.243E-01      | 1.330E-02 | 0.165   |
|         |           | 618.01       |     | 1.589E-02           | 3.401E-02 | 5.914E-02      | 6.578E-03 | 0.269   |
|         |           | 696.49       | *   | -3.033E-03          | 3.834E-02 | 6.342E-02      | 6.979E-03 | -0.048  |
|         |           | 778.57       |     | -1.411E+00          | 2.597E+00 | 4.065E+00      | 4.309E-01 | -0.347  |
| PR-144  |           | 696.49       | *   | -2.055E-01          | 2.598E+00 | 4.298E+00      | 4.728E-01 | -0.048  |
|         |           | 1489.15      |     | 1.518E+00           | 1.378E+01 | 2.269E+01      | 1.879E+00 | 0.067   |
| PM-146  |           | 453.90       | *   | 5.210E-03           | 4.789E-02 | 7.897E-02      | 9.221E-03 | 0.066   |
|         |           | 633.02       |     | -1.165E-01          | 1.606E+00 | 2.682E+00      | 1.019E+00 | -0.043  |
|         |           | 735.90       |     | 1.009E-01           | 1.798E-01 | 2.734E-01      | 8.026E-02 | 0.369   |
|         |           | 747.13       |     | -3.544E-02          | 1.012E-01 | 1.620E-01      | 2.506E-02 | -0.219  |
| ND-147  | +         | 91.11        |     | 1.078E+00           | 2.596E-01 | 3.906E-01      | 4.483E-02 | 2.761   |
|         |           | 319.41       |     | -2.745E+00          | 3.365E+00 | 5.393E+00      | 5.794E-01 | -0.509  |
|         |           | 439.89       |     | 7.371E+00           | 6.550E+00 | 1.147E+01      | 1.105E+00 | 0.643   |
|         |           | 531.02       | *   | -5.118E-01          | 6.208E-01 | 9.229E-01      | 1.483E-01 | -0.555  |
| PM-149  |           | 285.90       | *   | 8.741E+00           | 9.120E+01 | 1.451E+02      | 2.475E+01 | 0.060   |
| EU-152  |           | 121.78       |     | -2.267E-02          | 6.018E-02 | 9.983E-02      | 1.376E-02 | -0.227  |
|         |           | 244.69       |     | -4.243E-02          | 3.621E-01 | 5.120E-01      | 5.415E-02 | -0.083  |
|         |           | 344.27       | *   | -2.889E-02          | 1.035E-01 | 1.647E-01      | 1.769E-02 | -0.175  |
|         |           | 443.98       |     | -2.826E-01          | 1.097E+00 | 1.767E+00      | 1.710E-01 | -0.160  |
|         |           | 778.89       |     | -1.293E-01          | 3.026E-01 | 4.794E-01      | 5.080E-02 | -0.270  |
|         |           | 867.32       |     | 8.602E-01           | 9.738E-01 | 1.639E+00      | 1.610E-01 | 0.525   |
|         | +         | 964.01       |     | 1.005E+00           | 4.600E-01 | 6.780E-01      | 6.325E-02 | 1.482   |
|         |           | 1085.78      |     | -1.752E-01          | 4.192E-01 | 6.693E-01      | 5.894E-02 | -0.262  |
|         |           | 1112.02      |     | 3.087E-01           | 3.966E-01 | 6.460E-01      | 5.588E-02 | 0.478   |
|         |           | 1407.95      |     | 1.026E-01           | 1.888E-01 | 3.312E-01      | 2.721E-02 | 0.310   |
| GD-153  |           | 69.67        |     | -4.209E-01          | 8.606E-01 | 1.333E+00      | 1.333E-01 | -0.316  |
|         | +         | 83.37        |     | 2.173E+01           | 1.185E+01 | 1.635E+01      | 1.719E+00 | 1.329   |
|         |           | 97.43        | *   | -3.615E-02          | 6.302E-02 | 9.435E-02      | 1.063E-02 | -0.383  |
|         |           | 103.18       |     | -1.117E-01          | 7.723E-02 | 1.223E-01      | 1.420E-02 | -0.914  |
| EU-154  |           | 123.07       |     | 3.947E-02           | 4.241E-02 | 7.354E-02      | 1.089E-02 | 0.537   |
|         |           | 247.94       |     | 8.357E-02           | 3.647E-01 | 5.639E-01      | 7.364E-02 | 0.148   |
|         |           | 591.81       |     | -2.422E-01          | 7.169E-01 | 1.111E+00      | 1.485E-01 | -0.218  |
|         |           | 723.30       |     | 3.350E-02           | 2.163E-01 | 3.171E-01      | 3.690E-02 | 0.106   |
|         |           | 756.87       |     | 8.110E-01           | 8.684E-01 | 1.534E+00      | 2.083E-01 | 0.529   |
|         |           | 873.19       |     | 4.393E-02           | 3.289E-01 | 5.432E-01      | 7.100E-02 | 0.081   |
|         |           | 996.32       |     | -4.992E-01          | 4.420E-01 | 6.087E-01      | 1.100E-01 | -0.820  |
|         |           | 1004.76      |     | -2.747E-01          | 2.855E-01 | 4.138E-01      | 4.994E-02 | -0.664  |
|         |           | 1274.45      | *   | 1.322E-02           | 1.219E-01 | 2.030E-01      | 2.231E-02 | 0.065   |
| EU-155  |           | 48.70        |     | -1.807E-02          | 3.691E-01 | 5.484E-01      | 5.221E-02 | -0.033  |
|         |           | 60.01        |     | 1.764E+00           | 1.847E+00 | 2.818E+00      | 2.773E-01 | 0.626   |
|         | +         | 86.54        |     | 5.056E-01           | 9.500E-02 | 1.454E-01      | 1.561E-02 | 3.478   |
|         |           | 105.31       | *   | 1.070E-01           | 8.303E-02 | 1.464E-01      | 1.730E-02 | 0.731   |
| TB-160  | +         | 86.79        |     | 1.349E+00           | 2.529E-01 | 3.957E-01      | 4.227E-02 | 3.410   |

## ---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| HO-166M |           | 197.04       |     | -7.105E-01          | 5.654E-01 | 8.475E-01      | 8.148E-02 | -0.838  |
|         |           | 215.65       |     | 1.889E-01           | 7.409E-01 | 1.215E+00      | 1.216E-01 | 0.156   |
|         |           | 298.57       |     | 3.339E-02           | 1.347E-01 | 2.047E-01      | 2.253E-02 | 0.163   |
|         |           | 879.36       | *   | 2.944E-02           | 1.420E-01 | 2.364E-01      | 2.291E-02 | 0.125   |
|         |           | 962.29       |     | 8.573E-01           | 7.142E-01 | 1.133E+00      | 1.057E-01 | 0.757   |
|         |           | 966.15       |     | 1.390E+00           | 3.183E-01 | 6.087E-01      | 5.674E-02 | 2.283   |
|         |           | 1177.93      |     | 9.537E-03           | 3.933E-01 | 6.532E-01      | 5.377E-02 | 0.015   |
|         |           | 1271.85      |     | 7.114E-02           | 6.888E-01 | 1.147E+00      | 9.396E-02 | 0.062   |
|         |           | 80.57        |     | -2.712E-01          | 1.915E-01 | 2.530E-01      | 2.629E-02 | -1.072  |
|         |           | 184.41       |     | 1.064E-01           | 4.105E-02 | 6.745E-02      | 6.295E-03 | 1.577   |
|         |           | 280.46       |     | -1.231E-03          | 9.474E-02 | 1.332E-01      | 1.485E-02 | -0.009  |
|         |           | 410.95       |     | 1.962E-01           | 2.690E-01 | 4.628E-01      | 4.311E-02 | 0.424   |
|         |           | 711.68       | *   | 5.979E-02           | 7.151E-02 | 1.257E-01      | 1.376E-02 | 0.476   |
|         |           | 752.31       |     | -5.551E-01          | 3.098E-01 | 4.160E-01      | 4.476E-02 | -1.334  |
| TM-171  |           | 810.29       |     | -3.438E-02          | 6.727E-02 | 1.050E-01      | 1.088E-02 | -0.327  |
|         |           | 51.35        |     | -4.777E+00          | 5.858E+00 | 9.049E+00      | 8.641E-01 | -0.528  |
|         |           | 52.39        |     | 4.503E+00           | 3.307E+00 | 5.579E+00      | 5.340E-01 | 0.807   |
|         |           | 59.40        |     | 1.127E+01           | 9.424E+00 | 1.453E+01      | 1.429E+00 | 0.776   |
| LU-176  | +         | 66.72        | *   | -2.730E+00          | 1.356E+01 | 1.958E+01      | 1.943E+00 | -0.139  |
|         |           | 88.36        |     | 9.958E-01           | 1.867E-01 | 2.661E-01      | 2.864E-02 | 3.742   |
|         |           | 201.83       |     | -2.639E-02          | 2.935E-02 | 4.560E-02      | 4.432E-03 | -0.579  |
|         |           | 306.84       | *   | -1.621E-02          | 2.380E-02 | 3.857E-02      | 4.209E-03 | -0.420  |
| LU-177  |           | 401.10       |     | 4.541E+00           | 7.664E+00 | 1.310E+01      | 1.205E+00 | 0.347   |
|         |           | 112.95       |     | 1.083E-01           | 1.284E+00 | 2.185E+00      | 2.676E-01 | 0.050   |
| LU-177M | +         | 208.36       | *   | 4.430E+00           | 1.714E+00 | 2.041E+00      | 2.012E-01 | 2.171   |
|         |           | 52.97        |     | 3.359E-01           | 3.611E-01 | 6.003E-01      | 5.754E-02 | 0.560   |
| HF-181  |           | 54.07        |     | 1.884E-01           | 2.054E-01 | 3.408E-01      | 3.278E-02 | 0.553   |
|         |           | 61.30        |     | -2.694E-02          | 5.893E-01 | 8.628E-01      | 8.495E-02 | -0.031  |
|         |           | 121.62       |     | -2.075E-01          | 3.108E-01 | 5.081E-01      | 6.532E-02 | -0.408  |
|         |           | 147.16       |     | 2.510E-01           | 6.026E-01 | 9.219E-01      | 9.992E-02 | 0.272   |
|         |           | 171.86       |     | -2.321E-01          | 4.343E-01 | 6.964E-01      | 6.301E-02 | -0.333  |
|         |           | 218.09       |     | 7.310E-01           | 8.478E-01 | 1.425E+00      | 1.434E-01 | 0.513   |
|         | +         | 268.79       |     | 2.616E+00           | 1.265E+00 | 1.499E+00      | 1.649E-01 | 1.745   |
|         |           | 319.02       |     | -2.220E-01          | 2.663E-01 | 4.264E-01      | 4.584E-02 | -0.521  |
|         |           | 367.43       |     | -3.596E-01          | 9.246E-01 | 1.502E+00      | 1.468E-01 | -0.239  |
|         |           | 413.65       | *   | -2.018E-01          | 1.983E-01 | 3.045E-01      | 2.846E-02 | -0.663  |
|         |           | 56.28        |     | 1.985E-02           | 2.497E-01 | 3.992E-01      | 3.870E-02 | 0.050   |
|         |           | 57.53        |     | -2.019E-01          | 1.535E-01 | 2.285E-01      | 2.227E-02 | -0.884  |
|         |           | 65.20        |     | -8.592E-02          | 4.038E-01 | 5.833E-01      | 5.773E-02 | -0.147  |
|         |           | 133.02       |     | 2.104E-02           | 5.831E-02 | 8.964E-02      | 1.081E-02 | 0.235   |
| W-181   |           | 136.25       |     | 4.609E-02           | 3.812E-01 | 6.417E-01      | 7.572E-02 | 0.072   |
|         |           | 345.85       |     | -9.803E-02          | 2.223E-01 | 3.156E-01      | 3.243E-02 | -0.311  |
|         |           | 482.03       | *   | -5.562E-02          | 4.773E-02 | 7.017E-02      | 7.050E-03 | -0.793  |
|         |           | 56.28        |     | 7.654E-03           | 9.790E-02 | 1.565E-01      | 1.517E-02 | 0.049   |
| TA-182  |           | 57.53        |     | -7.928E-02          | 6.021E-02 | 8.962E-02      | 8.734E-03 | -0.885  |
|         |           | 65.20        | *   | -3.343E-02          | 1.571E-01 | 2.270E-01      | 2.247E-02 | -0.147  |
|         |           | 67.75        |     | 1.540E-02           | 5.201E-02 | 8.317E-02      | 8.275E-03 | 0.185   |
|         |           | 100.10       |     | 8.333E-02           | 1.307E-01 | 2.277E-01      | 2.601E-02 | 0.366   |
|         |           | 152.43       |     | 2.854E-01           | 3.025E-01 | 5.203E-01      | 5.376E-02 | 0.549   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| RE-183  |           | 222.10       |     | -8.800E-02          | 3.294E-01 | 5.243E-01           | 5.317E-02 | -0.168  |
|         |           | 1001.68      |     | 2.499E+00           | 2.588E+00 | 4.552E+00           | 4.188E-01 | 0.549   |
|         | +         | 1121.28      |     | 7.156E-01           | 3.187E-01 | 4.022E-01           | 3.456E-02 | 1.779   |
|         |           | 1189.05      |     | 1.135E-02           | 3.739E-01 | 6.205E-01           | 5.108E-02 | 0.018   |
|         |           | 1221.42      | *   | 2.132E-01           | 2.451E-01 | 4.312E-01           | 3.546E-02 | 0.494   |
|         |           | 1230.97      |     | 2.698E-01           | 5.112E-01 | 8.493E-01           | 6.981E-02 | 0.318   |
|         |           | 57.98        |     | -5.378E-02          | 6.146E-02 | 9.362E-02           | 9.143E-03 | -0.574  |
|         |           | 59.32        |     | 1.860E-02           | 3.944E-02 | 5.908E-02           | 5.807E-03 | 0.315   |
|         |           | 67.20        |     | 5.589E-02           | 9.704E-02 | 1.451E-01           | 1.442E-02 | 0.385   |
|         |           | 162.32       | *   | -6.412E-03          | 1.020E-01 | 1.658E-01           | 1.543E-02 | -0.039  |
| RE-184  | +         | 208.81       |     | 4.030E+00           | 1.559E+00 | 1.880E+00           | 1.555E-01 | 2.144   |
|         |           | 291.72       |     | -3.884E-01          | 9.933E-01 | 1.445E+00           | 1.600E-01 | -0.269  |
|         |           | 57.98        |     | -1.983E-01          | 2.266E-01 | 3.452E-01           | 3.371E-02 | -0.574  |
|         |           | 59.32        |     | 6.852E-02           | 1.453E-01 | 2.177E-01           | 2.139E-02 | 0.315   |
|         |           | 67.20        |     | 2.060E-01           | 3.577E-01 | 5.349E-01           | 5.315E-02 | 0.385   |
|         |           | 161.27       |     | -3.863E-01          | 3.250E-01 | 5.054E-01           | 4.761E-02 | -0.764  |
|         |           | 216.55       |     | 1.883E-01           | 2.653E-01 | 4.433E-01           | 4.445E-02 | 0.425   |
|         |           | 252.85       | *   | 9.711E-02           | 2.304E-01 | 3.771E-01           | 4.044E-02 | 0.258   |
|         |           | 318.01       |     | -7.202E-02          | 4.532E-01 | 7.574E-01           | 8.152E-02 | -0.095  |
|         |           | 792.07       |     | 1.703E+00           | 1.222E+00 | 2.017E+00           | 2.118E-01 | 0.844   |
| OS-185  |           | 903.28       |     | 1.295E-01           | 1.367E+00 | 1.941E+00           | 1.837E-01 | 0.067   |
|         |           | 920.93       |     | 3.102E-01           | 4.699E-01 | 7.981E-01           | 7.528E-02 | 0.389   |
|         |           | 59.72        |     | 1.681E-01           | 1.060E-01 | 1.654E-01           | 1.627E-02 | 1.016   |
|         |           | 61.14        |     | 1.568E-03           | 6.455E-02 | 9.484E-02           | 9.338E-03 | 0.017   |
|         |           | 69.30        |     | -1.413E-02          | 1.505E-01 | 2.369E-01           | 2.366E-02 | -0.060  |
|         |           | 592.07       |     | -6.999E-01          | 2.944E+00 | 4.605E+00           | 4.981E-01 | -0.152  |
|         |           | 646.12       | *   | -5.987E-02          | 4.660E-02 | 6.893E-02           | 7.606E-03 | -0.868  |
|         |           | 717.42       |     | 3.960E-01           | 1.005E+00 | 1.720E+00           | 1.880E-01 | 0.230   |
|         |           | 874.81       |     | -1.381E-02          | 6.358E-01 | 1.034E+00           | 1.007E-01 | -0.013  |
|         |           | 880.27       |     | 3.129E-01           | 7.701E-01 | 1.310E+00           | 1.268E-01 | 0.239   |
| RE-188  |           | 155.03       | *   | 4.093E-02           | 1.579E-01 | 2.630E-01           | 2.649E-02 | 0.156   |
|         |           | 477.96       |     | 2.134E+00           | 3.365E+00 | 5.726E+00           | 5.732E-01 | 0.373   |
|         |           | 633.10       |     | -2.351E-01          | 3.241E+00 | 5.414E+00           | 5.951E-01 | -0.043  |
|         | +         | 63.58        |     | 1.767E+02           | 4.165E+01 | 4.954E+01           | 4.890E+00 | 3.567   |
| W-188   |           | 227.08       |     | -2.123E+00          | 1.257E+01 | 2.009E+01           | 2.057E+00 | -0.106  |
|         |           | 290.67       | *   | -5.466E+00          | 8.225E+00 | 1.172E+01           | 1.298E+00 | -0.466  |
|         | +         | 295.96       |     | 1.255E+00           | 2.194E-01 | 3.176E-01           | 3.518E-02 | 3.952   |
|         |           | 308.46       |     | -3.184E-02          | 9.247E-02 | 1.531E-01           | 1.673E-02 | -0.208  |
| IR-192  |           | 316.51       | *   | 3.877E-03           | 3.488E-02 | 5.919E-02           | 6.393E-03 | 0.065   |
|         |           | 468.07       |     | -4.182E-02          | 8.452E-02 | 1.146E-01           | 1.198E-02 | -0.365  |
|         |           | 604.41       |     | 2.804E-01           | 5.448E-01 | 8.399E-01           | 1.227E-01 | 0.334   |
|         |           | 612.46       |     | 9.985E-01           | 8.412E-01 | 1.368E+00           | 1.634E-01 | 0.730   |
| AU-195  |           | 65.12        |     | -1.602E-02          | 7.258E-02 | 1.048E-01           | 1.037E-02 | -0.153  |
|         |           | 66.83        |     | -2.061E-03          | 4.518E-02 | 6.574E-02           | 6.527E-03 | -0.031  |
|         | +         | 75.70        |     | 1.248E+00           | 1.898E-01 | 2.959E-01           | 3.016E-02 | 4.218   |
|         |           | 98.88        | *   | 3.390E-01           | 1.739E-01 | 2.997E-01           | 3.400E-02 | 1.131   |
| TL-200  | +         | 129.76       |     | 5.706E+00           | 4.168E+00 | 4.740E+00           | 5.840E-01 | 1.204   |
|         |           | 367.94       | *   | 7.904E-05           | 4.168E+00 | Half-Life too short |           |         |
|         |           | 579.30       |     | 7.129E-04           | 4.168E+00 | Half-Life too short |           |         |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         | 828.27    |              |     | -2.733E-03          | 4.168E+00 | Half-Life      | too short |         |
|         | 1205.75   |              |     | -1.563E-03          | 4.168E+00 | Half-Life      | too short |         |
| TL-201  | 68.90     |              |     | 2.139E+00           | 2.290E+00 | 3.728E+00      | 3.720E-01 | 0.574   |
|         | 70.82     |              |     | -1.734E-01          | 1.522E+00 | 2.199E+00      | 2.205E-01 | -0.079  |
|         | 80.30     |              |     | -4.440E+00          | 3.430E+00 | 4.575E+00      | 4.748E-01 | -0.971  |
|         | 135.34    |              |     | -9.421E+00          | 2.037E+01 | 3.338E+01      | 3.964E+00 | -0.282  |
| TL-202  | 167.43    | *            |     | 1.624E+00           | 6.338E+00 | 1.058E+01      | 9.464E-01 | 0.153   |
|         | 68.90     |              |     | 1.965E-01           | 2.104E-01 | 3.425E-01      | 3.418E-02 | 0.574   |
|         | 70.82     |              |     | -1.589E-02          | 1.394E-01 | 2.014E-01      | 2.021E-02 | -0.079  |
|         | 80.30     |              |     | -4.070E-01          | 3.144E-01 | 4.193E-01      | 4.352E-02 | -0.971  |
| HG-203  | 439.56    | *            |     | 8.595E-02           | 7.777E-02 | 1.361E-01      | 1.311E-02 | 0.632   |
|         | 70.83     |              |     | -7.200E-02          | 6.075E-01 | 8.774E-01      | 1.276E-01 | -0.082  |
|         | 72.87     |              |     | 3.304E-01           | 3.677E-01 | 5.495E-01      | 7.808E-02 | 0.601   |
|         | 82.60     |              |     | 1.344E+00           | 7.859E-01 | 1.074E+00      | 1.609E-01 | 1.251   |
| BI-207  | 279.20    | *            |     | -3.218E-03          | 4.593E-02 | 6.427E-02      | 7.295E-03 | -0.050  |
|         | 72.80     |              |     | 7.285E-02           | 1.066E-01 | 1.589E-01      | 1.603E-02 | 0.459   |
| +       | 74.97     |              |     | 6.927E-01           | 1.053E-01 | 1.502E-01      | 1.527E-02 | 4.613   |
| +       | 84.90     |              |     | 2.811E-01           | 1.533E-01 | 2.195E-01      | 2.325E-02 | 1.280   |
|         | 569.67    |              |     | -2.436E-02          | 3.782E-02 | 5.635E-02      | 6.027E-03 | -0.432  |
| TL-207  | 1063.62   | *            |     | 5.951E-02           | 5.995E-02 | 1.087E-01      | 9.699E-03 | 0.548   |
|         | 1770.23   |              |     | 9.692E-02           | 6.286E-01 | 9.239E-01      | 7.607E-02 | 0.105   |
|         | 81.07     |              |     | -2.361E-01          | 1.540E-01 | 2.016E-01      | 2.099E-02 | -1.171  |
| +       | 83.78     |              |     | 1.853E-01           | 1.011E-01 | 1.433E-01      | 1.510E-02 | 1.293   |
|         | 94.90     |              |     | 3.345E-02           | 1.757E-01 | 2.738E-01      | 3.044E-02 | 0.122   |
|         | 122.32    |              |     | -1.434E-01          | 1.436E+00 | 2.412E+00      | 3.210E-01 | -0.059  |
| +       | 144.24    |              |     | 1.061E+00           | 7.100E-01 | 1.085E+00      | 1.293E-01 | 0.977   |
|         | 154.21    |              |     | -1.535E-02          | 3.704E-01 | 6.099E-01      | 6.644E-02 | -0.025  |
| +       | 269.46    |              |     | 6.128E-01           | 2.965E-01 | 3.718E-01      | 4.144E-02 | 1.648   |
|         | 323.87    | *            |     | -3.182E-01          | 7.708E-01 | 1.105E+00      | 2.076E-01 | -0.288  |
| +       | 338.28    |              |     | 8.549E+00           | 2.146E+00 | 2.824E+00      | 3.851E-01 | 3.027   |
| PO-209  | 445.03    |              |     | 3.078E-01           | 2.666E+00 | 4.403E+00      | 5.668E-01 | 0.070   |
|         | 260.50    |              |     | 4.462E+00           | 9.698E+00 | 1.587E+01      | 1.723E+00 | 0.281   |
|         | 262.80    |              |     | -1.080E+01          | 2.639E+01 | 4.092E+01      | 4.459E+00 | -0.264  |
| PB-211  | 896.60    | *            |     | 1.171E+00           | 8.772E+00 | 1.444E+01      | 1.370E+00 | 0.081   |
|         | 404.84    | *            |     | -5.208E-01          | 1.135E+00 | 1.747E+00      | 1.096E+00 | -0.298  |
|         | 427.08    |              |     | 3.796E-01           | 2.219E+00 | 3.672E+00      | 2.287E+00 | 0.103   |
| BI-212  | 831.96    |              |     | -7.871E-01          | 1.572E+00 | 2.333E+00      | 1.467E+00 | -0.337  |
| +       | 727.18    | *            |     | 1.752E+00           | 6.978E-01 | 7.461E-01      | 8.965E-02 | 2.349   |
|         | 785.46    |              |     | 2.335E+00           | 2.110E+00 | 3.748E+00      | 3.955E-01 | 0.623   |
| PO-215  | 1620.62   |              |     | 6.409E-01           | 1.438E+00 | 2.554E+00      | 2.123E-01 | 0.251   |
|         | 81.07     |              |     | -2.361E-01          | 1.540E-01 | 2.016E-01      | 2.099E-02 | -1.171  |
| +       | 83.78     |              |     | 1.853E-01           | 1.011E-01 | 1.433E-01      | 1.510E-02 | 1.293   |
|         | 94.90     |              |     | 3.345E-02           | 1.757E-01 | 2.738E-01      | 3.044E-02 | 0.122   |
|         | 122.32    |              |     | -1.434E-01          | 1.436E+00 | 2.412E+00      | 3.210E-01 | -0.059  |
| +       | 144.24    |              |     | 1.061E+00           | 7.100E-01 | 1.085E+00      | 1.293E-01 | 0.977   |
|         | 154.21    |              |     | -1.535E-02          | 3.704E-01 | 6.099E-01      | 6.644E-02 | -0.025  |
| +       | 269.46    |              |     | 6.128E-01           | 2.965E-01 | 3.718E-01      | 4.144E-02 | 1.648   |
|         | 323.87    | *            |     | -3.182E-01          | 7.708E-01 | 1.105E+00      | 2.076E-01 | -0.288  |
| +       | 338.28    |              |     | 8.549E+00           | 2.146E+00 | 2.824E+00      | 3.851E-01 | 3.027   |



----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| RN-219  | +         | 445.03       |     | 3.078E-01           | 2.666E+00 | 4.403E+00      | 5.668E-01 | 0.070   |
|         |           | 271.23       |     | 7.862E-01           | 3.828E-01 | 4.629E-01      | 5.740E-02 | 1.699   |
|         |           | 401.81       | *   | 2.541E-01           | 4.736E-01 | 8.052E-01      | 1.238E-01 | 0.316   |
| RN-220  |           | 549.76       | *   | 2.601E+01           | 2.967E+01 | 5.084E+01      | 5.375E+00 | 0.512   |
| RA-223  | +         | 81.07        |     | -2.361E-01          | 1.540E-01 | 2.016E-01      | 2.099E-02 | -1.171  |
|         |           | 83.78        |     | 1.853E-01           | 1.011E-01 | 1.433E-01      | 1.510E-02 | 1.293   |
|         |           | 94.90        |     | 3.345E-02           | 1.757E-01 | 2.738E-01      | 3.044E-02 | 0.122   |
|         | +         | 122.32       |     | -1.434E-01          | 1.436E+00 | 2.412E+00      | 3.210E-01 | -0.059  |
|         |           | 144.24       |     | 1.061E+00           | 7.100E-01 | 1.085E+00      | 1.293E-01 | 0.977   |
|         |           | 154.21       |     | -1.535E-02          | 3.704E-01 | 6.099E-01      | 6.644E-02 | -0.025  |
|         | +         | 269.46       |     | 6.128E-01           | 2.965E-01 | 3.718E-01      | 4.144E-02 | 1.648   |
|         |           | 323.87       | *   | -3.182E-01          | 7.708E-01 | 1.105E+00      | 2.076E-01 | -0.288  |
|         |           | 338.28       |     | 8.549E+00           | 2.146E+00 | 2.824E+00      | 3.851E-01 | 3.027   |
| AC-227  | +         | 445.03       |     | 3.078E-01           | 2.666E+00 | 4.403E+00      | 5.668E-01 | 0.070   |
|         |           | 79.80        |     | -1.700E+00          | 1.189E+00 | 1.500E+00      | 3.338E-01 | -1.133  |
|         |           | 236.00       |     | 1.518E-01           | 2.538E-01 | 3.766E-01      | 5.109E-02 | 0.403   |
|         | +         | 256.20       | *   | -8.893E-02          | 3.845E-01 | 6.050E-01      | 1.008E-01 | -0.147  |
|         |           | 286.10       |     | 6.523E-02           | 1.585E+00 | 2.513E+00      | 3.757E-01 | 0.026   |
|         |           | 299.80       |     | 2.572E+00           | 1.680E+00 | 2.759E+00      | 5.179E-01 | 0.932   |
|         | +         | 304.40       |     | -5.424E-01          | 1.835E+00 | 3.051E+00      | 5.988E-01 | -0.178  |
|         |           | 334.20       |     | -3.071E-01          | 2.663E+00 | 3.906E+00      | 7.936E-01 | -0.079  |
|         |           | 79.80        |     | -1.700E+00          | 1.190E+00 | 1.500E+00      | 3.378E-01 | -1.133  |
| TH-227  | +         | 94.00        |     | 1.740E+01           | 4.577E+00 | 3.107E+00      | 7.101E-01 | 5.601   |
|         |           | 236.00       |     | 1.518E-01           | 2.537E-01 | 3.766E-01      | 4.716E-02 | 0.403   |
|         |           | 256.20       | *   | -8.893E-02          | 3.846E-01 | 6.050E-01      | 1.161E-01 | -0.147  |
|         | +         | 286.10       |     | 6.523E-02           | 1.586E+00 | 2.513E+00      | 2.528E+00 | 0.026   |
|         |           | 299.80       |     | 2.572E+00           | 1.680E+00 | 2.759E+00      | 5.179E-01 | 0.932   |
|         |           | 304.40       |     | -5.424E-01          | 1.835E+00 | 3.051E+00      | 5.988E-01 | -0.178  |
| TH-229  | +         | 334.20       |     | -3.071E-01          | 2.663E+00 | 3.906E+00      | 7.936E-01 | -0.079  |
|         |           | 85.43        |     | 2.774E-01           | 1.513E-01 | 2.146E-01      | 2.278E-02 | 1.293   |
|         |           | 88.47        |     | 5.732E-01           | 1.075E-01 | 1.511E-01      | 1.627E-02 | 3.794   |
|         | +         | 100.00       |     | 8.592E-02           | 1.356E-01 | 2.363E-01      | 2.697E-02 | 0.364   |
|         |           | 193.63       | *   | -4.719E-01          | 4.883E-01 | 7.564E-01      | 7.216E-02 | -0.624  |
|         |           | 210.97       |     | 1.006E+00           | 8.249E-01 | 1.276E+00      | 1.265E-01 | 0.788   |
| PA-231  |           | 283.67       | *   | 4.033E-01           | 1.506E+00 | 2.423E+00      | 4.055E-01 | 0.166   |
| TH-231  | +         | 301.29       |     | 1.111E+00           | 6.264E-01 | 1.111E+00      | 1.555E-01 | 1.000   |
|         |           | 81.07        |     | -2.361E-01          | 1.540E-01 | 2.016E-01      | 2.099E-02 | -1.171  |
|         |           | 83.78        |     | 1.853E-01           | 1.011E-01 | 1.433E-01      | 1.510E-02 | 1.293   |
|         | +         | 94.90        |     | 3.345E-02           | 1.757E-01 | 2.738E-01      | 3.044E-02 | 0.122   |
|         |           | 122.32       |     | -1.434E-01          | 1.436E+00 | 2.412E+00      | 3.210E-01 | -0.059  |
|         |           | 144.24       |     | 1.061E+00           | 7.100E-01 | 1.085E+00      | 1.293E-01 | 0.977   |
|         | +         | 154.21       |     | -1.535E-02          | 3.704E-01 | 6.099E-01      | 6.644E-02 | -0.025  |
|         |           | 269.46       |     | 6.128E-01           | 2.965E-01 | 3.718E-01      | 4.144E-02 | 1.648   |
|         |           | 323.87       | *   | -3.182E-01          | 7.708E-01 | 1.105E+00      | 2.076E-01 | -0.288  |
|         | +         | 338.28       |     | 8.549E+00           | 2.146E+00 | 2.824E+00      | 3.851E-01 | 3.027   |
|         |           | 445.03       |     | 3.078E-01           | 2.666E+00 | 4.403E+00      | 5.668E-01 | 0.070   |
| U-231   | +         | 84.21        |     | 7.818E+00           | 4.263E+00 | 6.244E+00      | 6.592E-01 | 1.252   |
|         |           | 92.29        |     | 1.683E+01           | 2.876E+00 | 3.691E+00      | 4.050E-01 | 4.560   |
|         |           | 95.87        | *   | -1.890E-01          | 7.688E-01 | 1.173E+00      | 1.310E-01 | -0.161  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PA-233  | +         | 108.00       |     | -2.245E+00          | 1.579E+00 | 2.499E+00      | 2.978E-01 | -0.899  |
|         |           | 75.28        |     | 2.021E+01           | 4.004E+00 | 4.367E+00      | 7.107E-01 | 4.629   |
|         | +         | 86.59        |     | 8.219E+00           | 2.595E+00 | 2.375E+00      | 6.542E-01 | 3.461   |
|         |           | 300.12       |     | 7.600E-01           | 4.681E-01 | 7.765E-01      | 1.270E-01 | 0.979   |
|         | *         | 311.98       |     | -2.061E-03          | 6.368E-02 | 1.073E-01      | 1.185E-02 | -0.019  |
|         |           | 340.50       |     | 1.323E+00           | 7.890E-01 | 1.198E+00      | 2.938E-01 | 1.104   |
| PA-234  |           | 398.62       |     | -1.916E+00          | 2.399E+00 | 3.682E+00      | 9.873E-01 | -0.520  |
|         |           | 415.76       |     | 8.619E-01           | 1.774E+00 | 3.002E+00      | 6.563E-01 | 0.287   |
|         | +         | 63.00        |     | 5.131E+00           | 1.378E+00 | 1.452E+00      | 2.356E-01 | 3.533   |
|         |           | 94.67        |     | 1.387E-01           | 1.307E-01 | 2.089E-01      | 2.975E-02 | 0.664   |
|         |           | 98.44        |     | 1.415E-01           | 1.070E-01 | 1.206E-01      | 6.786E-02 | 1.173   |
|         |           | 99.86        |     | 2.154E-01           | 3.427E-01 | 5.973E-01      | 6.813E-02 | 0.361   |
|         |           | 111.00       |     | -9.634E-02          | 1.435E-01 | 2.360E-01      | 3.490E-02 | -0.408  |
|         |           | 131.20       |     | 8.109E-02           | 9.687E-02 | 1.521E-01      | 1.857E-02 | 0.533   |
|         | +         | 152.70       |     | 3.952E-01           | 2.977E-01 | 5.079E-01      | 9.121E-02 | 0.778   |
|         |           | 186.00       |     | 8.794E+00           | 3.586E+00 | 2.957E+00      | 9.293E-01 | 2.974   |
|         |           | 226.40       |     | -3.069E-01          | 3.945E-01 | 6.056E-01      | 8.662E-02 | -0.507  |
|         |           | 227.20       |     | 2.274E-02           | 4.229E-01 | 6.839E-01      | 7.006E-02 | 0.033   |
|         |           | 248.90       |     | -8.577E-01          | 8.438E-01 | 1.230E+00      | 2.862E-01 | -0.697  |
|         |           | 293.70       |     | 7.911E+00           | 1.820E+00 | 1.815E+00      | 3.381E-01 | 4.360   |
|         | +         | 369.80       |     | 3.264E-02           | 8.825E-01 | 1.473E+00      | 3.276E-01 | 0.022   |
|         |           | 568.70       |     | -7.434E-02          | 1.187E+00 | 1.858E+00      | 1.987E-01 | -0.040  |
|         |           | 569.50       |     | -2.122E-01          | 3.358E-01 | 5.010E-01      | 5.358E-02 | -0.424  |
|         |           | 574.00       |     | 9.039E-01           | 1.785E+00 | 2.968E+00      | 3.182E-01 | 0.305   |
|         |           | 699.00       |     | -2.398E-01          | 7.936E-01 | 1.287E+00      | 2.607E-01 | -0.186  |
|         |           | 706.10       |     | -8.779E-01          | 1.310E+00 | 1.967E+00      | 8.871E-01 | -0.446  |
|         |           | 733.00       |     | 6.965E-02           | 4.673E-01 | 6.839E-01      | 1.584E-01 | 0.102   |
|         |           | 742.81       |     | 1.077E+00           | 1.643E+00 | 2.591E+00      | 1.750E+00 | 0.416   |
|         |           | 796.30       |     | 9.389E-01           | 1.274E+00 | 1.925E+00      | 5.333E-01 | 0.488   |
|         |           | 805.60       |     | 3.923E-01           | 1.181E+00 | 1.984E+00      | 6.190E-01 | 0.198   |
|         |           | 819.60       |     | -3.860E-01          | 1.353E+00 | 2.143E+00      | 8.236E-01 | -0.180  |
|         |           | 826.30       |     | 3.921E-01           | 9.629E-01 | 1.609E+00      | 7.252E-01 | 0.244   |
|         |           | 831.60       |     | -5.440E-01          | 7.785E-01 | 1.168E+00      | 3.543E-01 | -0.466  |
|         |           | 876.40       |     | 4.769E-01           | 1.010E+00 | 1.518E+00      | 1.562E+00 | 0.314   |
|         |           | 880.51       |     | 5.551E-02           | 2.828E-01 | 4.704E-01      | 4.552E-02 | 0.118   |
|         |           | 883.24       |     | -2.037E-01          | 3.207E-01 | 4.331E-01      | 2.918E-01 | -0.470  |
|         |           | 899.00       |     | -1.419E-01          | 1.040E+00 | 1.666E+00      | 7.310E-01 | -0.085  |
|         |           | 925.00       |     | -6.559E-01          | 1.277E+00 | 1.950E+00      | 1.838E-01 | -0.336  |
|         |           | 926.50       |     | -2.314E-02          | 1.824E-01 | 2.911E-01      | 7.442E-02 | -0.079  |
|         |           | 946.00       | *   | -6.723E-02          | 3.415E-01 | 5.404E-01      | 1.033E-01 | -0.124  |
|         |           | 949.00       |     | -1.688E-01          | 5.330E-01 | 8.340E-01      | 7.814E-02 | -0.202  |
|         |           | 980.50       |     | 2.798E-01           | 7.627E-01 | 1.215E+00      | 1.128E-01 | 0.230   |
|         |           | 1394.10      |     | -1.829E+00          | 1.795E+00 | 1.727E+00      | 1.123E+00 | -1.059  |
| PA-234M |           | 766.42       |     | 8.794E+00           | 1.652E+01 | 2.403E+01      | 1.229E+01 | 0.366   |
| NP-236  | *         | 1001.03      |     | 3.788E+00           | 5.899E+00 | 1.012E+01      | 1.061E+00 | 0.374   |
|         |           | 94.67        |     | 1.082E-01           | 9.880E-02 | 1.588E-01      | 1.763E-02 | 0.682   |
|         |           | 98.44        |     | 1.069E-01           | 5.536E-02 | 9.117E-02      | 1.032E-02 | 1.173   |
|         |           | 111.00       |     | -7.287E-02          | 1.084E-01 | 1.785E-01      | 2.163E-02 | -0.408  |
|         |           | 160.31       | *   | 6.075E-03           | 7.185E-02 | 1.194E-01      | 1.137E-02 | 0.051   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|------------|-----------|----------------|-----------|---------|
| NP-239  |           | 99.55        |              | 1.314E-01  | 1.142E-01 | 2.015E-01      | 2.294E-02 | 0.652   |
|         |           | 117.00       | *            | -1.782E-01 | 1.546E-01 | 2.464E-01      | 3.087E-02 | -0.723  |
|         | +         | 209.75       |              | 3.183E+00  | 1.232E+00 | 1.487E+00      | 1.470E-01 | 2.141   |
|         |           | 228.18       |              | 2.724E-01  | 2.194E-01 | 3.738E-01      | 3.836E-02 | 0.729   |
|         | +         | 277.60       |              | 1.312E-01  | 2.611E-01 | 3.194E-01      | 3.556E-02 | 0.411   |
| AM-241  |           | 334.30       |              | -2.288E-01 | 1.506E+00 | 2.203E+00      | 2.313E-01 | -0.104  |
|         |           | 59.54        | *            | 7.311E-02  | 5.548E-02 | 8.578E-02      | 8.913E-03 | 0.852   |
| CM-243  |           | 99.55        |              | 1.352E-01  | 1.175E-01 | 2.073E-01      | 2.361E-02 | 0.652   |
|         |           | 103.76       | *            | 2.207E-02  | 7.060E-02 | 1.217E-01      | 1.417E-02 | 0.181   |
|         |           | 117.00       |              | -1.834E-01 | 1.590E-01 | 2.535E-01      | 3.176E-02 | -0.723  |
|         | +         | 209.75       |              | 3.138E+00  | 1.214E+00 | 1.465E+00      | 1.449E-01 | 2.141   |
|         |           | 228.18       |              | 2.753E-01  | 2.217E-01 | 3.777E-01      | 3.876E-02 | 0.729   |
| AM-246  | +         | 277.60       |              | 1.322E-01  | 2.632E-01 | 3.220E-01      | 3.585E-02 | 0.411   |
|         |           | 798.80       |              | 8.153E-02  | 1.664E-01 | 2.520E-01      | 2.635E-02 | 0.323   |
|         |           | 1036.00      |              | 9.374E-02  | 3.380E-01 | 5.810E-01      | 5.264E-02 | 0.161   |
|         |           | 1062.04      |              | 2.628E-02  | 2.674E-01 | 4.514E-01      | 4.032E-02 | 0.058   |
|         |           | 1078.86      | *            | 3.045E-02  | 1.689E-01 | 2.866E-01      | 2.535E-02 | 0.106   |
| CM-247  | +         | 278.00       |              | 5.440E-01  | 1.083E+00 | 1.342E+00      | 1.495E-01 | 0.405   |
|         |           | 287.40       |              | 2.043E-01  | 1.292E+00 | 2.062E+00      | 2.290E-01 | 0.099   |
|         |           | 402.60       | *            | 1.555E-02  | 4.298E-02 | 7.253E-02      | 6.686E-03 | 0.214   |
| CF-249  |           | 252.85       |              | 3.646E-01  | 8.650E-01 | 1.416E+00      | 1.518E-01 | 0.258   |
|         |           | 333.44       |              | -2.626E-02 | 2.147E-01 | 2.935E-01      | 3.085E-02 | -0.089  |
| CF-251  |           | 387.95       | *            | 9.867E-03  | 4.083E-02 | 6.877E-02      | 6.328E-03 | 0.143   |
|         |           | 176.60       | *            | 4.344E-02  | 1.175E-01 | 1.964E-01      | 1.798E-02 | 0.221   |
|         |           | 227.00       |              | -8.192E-02 | 3.768E-01 | 6.004E-01      | 6.148E-02 | -0.136  |
|         |           | 285.00       |              | -8.694E-01 | 1.829E+00 | 2.802E+00      | 3.117E-01 | -0.310  |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC
*                                     2040 Savage Road
*                                     Charleston, SC 29414
*****
*
*                               DETECTOR DATA
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630010
* Acquisition date   : 23-JAN-2010 11:48:51 Detector SN#      :
* Detector ID        : GAM25                               Sensitivity      : 5.000
* Geometry           : CAN                                 Energy tolerance: 1.500
* Elapsed live time  : 0 02:00:00.00                      Abundance limit : 75.000
* Elapsed real time  : 0 02:00:01.99                      Half life ratio  : 8.000
*****
*
*                               SAMPLE DATA
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID
* Sample ID          : G244630010 Analyst initials: MXR1
* Batch Number       : 941639 Sample Quantity : 1.1646E+02 GRAM
* Recovery           : 1.00000 Carrier Weight : 0.00000
*****
*
*                               QC DATA
*
* Standard Weight    : 0.00000
* CALIB. DATE/TIME   : 7-OCT-2009 09:38:43 MS Isotope      :
* MSD DPM            : 0.000 MSD Isotope                   :
* LCS DPM            : 0.000 LCS Isotope                    :
* LCSD DPM           : 0.000 LCSD Isotope                  :
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act error | MDA<br>(pCi/GRAM ) |           |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 2.720E+01               | 2.947E+00 | 6.358E-01          | 0.000E+00 |
| CD-109  | 4.271E+00               | 7.847E-01 | 8.179E-01          | 0.000E+00 |
| SN-126  | 4.199E-01               | 7.714E-02 | 8.024E-02          | 0.000E+00 |
| BA-137M | 9.180E-01               | 1.355E-01 | 8.215E-02          | 0.000E+00 |
| CS-137  | 9.705E-01               | 1.433E-01 | 8.684E-02          | 0.000E+00 |
| TL-208  | 6.775E-01               | 1.178E-01 | 6.421E-02          | 0.000E+00 |
| BI-210  | 3.274E+00               | 7.520E-01 | 6.681E-01          | 0.000E+00 |
| PB-210  | 3.274E+00               | 7.520E-01 | 6.681E-01          | 0.000E+00 |
| PO-210  | 3.274E+00               | 7.413E-01 | 6.681E-01          | 0.000E+00 |
| BI-211  | 4.304E+00               | 6.728E-01 | 3.484E-01          | 0.000E+00 |
| PB-212  | 2.054E+00               | 2.587E-01 | 8.973E-02          | 0.000E+00 |
| PO-212  | 2.054E+00               | 2.587E-01 | 8.973E-02          | 0.000E+00 |
| BI-214  | 1.325E+00               | 2.315E-01 | 1.244E-01          | 0.000E+00 |
| PB-214  | 1.497E+00               | 2.462E-01 | 1.215E-01          | 0.000E+00 |
| PO-214  | 1.497E+00               | 2.462E-01 | 1.215E-01          | 0.000E+00 |
| PO-216  | 2.054E+00               | 2.587E-01 | 8.973E-02          | 0.000E+00 |
| PO-218  | 1.497E+00               | 2.462E-01 | 1.215E-01          | 0.000E+00 |
| RA-224  | 2.746E+00               | 1.053E+00 | 1.022E+00          | 0.000E+00 |
| RA-226  | 1.325E+00               | 2.315E-01 | 1.244E-01          | 0.000E+00 |
| AC-228  | 1.962E+00               | 4.392E-01 | 2.121E-01          | 0.000E+00 |
| RA-228  | 1.962E+00               | 4.392E-01 | 2.121E-01          | 0.000E+00 |
| TH-228  | 2.085E+00               | 2.626E-01 | 9.108E-02          | 0.000E+00 |
| TH-230  | 1.325E+00               | 2.315E-01 | 1.244E-01          | 0.000E+00 |
| TH-232  | 1.962E+00               | 4.392E-01 | 2.121E-01          | 0.000E+00 |
| TH-234  | 4.402E+00               | 1.224E+00 | 8.233E-01          | 0.000E+00 |
| U-234   | 1.325E+00               | 2.315E-01 | 1.244E-01          | 0.000E+00 |
| U-235   | 3.273E-01               | 2.197E-01 | 3.096E-01          | 0.000E+00 |
| NP-237  | 1.233E+00               | 3.369E-01 | 2.601E-01          | 0.000E+00 |
| U-238   | 4.402E+00               | 1.224E+00 | 8.233E-01          | 0.000E+00 |
| AM-243  | 3.859E-01               | 5.750E-02 | 5.171E-02          | 0.000E+00 |
| ANH-511 | 1.820E-01               | 8.292E-02 | 5.256E-02          | 0.000E+00 |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM | K.L. Act error<br>) Ided | MDA<br>(pCi/GRAM | )         |            |
|---------|-----------------------------------|--------------------------|------------------|-----------|------------|
| BE-7    | 1.315E-01                         | 3.484E-01                | 5.990E-01        | 0.000E+00 | NOT IDENT. |
| NA-22   | 2.170E-03                         | 4.308E-02                | 7.254E-02        | 0.000E+00 | NOT IDENT. |
| NA-24   | 0.000E+00                         | 7.703E+05                | 0.000E+00        | 0.000E+00 | SHORT HLIF |
| AL-26   | 1.967E-02                         | 3.028E-02                | 5.737E-02        | 0.000E+00 | NOT IDENT. |
| TI-44   | 0.000E+00                         | 5.365E-02                | 4.830E-02        | 0.000E+00 | FAIL ABUN  |
| SC-46   | 6.782E-03                         | 4.016E-02                | 6.796E-02        | 0.000E+00 | FAIL ABUN  |
| V-48    | -8.055E-02                        | 7.476E-02                | 1.067E-01        | 0.000E+00 | NOT IDENT. |
| CR-51   | -1.600E-01                        | 3.713E-01                | 6.306E-01        | 0.000E+00 | NOT IDENT. |
| MN-52   | 1.714E-01                         | 2.508E-01                | 4.538E-01        | 0.000E+00 | NOT IDENT. |
| MN-54   | 1.058E-02                         | 4.525E-02                | 7.713E-02        | 0.000E+00 | NOT IDENT. |
| CO-56   | 1.819E-02                         | 4.351E-02                | 7.545E-02        | 0.000E+00 | FAIL ABUN  |
| CO-57   | -6.283E-03                        | 2.040E-02                | 3.542E-02        | 0.000E+00 | NOT IDENT. |
| CO-58   | -1.722E-02                        | 4.276E-02                | 6.906E-02        | 0.000E+00 | NOT IDENT. |
| FE-59   | -9.547E-02                        | 1.077E-01                | 1.681E-01        | 0.000E+00 | FAIL ABUN  |
| CO-60   | -7.109E-03                        | 4.202E-02                | 6.848E-02        | 0.000E+00 | NOT IDENT. |
| ZN-65   | -6.586E-02                        | 1.237E-01                | 1.689E-01        | 0.000E+00 | NOT IDENT. |
| GE-68   | 2.291E-01                         | 1.432E+00                | 2.475E+00        | 0.000E+00 | NOT IDENT. |
| AS-73   | 9.150E-02                         | 1.882E-01                | 3.237E-01        | 0.000E+00 | NOT IDENT. |
| AS-74   | 9.423E-02                         | 1.025E-01                | 1.796E-01        | 0.000E+00 | NOT IDENT. |
| SE-75   | 1.267E-02                         | 4.445E-02                | 7.098E-02        | 0.000E+00 | NOT IDENT. |
| BR-77   | 6.868E-01                         | 1.094E+01                | 1.827E+01        | 0.000E+00 | FAIL ABUN  |
| SR-82   | -1.477E-01                        | 4.188E-01                | 6.845E-01        | 0.000E+00 | NOT IDENT. |
| RB-83   | 1.270E-02                         | 7.508E-02                | 1.264E-01        | 0.000E+00 | NOT IDENT. |
| RB-84   | -3.750E-02                        | 6.775E-02                | 1.054E-01        | 0.000E+00 | NOT IDENT. |
| KR-85   | 8.305E+00                         | 9.058E+00                | 1.423E+01        | 0.000E+00 | NOT IDENT. |
| SR-85   | 4.253E-02                         | 4.638E-02                | 7.287E-02        | 0.000E+00 | NOT IDENT. |
| RB-86   | 4.400E-01                         | 8.637E-01                | 1.539E+00        | 0.000E+00 | NOT IDENT. |
| Y-88    | -6.880E-03                        | 4.489E-02                | 7.302E-02        | 0.000E+00 | NOT IDENT. |
| ZR-88   | 9.622E-04                         | 3.060E-02                | 5.237E-02        | 0.000E+00 | NOT IDENT. |
| Y-91    | 5.925E+00                         | 2.203E+01                | 3.793E+01        | 0.000E+00 | NOT IDENT. |
| NB-94   | 1.113E-02                         | 3.928E-02                | 6.724E-02        | 0.000E+00 | NOT IDENT. |
| NB-95   | 2.257E-02                         | 5.587E-02                | 8.529E-02        | 0.000E+00 | NOT IDENT. |
| NB-95M  | -9.972E-03                        | 1.303E-01                | 1.922E-01        | 0.000E+00 | NOT IDENT. |
| ZR-95   | 9.087E-02                         | 7.722E-02                | 1.420E-01        | 0.000E+00 | NOT IDENT. |
| NB-97   | 0.000E+00                         | 1.093E+05                | 0.000E+00        | 0.000E+00 | SHORT HLIF |
| ZR-97   | 0.000E+00                         | 1.958E+06                | 0.000E+00        | 0.000E+00 | SHORT HLIF |
| MO-99   | -1.168E+01                        | 1.237E+01                | 1.899E+01        | 0.000E+00 | NOT IDENT. |
| TC-99M  | 0.000E+00                         | 2.595E+16                | 0.000E+00        | 0.000E+00 | SHORT HLIF |
| RH-101  | -4.518E-03                        | 3.196E-02                | 5.294E-02        | 0.000E+00 | NOT IDENT. |
| RH-102  | -3.720E-02                        | 3.234E-02                | 4.927E-02        | 0.000E+00 | FAIL ABUN  |
| RU-103  | 2.288E-02                         | 4.454E-02                | 7.692E-02        | 0.000E+00 | FAIL ABUN  |
| RH-106  | -2.781E-02                        | 3.319E-01                | 5.688E-01        | 0.000E+00 | FAIL ABUN  |
| RU-106  | -2.781E-02                        | 3.319E-01                | 5.688E-01        | 0.000E+00 | FAIL ABUN  |
| AG-108M | -9.432E-03                        | 3.522E-02                | 5.849E-02        | 0.000E+00 | NOT IDENT. |
| AG-110M | 2.232E-02                         | 4.407E-02                | 6.916E-02        | 0.000E+00 | NOT IDENT. |
| IN-111  | 7.409E-01                         | 1.089E+00                | 1.686E+00        | 0.000E+00 | NOT IDENT. |
| IN-113M | -8.960E-03                        | 4.447E-02                | 7.497E-02        | 0.000E+00 | NOT IDENT. |
| SN-113  | -8.960E-03                        | 4.447E-02                | 7.497E-02        | 0.000E+00 | NOT IDENT. |
| IN-114M | 1.866E-01                         | 1.851E-01                | 2.970E-01        | 0.000E+00 | NOT IDENT. |
| CD-115  | -2.957E+00                        | 1.069E+01                | 1.731E+01        | 0.000E+00 | NOT IDENT. |
| SN-117M | 5.787E-03                         | 4.869E-02                | 8.436E-02        | 0.000E+00 | NOT IDENT. |
| SB-122  | 1.323E+00                         | 2.327E+00                | 3.991E+00        | 0.000E+00 | NOT IDENT. |
| I-123   | 0.000E+00                         | 4.337E+06                | 0.000E+00        | 0.000E+00 | SHORT HLIF |
| TE-123M | 1.914E-03                         | 2.507E-02                | 4.335E-02        | 0.000E+00 | NOT IDENT. |
| I-124   | 1.730E-01                         | 7.195E-01                | 1.200E+00        | 0.000E+00 | NOT IDENT. |
| SB-124  | -1.717E-03                        | 8.030E-02                | 1.348E-01        | 0.000E+00 | FAIL ABUN  |
| SB-125  | 6.427E-02                         | 9.722E-02                | 1.715E-01        | 0.000E+00 | FAIL ABUN  |
| TE-125M | 6.601E+00                         | 6.806E+00                | 1.242E+01        | 0.000E+00 | NOT IDENT. |
| I-126   | 1.459E-01                         | 2.429E-01                | 3.823E-01        | 0.000E+00 | NOT IDENT. |
| SB-126  | 3.361E-02                         | 1.748E-01                | 2.637E-01        | 0.000E+00 | FAIL ABUN  |
| SB-127  | 7.825E-01                         | 1.450E+00                | 2.575E+00        | 0.000E+00 | NOT IDENT. |
| XE-127  | -1.879E-02                        | 4.654E-02                | 7.707E-02        | 0.000E+00 | FAIL ABUN  |
| I-131   | -4.912E-02                        | 1.210E-01                | 2.029E-01        | 0.000E+00 | NOT IDENT. |
| TE-132  | 8.085E-01                         | 6.483E-01                | 1.130E+00        | 0.000E+00 | NOT IDENT. |
| BA-133  | -4.959E-02                        | 5.152E-02                | 7.130E-02        | 0.000E+00 | FAIL ABUN  |
| I-133   | 0.000E+00                         | 5.976E+03                | 0.000E+00        | 0.000E+00 | SHORT HLIF |
| CS-134  | 0.000E+00                         | 5.723E-02                | 1.005E-01        | 0.000E+00 | FAIL ABUN  |
| CS-135  | 2.118E-01                         | 1.752E-01                | 2.768E-01        | 0.000E+00 | NOT IDENT. |
| I-135   | 0.000E+00                         | 4.076E+15                | 0.000E+00        | 0.000E+00 | SHORT HLIF |
| CS-136  | 5.341E-02                         | 1.105E-01                | 1.974E-01        | 0.000E+00 | FAIL ABUN  |
| CE-139  | -7.208E-03                        | 2.720E-02                | 4.616E-02        | 0.000E+00 | NOT IDENT. |
| BA-140  | -1.590E-01                        | 2.836E-01                | 4.398E-01        | 0.000E+00 | NOT IDENT. |
| LA-140  | -2.068E-02                        | 9.516E-02                | 1.564E-01        | 0.000E+00 | FAIL ABUN  |
| CE-141  | 3.832E-02                         | 5.907E-02                | 9.504E-02        | 0.000E+00 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| CE-143  | 0.000E+00  | 1.803E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CE-144  | -4.077E-03 | 1.818E-01 | 2.850E-01 | 0.000E+00 | NOT IDENT. |
| PM-144  | -3.033E-03 | 3.757E-02 | 6.369E-02 | 0.000E+00 | NOT IDENT. |
| PR-144  | -2.055E-01 | 2.546E+00 | 4.315E+00 | 0.000E+00 | NOT IDENT. |
| PM-146  | 5.210E-03  | 4.693E-02 | 7.965E-02 | 0.000E+00 | NOT IDENT. |
| ND-147  | -5.118E-01 | 6.084E-01 | 9.292E-01 | 0.000E+00 | FAIL ABUN  |
| PM-149  | 8.741E+00  | 8.937E+01 | 1.470E+02 | 0.000E+00 | NOT IDENT. |
| EU-152  | -2.889E-02 | 1.014E-01 | 1.666E-01 | 0.000E+00 | FAIL ABUN  |
| GD-153  | -3.615E-02 | 6.176E-02 | 9.664E-02 | 0.000E+00 | FAIL ABUN  |
| EU-154  | 1.322E-02  | 1.195E-01 | 2.026E-01 | 0.000E+00 | NOT IDENT. |
| EU-155  | 1.070E-01  | 8.136E-02 | 1.498E-01 | 0.000E+00 | FAIL ABUN  |
| TB-160  | 2.944E-02  | 1.391E-01 | 2.368E-01 | 0.000E+00 | FAIL ABUN  |
| HO-166M | 5.979E-02  | 7.008E-02 | 1.262E-01 | 0.000E+00 | NOT IDENT. |
| TM-171  | -2.730E+00 | 1.329E+01 | 2.012E+01 | 0.000E+00 | NOT IDENT. |
| LU-176  | -1.621E-02 | 2.332E-02 | 3.905E-02 | 0.000E+00 | FAIL ABUN  |
| LU-177  | 0.000E+00  | 1.680E+00 | 2.075E+00 | 0.000E+00 | FAIL ABUN  |
| LU-177M | -2.018E-01 | 1.944E-01 | 3.074E-01 | 0.000E+00 | FAIL ABUN  |
| HF-181  | -5.562E-02 | 4.678E-02 | 7.072E-02 | 0.000E+00 | NOT IDENT. |
| W-181   | -3.343E-02 | 1.540E-01 | 2.334E-01 | 0.000E+00 | NOT IDENT. |
| TA-182  | 2.132E-01  | 2.402E-01 | 4.305E-01 | 0.000E+00 | FAIL ABUN  |
| RE-183  | -6.412E-03 | 9.991E-02 | 1.689E-01 | 0.000E+00 | FAIL ABUN  |
| RE-184  | 9.711E-02  | 2.258E-01 | 3.826E-01 | 0.000E+00 | NOT IDENT. |
| OS-185  | -5.987E-02 | 4.567E-02 | 6.927E-02 | 0.000E+00 | NOT IDENT. |
| RE-188  | 4.093E-02  | 1.547E-01 | 2.681E-01 | 0.000E+00 | NOT IDENT. |
| W-188   | -5.466E+00 | 8.060E+00 | 1.187E+01 | 0.000E+00 | FAIL ABUN  |
| IR-192  | 3.877E-03  | 3.419E-02 | 5.991E-02 | 0.000E+00 | FAIL ABUN  |
| AU-195  | 0.000E+00  | 1.704E-01 | 3.069E-01 | 0.000E+00 | FAIL ABUN  |
| TL-200  | 0.000E+00  | 4.276E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TL-201  | 1.624E+00  | 6.212E+00 | 1.078E+01 | 0.000E+00 | NOT IDENT. |
| TL-202  | 8.595E-02  | 7.621E-02 | 1.373E-01 | 0.000E+00 | NOT IDENT. |
| HG-203  | -3.218E-03 | 4.501E-02 | 6.514E-02 | 0.000E+00 | NOT IDENT. |
| BI-207  | 5.951E-02  | 5.875E-02 | 1.086E-01 | 0.000E+00 | FAIL ABUN  |
| TL-207  | -3.182E-01 | 7.554E-01 | 1.118E+00 | 0.000E+00 | FAIL ABUN  |
| PO-209  | 1.171E+00  | 8.597E+00 | 1.446E+01 | 0.000E+00 | NOT IDENT. |
| PB-211  | -5.208E-01 | 1.113E+00 | 1.764E+00 | 0.000E+00 | NOT IDENT. |
| BI-212  | 0.000E+00  | 6.839E-01 | 7.489E-01 | 0.000E+00 | FAIL ABUN  |
| PO-215  | -3.182E-01 | 7.554E-01 | 1.118E+00 | 0.000E+00 | FAIL ABUN  |
| RN-219  | 2.541E-01  | 4.641E-01 | 8.130E-01 | 0.000E+00 | FAIL ABUN  |
| RN-220  | 2.601E+01  | 2.908E+01 | 5.117E+01 | 0.000E+00 | NOT IDENT. |
| RA-223  | -3.182E-01 | 7.554E-01 | 1.118E+00 | 0.000E+00 | FAIL ABUN  |
| AC-227  | -8.893E-02 | 3.768E-01 | 6.137E-01 | 0.000E+00 | NOT IDENT. |
| TH-227  | -8.893E-02 | 3.769E-01 | 6.137E-01 | 0.000E+00 | FAIL ABUN  |
| TH-229  | -4.719E-01 | 4.785E-01 | 7.694E-01 | 0.000E+00 | FAIL ABUN  |
| PA-231  | 4.033E-01  | 1.475E+00 | 2.455E+00 | 0.000E+00 | NOT IDENT. |
| TH-231  | -3.182E-01 | 7.554E-01 | 1.118E+00 | 0.000E+00 | FAIL ABUN  |
| U-231   | -1.890E-01 | 7.534E-01 | 1.201E+00 | 0.000E+00 | FAIL ABUN  |
| PA-233  | -2.061E-03 | 6.241E-02 | 1.087E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234  | -6.723E-02 | 3.347E-01 | 5.409E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234M | 3.788E+00  | 5.781E+00 | 1.013E+01 | 0.000E+00 | NOT IDENT. |
| NP-236  | 6.075E-03  | 7.041E-02 | 1.217E-01 | 0.000E+00 | NOT IDENT. |
| NP-239  | -1.782E-01 | 1.515E-01 | 2.519E-01 | 0.000E+00 | FAIL ABUN  |
| AM-241  | 7.311E-02  | 5.437E-02 | 8.828E-02 | 0.000E+00 | NOT IDENT. |
| CM-243  | 2.207E-02  | 6.919E-02 | 1.246E-01 | 0.000E+00 | FAIL ABUN  |
| AM-246  | 3.045E-02  | 1.655E-01 | 2.865E-01 | 0.000E+00 | NOT IDENT. |
| CM-247  | 1.555E-02  | 4.212E-02 | 7.323E-02 | 0.000E+00 | FAIL ABUN  |
| CF-249  | 9.867E-03  | 4.001E-02 | 6.947E-02 | 0.000E+00 | NOT IDENT. |
| CF-251  | 4.344E-02  | 1.151E-01 | 2.000E-01 | 0.000E+00 | NOT IDENT. |

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630010.CNF;1
Sample date        : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 11:48:51
Sample ID          : G244630010           Sample quantity  : 1.16460E+02 GRAM
Detector name      : GAM25                 Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00         Elapsed real time: 0 02:00:01.99  0.0%
Energy tolerance   : 1.50000 keV           Analyst Initials : MXR1
Abundance limit    : 75.00000              Sensitivity       : 5.00000
Batch ID           : 941639                 Detector SN#       :
Matrix Spike ID    :                       LCS ID          : 1032-A
*****

```

## Nuclide Line Activity Report

## Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| K-40    | 1460.81 | 998   | 10.67* | 1.109E+00 | 2.720E+01               | 2.720E+01              | 11.06             |
| CD-109  | 88.03   | 453   | 3.72*  | 9.406E+00 | 4.176E+00               | 4.271E+00              | 18.75             |
| SN-126  | 64.28   | 507   | 9.60   | 9.778E+00 | 1.743E+00               | 1.743E+00              | 26.68             |
|         | 86.94   | 453   | 8.90   | 9.406E+00 | 1.745E+00               | 1.745E+00              | 44.58             |
|         | 87.57   | 453   | 37.00* | 9.406E+00 | 4.199E-01               | 4.199E-01              | 18.75             |
| BA-137M | 661.65  | 571   | 89.98* | 2.231E+00 | 9.172E-01               | 9.180E-01              | 15.06             |
| CS-137  | 661.65  | 571   | 85.12* | 2.231E+00 | 9.695E-01               | 9.705E-01              | 15.07             |
| TL-208  | 277.35  | 27    | 6.80   | 4.738E+00 | 2.720E-01               | 2.720E-01              | 199.26            |
|         | 510.84  | 159   | 21.60  | 2.809E+00 | 8.426E-01               | 8.426E-01              | 47.23             |
|         | 583.14  | 442   | 84.20* | 2.496E+00 | 6.775E-01               | 6.775E-01              | 17.74             |
|         | 860.37  | 64    | 12.46  | 1.766E+00 | 9.375E-01               | 9.375E-01              | 51.23             |
| BI-210  | 46.50   | 378   | 4.05*  | 9.189E+00 | 3.269E+00               | 3.274E+00              | 23.44             |
| PB-210  | 46.50   | 378   | 4.05*  | 9.189E+00 | 3.269E+00               | 3.274E+00              | 23.44             |
| PO-210  | 46.50   | 378   | 4.05*  | 9.189E+00 | 3.269E+00               | 3.274E+00              | 23.11             |
| BI-211  | 72.87   | ----- | 1.27   | 9.724E+00 | -----                   | Line Not Found         | -----             |
|         | 351.07  | 672   | 12.94* | 3.886E+00 | 4.304E+00               | 4.304E+00              | 15.95             |
| PB-212  | 74.81   | 766   | 10.70  | 9.694E+00 | 2.380E+00               | 2.380E+00              | 17.85             |
|         | 77.11   | 1248  | 18.00  | 9.653E+00 | 2.314E+00               | 2.314E+00              | 12.82             |
|         | 87.30   | 453   | 8.00   | 9.406E+00 | 1.942E+00               | 1.942E+00              | 21.25             |
|         | 238.63  | 1518  | 44.60* | 5.339E+00 | 2.054E+00               | 2.054E+00              | 12.85             |
|         | 300.09  | ----- | 3.41   | 4.442E+00 | -----                   | Line Not Found         | -----             |
| PO-212  | 74.81   | 766   | 10.70  | 9.694E+00 | 2.380E+00               | 2.380E+00              | 17.85             |
|         | 77.11   | 1248  | 18.00  | 9.653E+00 | 2.314E+00               | 2.314E+00              | 12.82             |
|         | 87.30   | 453   | 8.00   | 9.406E+00 | 1.942E+00               | 1.942E+00              | 21.25             |
|         | 115.19  | ----- | 0.60   | 8.498E+00 | -----                   | Line Not Found         | -----             |
|         | 238.63  | 1518  | 44.60* | 5.339E+00 | 2.054E+00               | 2.054E+00              | 12.85             |
|         | 300.09  | ----- | 3.41   | 4.442E+00 | -----                   | Line Not Found         | -----             |
| BI-214  | 609.31  | 457   | 46.30* | 2.401E+00 | 1.325E+00               | 1.325E+00              | 17.83             |
|         | 1120.29 | 99    | 15.10  | 1.398E+00 | 1.515E+00               | 1.515E+00              | 45.03             |
|         | 1764.49 | 58    | 15.80  | 9.412E-01 | 1.249E+00               | 1.249E+00              | 45.45             |
| PB-214  | 74.81   | 766   | 6.21   | 9.694E+00 | 4.102E+00               | 4.102E+00              | 16.91             |
|         | 77.11   | 1248  | 10.50  | 9.653E+00 | 3.967E+00               | 3.967E+00              | 14.91             |

Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| PO-214  | 87.30   | 453   | 4.67   | 9.406E+00 | 3.327E+00               | 3.327E+00              | 20.27             |
|         | 241.98  | 204   | 7.49   | 5.280E+00 | 1.665E+00               | 1.665E+00              | 31.69             |
|         | 295.21  | 442   | 19.20  | 4.503E+00 | 1.648E+00               | 1.648E+00              | 18.53             |
|         | 351.92  | 672   | 37.20* | 3.886E+00 | 1.497E+00               | 1.497E+00              | 16.78             |
|         | 74.81   | 766   | 6.21   | 9.694E+00 | 4.102E+00               | 4.102E+00              | 16.91             |
|         | 77.11   | 1248  | 10.50  | 9.653E+00 | 3.967E+00               | 3.967E+00              | 14.91             |
|         | 87.30   | 453   | 4.67   | 9.406E+00 | 3.327E+00               | 3.327E+00              | 20.27             |
|         | 241.98  | 204   | 7.49   | 5.280E+00 | 1.665E+00               | 1.665E+00              | 31.69             |
|         | 295.21  | 442   | 19.20  | 4.503E+00 | 1.648E+00               | 1.648E+00              | 18.53             |
|         | 351.92  | 672   | 37.20* | 3.886E+00 | 1.497E+00               | 1.497E+00              | 16.78             |
| PO-216  | 74.81   | 766   | 10.70  | 9.694E+00 | 2.380E+00               | 2.380E+00              | 17.85             |
|         | 77.11   | 1248  | 18.00  | 9.653E+00 | 2.314E+00               | 2.314E+00              | 12.82             |
|         | 87.30   | 453   | 8.00   | 9.406E+00 | 1.942E+00               | 1.942E+00              | 21.25             |
|         | 238.63  | 1518  | 44.60* | 5.339E+00 | 2.054E+00               | 2.054E+00              | 12.85             |
|         | 300.09  | ----- | 3.41   | 4.442E+00 | -----                   | Line Not Found         | -----             |
|         | 74.81   | 766   | 6.21   | 9.694E+00 | 4.102E+00               | 4.102E+00              | 16.91             |
| PO-218  | 77.11   | 1248  | 10.50  | 9.653E+00 | 3.967E+00               | 3.967E+00              | 14.91             |
|         | 87.30   | 453   | 4.67   | 9.406E+00 | 3.327E+00               | 3.327E+00              | 20.27             |
|         | 241.98  | 204   | 7.49   | 5.280E+00 | 1.665E+00               | 1.665E+00              | 31.69             |
|         | 295.21  | 442   | 19.20  | 4.503E+00 | 1.648E+00               | 1.648E+00              | 18.53             |
|         | 351.92  | 672   | 37.20* | 3.886E+00 | 1.497E+00               | 1.497E+00              | 16.78             |
|         | 240.98  | 178   | 3.95*  | 5.299E+00 | 2.746E+00               | 2.746E+00              | 39.12             |
| RA-224  | 609.31  | 457   | 46.30* | 2.401E+00 | 1.325E+00               | 1.325E+00              | 17.83             |
| RA-226  | 1120.29 | 99    | 15.10  | 1.398E+00 | 1.515E+00               | 1.515E+00              | 45.03             |
| AC-228  | 1764.49 | 58    | 15.80  | 9.412E-01 | 1.249E+00               | 1.249E+00              | 45.45             |
|         | 338.32  | 291   | 11.40  | 4.018E+00 | 2.047E+00               | 2.047E+00              | 46.70             |
|         | 911.07  | 283   | 27.70* | 1.678E+00 | 1.962E+00               | 1.962E+00              | 22.85             |
|         | 969.11  | 181   | 16.60  | 1.589E+00 | 2.217E+00               | 2.217E+00              | 30.03             |
| RA-228  | 338.32  | 291   | 11.40  | 4.018E+00 | 2.047E+00               | 2.047E+00              | 46.70             |
|         | 911.07  | 283   | 27.70* | 1.678E+00 | 1.962E+00               | 1.962E+00              | 22.85             |
|         | 969.11  | 181   | 16.60  | 1.589E+00 | 2.217E+00               | 2.217E+00              | 30.03             |
|         | 74.81   | 766   | 10.70  | 9.694E+00 | 2.380E+00               | 2.416E+00              | 15.24             |
| TH-228  | 77.11   | 1248  | 18.00  | 9.653E+00 | 2.314E+00               | 2.349E+00              | 12.82             |
|         | 87.30   | 453   | 8.00   | 9.406E+00 | 1.942E+00               | 1.971E+00              | 18.75             |
|         | 238.63  | 1518  | 44.60* | 5.339E+00 | 2.054E+00               | 2.085E+00              | 12.85             |
|         | 300.09  | ----- | 3.41   | 4.442E+00 | -----                   | Line Not Found         | -----             |
|         | 609.31  | 457   | 46.30* | 2.401E+00 | 1.325E+00               | 1.325E+00              | 17.83             |
|         | 1120.29 | 99    | 15.10  | 1.398E+00 | 1.515E+00               | 1.515E+00              | 45.03             |
| TH-230  | 1764.49 | 58    | 15.80  | 9.412E-01 | 1.249E+00               | 1.249E+00              | 45.45             |
|         | 338.32  | 291   | 11.40  | 4.018E+00 | 2.047E+00               | 2.047E+00              | 23.51             |
|         | 911.07  | 283   | 27.70* | 1.678E+00 | 1.962E+00               | 1.962E+00              | 22.85             |
|         | 969.11  | 181   | 16.60  | 1.589E+00 | 2.217E+00               | 2.217E+00              | 30.03             |
| TH-234  | 63.29   | 507   | 3.80*  | 9.778E+00 | 4.402E+00               | 4.402E+00              | 28.37             |
|         | 92.38   | 699   | 5.41   | 9.243E+00 | 4.503E+00               | 4.503E+00              | 23.33             |
|         | 609.31  | 457   | 46.30* | 2.401E+00 | 1.325E+00               | 1.325E+00              | 17.83             |
| U-234   | 1120.29 | 99    | 15.10  | 1.398E+00 | 1.515E+00               | 1.515E+00              | 45.03             |
| U-235   | 1764.49 | 58    | 15.80  | 9.412E-01 | 1.249E+00               | 1.249E+00              | 45.45             |
|         | 89.95   | 338   | 2.70   | 9.327E+00 | 4.329E+00               | 4.329E+00              | 38.01             |
|         | 93.35   | 699   | 4.50   | 9.243E+00 | 5.414E+00               | 5.414E+00              | 31.67             |



Nuclide Type:

| Nuclide | Energy | Area  | %Abn    | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|--------|-------|---------|-----------|-------------------------|------------------------|-------------------|
|         | 105.00 | ----- | 2.10    | 8.843E+00 | -----                   | Line Not Found         | -----             |
|         | 143.76 | 81    | 10.50*  | 7.566E+00 | 3.273E-01               | 3.273E-01              | 68.52             |
|         | 163.35 | ----- | 4.70    | 6.998E+00 | -----                   | Line Not Found         | -----             |
|         | 185.71 | 350   | 54.00   | 6.412E+00 | 3.257E-01               | 3.257E-01              | 27.62             |
|         | 205.31 | ----- | 4.70    | 5.979E+00 | -----                   | Line Not Found         | -----             |
| NP-237  | 86.50  | 453   | 12.60*  | 9.406E+00 | 1.233E+00               | 1.233E+00              | 27.88             |
|         | 95.87  | ----- | 2.60    | 9.143E+00 | -----                   | Line Not Found         | -----             |
| U-238   | 63.29  | 507   | 3.80*   | 9.778E+00 | 4.402E+00               | 4.402E+00              | 28.37             |
|         | 92.38  | 699   | 5.41    | 9.243E+00 | 4.503E+00               | 4.503E+00              | 17.08             |
| AM-243  | 74.67  | 766   | 66.00*  | 9.694E+00 | 3.859E-01               | 3.859E-01              | 15.20             |
|         | 86.72  | 453   | 0.34    | 9.406E+00 | 4.623E+01               | 4.623E+01              | 18.75             |
|         | 117.66 | ----- | 0.55    | 8.415E+00 | -----                   | Line Not Found         | -----             |
|         | 142.18 | ----- | 0.13    | 7.617E+00 | -----                   | Line Not Found         | -----             |
| ANH-511 | 511.00 | 159   | 100.00* | 2.809E+00 | 1.820E-01               | 1.820E-01              | 46.49             |

Flag: "\*" = Keyline

Summary of Nuclide Activity  
Sample ID : G244630010

Page : 4  
Acquisition date : 23-JAN-2010 11:48:51

Total number of lines in spectrum 39  
Number of unidentified lines 2  
Number of lines tentatively identified by NID 37 94.87%

Nuclide Type :

| Nuclide | Hlife     | Decay | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | Decay Corr<br>2-Sigma Error | 2-Sigma<br>%Error | Flags |
|---------|-----------|-------|-------------------------|------------------------|-----------------------------|-------------------|-------|
| K-40    | 1.28E+09Y | 1.00  | 2.720E+01               | 2.720E+01              | 0.301E+01                   | 11.06             |       |
| CD-109  | 464.00D   | 1.02  | 4.176E+00               | 4.271E+00              | 0.801E+00                   | 18.75             |       |
| SN-126  | 1.00E+05Y | 1.00  | 4.199E-01               | 4.199E-01              | 0.787E-01                   | 18.75             |       |
| BA-137M | 30.17Y    | 1.00  | 9.172E-01               | 9.180E-01              | 1.382E-01                   | 15.06             |       |
| CS-137  | 30.17Y    | 1.00  | 9.695E-01               | 9.705E-01              | 1.462E-01                   | 15.07             |       |
| TL-208  | 1.41E+10Y | 1.00  | 6.775E-01               | 6.775E-01              | 1.202E-01                   | 17.74             |       |
| BI-210  | 22.26Y    | 1.00  | 3.269E+00               | 3.274E+00              | 0.767E+00                   | 23.44             |       |
| PB-210  | 22.26Y    | 1.00  | 3.269E+00               | 3.274E+00              | 0.767E+00                   | 23.44             |       |
| PO-210  | 22.26Y    | 1.00  | 3.269E+00               | 3.274E+00              | 0.756E+00                   | 23.11             |       |
| BI-211  | 7.04E+08Y | 1.00  | 4.304E+00               | 4.304E+00              | 0.686E+00                   | 15.95             |       |
| PB-212  | 1.41E+10Y | 1.00  | 2.054E+00               | 2.054E+00              | 0.264E+00                   | 12.85             |       |
| PO-212  | 1.41E+10Y | 1.00  | 2.054E+00               | 2.054E+00              | 0.264E+00                   | 12.85             |       |
| BI-214  | 1600.00Y  | 1.00  | 1.325E+00               | 1.325E+00              | 0.236E+00                   | 17.83             |       |
| PB-214  | 1600.00Y  | 1.00  | 1.497E+00               | 1.497E+00              | 0.251E+00                   | 16.78             |       |
| PO-214  | 1600.00Y  | 1.00  | 1.497E+00               | 1.497E+00              | 0.251E+00                   | 16.78             |       |
| PO-216  | 1.41E+10Y | 1.00  | 2.054E+00               | 2.054E+00              | 0.264E+00                   | 12.85             |       |
| PO-218  | 1600.00Y  | 1.00  | 1.497E+00               | 1.497E+00              | 0.251E+00                   | 16.78             |       |
| RA-224  | 1.41E+10Y | 1.00  | 2.746E+00               | 2.746E+00              | 1.074E+00                   | 39.12             |       |
| RA-226  | 1600.00Y  | 1.00  | 1.325E+00               | 1.325E+00              | 0.236E+00                   | 17.83             |       |
| AC-228  | 1.41E+10Y | 1.00  | 1.962E+00               | 1.962E+00              | 0.448E+00                   | 22.85             |       |
| RA-228  | 1.41E+10Y | 1.00  | 1.962E+00               | 1.962E+00              | 0.448E+00                   | 22.85             |       |
| TH-228  | 1.91Y     | 1.02  | 2.054E+00               | 2.085E+00              | 0.268E+00                   | 12.85             |       |
| TH-230  | 4.47E+09Y | 1.00  | 1.325E+00               | 1.325E+00              | 0.236E+00                   | 17.83             |       |
| TH-232  | 1.41E+10Y | 1.00  | 1.962E+00               | 1.962E+00              | 0.448E+00                   | 22.85             |       |
| TH-234  | 4.47E+09Y | 1.00  | 4.402E+00               | 4.402E+00              | 1.249E+00                   | 28.37             |       |
| U-234   | 4.47E+09Y | 1.00  | 1.325E+00               | 1.325E+00              | 0.236E+00                   | 17.83             |       |
| U-235   | 7.04E+08Y | 1.00  | 3.273E-01               | 3.273E-01              | 2.242E-01                   | 68.52             |       |
| NP-237  | 2.14E+06Y | 1.00  | 1.233E+00               | 1.233E+00              | 0.344E+00                   | 27.88             |       |
| U-238   | 4.47E+09Y | 1.00  | 4.402E+00               | 4.402E+00              | 1.249E+00                   | 28.37             |       |
| AM-243  | 7380.00Y  | 1.00  | 3.859E-01               | 3.859E-01              | 0.587E-01                   | 15.20             |       |
| ANH-511 | 1.00E+09Y | 1.00  | 1.820E-01               | 1.820E-01              | 0.846E-01                   | 46.49             |       |

Total Activity : 8.604E+01 8.618E+01

Grand Total Activity : 8.604E+01 8.618E+01

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

Unidentified Energy Lines  
Sample ID : G244630010

Page : 5  
Acquisition date : 23-JAN-2010 11:48:51

| It | Energy  | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | %Eff     | Flags |
|----|---------|------|-------|------|---------|------|----|----------|------|----------|-------|
| 0  | 84.28   | 135  | 450   | 1.11 | 168.11  | 165  | 6  | 1.87E-02 | 53.5 | 9.48E+00 | T     |
| 0  | 129.47  | 109  | 434   | 0.87 | 258.48  | 254  | 9  | 1.51E-02 | 72.0 | 8.02E+00 | T     |
| 0  | 209.26  | 189  | 300   | 1.22 | 418.06  | 413  | 10 | 2.62E-02 | 37.4 | 5.90E+00 | T     |
| 0  | 270.14  | 125  | 212   | 1.66 | 539.79  | 535  | 10 | 1.74E-02 | 47.1 | 4.84E+00 | T     |
| 0  | 328.20  | 63   | 165   | 1.03 | 655.91  | 652  | 8  | 8.77E-03 | 75.0 | 4.12E+00 | T     |
| 0  | 462.92  | 114  | 107   | 0.96 | 925.33  | 921  | 10 | 1.59E-02 | 38.5 | 3.06E+00 | T     |
| 0  | 727.52  | 132  | 86    | 1.92 | 1454.53 | 1446 | 19 | 1.83E-02 | 38.0 | 2.05E+00 | T     |
| 0  | 768.27  | 36   | 58    | 1.49 | 1536.03 | 1532 | 8  | 5.02E-03 | 80.1 | 1.95E+00 | T     |
| 0  | 794.67  | 58   | 31    | 0.72 | 1588.83 | 1585 | 9  | 8.08E-03 | 43.4 | 1.89E+00 | T     |
| 4  | 964.52  | 71   | 40    | 2.62 | 1928.53 | 1922 | 30 | 9.93E-03 | 44.8 | 1.60E+00 | T     |
| 0  | 1238.99 | 30   | 62    | 1.68 | 2477.48 | 2472 | 13 | 4.12E-03 | **** | 1.28E+00 | T     |
| 0  | 1378.92 | 29   | 30    | 2.36 | 2757.35 | 2746 | 15 | 3.98E-03 | 91.4 | 1.17E+00 |       |
| 0  | 1730.20 | 29   | 5     | 1.06 | 3459.97 | 3454 | 13 | 3.96E-03 | 52.0 | 9.57E-01 |       |

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC
*                                     2040 Savage Road
*                                     Charleston, SC 29414
*****
*
*                               DETECTOR DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630010.CNF;1
* Acquisition date   : 23-JAN-2010 11:48:51  Detector SN#      :
* Detector ID        : GAM25                  Sensitivity       : 5.00000
* Geometry           : CAN                    Energy tolerance: 1.50000
* Elapsed live time  : 0 02:00:00.00          Abundance limit  : 75.00000
* Elapsed real time  : 0 02:00:01.99          Half life ratio  : 8.00000
*****
*
*                               SAMPLE DATA
*
* Sample date        : 8-JAN-2010 12:00:00.   Nuclide Library : SOLID
* Sample ID          : G244630010             Analyst initials: MXR1
* Batch Number       : 941639                 Sample Quantity  : 1.16460E+02 GRAM
*****
*
*                               QC DATA
*
* CALIB. DATE/TIME   : 7-OCT-2009 09:38:43.34MS Isotope      :
* MSD ID              :                      MSD Isotope      :
* LCS ID              : 1032-A               LCS Isotope      :
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| K-40    | 2.720E+01              | 3.007E+00 | 6.380E-01         | 5.434E-02 | 42.625  |
| CD-109  | 4.271E+00              | 8.007E-01 | 7.977E-01         | 8.573E-02 | 5.354   |
| SN-126  | 4.199E-01              | 7.871E-02 | 7.826E-02         | 8.392E-03 | 5.365   |
| BA-137M | 9.180E-01              | 1.382E-01 | 8.176E-02         | 9.057E-03 | 11.228  |
| CS-137  | 9.705E-01              | 1.462E-01 | 8.643E-02         | 9.586E-03 | 11.228  |
| TL-208  | 6.775E-01              | 1.202E-01 | 6.383E-02         | 7.195E-03 | 10.615  |
| BI-210  | 3.274E+00              | 7.674E-01 | 6.476E-01         | 6.677E-02 | 5.055   |
| PB-210  | 3.274E+00              | 7.674E-01 | 6.476E-01         | 6.677E-02 | 5.055   |
| PO-210  | 3.274E+00              | 7.564E-01 | 6.476E-01         | 6.168E-02 | 5.055   |
| BI-211  | 4.304E+00              | 6.865E-01 | 3.446E-01         | 3.631E-02 | 12.492  |
| PB-212  | 2.054E+00              | 2.640E-01 | 8.839E-02         | 1.006E-02 | 23.242  |
| PO-212  | 2.054E+00              | 2.640E-01 | 8.839E-02         | 1.006E-02 | 23.242  |
| BI-214  | 1.325E+00              | 2.363E-01 | 1.237E-01         | 1.493E-02 | 10.712  |
| PB-214  | 1.497E+00              | 2.513E-01 | 1.202E-01         | 1.411E-02 | 12.461  |
| PO-214  | 1.497E+00              | 2.513E-01 | 1.202E-01         | 1.411E-02 | 12.461  |
| PO-216  | 2.054E+00              | 2.640E-01 | 8.839E-02         | 1.006E-02 | 23.242  |
| PO-218  | 1.497E+00              | 2.513E-01 | 1.202E-01         | 1.411E-02 | 12.461  |
| RA-224  | 2.746E+00              | 1.074E+00 | 1.007E+00         | 1.058E-01 | 2.727   |

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| RA-226  | 1.325E+00              | 2.363E-01 | 1.237E-01         | 1.493E-02 | 10.712  |
| AC-228  | 1.962E+00              | 4.481E-01 | 2.118E-01         | 2.519E-02 | 9.262   |
| RA-228  | 1.962E+00              | 4.481E-01 | 2.118E-01         | 2.519E-02 | 9.262   |
| TH-228  | 2.085E+00              | 2.680E-01 | 8.972E-02         | 1.021E-02 | 23.242  |
| TH-230  | 1.325E+00              | 2.363E-01 | 1.237E-01         | 1.493E-02 | 10.712  |
| TH-232  | 1.962E+00              | 4.481E-01 | 2.118E-01         | 2.519E-02 | 9.262   |
| TH-234  | 4.402E+00              | 1.249E+00 | 8.005E-01         | 1.490E-01 | 5.500   |
| U-234   | 1.325E+00              | 2.363E-01 | 1.237E-01         | 1.493E-02 | 10.712  |
| U-235   | 3.273E-01              | 2.242E-01 | 3.034E-01         | 5.729E-02 | 1.079   |
| NP-237  | 1.233E+00              | 3.437E-01 | 2.537E-01         | 5.893E-02 | 4.860   |
| U-238   | 4.402E+00              | 1.249E+00 | 8.005E-01         | 1.490E-01 | 5.500   |
| AM-243  | 3.859E-01              | 5.867E-02 | 5.036E-02         | 5.114E-03 | 7.664   |
| ANH-511 | 1.820E-01              | 8.461E-02 | 5.218E-02         | 5.371E-03 | 3.488   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| BE-7    | 1.315E-01                          |              | 3.555E-01 | 5.943E-01         | 6.292E-02 | 0.221   |
| NA-22   | 2.170E-03                          |              | 4.396E-02 | 7.270E-02         | 5.961E-03 | 0.030   |
| NA-24   | 3.577E-02                          |              | 3.930E-01 | Half-Life         | too short |         |
| AL-26   | 1.967E-02                          |              | 3.089E-02 | 5.770E-02         | 4.728E-03 | 0.341   |
| TI-44   | 4.271E-01                          | +            | 5.474E-02 | 4.705E-02         | 4.846E-03 | 9.076   |
| SC-46   | 6.782E-03                          |              | 4.098E-02 | 6.785E-02         | 6.498E-03 | 0.100   |
| V-48    | -8.055E-02                         |              | 7.629E-02 | 1.067E-01         | 9.885E-03 | -0.755  |
| CR-51   | -1.600E-01                         |              | 3.789E-01 | 6.231E-01         | 6.919E-02 | -0.257  |
| MN-52   | 1.714E-01                          |              | 2.559E-01 | 4.553E-01         | 3.752E-02 | 0.376   |
| MN-54   | 1.058E-02                          |              | 4.618E-02 | 7.695E-02         | 7.809E-03 | 0.137   |
| CO-56   | 1.819E-02                          |              | 4.440E-02 | 7.529E-02         | 7.554E-03 | 0.242   |
| CO-57   | -6.283E-03                         |              | 2.082E-02 | 3.466E-02         | 4.470E-03 | -0.181  |
| CO-58   | -1.722E-02                         |              | 4.364E-02 | 6.888E-02         | 7.147E-03 | -0.250  |
| FE-59   | -9.547E-02                         |              | 1.099E-01 | 1.682E-01         | 1.585E-02 | -0.567  |
| CO-60   | -7.109E-03                         |              | 4.288E-02 | 6.866E-02         | 5.576E-03 | -0.104  |
| ZN-65   | -6.586E-02                         |              | 1.262E-01 | 1.690E-01         | 1.460E-02 | -0.390  |
| GE-68   | 2.291E-01                          |              | 1.461E+00 | 2.476E+00         | 2.192E-01 | 0.093   |
| AS-73   | 9.150E-02                          |              | 1.921E-01 | 3.141E-01         | 3.015E-02 | 0.291   |
| AS-74   | 9.423E-02                          |              | 1.046E-01 | 1.786E-01         | 1.935E-02 | 0.528   |
| SE-75   | 1.267E-02                          |              | 4.536E-02 | 7.000E-02         | 7.671E-03 | 0.181   |
| BR-77   | 6.868E-01                          |              | 1.117E+01 | 1.814E+01         | 1.881E+00 | 0.038   |
| SR-82   | -1.477E-01                         |              | 4.274E-01 | 6.825E-01         | 7.243E-02 | -0.216  |
| RB-83   | 1.270E-02                          |              | 7.661E-02 | 1.255E-01         | 1.301E-02 | 0.101   |
| RB-84   | -3.750E-02                         |              | 6.913E-02 | 1.052E-01         | 1.017E-02 | -0.356  |
| KR-85   | 8.305E+00                          |              | 9.243E+00 | 1.413E+01         | 1.458E+00 | 0.588   |
| SR-85   | 4.253E-02                          |              | 4.733E-02 | 7.234E-02         | 7.464E-03 | 0.588   |
| RB-86   | 4.400E-01                          |              | 8.813E-01 | 1.539E+00         | 1.363E-01 | 0.286   |
| Y-88    | -6.880E-03                         |              | 4.580E-02 | 7.345E-02         | 6.003E-03 | -0.094  |
| ZR-88   | 9.622E-04                          |              | 3.122E-02 | 5.185E-02         | 4.719E-03 | 0.019   |
| Y-91    | 5.925E+00                          |              | 2.248E+01 | 3.798E+01         | 3.126E+00 | 0.156   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| NB-94   | 1.113E-02                          |              | 4.009E-02 | 6.697E-02         | 7.354E-03 | 0.166   |
| NB-95   | 2.257E-02                          |              | 5.701E-02 | 8.503E-02         | 9.082E-03 | 0.265   |
| NB-95M  | -9.972E-03                         |              | 1.329E-01 | 1.893E-01         | 2.170E-02 | -0.053  |
| ZR-95   | 9.087E-02                          |              | 7.880E-02 | 1.415E-01         | 1.621E-02 | 0.642   |
| NB-97   | 7.720E-02                          |              | 5.579E-02 | Half-Life         | too short |         |
| ZR-97   | 2.155E+00                          |              | 9.990E-01 | Half-Life         | too short |         |
| MO-99   | -1.168E+01                         |              | 1.263E+01 | 1.892E+01         | 3.130E+00 | -0.617  |
| TC-99M  | 2.343E+10                          |              | 1.324E+10 | Half-Life         | too short |         |
| RH-101  | -4.518E-03                         |              | 3.261E-02 | 5.206E-02         | 5.016E-03 | -0.087  |
| RH-102  | -3.720E-02                         |              | 3.300E-02 | 4.888E-02         | 4.880E-03 | -0.761  |
| RU-103  | 2.288E-02                          |              | 4.545E-02 | 7.634E-02         | 1.157E-02 | 0.300   |
| RH-106  | -2.781E-02                         |              | 3.386E-01 | 5.658E-01         | 8.469E-02 | -0.049  |
| RU-106  | -2.781E-02                         |              | 3.386E-01 | 5.658E-01         | 6.196E-02 | -0.049  |
| AG-108M | -9.432E-03                         |              | 3.594E-02 | 5.797E-02         | 5.728E-03 | -0.163  |
| AG-110M | 2.232E-02                          |              | 4.497E-02 | 6.883E-02         | 7.756E-03 | 0.324   |
| IN-111  | 7.409E-01                          |              | 1.111E+00 | 1.661E+00         | 1.759E-01 | 0.446   |
| IN-113M | -8.960E-03                         |              | 4.537E-02 | 7.423E-02         | 6.933E-03 | -0.121  |
| SN-113  | -8.960E-03                         |              | 4.537E-02 | 7.423E-02         | 6.933E-03 | -0.121  |
| IN-114M | 1.866E-01                          |              | 1.889E-01 | 2.919E-01         | 2.763E-02 | 0.639   |
| CD-115  | -2.957E+00                         |              | 1.091E+01 | 1.719E+01         | 1.792E+00 | -0.172  |
| SN-117M | 5.787E-03                          |              | 4.969E-02 | 8.276E-02         | 8.035E-03 | 0.070   |
| SB-122  | 1.323E+00                          |              | 2.375E+00 | 3.966E+00         | 4.228E-01 | 0.334   |
| I-123   | 3.311E-01                          |              | 2.213E+00 | Half-Life         | too short |         |
| TE-123M | 1.914E-03                          |              | 2.558E-02 | 4.253E-02         | 4.130E-03 | 0.045   |
| I-124   | 1.730E-01                          |              | 7.342E-01 | 1.193E+00         | 1.297E-01 | 0.145   |
| SB-124  | -1.717E-03                         |              | 8.194E-02 | 1.355E-01         | 1.171E-02 | -0.013  |
| SB-125  | 6.427E-02                          |              | 9.921E-02 | 1.699E-01         | 1.642E-02 | 0.378   |
| TE-125M | 6.601E+00                          |              | 6.945E+00 | 1.214E+01         | 1.613E+00 | 0.544   |
| I-126   | 1.459E-01                          |              | 2.479E-01 | 3.806E-01         | 4.214E-02 | 0.383   |
| SB-126  | 3.361E-02                          |              | 1.783E-01 | 2.627E-01         | 2.867E-02 | 0.128   |
| SB-127  | 7.825E-01                          |              | 1.480E+00 | 2.564E+00         | 3.403E-01 | 0.305   |
| XE-127  | -1.879E-02                         |              | 4.749E-02 | 7.580E-02         | 7.383E-03 | -0.248  |
| I-131   | -4.912E-02                         |              | 1.234E-01 | 2.008E-01         | 2.060E-02 | -0.245  |
| TE-132  | 8.085E-01                          |              | 6.615E-01 | 1.112E+00         | 1.852E-01 | 0.727   |
| BA-133  | -4.959E-02                         |              | 5.257E-02 | 7.053E-02         | 1.000E-02 | -0.703  |
| I-133   | -6.513E-03                         |              | 3.049E-03 | Half-Life         | too short |         |
| CS-134  | 1.306E-01                          | +            | 5.840E-02 | 1.002E-01         | 1.055E-02 | 1.303   |
| CS-135  | 2.118E-01                          |              | 1.788E-01 | 2.730E-01         | 3.295E-02 | 0.776   |
| I-135   | -2.335E+09                         |              | 2.079E+09 | Half-Life         | too short |         |
| CS-136  | 5.341E-02                          |              | 1.128E-01 | 1.974E-01         | 1.847E-02 | 0.270   |
| CE-139  | -7.208E-03                         |              | 2.775E-02 | 4.531E-02         | 4.040E-03 | -0.159  |
| BA-140  | -1.590E-01                         |              | 2.894E-01 | 4.368E-01         | 1.471E-01 | -0.364  |
| LA-140  | -2.068E-02                         |              | 9.710E-02 | 1.571E-01         | 1.306E-02 | -0.132  |
| CE-141  | 3.832E-02                          |              | 6.028E-02 | 9.317E-02         | 1.036E-02 | 0.411   |
| CE-143  | 4.456E-04                          |              | 9.199E-05 | Half-Life         | too short |         |
| CE-144  | -4.077E-03                         |              | 1.855E-01 | 2.791E-01         | 4.935E-02 | -0.015  |
| PM-144  | -3.033E-03                         |              | 3.834E-02 | 6.342E-02         | 6.979E-03 | -0.048  |
| PR-144  | -2.055E-01                         |              | 2.598E+00 | 4.298E+00         | 4.728E-01 | -0.048  |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| PM-146  | 5.210E-03                          |              | 4.789E-02 | 7.897E-02           | 9.221E-03 | 0.066   |
| ND-147  | -5.118E-01                         |              | 6.208E-01 | 9.229E-01           | 1.483E-01 | -0.555  |
| PM-149  | 8.741E+00                          |              | 9.120E+01 | 1.451E+02           | 2.475E+01 | 0.060   |
| EU-152  | -2.889E-02                         |              | 1.035E-01 | 1.647E-01           | 1.769E-02 | -0.175  |
| GD-153  | -3.615E-02                         |              | 6.302E-02 | 9.435E-02           | 1.063E-02 | -0.383  |
| EU-154  | 1.322E-02                          |              | 1.219E-01 | 2.030E-01           | 2.231E-02 | 0.065   |
| EU-155  | 1.070E-01                          |              | 8.303E-02 | 1.464E-01           | 1.730E-02 | 0.731   |
| TB-160  | 2.944E-02                          |              | 1.420E-01 | 2.364E-01           | 2.291E-02 | 0.125   |
| HO-166M | 5.979E-02                          |              | 7.151E-02 | 1.257E-01           | 1.376E-02 | 0.476   |
| TM-171  | -2.730E+00                         |              | 1.356E+01 | 1.958E+01           | 1.943E+00 | -0.139  |
| LU-176  | -1.621E-02                         |              | 2.380E-02 | 3.857E-02           | 4.209E-03 | -0.420  |
| LU-177  | 4.430E+00                          | +            | 1.714E+00 | 2.041E+00           | 2.012E-01 | 2.171   |
| LU-177M | -2.018E-01                         |              | 1.983E-01 | 3.045E-01           | 2.846E-02 | -0.663  |
| HF-181  | -5.562E-02                         |              | 4.773E-02 | 7.017E-02           | 7.050E-03 | -0.793  |
| W-181   | -3.343E-02                         |              | 1.571E-01 | 2.270E-01           | 2.247E-02 | -0.147  |
| TA-182  | 2.132E-01                          |              | 2.451E-01 | 4.312E-01           | 3.546E-02 | 0.494   |
| RE-183  | -6.412E-03                         |              | 1.020E-01 | 1.658E-01           | 1.543E-02 | -0.039  |
| RE-184  | 9.711E-02                          |              | 2.304E-01 | 3.771E-01           | 4.044E-02 | 0.258   |
| OS-185  | -5.987E-02                         |              | 4.660E-02 | 6.893E-02           | 7.606E-03 | -0.868  |
| RE-188  | 4.093E-02                          |              | 1.579E-01 | 2.630E-01           | 2.649E-02 | 0.156   |
| W-188   | -5.466E+00                         |              | 8.225E+00 | 1.172E+01           | 1.298E+00 | -0.466  |
| IR-192  | 3.877E-03                          |              | 3.488E-02 | 5.919E-02           | 6.393E-03 | 0.065   |
| AU-195  | 3.390E-01                          |              | 1.739E-01 | 2.997E-01           | 3.400E-02 | 1.131   |
| TL-200  | 7.904E-05                          |              | 2.182E-04 | Half-Life too short |           |         |
| TL-201  | 1.624E+00                          |              | 6.338E+00 | 1.058E+01           | 9.464E-01 | 0.153   |
| TL-202  | 8.595E-02                          |              | 7.777E-02 | 1.361E-01           | 1.311E-02 | 0.632   |
| HG-203  | -3.218E-03                         |              | 4.593E-02 | 6.427E-02           | 7.295E-03 | -0.050  |
| BI-207  | 5.951E-02                          |              | 5.995E-02 | 1.087E-01           | 9.699E-03 | 0.548   |
| TL-207  | -3.182E-01                         |              | 7.708E-01 | 1.105E+00           | 2.076E-01 | -0.288  |
| PO-209  | 1.171E+00                          |              | 8.772E+00 | 1.444E+01           | 1.370E+00 | 0.081   |
| PB-211  | -5.208E-01                         |              | 1.135E+00 | 1.747E+00           | 1.096E+00 | -0.298  |
| BI-212  | 1.752E+00                          | +            | 6.978E-01 | 7.461E-01           | 8.965E-02 | 2.349   |
| PO-215  | -3.182E-01                         |              | 7.708E-01 | 1.105E+00           | 2.076E-01 | -0.288  |
| RN-219  | 2.541E-01                          |              | 4.736E-01 | 8.052E-01           | 1.238E-01 | 0.316   |
| RN-220  | 2.601E+01                          |              | 2.967E+01 | 5.084E+01           | 5.375E+00 | 0.512   |
| RA-223  | -3.182E-01                         |              | 7.708E-01 | 1.105E+00           | 2.076E-01 | -0.288  |
| AC-227  | -8.893E-02                         |              | 3.845E-01 | 6.050E-01           | 1.008E-01 | -0.147  |
| TH-227  | -8.893E-02                         |              | 3.846E-01 | 6.050E-01           | 1.161E-01 | -0.147  |
| TH-229  | -4.719E-01                         |              | 4.883E-01 | 7.564E-01           | 7.216E-02 | -0.624  |
| PA-231  | 4.033E-01                          |              | 1.506E+00 | 2.423E+00           | 4.055E-01 | 0.166   |
| TH-231  | -3.182E-01                         |              | 7.708E-01 | 1.105E+00           | 2.076E-01 | -0.288  |
| U-231   | -1.890E-01                         |              | 7.688E-01 | 1.173E+00           | 1.310E-01 | -0.161  |
| PA-233  | -2.061E-03                         |              | 6.368E-02 | 1.073E-01           | 1.185E-02 | -0.019  |
| PA-234  | -6.723E-02                         |              | 3.415E-01 | 5.404E-01           | 1.033E-01 | -0.124  |
| PA-234M | 3.788E+00                          |              | 5.899E+00 | 1.012E+01           | 1.061E+00 | 0.374   |
| NP-236  | 6.075E-03                          |              | 7.185E-02 | 1.194E-01           | 1.137E-02 | 0.051   |
| NP-239  | -1.782E-01                         |              | 1.546E-01 | 2.464E-01           | 3.087E-02 | -0.723  |
| AM-241  | 7.311E-02                          |              | 5.548E-02 | 8.578E-02           | 8.913E-03 | 0.852   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| CM-243  | 2.207E-02                          |              | 7.060E-02 | 1.217E-01         | 1.417E-02 | 0.181   |
| AM-246  | 3.045E-02                          |              | 1.689E-01 | 2.866E-01         | 2.535E-02 | 0.106   |
| CM-247  | 1.555E-02                          |              | 4.298E-02 | 7.253E-02         | 6.686E-03 | 0.214   |
| CF-249  | 9.867E-03                          |              | 4.083E-02 | 6.877E-02         | 6.328E-03 | 0.143   |
| CF-251  | 4.344E-02                          |              | 1.175E-01 | 1.964E-01         | 1.798E-02 | 0.221   |



# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC
*                                     2040 Savage Road
*                                     Charleston, SC 29414
*****
*
*                               DETECTOR DATA
*
* Configuration      : SYS$SYSROOT:[ALPHA.ARCHIVE.GAMMA]G244630010
* Acquisition date   : 23-JAN-2010 11:48:51 Detector SN#      :
* Detector ID        : GAM25                               Sensitivity      : 5.000
* Geometry           : CAN                                 Energy tolerance: 1.500
* Elapsed live time  : 0 02:00:00.00                      Abundance limit : 75.000
* Elapsed real time  : 0 02:00:01.99                      Half life ratio  : 8.000
*****
*
*                               SAMPLE DATA
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID
* Sample ID          : G244630010                      Analyst initials: MXR1
* Batch Number       : 941639                          Sample Quantity : 1.1646E+02 GRAM
* Recovery           : 1.00000                          Carrier Weight  : 0.00000
*****
*
*                               QC DATA
*
* CALIB. DATE/TIME   : 7-OCT-2009 09:38:43 MS Isotope      :
* MSD DPM             : 0.000                            MSD Isotope      :
* LCS DPM             : 0.000                            LCS Isotope      :
* LCSD DPM            : 0.000                            LCSD Isotope     :
*****

```

## Combined Activity-MDA Report

### ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act Error | DLC<br>(pCi/GRAM ) | TPU       |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 2.720E+01               | 2.947E+00 | 3.181E-01          | 1.504E+00 |
| CD-109  | 4.271E+00               | 7.847E-01 | 4.092E-01          | 4.003E-01 |
| SN-126  | 4.199E-01               | 7.714E-02 | 4.014E-02          | 3.936E-02 |
| BA-137M | 9.180E-01               | 1.355E-01 | 4.110E-02          | 6.912E-02 |
| CS-137  | 9.705E-01               | 1.433E-01 | 4.344E-02          | 7.311E-02 |
| TL-208  | 6.775E-01               | 1.178E-01 | 3.212E-02          | 6.008E-02 |
| BI-210  | 3.274E+00               | 7.520E-01 | 3.342E-01          | 3.837E-01 |
| PB-210  | 3.274E+00               | 7.520E-01 | 3.342E-01          | 3.837E-01 |
| PO-210  | 3.274E+00               | 7.413E-01 | 3.342E-01          | 3.782E-01 |
| BI-211  | 4.304E+00               | 6.728E-01 | 1.743E-01          | 3.432E-01 |
| PB-212  | 2.054E+00               | 2.587E-01 | 4.489E-02          | 1.320E-01 |
| PO-212  | 2.054E+00               | 2.587E-01 | 4.489E-02          | 1.320E-01 |
| BI-214  | 1.325E+00               | 2.315E-01 | 6.222E-02          | 1.181E-01 |
| PB-214  | 1.497E+00               | 2.462E-01 | 6.078E-02          | 1.256E-01 |
| PO-214  | 1.497E+00               | 2.462E-01 | 6.078E-02          | 1.256E-01 |
| PO-216  | 2.054E+00               | 2.587E-01 | 4.489E-02          | 1.320E-01 |
| PO-218  | 1.497E+00               | 2.462E-01 | 6.078E-02          | 1.256E-01 |
| RA-224  | 2.746E+00               | 1.053E+00 | 5.115E-01          | 5.371E-01 |
| RA-226  | 1.325E+00               | 2.315E-01 | 6.222E-02          | 1.181E-01 |
| AC-228  | 1.962E+00               | 4.392E-01 | 1.061E-01          | 2.241E-01 |
| RA-228  | 1.962E+00               | 4.392E-01 | 1.061E-01          | 2.241E-01 |
| TH-228  | 2.085E+00               | 2.626E-01 | 4.557E-02          | 1.340E-01 |
| TH-230  | 1.325E+00               | 2.315E-01 | 6.222E-02          | 1.181E-01 |
| TH-232  | 1.962E+00               | 4.392E-01 | 1.061E-01          | 2.241E-01 |
| TH-234  | 4.402E+00               | 1.224E+00 | 4.119E-01          | 6.244E-01 |
| U-234   | 1.325E+00               | 2.315E-01 | 6.222E-02          | 1.181E-01 |
| U-235   | 3.273E-01               | 2.197E-01 | 1.549E-01          | 1.121E-01 |
| NP-237  | 1.233E+00               | 3.369E-01 | 1.301E-01          | 1.719E-01 |
| U-238   | 4.402E+00               | 1.224E+00 | 4.119E-01          | 6.244E-01 |
| AM-243  | 3.859E-01               | 5.750E-02 | 2.587E-02          | 2.934E-02 |
| ANH-511 | 1.820E-01               | 8.292E-02 | 2.630E-02          | 4.231E-02 |

### ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L Act error | DLC<br>(pCi/GRAM ) | TPU                  |
|---------|-------------------------------------|---------------|--------------------|----------------------|
| BE-7    | 1.315E-01                           | 3.484E-01     | 2.997E-01          | 1.777E-01 NOT IDENT. |
| NA-22   | 2.170E-03                           | 4.308E-02     | 3.629E-02          | 2.198E-02 NOT IDENT. |
| NA-24   | 3.577E+04                           | 7.703E+05     | 0.000E+00          | 3.930E+05 SHORT HLIF |
| AL-26   | 1.967E-02                           | 3.028E-02     | 2.870E-02          | 1.545E-02 NOT IDENT. |
| TI-44   | 4.271E-01                           | 5.365E-02     | 2.416E-02          | 2.737E-02 FAIL ABUN  |
| SC-46   | 6.782E-03                           | 4.016E-02     | 3.400E-02          | 2.049E-02 FAIL ABUN  |
| V-48    | -8.055E-02                          | 7.476E-02     | 5.340E-02          | 3.815E-02 NOT IDENT. |
| CR-51   | -1.600E-01                          | 3.713E-01     | 3.155E-01          | 1.895E-01 NOT IDENT. |
| MN-52   | 1.714E-01                           | 2.508E-01     | 2.270E-01          | 1.280E-01 NOT IDENT. |
| MN-54   | 1.058E-02                           | 4.525E-02     | 3.859E-02          | 2.309E-02 NOT IDENT. |
| CO-56   | 1.819E-02                           | 4.351E-02     | 3.775E-02          | 2.220E-02 FAIL ABUN  |
| CO-57   | -6.283E-03                          | 2.040E-02     | 1.772E-02          | 1.041E-02 NOT IDENT. |
| CO-58   | -1.722E-02                          | 4.276E-02     | 3.455E-02          | 2.182E-02 NOT IDENT. |
| FE-59   | -9.547E-02                          | 1.077E-01     | 8.412E-02          | 5.496E-02 FAIL ABUN  |
| CO-60   | -7.109E-03                          | 4.202E-02     | 3.426E-02          | 2.144E-02 NOT IDENT. |
| ZN-65   | -6.586E-02                          | 1.237E-01     | 8.451E-02          | 6.312E-02 NOT IDENT. |
| GE-68   | 2.291E-01                           | 1.432E+00     | 1.238E+00          | 7.307E-01 NOT IDENT. |
| AS-73   | 9.150E-02                           | 1.882E-01     | 1.619E-01          | 9.603E-02 NOT IDENT. |
| AS-74   | 9.423E-02                           | 1.025E-01     | 8.985E-02          | 5.232E-02 NOT IDENT. |
| SE-75   | 1.267E-02                           | 4.445E-02     | 3.551E-02          | 2.268E-02 NOT IDENT. |
| BR-77   | 6.868E-01                           | 1.094E+01     | 9.141E+00          | 5.584E+00 FAIL ABUN  |
| SR-82   | -1.477E-01                          | 4.188E-01     | 3.425E-01          | 2.137E-01 NOT IDENT. |
| RB-83   | 1.270E-02                           | 7.508E-02     | 6.322E-02          | 3.831E-02 NOT IDENT. |
| RB-84   | -3.750E-02                          | 6.775E-02     | 5.273E-02          | 3.456E-02 NOT IDENT. |
| KR-85   | 8.305E+00                           | 9.058E+00     | 7.120E+00          | 4.621E+00 NOT IDENT. |
| SR-85   | 4.253E-02                           | 4.638E-02     | 3.646E-02          | 2.366E-02 NOT IDENT. |
| RB-86   | 4.400E-01                           | 8.637E-01     | 7.697E-01          | 4.407E-01 NOT IDENT. |
| Y-88    | -6.880E-03                          | 4.489E-02     | 3.653E-02          | 2.290E-02 NOT IDENT. |
| ZR-88   | 9.622E-04                           | 3.060E-02     | 2.620E-02          | 1.561E-02 NOT IDENT. |
| Y-91    | 5.925E+00                           | 2.203E+01     | 1.897E+01          | 1.124E+01 NOT IDENT. |
| NB-94   | 1.113E-02                           | 3.928E-02     | 3.364E-02          | 2.004E-02 NOT IDENT. |
| NB-95   | 2.257E-02                           | 5.587E-02     | 4.267E-02          | 2.851E-02 NOT IDENT. |
| NB-95M  | -9.972E-03                          | 1.303E-01     | 9.617E-02          | 6.647E-02 NOT IDENT. |
| ZR-95   | 9.087E-02                           | 7.722E-02     | 7.103E-02          | 3.940E-02 NOT IDENT. |
| NB-97   | 7.720E+04                           | 1.093E+05     | 0.000E+00          | 5.579E+04 SHORT HLIF |
| ZR-97   | 2.155E+06                           | 1.958E+06     | 0.000E+00          | 9.990E+05 SHORT HLIF |
| MO-99   | -1.168E+01                          | 1.237E+01     | 9.501E+00          | 6.313E+00 NOT IDENT. |
| TC-99M  | 2.343E+16                           | 2.595E+16     | 0.000E+00          | 0.000E+00 SHORT HLIF |
| RH-101  | -4.518E-03                          | 3.196E-02     | 2.649E-02          | 1.631E-02 NOT IDENT. |
| RH-102  | -3.720E-02                          | 3.234E-02     | 2.465E-02          | 1.650E-02 FAIL ABUN  |
| RU-103  | 2.288E-02                           | 4.454E-02     | 3.848E-02          | 2.272E-02 FAIL ABUN  |
| RH-106  | -2.781E-02                          | 3.319E-01     | 2.846E-01          | 1.693E-01 FAIL ABUN  |
| RU-106  | -2.781E-02                          | 3.319E-01     | 2.846E-01          | 1.693E-01 FAIL ABUN  |
| AG-108M | -9.432E-03                          | 3.522E-02     | 2.926E-02          | 1.797E-02 NOT IDENT. |
| AG-110M | 2.232E-02                           | 4.407E-02     | 3.460E-02          | 2.248E-02 NOT IDENT. |
| IN-111  | 7.409E-01                           | 1.089E+00     | 8.433E-01          | 5.555E-01 NOT IDENT. |
| IN-113M | -8.960E-03                          | 4.447E-02     | 3.751E-02          | 2.269E-02 NOT IDENT. |
| SN-113  | -8.960E-03                          | 4.447E-02     | 3.751E-02          | 2.269E-02 NOT IDENT. |
| IN-114M | 1.866E-01                           | 1.851E-01     | 1.486E-01          | 9.446E-02 NOT IDENT. |
| CD-115  | -2.957E+00                          | 1.069E+01     | 8.661E+00          | 5.455E+00 NOT IDENT. |
| SN-117M | 5.787E-03                           | 4.869E-02     | 4.220E-02          | 2.484E-02 NOT IDENT. |
| SB-122  | 1.323E+00                           | 2.327E+00     | 1.997E+00          | 1.187E+00 NOT IDENT. |
| I-123   | 3.311E+05                           | 4.337E+06     | 0.000E+00          | 2.213E+06 SHORT HLIF |
| TE-123M | 1.914E-03                           | 2.507E-02     | 2.169E-02          | 1.279E-02 NOT IDENT. |
| I-124   | 1.730E-01                           | 7.195E-01     | 6.002E-01          | 3.671E-01 NOT IDENT. |
| SB-124  | -1.717E-03                          | 8.030E-02     | 6.745E-02          | 4.097E-02 FAIL ABUN  |
| SB-125  | 6.427E-02                           | 9.722E-02     | 8.580E-02          | 4.960E-02 FAIL ABUN  |
| TE-125M | 6.601E+00                           | 6.806E+00     | 6.215E+00          | 3.473E+00 NOT IDENT. |
| I-126   | 1.459E-01                           | 2.429E-01     | 1.913E-01          | 1.239E-01 NOT IDENT. |
| SB-126  | 3.361E-02                           | 1.748E-01     | 1.319E-01          | 8.917E-02 FAIL ABUN  |
| SB-127  | 7.825E-01                           | 1.450E+00     | 1.288E+00          | 7.400E-01 NOT IDENT. |
| XE-127  | -1.879E-02                          | 4.654E-02     | 3.856E-02          | 2.375E-02 FAIL ABUN  |
| I-131   | -4.912E-02                          | 1.210E-01     | 1.015E-01          | 6.171E-02 NOT IDENT. |
| TE-132  | 8.085E-01                           | 6.483E-01     | 5.652E-01          | 3.308E-01 NOT IDENT. |
| BA-133  | -4.959E-02                          | 5.152E-02     | 3.567E-02          | 2.629E-02 FAIL ABUN  |
| I-133   | -6.513E+03                          | 5.976E+03     | 0.000E+00          | 3.049E+03 SHORT HLIF |
| CS-134  | 1.306E-01                           | 5.723E-02     | 5.027E-02          | 2.920E-02 FAIL ABUN  |
| CS-135  | 2.118E-01                           | 1.752E-01     | 1.385E-01          | 8.941E-02 NOT IDENT. |
| I-135   | -2.335E+15                          | 4.076E+15     | 0.000E+00          | 2.079E+15 SHORT HLIF |
| CS-136  | 5.341E-02                           | 1.105E-01     | 9.877E-02          | 5.639E-02 FAIL ABUN  |
| CE-139  | -7.208E-03                          | 2.720E-02     | 2.309E-02          | 1.388E-02 NOT IDENT. |
| BA-140  | -1.590E-01                          | 2.836E-01     | 2.200E-01          | 1.447E-01 NOT IDENT. |
| LA-140  | -2.068E-02                          | 9.516E-02     | 7.824E-02          | 4.855E-02 FAIL ABUN  |
| CE-141  | 3.832E-02                           | 5.907E-02     | 4.755E-02          | 3.014E-02 NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| CE-143  | 4.456E+02  | 1.803E+02 | 0.000E+00 | 9.199E+01 | SHORT HLIF |
| CE-144  | -4.077E-03 | 1.818E-01 | 1.426E-01 | 9.277E-02 | NOT IDENT. |
| PM-144  | -3.033E-03 | 3.757E-02 | 3.186E-02 | 1.917E-02 | NOT IDENT. |
| PR-144  | -2.055E-01 | 2.546E+00 | 2.159E+00 | 1.299E+00 | NOT IDENT. |
| PM-146  | 5.210E-03  | 4.693E-02 | 3.985E-02 | 2.394E-02 | NOT IDENT. |
| ND-147  | -5.118E-01 | 6.084E-01 | 4.649E-01 | 3.104E-01 | FAIL ABUN  |
| PM-149  | 8.741E+00  | 8.937E+01 | 7.356E+01 | 4.560E+01 | NOT IDENT. |
| EU-152  | -2.889E-02 | 1.014E-01 | 8.334E-02 | 5.176E-02 | FAIL ABUN  |
| GD-153  | -3.615E-02 | 6.176E-02 | 4.835E-02 | 3.151E-02 | FAIL ABUN  |
| EU-154  | 1.322E-02  | 1.195E-01 | 1.014E-01 | 6.096E-02 | NOT IDENT. |
| EU-155  | 1.070E-01  | 8.136E-02 | 7.495E-02 | 4.151E-02 | FAIL ABUN  |
| TB-160  | 2.944E-02  | 1.391E-01 | 1.185E-01 | 7.099E-02 | FAIL ABUN  |
| HO-166M | 5.979E-02  | 7.008E-02 | 6.314E-02 | 3.576E-02 | NOT IDENT. |
| TM-171  | -2.730E+00 | 1.329E+01 | 1.007E+01 | 6.778E+00 | NOT IDENT. |
| LU-176  | -1.621E-02 | 2.332E-02 | 1.954E-02 | 1.190E-02 | FAIL ABUN  |
| LU-177  | 4.430E+00  | 1.680E+00 | 1.038E+00 | 8.572E-01 | FAIL ABUN  |
| LU-177M | -2.018E-01 | 1.944E-01 | 1.538E-01 | 9.917E-02 | FAIL ABUN  |
| HF-181  | -5.562E-02 | 4.678E-02 | 3.538E-02 | 2.387E-02 | NOT IDENT. |
| W-181   | -3.343E-02 | 1.540E-01 | 1.168E-01 | 7.856E-02 | NOT IDENT. |
| TA-182  | 2.132E-01  | 2.402E-01 | 2.154E-01 | 1.226E-01 | FAIL ABUN  |
| RE-183  | -6.412E-03 | 9.991E-02 | 8.452E-02 | 5.098E-02 | FAIL ABUN  |
| RE-184  | 9.711E-02  | 2.258E-01 | 1.914E-01 | 1.152E-01 | NOT IDENT. |
| OS-185  | -5.987E-02 | 4.567E-02 | 3.466E-02 | 2.330E-02 | NOT IDENT. |
| RE-188  | 4.093E-02  | 1.547E-01 | 1.341E-01 | 7.893E-02 | NOT IDENT. |
| W-188   | -5.466E+00 | 8.060E+00 | 5.940E+00 | 4.112E+00 | FAIL ABUN  |
| IR-192  | 3.877E-03  | 3.419E-02 | 2.997E-02 | 1.744E-02 | FAIL ABUN  |
| AU-195  | 3.390E-01  | 1.704E-01 | 1.535E-01 | 8.695E-02 | FAIL ABUN  |
| TL-200  | 7.904E+01  | 4.276E+02 | 0.000E+00 | 2.182E+02 | SHORT HLIF |
| TL-201  | 1.624E+00  | 6.212E+00 | 5.392E+00 | 3.169E+00 | NOT IDENT. |
| TL-202  | 8.595E-02  | 7.621E-02 | 6.867E-02 | 3.888E-02 | NOT IDENT. |
| HG-203  | -3.218E-03 | 4.501E-02 | 3.259E-02 | 2.296E-02 | NOT IDENT. |
| BI-207  | 5.951E-02  | 5.875E-02 | 5.435E-02 | 2.998E-02 | FAIL ABUN  |
| TL-207  | -3.182E-01 | 7.554E-01 | 5.595E-01 | 3.854E-01 | FAIL ABUN  |
| PO-209  | 1.171E+00  | 8.597E+00 | 7.236E+00 | 4.386E+00 | NOT IDENT. |
| PB-211  | -5.208E-01 | 1.113E+00 | 8.823E-01 | 5.676E-01 | NOT IDENT. |
| BI-212  | 1.752E+00  | 6.839E-01 | 3.747E-01 | 3.489E-01 | FAIL ABUN  |
| PO-215  | -3.182E-01 | 7.554E-01 | 5.595E-01 | 3.854E-01 | FAIL ABUN  |
| RN-219  | 2.541E-01  | 4.641E-01 | 4.068E-01 | 2.368E-01 | FAIL ABUN  |
| RN-220  | 2.601E+01  | 2.908E+01 | 2.560E+01 | 1.483E+01 | NOT IDENT. |
| RA-223  | -3.182E-01 | 7.554E-01 | 5.595E-01 | 3.854E-01 | FAIL ABUN  |
| AC-227  | -8.893E-02 | 3.768E-01 | 3.070E-01 | 1.922E-01 | NOT IDENT. |
| TH-227  | -8.893E-02 | 3.769E-01 | 3.070E-01 | 1.923E-01 | FAIL ABUN  |
| TH-229  | -4.719E-01 | 4.785E-01 | 3.850E-01 | 2.441E-01 | FAIL ABUN  |
| PA-231  | 4.033E-01  | 1.475E+00 | 1.228E+00 | 7.528E-01 | NOT IDENT. |
| TH-231  | -3.182E-01 | 7.554E-01 | 5.595E-01 | 3.854E-01 | FAIL ABUN  |
| U-231   | -1.890E-01 | 7.534E-01 | 6.010E-01 | 3.844E-01 | FAIL ABUN  |
| PA-233  | -2.061E-03 | 6.241E-02 | 5.436E-02 | 3.184E-02 | FAIL ABUN  |
| PA-234  | -6.723E-02 | 3.347E-01 | 2.706E-01 | 1.707E-01 | FAIL ABUN  |
| PA-234M | 3.788E+00  | 5.781E+00 | 5.067E+00 | 2.949E+00 | NOT IDENT. |
| NP-236  | 6.075E-03  | 7.041E-02 | 6.089E-02 | 3.592E-02 | NOT IDENT. |
| NP-239  | -1.782E-01 | 1.515E-01 | 1.260E-01 | 7.729E-02 | FAIL ABUN  |
| AM-241  | 7.311E-02  | 5.437E-02 | 4.417E-02 | 2.774E-02 | NOT IDENT. |
| CM-243  | 2.207E-02  | 6.919E-02 | 6.232E-02 | 3.530E-02 | FAIL ABUN  |
| AM-246  | 3.045E-02  | 1.655E-01 | 1.434E-01 | 8.444E-02 | NOT IDENT. |
| CM-247  | 1.555E-02  | 4.212E-02 | 3.664E-02 | 2.149E-02 | FAIL ABUN  |
| CF-249  | 9.867E-03  | 4.001E-02 | 3.475E-02 | 2.041E-02 | NOT IDENT. |
| CF-251  | 4.344E-02  | 1.151E-01 | 1.000E-01 | 5.875E-02 | NOT IDENT. |

\*\*\*\*\*  
 \* GEL Laboratories LLC \*  
 \* 2040 SAVAGE ROAD \*  
 \* CHARLESTON ,SC 29417 \*  
 \* GAMMA SPECTROSCOPY BACKGROUND REPORT \*  
 \*\*\*\*\*

ENERGY MDA COUNTS

|       |          |
|-------|----------|
| 46.50 | 257.8192 |
| 46.50 | 257.8192 |
| 46.50 | 257.8192 |
| 48.70 | 246.7741 |
| 49.72 | 260.8614 |
| 51.35 | 308.0728 |
| 52.39 | 262.4240 |
| 52.97 | 287.1802 |
| 53.15 | 300.5603 |
| 53.44 | 305.3181 |
| 54.07 | 291.8029 |
| 56.28 | 287.7727 |
| 56.28 | 287.7767 |
| 57.37 | 0.0000   |
| 57.53 | 364.0303 |
| 57.53 | 364.0327 |
| 57.60 | 340.6747 |
| 57.98 | 361.3198 |
| 57.98 | 361.3198 |
| 59.32 | 352.3422 |
| 59.32 | 352.3422 |
| 59.40 | 314.9573 |
| 59.54 | 315.1271 |
| 59.72 | 306.3362 |
| 60.01 | 344.2606 |
| 61.10 | 389.4697 |
| 61.14 | 403.1169 |
| 61.30 | 403.3614 |
| 63.00 | 393.3893 |
| 63.29 | 393.8111 |
| 63.29 | 393.8111 |
| 63.58 | 394.2309 |
| 64.28 | 395.2423 |
| 65.12 | 364.6560 |
| 65.20 | 364.7619 |
| 65.20 | 364.7619 |
| 66.05 | 438.1313 |
| 66.72 | 408.3530 |
| 66.83 | 408.5174 |
| 66.91 | 408.6306 |
| 67.20 | 388.9845 |
| 67.20 | 388.9845 |
| 67.75 | 421.0536 |
| 67.85 | 414.2411 |
| 68.90 | 413.4291 |
| 68.90 | 413.4291 |
| 69.30 | 464.1501 |
| 69.67 | 488.0993 |
| 70.82 | 478.2931 |
| 70.82 | 478.2931 |
| 70.83 | 478.3087 |
| 72.80 | 456.3081 |
| 72.87 | 456.4143 |
| 72.87 | 456.4143 |
| 74.67 | 462.2947 |
| 74.81 | 462.5056 |
| 74.81 | 462.5056 |
| 74.81 | 462.5056 |
| 74.81 | 462.5056 |
| 74.81 | 462.5056 |
| 74.81 | 462.5056 |
| 74.97 | 462.7462 |
| 75.28 | 463.2126 |
| 75.70 | 463.8453 |
| 77.11 | 465.9483 |
| 77.11 | 465.9483 |

|        |          |
|--------|----------|
| 77.11  | 465.9483 |
| 77.11  | 465.9483 |
| 77.11  | 465.9483 |
| 77.11  | 465.9483 |
| 77.11  | 465.9483 |
| 78.38  | 467.8256 |
| 79.62  | 469.6434 |
| 79.80  | 469.9078 |
| 79.80  | 469.9078 |
| 80.11  | 470.3593 |
| 80.18  | 470.4603 |
| 80.30  | 470.6356 |
| 80.30  | 470.6356 |
| 80.57  | 471.0276 |
| 81.00  | 471.6514 |
| 81.07  | 471.7524 |
| 81.07  | 471.7524 |
| 81.07  | 471.7524 |
| 81.07  | 471.7524 |
| 82.60  | 262.9501 |
| 83.37  | 263.5582 |
| 83.78  | 368.9496 |
| 83.78  | 368.9496 |
| 83.78  | 368.9496 |
| 83.78  | 368.9496 |
| 84.21  | 369.4242 |
| 84.90  | 402.0547 |
| 85.43  | 402.6854 |
| 86.29  | 403.7039 |
| 86.50  | 403.9516 |
| 86.54  | 403.9991 |
| 86.59  | 404.0592 |
| 86.72  | 328.6275 |
| 86.79  | 328.6926 |
| 86.94  | 328.8391 |
| 87.30  | 329.1829 |
| 87.30  | 329.1829 |
| 87.30  | 329.1829 |
| 87.30  | 329.1829 |
| 87.30  | 329.1829 |
| 87.30  | 329.1829 |
| 87.57  | 329.4413 |
| 87.88  | 329.7363 |
| 88.03  | 329.8787 |
| 88.36  | 330.1920 |
| 88.47  | 330.2979 |
| 89.95  | 331.6976 |
| 91.11  | 332.7860 |
| 92.29  | 339.3113 |
| 92.38  | 339.3972 |
| 92.38  | 339.3972 |
| 93.35  | 340.3090 |
| 94.00  | 340.9189 |
| 94.67  | 341.5412 |
| 94.67  | 341.5453 |
| 94.90  | 341.7604 |
| 94.90  | 341.7604 |
| 94.90  | 341.7604 |
| 94.90  | 341.7604 |
| 95.87  | 293.3489 |
| 95.87  | 293.3489 |
| 96.73  | 321.9145 |
| 97.43  | 325.0547 |
| 98.44  | 241.9009 |
| 98.44  | 241.9009 |
| 98.88  | 248.8103 |
| 99.55  | 263.8929 |
| 99.55  | 263.8929 |
| 99.86  | 280.2946 |
| 100.00 | 280.3967 |
| 100.10 | 280.4736 |
| 103.18 | 304.1971 |
| 103.76 | 260.7590 |
| 105.00 | 241.7230 |
| 105.31 | 254.8720 |
| 108.00 | 321.8210 |
| 109.28 | 235.5826 |

|        |          |
|--------|----------|
| 111.00 | 288.2666 |
| 111.00 | 288.2666 |
| 111.76 | 290.5510 |
| 112.95 | 282.5763 |
| 115.19 | 272.5752 |
| 116.30 | 291.0306 |
| 117.00 | 288.8382 |
| 117.00 | 288.8382 |
| 117.66 | 267.9189 |
| 121.11 | 269.1437 |
| 121.62 | 270.3516 |
| 121.78 | 260.5660 |
| 122.06 | 260.7298 |
| 122.32 | 254.5846 |
| 122.32 | 254.5846 |
| 122.32 | 254.5846 |
| 122.32 | 254.5846 |
| 123.07 | 225.2757 |
| 127.23 | 261.9089 |
| 129.76 | 257.8574 |
| 131.20 | 231.1359 |
| 133.02 | 220.9766 |
| 133.54 | 235.0444 |
| 135.34 | 247.0315 |
| 136.00 | 223.2800 |
| 136.25 | 237.2995 |
| 136.48 | 238.3388 |
| 140.51 | 218.7990 |
| 140.51 | 0.0000   |
| 142.18 | 263.1571 |
| 142.65 | 261.9967 |
| 143.76 | 258.8084 |
| 144.24 | 245.8663 |
| 144.24 | 245.8663 |
| 144.24 | 245.8663 |
| 144.24 | 245.8663 |
| 145.22 | 237.8470 |
| 145.44 | 237.9496 |
| 147.16 | 220.2747 |
| 152.43 | 233.5156 |
| 152.70 | 222.1445 |
| 153.22 | 223.3201 |
| 154.21 | 266.9455 |
| 154.21 | 266.9455 |
| 154.21 | 266.9455 |
| 154.21 | 266.9455 |
| 155.03 | 250.0448 |
| 156.02 | 275.5555 |
| 158.56 | 244.9059 |
| 159.00 | 0.0000   |
| 159.00 | 239.2888 |
| 160.31 | 238.8906 |
| 161.27 | 270.4352 |
| 162.32 | 237.8097 |
| 162.64 | 221.3680 |
| 163.35 | 213.8382 |
| 163.89 | 234.5703 |
| 165.85 | 255.0039 |
| 167.43 | 239.9790 |
| 171.28 | 225.7479 |
| 171.86 | 230.9284 |
| 172.10 | 242.9214 |
| 176.55 | 221.7877 |
| 176.60 | 221.8058 |
| 181.06 | 241.5771 |
| 184.41 | 221.6511 |
| 185.71 | 240.3752 |
| 186.00 | 240.4861 |
| 190.27 | 203.8227 |
| 192.34 | 226.5259 |
| 193.63 | 250.6073 |
| 197.04 | 262.2605 |
| 198.01 | 230.5971 |
| 198.60 | 238.0485 |
| 200.40 | 211.7197 |
| 201.83 | 276.6666 |
| 202.84 | 261.4634 |
| 205.31 | 205.4491 |

|        |          |
|--------|----------|
| 208.36 | 211.1048 |
| 208.81 | 211.2459 |
| 209.75 | 211.5362 |
| 209.75 | 211.5362 |
| 210.97 | 205.5887 |
| 215.65 | 214.4134 |
| 216.55 | 205.1253 |
| 218.09 | 197.0537 |
| 222.10 | 198.1706 |
| 223.80 | 178.2393 |
| 226.40 | 213.3640 |
| 227.00 | 204.9133 |
| 227.08 | 204.9365 |
| 227.20 | 198.4967 |
| 228.16 | 167.4310 |
| 228.18 | 167.4358 |
| 228.18 | 167.4358 |
| 231.56 | 0.0000   |
| 235.69 | 212.7933 |
| 236.00 | 212.8806 |
| 236.00 | 212.8806 |
| 238.63 | 197.1918 |
| 238.63 | 197.1918 |
| 238.63 | 197.1918 |
| 238.63 | 197.1918 |
| 239.00 | 197.2870 |
| 240.98 | 197.8015 |
| 241.98 | 198.0597 |
| 241.98 | 198.0597 |
| 241.98 | 198.0597 |
| 244.69 | 183.8505 |
| 245.39 | 159.1494 |
| 247.94 | 155.6806 |
| 248.90 | 190.9525 |
| 249.79 | 193.3923 |
| 252.40 | 168.3835 |
| 252.85 | 157.3226 |
| 252.85 | 157.3226 |
| 254.15 | 0.0000   |
| 256.20 | 173.6686 |
| 256.20 | 173.6686 |
| 260.50 | 156.5730 |
| 260.90 | 183.6967 |
| 262.80 | 162.6621 |
| 264.65 | 148.0840 |
| 268.24 | 150.0898 |
| 268.79 | 143.3624 |
| 269.46 | 145.7552 |
| 269.46 | 145.7552 |
| 269.46 | 145.7552 |
| 269.46 | 145.7552 |
| 271.23 | 155.7620 |
| 273.65 | 164.7920 |
| 276.40 | 160.7328 |
| 277.35 | 143.0945 |
| 277.60 | 143.1375 |
| 277.60 | 143.1375 |
| 278.00 | 132.8513 |
| 278.60 | 145.0313 |
| 279.20 | 158.9532 |
| 279.53 | 155.5582 |
| 280.46 | 150.5349 |
| 281.68 | 152.4800 |
| 283.67 | 135.4598 |
| 284.30 | 162.2054 |
| 285.00 | 164.6555 |
| 285.90 | 152.0551 |
| 286.10 | 152.0898 |
| 286.10 | 152.0898 |
| 287.40 | 154.6417 |
| 288.45 | 0.0000   |
| 290.67 | 176.4523 |
| 290.80 | 156.8684 |
| 291.72 | 158.4317 |
| 293.26 | 0.0000   |
| 293.70 | 157.3770 |
| 295.21 | 155.7068 |
| 295.21 | 155.7068 |

|        |          |
|--------|----------|
| 295.21 | 155.7068 |
| 295.96 | 201.4429 |
| 296.50 | 238.2091 |
| 297.23 | 241.2244 |
| 298.57 | 193.5459 |
| 299.80 | 161.5057 |
| 299.80 | 161.5057 |
| 300.09 | 161.5559 |
| 300.09 | 161.5559 |
| 300.09 | 161.5559 |
| 300.09 | 161.5559 |
| 300.12 | 161.5614 |
| 301.29 | 157.6349 |
| 302.84 | 194.2716 |
| 303.76 | 192.6895 |
| 303.91 | 182.9501 |
| 304.40 | 155.5016 |
| 304.40 | 155.5016 |
| 304.84 | 158.2433 |
| 306.84 | 147.8919 |
| 308.46 | 141.9029 |
| 311.98 | 142.4343 |
| 316.51 | 142.2135 |
| 318.01 | 146.0437 |
| 319.02 | 162.4411 |
| 319.41 | 159.7986 |
| 320.08 | 153.5852 |
| 323.87 | 158.1777 |
| 323.87 | 158.1777 |
| 323.87 | 158.1777 |
| 323.87 | 158.1777 |
| 325.23 | 165.6646 |
| 328.77 | 153.1344 |
| 333.44 | 157.5206 |
| 334.20 | 152.5088 |
| 334.20 | 152.5088 |
| 334.30 | 152.5240 |
| 338.28 | 149.0793 |
| 338.28 | 149.0793 |
| 338.28 | 149.0793 |
| 338.28 | 149.0793 |
| 338.32 | 149.0842 |
| 338.32 | 149.0842 |
| 338.32 | 149.0842 |
| 340.50 | 132.8049 |
| 340.57 | 132.8137 |
| 344.27 | 141.7604 |
| 345.85 | 140.9182 |
| 350.59 | 0.0000   |
| 351.07 | 134.1760 |
| 351.92 | 134.2859 |
| 351.92 | 134.2859 |
| 351.92 | 134.2859 |
| 355.39 | 0.0000   |
| 356.01 | 152.7833 |
| 364.48 | 138.7164 |
| 366.43 | 131.4048 |
| 367.43 | 123.0096 |
| 367.94 | 0.0000   |
| 369.80 | 119.4843 |
| 374.96 | 145.7744 |
| 383.85 | 122.9336 |
| 387.95 | 109.8861 |
| 388.63 | 108.0232 |
| 391.69 | 114.1162 |
| 391.69 | 114.1162 |
| 392.90 | 109.3963 |
| 398.62 | 144.9644 |
| 400.65 | 115.0039 |
| 401.10 | 127.7238 |
| 401.81 | 128.7773 |
| 402.60 | 135.6976 |
| 404.84 | 151.6084 |
| 410.95 | 115.0326 |
| 411.60 | 130.8346 |
| 413.65 | 143.8680 |
| 414.70 | 133.1461 |
| 415.30 | 130.2517 |



|        |          |
|--------|----------|
| 415.76 | 104.6365 |
| 417.63 | 0.0000   |
| 418.52 | 118.7274 |
| 423.70 | 128.1772 |
| 427.08 | 104.6187 |
| 427.89 | 97.7084  |
| 432.53 | 111.0864 |
| 433.93 | 112.2119 |
| 439.47 | 100.6332 |
| 439.56 | 95.6088  |
| 439.89 | 95.6335  |
| 443.98 | 118.1622 |
| 444.90 | 123.3012 |
| 445.03 | 117.2496 |
| 445.03 | 117.2496 |
| 445.03 | 117.2496 |
| 445.03 | 117.2496 |
| 453.90 | 101.7776 |
| 463.38 | 95.3415  |
| 468.07 | 110.2899 |
| 473.00 | 87.7730  |
| 475.06 | 116.8658 |
| 475.35 | 123.0983 |
| 476.78 | 94.2339  |
| 477.59 | 92.2172  |
| 477.96 | 86.0244  |
| 482.03 | 113.3110 |
| 484.57 | 83.3179  |
| 487.03 | 79.2946  |
| 490.36 | 0.0000   |
| 492.35 | 78.5534  |
| 497.08 | 86.1766  |
| 507.63 | 0.0000   |
| 510.53 | 0.0000   |
| 510.84 | 95.5076  |
| 511.00 | 95.5186  |
| 511.85 | 95.5749  |
| 511.85 | 95.5749  |
| 513.99 | 98.6956  |
| 513.99 | 98.6956  |
| 520.41 | 84.3932  |
| 520.65 | 85.4736  |
| 527.90 | 78.3823  |
| 528.96 | 0.0000   |
| 529.64 | 93.5261  |
| 529.87 | 0.0000   |
| 531.02 | 93.6110  |
| 537.32 | 89.6870  |
| 543.00 | 82.4338  |
| 546.56 | 0.0000   |
| 549.76 | 72.9970  |
| 552.65 | 111.3384 |
| 555.20 | 66.6964  |
| 563.23 | 78.0333  |
| 563.90 | 86.8643  |
| 568.70 | 89.3353  |
| 569.32 | 103.7133 |
| 569.50 | 103.7276 |
| 569.67 | 103.7391 |
| 573.80 | 86.3051  |
| 574.00 | 86.3170  |
| 574.64 | 89.6740  |
| 578.91 | 83.4755  |
| 579.30 | 0.0000   |
| 583.14 | 80.1343  |
| 585.48 | 49.9338  |
| 591.81 | 86.1621  |
| 592.07 | 86.1738  |
| 593.00 | 87.3430  |
| 595.88 | 70.6712  |
| 600.56 | 95.6224  |
| 602.52 | 0.0000   |
| 602.71 | 82.2297  |
| 602.71 | 82.2297  |
| 603.60 | 67.6227  |
| 604.41 | 78.1799  |
| 604.70 | 78.1947  |
| 609.31 | 84.1405  |

|        |          |
|--------|----------|
| 609.31 | 84.1405  |
| 609.31 | 84.1405  |
| 609.31 | 84.1405  |
| 610.33 | 84.1927  |
| 612.46 | 67.9834  |
| 614.37 | 77.1371  |
| 618.01 | 69.1181  |
| 621.84 | 73.8314  |
| 621.84 | 73.8314  |
| 631.29 | 58.6609  |
| 633.02 | 84.4082  |
| 633.10 | 84.4127  |
| 634.78 | 87.2511  |
| 635.90 | 80.8736  |
| 636.97 | 83.6818  |
| 645.85 | 86.8834  |
| 646.12 | 86.8972  |
| 656.30 | 65.0833  |
| 657.75 | 72.8905  |
| 657.90 | 0.0000   |
| 661.65 | 119.6796 |
| 661.65 | 119.6796 |
| 664.57 | 0.0000   |
| 666.33 | 84.1487  |
| 666.33 | 84.1487  |
| 675.00 | 75.1582  |
| 677.61 | 60.2125  |
| 685.20 | 65.1861  |
| 692.80 | 80.6317  |
| 695.00 | 84.5239  |
| 696.49 | 77.9380  |
| 696.49 | 77.9380  |
| 697.00 | 78.9108  |
| 697.49 | 74.1762  |
| 698.33 | 85.6274  |
| 698.50 | 86.5855  |
| 699.00 | 80.8994  |
| 702.63 | 79.1479  |
| 706.10 | 96.4875  |
| 706.58 | 0.0000   |
| 706.67 | 94.6059  |
| 709.31 | 81.3414  |
| 711.68 | 68.9854  |
| 713.82 | 88.2468  |
| 717.42 | 66.3097  |
| 720.50 | 65.7742  |
| 721.93 | 0.0000   |
| 722.20 | 83.4950  |
| 722.78 | 78.7019  |
| 722.78 | 78.7019  |
| 722.89 | 78.7059  |
| 722.95 | 69.0701  |
| 723.30 | 69.0824  |
| 724.18 | 61.0774  |
| 727.18 | 68.5784  |
| 733.00 | 62.9703  |
| 735.90 | 51.7435  |
| 739.58 | 75.8177  |
| 742.81 | 53.5485  |
| 744.21 | 60.4061  |
| 747.13 | 68.3013  |
| 751.79 | 76.2842  |
| 752.31 | 86.0857  |
| 753.82 | 69.5093  |
| 755.35 | 47.0273  |
| 756.15 | 50.9666  |
| 756.87 | 54.9076  |
| 763.93 | 50.8354  |
| 765.79 | 77.1438  |
| 766.42 | 83.7341  |
| 766.84 | 82.1106  |
| 776.49 | 69.2976  |
| 778.00 | 72.3210  |
| 778.57 | 71.3496  |
| 778.89 | 71.3619  |
| 783.80 | 56.6284  |
| 785.46 | 61.6443  |
| 792.07 | 46.5470  |

|         |         |
|---------|---------|
| 795.84  | 74.9414 |
| 796.30  | 68.2950 |
| 798.80  | 50.0305 |
| 801.93  | 65.6932 |
| 805.60  | 63.2415 |
| 810.29  | 66.3996 |
| 810.76  | 62.3890 |
| 815.85  | 42.3640 |
| 817.79  | 47.4498 |
| 818.51  | 55.5452 |
| 819.60  | 56.5838 |
| 826.30  | 55.7452 |
| 828.27  | 0.0000  |
| 831.60  | 80.2652 |
| 831.96  | 80.2787 |
| 834.83  | 75.2954 |
| 836.80  | 0.0000  |
| 846.75  | 53.1972 |
| 848.13  | 59.3721 |
| 856.28  | 0.0000  |
| 856.80  | 53.0946 |
| 860.37  | 47.3465 |
| 867.32  | 43.8779 |
| 867.82  | 47.0437 |
| 871.10  | 58.9468 |
| 873.19  | 49.6840 |
| 874.81  | 49.7191 |
| 875.33  | 0.0000  |
| 876.40  | 41.4619 |
| 879.36  | 41.5156 |
| 880.27  | 37.3790 |
| 880.51  | 40.4977 |
| 881.50  | 45.7091 |
| 883.24  | 48.8623 |
| 884.67  | 43.6919 |
| 889.25  | 43.7780 |
| 896.60  | 56.4640 |
| 898.02  | 61.7296 |
| 899.00  | 65.9424 |
| 903.28  | 59.4211 |
| 911.07  | 43.1351 |
| 911.07  | 43.1351 |
| 911.07  | 43.1351 |
| 919.63  | 33.4359 |
| 920.93  | 35.2148 |
| 925.00  | 51.8543 |
| 925.24  | 45.5090 |
| 926.50  | 44.4743 |
| 935.52  | 45.7033 |
| 937.48  | 64.8870 |
| 944.10  | 52.2635 |
| 946.00  | 53.3716 |
| 949.00  | 60.9187 |
| 962.29  | 55.5164 |
| 964.01  | 39.7840 |
| 966.15  | 39.8184 |
| 968.20  | 39.8509 |
| 969.11  | 39.8653 |
| 969.11  | 39.8653 |
| 969.11  | 39.8653 |
| 977.42  | 32.4302 |
| 980.50  | 33.8226 |
| 983.50  | 54.1809 |
| 989.30  | 39.0990 |
| 996.32  | 66.4328 |
| 1001.03 | 52.3711 |
| 1001.68 | 48.0187 |
| 1004.76 | 80.8562 |
| 1021.30 | 0.0000  |
| 1024.50 | 0.0000  |
| 1034.80 | 44.2090 |
| 1036.00 | 48.8378 |
| 1037.82 | 55.3247 |
| 1038.57 | 50.7277 |
| 1038.76 | 0.0000  |
| 1045.16 | 54.5515 |
| 1046.59 | 43.4811 |
| 1048.07 | 40.7272 |

|         |         |
|---------|---------|
| 1050.47 | 48.1745 |
| 1050.47 | 48.1745 |
| 1062.04 | 54.8948 |
| 1063.62 | 42.8236 |
| 1076.63 | 45.8358 |
| 1077.35 | 54.2688 |
| 1078.86 | 55.2333 |
| 1085.78 | 48.8029 |
| 1099.22 | 69.7845 |
| 1112.02 | 46.8937 |
| 1112.84 | 48.7354 |
| 1115.52 | 73.1721 |
| 1120.29 | 47.5057 |
| 1120.29 | 47.5057 |
| 1120.29 | 47.5057 |
| 1120.29 | 47.5057 |
| 1120.51 | 47.5098 |
| 1121.28 | 47.5220 |
| 1124.00 | 0.0000  |
| 1129.67 | 53.7631 |
| 1131.51 | 0.0000  |
| 1147.95 | 0.0000  |
| 1167.94 | 59.8809 |
| 1173.22 | 54.1839 |
| 1175.09 | 57.1226 |
| 1177.93 | 52.3301 |
| 1189.05 | 66.1434 |
| 1204.90 | 63.5586 |
| 1205.75 | 0.0000  |
| 1213.00 | 66.6691 |
| 1221.42 | 63.9024 |
| 1230.97 | 47.3359 |
| 1235.34 | 59.2529 |
| 1236.41 | 0.0000  |
| 1238.25 | 55.9200 |
| 1246.25 | 52.6650 |
| 1260.41 | 0.0000  |
| 1271.85 | 31.9701 |
| 1274.45 | 33.9958 |
| 1274.54 | 34.9957 |
| 1291.56 | 35.1823 |
| 1298.22 | 0.0000  |
| 1312.09 | 36.4160 |
| 1325.50 | 34.5326 |
| 1325.50 | 34.5326 |
| 1332.49 | 32.5703 |
| 1333.61 | 30.5444 |
| 1360.21 | 30.7874 |
| 1362.66 | 0.0000  |
| 1365.15 | 26.7215 |
| 1368.21 | 26.0590 |
| 1368.53 | 0.0000  |
| 1376.25 | 25.7772 |
| 1384.27 | 35.4339 |
| 1394.10 | 37.3125 |
| 1395.20 | 39.3978 |
| 1407.95 | 19.7708 |
| 1434.06 | 18.8694 |
| 1436.60 | 25.1768 |
| 1457.56 | 0.0000  |
| 1460.81 | 25.3477 |
| 1489.15 | 21.2874 |
| 1509.49 | 18.1939 |
| 1596.49 | 23.4619 |
| 1620.62 | 16.9962 |
| 1678.03 | 0.0000  |
| 1691.02 | 13.4512 |
| 1691.02 | 13.4512 |
| 1706.46 | 0.0000  |
| 1750.46 | 0.0000  |
| 1764.49 | 17.1100 |
| 1764.49 | 17.1100 |
| 1764.49 | 17.1100 |
| 1764.49 | 17.1100 |
| 1770.23 | 13.7061 |
| 1771.40 | 34.2749 |
| 1791.20 | 0.0000  |
| 1808.65 | 6.9138  |

1836.01

17.8889

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G244630010

|                             |            |      |
|-----------------------------|------------|------|
| Total Uranium Activity      | 1.3248E+01 | ug/g |
| Total Uranium Counting Unc. | 3.6425E+00 | ug/g |
| Total Uranium Tpu           | 1.8584E-06 | ug/g |
| Total Uranium Mda           | 1.2275E+00 | ug/g |

```

*****
*
*               GEL Laboratories LLC                      *
*               2040 SAVAGE ROAD                          *
*               CHARLESTON ,SC 29417                      *
*               GROSS GAMMA REPORT                        *
*
*****
*
*  BATCH ID      : 941639                                SAMPLE ID   : G244630010
*  ANALYST       : MXR1                                  DETECTOR    : GAM25
*  SAMPLE DATE   : 8-JAN-2010 12:00:00.00              COUNT TIME   : 0 02:00:00.00
*  ANALYSIS DATE : 23-JAN-2010 11:48:51.66              SAMPLE ALQT  : 116.460 GRAM
*
*****

```

```

GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.172E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.481E+00
GROSS GAMMA MDA      (pCi/GRAM ) : 4.287E+00
GROSS GAMMA DLC      (pCi/GRAM ) : 2.081E+00

```

VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 13:53:45.29

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630011.CNF;1
Sample date        : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 11:49:21
Sample ID          : G244630011      Sample quantity   : 1.46160E+02 GRAM
Detector name      : GAM18            Detector geometry: CAN
Elapsed live time   : 0 02:00:00.00   Elapsed real time: 0 02:00:02.16  0.0%
Energy tolerance    : 1.50000 keV     Analyst Initials  : MXR1
Abundance limit     : 75.00000         Sensitivity       : 5.00000
Batch ID           : 941639            Detector SN#      :
Matrix Spike ID     :                  LCS ID           : 1032-A
*****

```

| Pk | It | Energy   | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | Fit      |
|----|----|----------|------|-------|------|---------|------|----|----------|------|----------|
| 1  | 0  | 62.93*   | 115  | 789   | 1.40 | 124.98  | 121  | 10 | 1.59E-02 | 47.4 |          |
| 2  | 3  | 74.98*   | 565  | 586   | 1.06 | 149.07  | 144  | 14 | 7.84E-02 | 8.0  | 7.98E-01 |
| 3  | 3  | 77.29*   | 924  | 555   | 1.06 | 153.69  | 144  | 14 | 1.28E-01 | 5.3  |          |
| 4  | 5  | 84.20*   | 225  | 542   | 1.45 | 167.52  | 164  | 27 | 3.12E-02 | 18.3 | 2.98E+00 |
| 5  | 5  | 87.27    | 439  | 602   | 1.29 | 173.65  | 164  | 27 | 6.10E-02 | 10.8 |          |
| 6  | 5  | 90.05    | 282  | 587   | 1.34 | 179.21  | 164  | 27 | 3.92E-02 | 16.5 |          |
| 7  | 5  | 93.08*   | 365  | 713   | 1.65 | 185.25  | 164  | 27 | 5.07E-02 | 15.7 |          |
| 8  | 0  | 129.41   | 86   | 631   | 1.77 | 257.90  | 254  | 9  | 1.19E-02 | 54.1 |          |
| 9  | 0  | 186.01*  | 373  | 531   | 1.46 | 371.05  | 366  | 10 | 5.18E-02 | 13.0 |          |
| 10 | 0  | 209.44   | 215  | 462   | 1.08 | 417.90  | 414  | 9  | 2.99E-02 | 19.3 |          |
| 11 | 2  | 238.74*  | 2532 | 295   | 1.24 | 476.49  | 470  | 22 | 3.52E-01 | 2.3  | 2.62E+00 |
| 12 | 2  | 241.72   | 568  | 333   | 1.61 | 482.44  | 470  | 22 | 7.89E-02 | 8.6  |          |
| 13 | 0  | 270.21   | 211  | 421   | 1.34 | 539.40  | 534  | 12 | 2.92E-02 | 20.7 |          |
| 14 | 0  | 295.31*  | 696  | 334   | 1.22 | 589.59  | 584  | 10 | 9.66E-02 | 6.4  |          |
| 15 | 0  | 300.29   | 100  | 317   | 1.25 | 599.54  | 595  | 10 | 1.39E-02 | 35.1 |          |
| 16 | 0  | 328.40   | 139  | 380   | 1.20 | 655.74  | 649  | 13 | 1.93E-02 | 30.2 |          |
| 17 | 0  | 338.32*  | 465  | 359   | 1.20 | 675.58  | 669  | 12 | 6.46E-02 | 9.5  |          |
| 18 | 0  | 351.92*  | 1427 | 255   | 1.29 | 702.76  | 698  | 10 | 1.98E-01 | 3.4  |          |
| 19 | 0  | 463.20   | 134  | 230   | 1.44 | 925.26  | 919  | 11 | 1.87E-02 | 23.5 |          |
| 20 | 0  | 510.67*  | 188  | 290   | 1.96 | 1020.18 | 1013 | 16 | 2.61E-02 | 23.7 |          |
| 21 | 0  | 582.92*  | 822  | 180   | 1.74 | 1164.64 | 1157 | 14 | 1.14E-01 | 5.0  |          |
| 22 | 0  | 609.16*  | 1010 | 246   | 1.71 | 1217.11 | 1211 | 16 | 1.40E-01 | 4.8  |          |
| 23 | 0  | 727.03*  | 260  | 108   | 1.74 | 1452.78 | 1446 | 14 | 3.61E-02 | 10.7 |          |
| 24 | 0  | 768.40   | 116  | 150   | 1.47 | 1535.50 | 1527 | 13 | 1.61E-02 | 23.7 |          |
| 25 | 0  | 794.60   | 113  | 106   | 1.51 | 1587.90 | 1581 | 14 | 1.58E-02 | 21.3 |          |
| 26 | 0  | 860.15   | 138  | 74    | 2.00 | 1718.95 | 1713 | 11 | 1.92E-02 | 14.8 |          |
| 27 | 0  | 910.92*  | 634  | 136   | 1.93 | 1820.48 | 1813 | 16 | 8.81E-02 | 5.8  |          |
| 28 | 2  | 964.56   | 88   | 109   | 1.83 | 1927.73 | 1921 | 23 | 1.22E-02 | 25.0 | 3.34E+00 |
| 29 | 2  | 968.70   | 410  | 99    | 2.05 | 1936.02 | 1921 | 23 | 5.70E-02 | 7.1  |          |
| 30 | 0  | 1119.87* | 215  | 119   | 1.48 | 2238.32 | 2231 | 14 | 2.98E-02 | 12.9 |          |
| 31 | 0  | 1238.85  | 179  | 271   | 5.66 | 2476.24 | 2463 | 32 | 2.48E-02 | 29.0 |          |
| 32 | 0  | 1377.02  | 85   | 92    | 1.38 | 2752.55 | 2741 | 23 | 1.18E-02 | 31.3 |          |
| 33 | 0  | 1460.19* | 2643 | 76    | 2.15 | 2918.87 | 2907 | 22 | 3.67E-01 | 2.1  |          |
| 34 | 0  | 1589.39  | 61   | 78    | 2.33 | 3177.25 | 3164 | 26 | 8.47E-03 | 41.7 |          |
| 35 | 0  | 1620.81  | 23   | 29    | 1.07 | 3240.08 | 3235 | 12 | 3.24E-03 | 51.1 |          |
| 36 | 0  | 1630.60  | 22   | 41    | 1.53 | 3259.66 | 3253 | 15 | 3.11E-03 | 65.9 |          |
| 37 | 0  | 1729.01  | 70   | 7     | 2.83 | 3456.47 | 3449 | 13 | 9.65E-03 | 14.2 |          |
| 38 | 0  | 1763.69* | 232  | 16    | 2.76 | 3525.84 | 3516 | 21 | 3.22E-02 | 8.1  |          |



Peak Search Report (continued)  
Sample ID : G244630011

Page : 2  
Acquisition date : 23-JAN-2010 11:49:21

| Pk | It | Energy | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec | %Err | Fit |
|----|----|--------|------|-------|------|---------|------|----|---------|------|-----|
|----|----|--------|------|-------|------|---------|------|----|---------|------|-----|

Flag: "\*" = Peak area was modified by background subtraction

## VMS Nuclide Identification Report V3.1 Generated 23-JAN-2010 13:53:48

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630011.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 8-JAN-2010 12:00:00   Acquisition date : 23-JAN-2010 11:49:21
Sample ID        : G244630011             Sample quantity  : 146.16 GRAM
Sample type      : SOLID                  Sample geometry   :
Detector name    : GAMMA18               Detector geometry: CAN
Elapsed live time: 0 02:00:00.00          Elapsed real time: 0 02:00:02.16    0.0%
Peak Width (FWHM): 3.00                  Confidence level  : 5.00 %
Energy tolerance : 1.50 keV              Half life ratio   : 8.00
Errors propagated: Yes                   Systematic Error  : 0.00 %
Efficiency type  : Empirical              Efficiencies at   : Peak Energy
Abundance limit  : 75.00                 WTM error limit   : 3.00

```

## Full Combined Activity-MDA Report

## ---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| K-40    | +         | 1460.81      | *   | 3.360E+01           | 2.921E+00 | 4.346E-01      | 3.298E-02 | 77.308  |
| CD-109  | +         | 88.03        | *   | 4.812E+00           | 1.130E+00 | 1.105E+00      | 1.021E-01 | 4.355   |
| SN-126  | +         | 64.28        |     | 1.015E+00           | 9.732E-01 | 8.727E-01      | 1.290E-01 | 1.163   |
|         | +         | 86.94        |     | 1.967E+00           | 9.198E-01 | 4.585E-01      | 1.902E-01 | 4.289   |
|         | +         | 87.57        | *   | 4.731E-01           | 1.111E-01 | 1.093E-01      | 1.007E-02 | 4.328   |
| TL-208  |           | 277.35       |     | 4.354E-01           | 3.113E-01 | 5.297E-01      | 5.563E-02 | 0.822   |
|         | +         | 510.84       |     | 5.183E-01           | 2.515E-01 | 1.681E-01      | 1.787E-02 | 3.084   |
|         | +         | 583.14       | *   | 6.375E-01           | 8.094E-02 | 4.307E-02      | 3.376E-03 | 14.802  |
|         | +         | 860.37       |     | 9.758E-01           | 3.084E-01 | 3.421E-01      | 3.826E-02 | 2.853   |
| BI-211  |           | 72.87        |     | 3.480E+00           | 3.373E+00 | 5.176E+00      | 4.273E-01 | 0.672   |
|         | +         | 351.07       | *   | 5.197E+00           | 4.881E-01 | 2.785E-01      | 1.788E-02 | 18.659  |
| BI-212  | +         | 727.18       | *   | 1.693E+00           | 4.008E-01 | 3.513E-01      | 3.499E-02 | 4.820   |
|         |           | 785.46       |     | 1.396E+00           | 1.477E+00 | 2.511E+00      | 2.374E-01 | 0.556   |
|         | +         | 1620.62      |     | 1.231E+00           | 1.260E+00 | 1.390E+00      | 9.396E-02 | 0.886   |
| PB-212  | +         | 74.81        |     | 2.748E+00           | 5.592E-01 | 5.430E-01      | 6.806E-02 | 5.060   |
|         | +         | 77.11        |     | 2.508E+00           | 3.410E-01 | 3.038E-01      | 2.575E-02 | 8.255   |
|         | +         | 87.30        |     | 2.188E+00           | 5.583E-01 | 5.075E-01      | 6.893E-02 | 4.311   |
|         | +         | 238.63       | *   | 2.146E+00           | 1.825E-01 | 7.268E-02      | 5.192E-03 | 29.532  |
|         | +         | 300.09       |     | 1.259E+00           | 8.890E-01 | 9.406E-01      | 7.724E-02 | 1.339   |
| PO-212  | +         | 74.81        |     | 2.748E+00           | 5.592E-01 | 5.430E-01      | 6.806E-02 | 5.060   |
|         | +         | 77.11        |     | 2.508E+00           | 3.410E-01 | 3.038E-01      | 2.575E-02 | 8.255   |
|         | +         | 87.30        |     | 2.188E+00           | 5.583E-01 | 5.075E-01      | 6.893E-02 | 4.311   |
|         |           | 115.19       |     | 1.357E+00           | 3.220E+00 | 5.262E+00      | 3.315E-01 | 0.258   |
|         | +         | 238.63       | *   | 2.146E+00           | 1.825E-01 | 7.268E-02      | 5.192E-03 | 29.532  |
|         | +         | 300.09       |     | 1.259E+00           | 8.890E-01 | 9.406E-01      | 7.724E-02 | 1.339   |
| BI-214  | +         | 609.31       | *   | 1.469E+00           | 1.921E-01 | 8.382E-02      | 7.487E-03 | 17.531  |
|         | +         | 1120.29      |     | 1.565E+00           | 4.309E-01 | 3.872E-01      | 3.707E-02 | 4.042   |
|         | +         | 1764.49      |     | 2.221E+00           | 3.861E-01 | 2.043E-01      | 1.242E-02 | 10.873  |
| PB-214  | +         | 74.81        |     | 4.735E+00           | 9.250E-01 | 9.357E-01      | 1.045E-01 | 5.060   |
|         | +         | 77.11        |     | 4.299E+00           | 6.700E-01 | 5.208E-01      | 5.936E-02 | 8.255   |
|         | +         | 87.30        |     | 3.748E+00           | 9.262E-01 | 8.694E-01      | 1.043E-01 | 4.311   |
|         | +         | 241.98       |     | 2.887E+00           | 5.441E-01 | 4.369E-01      | 3.454E-02 | 6.608   |
|         | +         | 295.21       |     | 1.541E+00           | 2.360E-01 | 1.846E-01      | 1.566E-02 | 8.350   |
|         | +         | 351.92       | *   | 1.808E+00           | 1.942E-01 | 9.210E-02      | 7.619E-03 | 19.627  |

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PO-214  | +         | 74.81        |     | 4.735E+00           | 9.250E-01 | 9.357E-01      | 1.045E-01 | 5.060   |
|         | +         | 77.11        |     | 4.299E+00           | 6.700E-01 | 5.208E-01      | 5.936E-02 | 8.255   |
|         | +         | 87.30        |     | 3.748E+00           | 9.262E-01 | 8.694E-01      | 1.043E-01 | 4.311   |
|         | +         | 241.98       |     | 2.887E+00           | 5.441E-01 | 4.369E-01      | 3.454E-02 | 6.608   |
|         | +         | 295.21       |     | 1.541E+00           | 2.360E-01 | 1.846E-01      | 1.566E-02 | 8.350   |
| PO-216  | +         | 351.92       | *   | 1.808E+00           | 1.942E-01 | 9.210E-02      | 7.619E-03 | 19.627  |
|         | +         | 74.81        |     | 2.748E+00           | 5.592E-01 | 5.430E-01      | 6.806E-02 | 5.060   |
|         | +         | 77.11        |     | 2.508E+00           | 3.410E-01 | 3.038E-01      | 2.575E-02 | 8.255   |
|         | +         | 87.30        |     | 2.188E+00           | 5.583E-01 | 5.075E-01      | 6.893E-02 | 4.311   |
|         | +         | 238.63       | *   | 2.146E+00           | 1.825E-01 | 7.268E-02      | 5.192E-03 | 29.532  |
| PO-218  | +         | 300.09       |     | 1.259E+00           | 8.890E-01 | 9.406E-01      | 7.724E-02 | 1.339   |
|         | +         | 74.81        |     | 4.735E+00           | 9.250E-01 | 9.357E-01      | 1.045E-01 | 5.060   |
|         | +         | 77.11        |     | 4.299E+00           | 6.700E-01 | 5.208E-01      | 5.936E-02 | 8.255   |
|         | +         | 87.30        |     | 3.748E+00           | 9.262E-01 | 8.694E-01      | 1.043E-01 | 4.311   |
|         | +         | 241.98       |     | 2.887E+00           | 5.441E-01 | 4.369E-01      | 3.454E-02 | 6.608   |
| RA-224  | +         | 295.21       |     | 1.541E+00           | 2.360E-01 | 1.846E-01      | 1.566E-02 | 8.350   |
|         | +         | 351.92       | *   | 1.808E+00           | 1.942E-01 | 9.210E-02      | 7.619E-03 | 19.627  |
|         | +         | 240.98       | *   | 5.474E+00           | 9.849E-01 | 8.261E-01      | 4.602E-02 | 6.626   |
|         | +         | 609.31       | *   | 1.469E+00           | 1.921E-01 | 8.382E-02      | 7.487E-03 | 17.531  |
|         | +         | 1120.29      |     | 1.565E+00           | 4.309E-01 | 3.872E-01      | 3.707E-02 | 4.042   |
| AC-228  | +         | 1764.49      |     | 2.221E+00           | 3.861E-01 | 2.043E-01      | 1.242E-02 | 10.873  |
|         | +         | 338.32       |     | 1.878E+00           | 8.438E-01 | 2.990E-01      | 1.219E-01 | 6.280   |
|         | +         | 911.07       | *   | 2.116E+00           | 3.729E-01 | 1.713E-01      | 2.269E-02 | 12.356  |
|         | +         | 969.11       |     | 2.404E+00           | 6.685E-01 | 2.831E-01      | 6.779E-02 | 8.491   |
|         | +         | 338.32       |     | 1.878E+00           | 8.438E-01 | 2.990E-01      | 1.219E-01 | 6.280   |
| RA-228  | +         | 911.07       | *   | 2.116E+00           | 3.729E-01 | 1.713E-01      | 2.269E-02 | 12.356  |
|         | +         | 969.11       |     | 2.404E+00           | 6.685E-01 | 2.831E-01      | 6.779E-02 | 8.491   |
|         | +         | 74.81        |     | 2.789E+00           | 5.052E-01 | 5.512E-01      | 4.645E-02 | 5.060   |
|         | +         | 77.11        |     | 2.545E+00           | 3.461E-01 | 3.084E-01      | 2.614E-02 | 8.255   |
|         | +         | 87.30        |     | 2.221E+00           | 5.214E-01 | 5.151E-01      | 4.735E-02 | 4.311   |
| TH-228  | +         | 238.63       | *   | 2.179E+00           | 1.852E-01 | 7.377E-02      | 5.270E-03 | 29.532  |
|         | +         | 300.09       |     | 1.278E+00           | 1.171E+00 | 9.548E-01      | 5.627E-01 | 1.339   |
|         | +         | 609.31       | *   | 1.469E+00           | 1.921E-01 | 8.382E-02      | 7.487E-03 | 17.531  |
|         | +         | 1120.29      |     | 1.565E+00           | 4.309E-01 | 3.872E-01      | 3.707E-02 | 4.042   |
|         | +         | 1764.49      |     | 2.221E+00           | 3.861E-01 | 2.043E-01      | 1.242E-02 | 10.873  |
| TH-230  | +         | 338.32       |     | 1.878E+00           | 3.715E-01 | 2.990E-01      | 1.730E-02 | 6.280   |
|         | +         | 911.07       | *   | 2.116E+00           | 3.729E-01 | 1.713E-01      | 2.269E-02 | 12.356  |
|         | +         | 969.11       |     | 2.404E+00           | 6.685E-01 | 2.831E-01      | 6.779E-02 | 8.491   |
|         | +         | 63.29        | *   | 2.565E+00           | 2.471E+00 | 2.162E+00      | 3.812E-01 | 1.186   |
|         | +         | 92.38        |     | 2.489E+00           | 9.012E-01 | 7.047E-01      | 1.270E-01 | 3.532   |
| U-234   | +         | 609.31       | *   | 1.469E+00           | 1.921E-01 | 8.382E-02      | 7.487E-03 | 17.531  |
|         | +         | 1120.29      |     | 1.565E+00           | 4.309E-01 | 3.872E-01      | 3.707E-02 | 4.042   |
|         | +         | 1764.49      |     | 2.221E+00           | 3.861E-01 | 2.043E-01      | 1.242E-02 | 10.873  |
|         | +         | 86.50        | *   | 1.389E+00           | 4.342E-01 | 3.260E-01      | 7.355E-02 | 4.261   |
|         | +         | 95.87        |     | 5.044E-01           | 9.420E-01 | 1.392E+00      | 3.400E-01 | 0.362   |
| U-238   | +         | 63.29        | *   | 2.565E+00           | 2.471E+00 | 2.162E+00      | 3.812E-01 | 1.186   |
|         | +         | 92.38        |     | 2.489E+00           | 8.097E-01 | 7.047E-01      | 5.989E-02 | 3.532   |
|         | +         | 74.67        | *   | 4.455E-01           | 8.053E-02 | 8.838E-02      | 7.375E-03 | 5.040   |
|         | +         | 86.72        |     | 5.209E+01           | 1.223E+01 | 1.219E+01      | 1.114E+00 | 4.275   |
|         | +         |              |     |                     |           |                |           |         |

---- Identified Nuclides ----

| Nuclide   | Line Energy (keV) | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|-----------|-------------------|---------------------|-----------|----------------|-----------|---------|
|           | 117.66            | 2.003E+00           | 3.401E+00 | 5.583E+00      | 3.434E-01 | 0.359   |
|           | 142.18            | -5.052E+00          | 1.609E+01 | 2.526E+01      | 1.392E+00 | -0.200  |
| ANH-511 + | 511.00 *          | 1.119E-01           | 5.353E-02 | 3.632E-02      | 2.398E-03 | 3.083   |

---- Non-Identified Nuclides ----

| Nuclide | Line Energy (keV) | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-------------------|---------------------|-----------|---------------------|-----------|---------|
| BE-7    | 477.59 *          | 7.036E-02           | 2.487E-01 | 4.163E-01           | 3.016E-02 | 0.169   |
| NA-22   | 1274.54 *         | -3.472E-02          | 3.644E-02 | 5.568E-02           | 3.789E-03 | -0.624  |
| NA-24   | 1368.53 *         | -2.707E-01          | 3.644E-02 | Half-Life too short |           |         |
| AL-26   | 1129.67           | 9.989E-01           | 1.437E+00 | 2.442E+00           | 1.631E-01 | 0.409   |
|         | 1808.65 *         | 1.834E-02           | 2.094E-02 | 3.850E-02           | 2.248E-03 | 0.476   |
| TI-44   | 67.85             | -3.449E-02          | 5.246E-02 | 7.595E-02           | 6.107E-03 | -0.454  |
|         | + 78.38 *         | 4.628E-01           | 6.292E-02 | 8.098E-02           | 6.924E-03 | 5.715   |
| SC-46   | 889.25 *          | -4.798E-03          | 2.874E-02 | 4.639E-02           | 5.174E-03 | -0.103  |
|         | + 1120.51         | 2.676E-01           | 7.152E-02 | 1.067E-01           | 7.369E-03 | 2.509   |
| V-48    | 944.10            | 3.345E-01           | 6.683E-01 | 1.124E+00           | 1.190E-01 | 0.298   |
|         | 983.50 *          | 1.245E-02           | 5.549E-02 | 9.126E-02           | 9.027E-03 | 0.136   |
|         | 1312.09           | 1.205E-02           | 6.487E-02 | 1.077E-01           | 7.846E-03 | 0.112   |
| CR-51   | 320.08 *          | 2.785E-01           | 3.013E-01 | 5.052E-01           | 3.253E-02 | 0.551   |
| MN-52   | 744.21            | -4.944E-02          | 1.772E-01 | 2.892E-01           | 2.550E-02 | -0.171  |
|         | 848.13            | -3.494E-01          | 5.198E+00 | 8.494E+00           | 8.887E-01 | -0.041  |
|         | 935.52            | 4.344E-01           | 2.258E-01 | 3.912E-01           | 4.196E-02 | 1.110   |
|         | 1246.25           | -5.702E-01          | 6.802E+00 | 9.472E+00           | 6.090E-01 | -0.060  |
|         | 1333.61           | -2.181E+00          | 4.087E+00 | 6.381E+00           | 4.820E-01 | -0.342  |
|         | 1434.06 *         | 8.413E-02           | 1.694E-01 | 2.890E-01           | 2.130E-02 | 0.291   |
| MN-54   | 834.83 *          | -6.369E-03          | 3.245E-02 | 5.275E-02           | 5.404E-03 | -0.121  |
| CO-56   | 846.75 *          | 3.667E-04           | 3.079E-02 | 5.059E-02           | 5.281E-03 | 0.007   |
|         | 977.42            | -1.691E+00          | 2.539E+00 | 3.562E+00           | 3.563E-01 | -0.475  |
|         | 1037.82           | -1.695E-01          | 2.433E-01 | 3.878E-01           | 3.593E-02 | -0.437  |
|         | 1175.09           | -1.244E-01          | 1.791E+00 | 2.951E+00           | 1.638E-01 | -0.042  |
|         | + 1238.25         | 3.644E-01           | 2.128E-01 | 1.504E-01           | 1.003E-02 | 2.423   |
|         | 1360.21           | 1.037E-01           | 7.769E-01 | 1.283E+00           | 9.642E-02 | 0.081   |
|         | 1771.40           | -7.975E-02          | 1.760E-01 | 2.189E-01           | 1.323E-02 | -0.364  |
| CO-57   | 122.06 *          | 3.686E-03           | 2.190E-02 | 3.537E-02           | 2.095E-03 | 0.104   |
|         | 136.48            | -4.309E-02          | 1.898E-01 | 2.997E-01           | 1.962E-02 | -0.144  |
| CO-58   | 810.76 *          | -2.050E-02          | 3.212E-02 | 5.076E-02           | 5.011E-03 | -0.404  |
| FE-59   | 142.65            | 1.568E-01           | 2.503E+00 | 3.950E+00           | 2.173E-01 | 0.040   |
|         | 192.34            | -3.022E-02          | 7.843E-01 | 1.310E+00           | 1.520E-01 | -0.023  |
|         | 1099.22 *         | -8.976E-02          | 7.313E-02 | 1.113E-01           | 9.162E-03 | -0.806  |
|         | 1291.56           | -3.392E-02          | 9.745E-02 | 1.555E-01           | 1.307E-02 | -0.218  |
| CO-60   | 1173.22           | 1.805E-02           | 3.525E-02 | 6.018E-02           | 3.326E-03 | 0.300   |
|         | 1332.49 *         | -4.281E-03          | 3.386E-02 | 5.481E-02           | 4.142E-03 | -0.078  |
| ZN-65   | 1115.52 *         | 8.731E-02           | 8.473E-02 | 1.308E-01           | 9.215E-03 | 0.667   |
| GE-68   | 1077.35 *         | 7.637E-01           | 1.035E+00 | 1.800E+00           | 1.430E-01 | 0.424   |
| AS-73   | 53.44 *           | 7.193E-01           | 1.022E+00 | 1.756E+00           | 1.392E-01 | 0.410   |
| AS-74   | 595.88 *          | -1.743E-02          | 7.370E-02 | 1.176E-01           | 8.450E-03 | -0.148  |
|         | 634.78            | -1.289E-01          | 2.798E-01 | 4.366E-01           | 3.251E-02 | -0.295  |

## ---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| SE-75   |           | 66.05        |     | -2.877E+00          | 5.563E+00 | 8.036E+00           | 7.959E-01 | -0.358  |
|         |           | 96.73        |     | -1.019E+00          | 8.206E-01 | 1.110E+00           | 1.464E-01 | -0.918  |
|         |           | 121.11       |     | 4.697E-02           | 1.168E-01 | 1.902E-01           | 1.776E-02 | 0.247   |
|         |           | 136.00       |     | 2.667E-03           | 3.545E-02 | 5.662E-02           | 3.224E-03 | 0.047   |
|         |           | 198.60       |     | 6.674E-01           | 1.511E+00 | 2.534E+00           | 1.719E-01 | 0.263   |
|         |           | 264.65       | *   | -1.759E-02          | 4.035E-02 | 5.626E-02           | 3.218E-03 | -0.313  |
|         |           | 279.53       |     | 8.739E-02           | 9.017E-02 | 1.523E-01           | 9.409E-03 | 0.574   |
|         |           | 303.91       |     | -1.702E+00          | 1.959E+00 | 2.605E+00           | 2.478E-01 | -0.653  |
|         |           | 400.65       |     | 4.106E-02           | 2.105E-01 | 3.550E-01           | 3.235E-02 | 0.116   |
| BR-77   | +         | 87.88        |     | 1.003E+03           | 2.355E+02 | 3.180E+02           | 2.938E+01 | 3.154   |
|         |           | 200.40       |     | 7.644E+01           | 1.313E+02 | 2.231E+02           | 1.202E+01 | 0.343   |
|         | +         | 239.00       |     | 3.324E+02           | 2.401E+01 | 3.345E+01           | 1.861E+00 | 9.937   |
|         |           | 249.79       |     | 1.973E+01           | 5.228E+01 | 8.434E+01           | 4.727E+00 | 0.234   |
|         |           | 281.68       |     | -1.204E+02          | 7.430E+01 | 1.121E+02           | 6.397E+00 | -1.074  |
|         |           | 297.23       |     | 3.606E+02           | 7.940E+01 | 1.061E+02           | 6.091E+00 | 3.399   |
|         |           | 303.76       |     | -1.373E+02          | 1.608E+02 | 2.146E+02           | 1.234E+01 | -0.640  |
|         |           | 439.47       |     | 6.185E+01           | 1.094E+02 | 1.865E+02           | 1.137E+01 | 0.332   |
|         |           | 484.57       |     | -2.540E+02          | 1.710E+02 | 2.570E+02           | 1.649E+01 | -0.988  |
|         |           | 520.65       | *   | 1.144E+00           | 7.594E+00 | 1.254E+01           | 8.367E-01 | 0.091   |
|         |           | 574.64       |     | 1.633E+01           | 1.700E+02 | 2.615E+02           | 1.841E+01 | 0.062   |
|         |           | 578.91       |     | 2.601E+01           | 7.515E+01 | 1.082E+02           | 7.647E+00 | 0.240   |
|         |           | 585.48       |     | 1.623E+03           | 2.329E+02 | 3.936E+02           | 2.801E+01 | 4.123   |
|         |           | 755.35       |     | 4.763E+01           | 1.283E+02 | 2.172E+02           | 1.952E+01 | 0.219   |
|         |           | 817.79       |     | -4.417E+00          | 9.717E+01 | 1.596E+02           | 1.590E+01 | -0.028  |
| SR-82   |           | 698.33       |     | -2.366E+00          | 2.623E+01 | 4.360E+01           | 3.549E+00 | -0.054  |
|         |           | 776.49       | *   | -2.445E-01          | 3.235E-01 | 5.111E-01           | 4.760E-02 | -0.478  |
|         |           | 1395.20      |     | -6.266E+00          | 9.287E+00 | 1.417E+01           | 1.056E+00 | -0.442  |
| RB-83   |           | 520.41       | *   | 6.411E-03           | 5.192E-02 | 8.562E-02           | 5.711E-03 | 0.075   |
|         |           | 529.64       |     | 2.812E-03           | 8.047E-02 | 1.306E-01           | 8.796E-03 | 0.022   |
|         |           | 552.65       |     | -5.596E-02          | 1.596E-01 | 2.547E-01           | 1.755E-02 | -0.220  |
| RB-84   |           | 881.50       | *   | -2.408E-02          | 5.658E-02 | 8.982E-02           | 9.899E-03 | -0.268  |
| KR-85   |           | 513.99       | *   | 1.563E+01           | 6.555E+00 | 1.066E+01           | 7.062E-01 | 1.466   |
| SR-85   |           | 513.99       | *   | 8.004E-02           | 3.356E-02 | 5.458E-02           | 3.616E-03 | 1.466   |
| RB-86   |           | 1076.63      | *   | 6.107E-01           | 6.497E-01 | 1.142E+00           | 9.090E-02 | 0.535   |
| Y-88    |           | 898.02       |     | 1.811E-02           | 3.344E-02 | 5.643E-02           | 6.396E-03 | 0.321   |
|         |           | 1836.01      | *   | 1.504E-02           | 2.601E-02 | 4.575E-02           | 2.606E-03 | 0.329   |
| ZR-88   |           | 392.90       | *   | 7.143E-03           | 2.460E-02 | 4.174E-02           | 2.401E-03 | 0.171   |
| Y-91    |           | 1204.90      | *   | 6.588E+00           | 1.524E+01 | 2.580E+01           | 1.526E+00 | 0.255   |
| NB-94   |           | 702.63       | *   | -5.700E-03          | 2.567E-02 | 4.232E-02           | 3.472E-03 | -0.135  |
|         |           | 871.10       |     | 5.952E-03           | 2.712E-02 | 4.505E-02           | 4.886E-03 | 0.132   |
| NB-95   |           | 765.79       | *   | 7.718E-02           | 4.238E-02 | 6.731E-02           | 6.157E-03 | 1.147   |
| NB-95M  |           | 235.69       | *   | 1.217E-01           | 1.161E-01 | 1.759E-01           | 1.290E-02 | 0.692   |
| ZR-95   |           | 724.18       |     | 1.813E-01           | 9.063E-02 | 1.460E-01           | 1.354E-02 | 1.241   |
|         |           | 756.15       | *   | -2.547E-02          | 5.741E-02 | 9.269E-02           | 9.121E-03 | -0.275  |
| NB-97   |           | 657.90       | *   | -3.569E-02          | 5.741E-02 | Half-Life too short |           |         |
|         |           | 1024.50      |     | 4.858E-01           | 5.741E-02 | Half-Life too short |           |         |
| ZR-97   |           | 254.15       |     | -2.548E+00          | 5.741E-02 | Half-Life too short |           |         |
|         |           | 355.39       |     | 6.292E-01           | 5.741E-02 | Half-Life too short |           |         |
|         |           | 507.63       | *   | 2.673E+00           | 5.741E-02 | Half-Life too short |           |         |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         | 602.52    |              |     | 3.068E+00           | 5.741E-02 | Half-Life      | too short |         |
|         | 1021.30   |              |     | -3.100E-01          | 5.741E-02 | Half-Life      | too short |         |
|         | 1147.95   |              |     | -2.480E+00          | 5.741E-02 | Half-Life      | too short |         |
|         | 1362.66   |              |     | 4.386E-01           | 5.741E-02 | Half-Life      | too short |         |
|         | 1750.46   |              |     | 9.588E-01           | 5.741E-02 | Half-Life      | too short |         |
| MO-99   | 140.51    |              |     | -1.131E+01          | 2.371E+01 | 3.635E+01      | 9.776E+00 | -0.311  |
|         | 181.06    |              |     | -2.899E-02          | 1.530E+01 | 2.265E+01      | 3.846E+00 | -0.001  |
|         | 366.43    |              |     | -1.660E+01          | 6.475E+01 | 1.078E+02      | 6.230E+00 | -0.154  |
|         | 739.58    | *            |     | 2.038E+00           | 8.570E+00 | 1.443E+01      | 2.202E+00 | 0.141   |
|         | 778.00    |              |     | -2.192E+01          | 2.820E+01 | 4.449E+01      | 4.154E+00 | -0.493  |
| TC-99M  | 140.51    | *            |     | -1.203E+10          | 2.820E+01 | Half-Life      | too short |         |
| RH-101  | 127.23    |              |     | 2.489E-02           | 3.173E-02 | 4.682E-02      | 2.705E-03 | 0.531   |
|         | 198.01    | *            |     | 2.919E-03           | 2.778E-02 | 4.611E-02      | 2.479E-03 | 0.063   |
|         | 325.23    |              |     | 7.330E-02           | 2.106E-01 | 3.021E-01      | 1.746E-02 | 0.243   |
| RH-102  | 418.52    |              |     | 2.849E-01           | 2.172E-01 | 3.837E-01      | 2.280E-02 | 0.743   |
|         | 475.06    | *            |     | -3.174E-03          | 2.305E-02 | 3.777E-02      | 2.399E-03 | -0.084  |
|         | 631.29    |              |     | 1.564E-02           | 4.404E-02 | 7.240E-02      | 5.373E-03 | 0.216   |
|         | 697.49    |              |     | 5.266E-02           | 5.955E-02 | 1.038E-01      | 8.442E-03 | 0.507   |
|         | 766.84    |              |     | 1.834E-01           | 9.946E-02 | 1.761E-01      | 1.614E-02 | 1.041   |
|         | 1046.59   |              |     | -9.207E-02          | 9.012E-02 | 1.399E-01      | 1.207E-02 | -0.658  |
|         | 1112.84   |              |     | -4.603E-02          | 2.087E-01 | 2.908E-01      | 2.065E-02 | -0.158  |
| RU-103  | 497.08    | *            |     | 4.289E-02           | 3.031E-02 | 5.287E-02      | 6.865E-03 | 0.811   |
|         | 610.33    | +            |     | 1.583E+01           | 2.954E+00 | 2.511E+00      | 4.026E-01 | 6.306   |
| RH-106  | 511.85    | +            |     | 5.590E-01           | 2.673E-01 | 3.361E-01      | 2.222E-02 | 1.663   |
|         | 621.84    | *            |     | -2.588E-02          | 2.587E-01 | 4.144E-01      | 5.214E-02 | -0.062  |
|         | 1050.47   |              |     | 1.563E+00           | 1.791E+00 | 3.150E+00      | 2.692E-01 | 0.496   |
| RU-106  | 511.85    | +            |     | 5.590E-01           | 2.673E-01 | 3.361E-01      | 2.222E-02 | 1.663   |
|         | 621.84    | *            |     | -2.588E-02          | 2.587E-01 | 4.144E-01      | 3.050E-02 | -0.062  |
|         | 1050.47   |              |     | 1.563E+00           | 1.791E+00 | 3.150E+00      | 2.692E-01 | 0.496   |
| AG-108M | 433.93    | *            |     | -1.000E-02          | 2.555E-02 | 4.164E-02      | 2.720E-03 | -0.240  |
|         | 614.37    |              |     | -1.161E-02          | 3.477E-02 | 4.696E-02      | 3.618E-03 | -0.247  |
|         | 722.95    |              |     | 2.858E-02           | 3.716E-02 | 5.643E-02      | 4.991E-03 | 0.506   |
| AG-110M | 657.75    | *            |     | -1.564E-02          | 2.804E-02 | 4.565E-02      | 3.601E-03 | -0.343  |
|         | 677.61    |              |     | -2.963E-02          | 2.450E-01 | 4.076E-01      | 3.306E-02 | -0.073  |
|         | 706.67    |              |     | -1.025E-03          | 1.599E-01 | 2.667E-01      | 2.270E-02 | -0.004  |
|         | 763.93    |              |     | 1.469E-01           | 1.405E-01 | 2.171E-01      | 2.030E-02 | 0.677   |
|         | 884.67    |              |     | 1.768E-02           | 3.739E-02 | 6.306E-02      | 7.122E-03 | 0.280   |
|         | 937.48    |              |     | -5.787E-02          | 9.317E-02 | 1.449E-01      | 1.587E-02 | -0.399  |
|         | 1384.27   |              |     | 6.383E-02           | 1.506E-01 | 2.202E-01      | 1.707E-02 | 0.290   |
| IN-111  | 171.28    |              |     | -5.136E-01          | 7.916E-01 | 1.305E+00      | 6.867E-02 | -0.393  |
|         | 245.39    | *            |     | -2.041E-01          | 9.020E-01 | 1.284E+00      | 7.174E-02 | -0.159  |
| IN-113M | 391.69    | *            |     | 1.993E-02           | 3.552E-02 | 6.095E-02      | 3.739E-03 | 0.327   |
| SN-113  | 391.69    | *            |     | 1.993E-02           | 3.552E-02 | 6.095E-02      | 3.739E-03 | 0.327   |
| IN-114M | 190.27    | *            |     | 1.045E-01           | 1.681E-01 | 2.548E-01      | 1.360E-02 | 0.410   |
| CD-115  | 260.90    |              |     | -1.284E+01          | 1.006E+02 | 1.638E+02      | 9.245E+00 | -0.078  |
|         | 492.35    |              |     | -3.033E+01          | 2.702E+01 | 4.153E+01      | 2.688E+00 | -0.730  |
|         | 527.90    | *            |     | 1.790E+00           | 8.076E+00 | 1.326E+01      | 8.909E-01 | 0.135   |
| SN-117M | 156.02    |              |     | 1.436E-01           | 1.934E+00 | 3.288E+00      | 1.756E-01 | 0.044   |
|         | 158.56    | *            |     | -2.904E-02          | 4.615E-02 | 7.663E-02      | 4.073E-03 | -0.379  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| SB-122  | 563.90    | *            |     | 1.564E-01           | 1.655E+00 | 2.706E+00           | 1.885E-01 | 0.058   |
|         | 692.80    |              |     | -6.279E+00          | 3.329E+01 | 5.507E+01           | 4.440E+00 | -0.114  |
| I-123   | 159.00    | *            |     | -1.699E+00          | 3.329E+01 | Half-Life too short |           |         |
|         | 528.96    |              |     | -2.239E+00          | 3.329E+01 | Half-Life too short |           |         |
| TE-123M | 159.00    | *            |     | -9.821E-03          | 2.398E-02 | 4.011E-02           | 2.164E-03 | -0.245  |
| I-124   | 602.71    | *            |     | 1.115E-01           | 6.296E-01 | 8.830E-01           | 6.385E-02 | 0.126   |
|         | 722.78    |              |     | 2.567E+00           | 3.782E+00 | 5.710E+00           | 4.853E-01 | 0.450   |
|         | 1325.50   |              |     | -5.259E+00          | 2.982E+01 | 4.813E+01           | 3.592E+00 | -0.109  |
| +       | 1376.25   |              |     | 8.229E+01           | 5.195E+01 | 5.255E+01           | 3.935E+00 | 1.566   |
|         | 1509.49   |              |     | 3.167E+00           | 1.112E+01 | 1.907E+01           | 1.366E+00 | 0.166   |
|         | 1691.02   |              |     | -3.647E-01          | 2.670E+00 | 4.330E+00           | 2.793E-01 | -0.084  |
| SB-124  | 602.71    |              |     | 6.606E-03           | 3.730E-02 | 5.231E-02           | 3.784E-03 | 0.126   |
|         | 645.85    |              |     | -1.546E-01          | 3.966E-01 | 6.208E-01           | 5.032E-02 | -0.249  |
|         | 709.31    |              |     | -1.140E+00          | 2.168E+00 | 3.506E+00           | 2.911E-01 | -0.325  |
|         | 713.82    |              |     | -4.739E-01          | 1.294E+00 | 2.111E+00           | 2.503E-01 | -0.225  |
|         | 722.78    |              |     | 2.205E-01           | 3.248E-01 | 4.904E-01           | 4.261E-02 | 0.450   |
| +       | 968.20    |              |     | 2.471E+01           | 4.301E+00 | 6.559E+00           | 6.669E-01 | 3.768   |
|         | 1045.16   |              |     | -8.447E-01          | 1.975E+00 | 3.211E+00           | 2.781E-01 | -0.263  |
|         | 1325.50   |              |     | -4.824E-01          | 2.735E+00 | 4.415E+00           | 3.295E-01 | -0.109  |
|         | 1368.21   |              |     | -8.713E-01          | 1.709E+00 | 2.204E+00           | 2.819E-01 | -0.395  |
|         | 1436.60   |              |     | -1.548E+00          | 2.756E+00 | 4.192E+00           | 3.087E-01 | -0.369  |
|         | 1691.02   | *            |     | -7.388E-03          | 5.409E-02 | 8.772E-02           | 6.052E-03 | -0.084  |
| SB-125  | 427.89    | *            |     | 5.189E-02           | 7.118E-02 | 1.225E-01           | 7.654E-03 | 0.424   |
| +       | 463.38    |              |     | 7.329E-01           | 3.488E-01 | 4.685E-01           | 3.359E-02 | 1.564   |
|         | 600.56    |              |     | 1.322E-01           | 1.474E-01 | 2.491E-01           | 1.984E-02 | 0.531   |
|         | 635.90    |              |     | -2.066E-01          | 2.127E-01 | 3.192E-01           | 2.633E-02 | -0.647  |
| TE-125M | 109.28    | *            |     | -5.951E+00          | 8.572E+00 | 1.349E+01           | 1.186E+00 | -0.441  |
| I-126   | 388.63    |              |     | -3.853E-02          | 1.622E-01 | 2.691E-01           | 1.547E-02 | -0.143  |
|         | 666.33    | *            |     | -7.538E-02          | 1.482E-01 | 2.419E-01           | 1.860E-02 | -0.312  |
|         | 753.82    |              |     | 1.462E+00           | 1.168E+00 | 2.060E+00           | 1.847E-01 | 0.709   |
| SB-126  | 223.80    |              |     | -1.172E+00          | 3.404E+00 | 5.566E+00           | 3.059E-01 | -0.211  |
|         | 278.60    |              |     | 3.905E+00           | 2.016E+00 | 3.515E+00           | 2.003E-01 | 1.111   |
| +       | 296.50    |              |     | 1.524E+01           | 2.130E+00 | 3.183E+00           | 1.827E-01 | 4.787   |
|         | 414.70    |              |     | -7.275E-02          | 5.875E-02 | 9.193E-02           | 5.437E-03 | -0.791  |
|         | 415.30    |              |     | -1.860E+00          | 4.812E+00 | 7.876E+00           | 4.662E-01 | -0.236  |
|         | 555.20    |              |     | 6.990E-01           | 3.143E+00 | 5.182E+00           | 3.580E-01 | 0.135   |
|         | 573.80    |              |     | 2.916E-01           | 8.648E-01 | 1.393E+00           | 9.800E-02 | 0.209   |
|         | 593.00    |              |     | -2.953E-01          | 7.141E-01 | 1.126E+00           | 8.069E-02 | -0.262  |
|         | 656.30    |              |     | -2.338E+00          | 2.651E+00 | 4.231E+00           | 3.211E-01 | -0.553  |
|         | 666.33    |              |     | -3.149E-02          | 6.192E-02 | 1.011E-01           | 7.770E-03 | -0.312  |
|         | 675.00    |              |     | 2.593E-01           | 1.568E+00 | 2.650E+00           | 2.070E-01 | 0.098   |
|         | 695.00    |              |     | 6.334E-03           | 5.964E-02 | 1.002E-01           | 8.111E-03 | 0.063   |
|         | 697.00    |              |     | 1.306E-01           | 2.095E-01 | 3.609E-01           | 2.931E-02 | 0.362   |
|         | 720.50    | *            |     | 2.866E-02           | 1.319E-01 | 1.925E-01           | 1.630E-02 | 0.149   |
|         | 856.80    |              |     | 3.981E-01           | 4.084E-01 | 6.242E-01           | 6.621E-02 | 0.638   |
|         | 989.30    |              |     | 5.714E-01           | 9.961E-01 | 1.675E+00           | 1.638E-01 | 0.341   |
|         | 1034.80   |              |     | -7.018E+00          | 7.188E+00 | 1.069E+01           | 9.491E-01 | -0.657  |
|         | 1213.00   |              |     | 3.624E-01           | 3.674E+00 | 6.098E+00           | 3.666E-01 | 0.059   |
| SB-127  | 61.10     |              |     | 7.020E+01           | 6.315E+01 | 9.864E+01           | 1.029E+01 | 0.712   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|---------------------|-----------|----------------|-----------|---------|
|         |           | 252.40       |              | -1.068E+00          | 3.442E+00 | 5.527E+00      | 2.294E+00 | -0.193  |
|         |           | 290.80       |              | -2.593E+01          | 2.011E+01 | 2.611E+01      | 2.368E+00 | -0.993  |
|         |           | 411.60       |              | 1.282E+01           | 9.726E+00 | 1.687E+01      | 2.426E+00 | 0.760   |
|         |           | 444.90       |              | 8.306E-01           | 7.780E+00 | 1.265E+01      | 1.383E+00 | 0.066   |
|         |           | 473.00       |              | 1.006E-01           | 1.295E+00 | 2.146E+00      | 2.452E-01 | 0.047   |
|         |           | 543.00       |              | -1.525E+01          | 1.259E+01 | 1.876E+01      | 2.507E+00 | -0.813  |
|         |           | 603.60       |              | -3.802E+00          | 1.100E+01 | 1.480E+01      | 1.711E+00 | -0.257  |
|         |           | 685.20       | *            | -7.157E-01          | 1.027E+00 | 1.645E+00      | 1.784E-01 | -0.435  |
|         |           | 698.50       |              | -1.817E+00          | 1.142E+01 | 1.890E+01      | 2.937E+00 | -0.096  |
|         |           | 722.20       |              | 5.176E+00           | 2.584E+01 | 3.766E+01      | 4.151E+00 | 0.137   |
|         |           | 783.80       |              | 3.226E+00           | 2.949E+00 | 5.114E+00      | 6.627E-01 | 0.631   |
| XE-127  |           | 57.60        |              | -3.921E+00          | 6.540E+00 | 1.072E+01      | 8.261E-01 | -0.366  |
|         |           | 145.22       |              | 7.533E-01           | 6.381E-01 | 1.043E+00      | 5.701E-02 | 0.722   |
|         |           | 172.10       |              | -3.827E-02          | 9.676E-02 | 1.609E-01      | 8.471E-03 | -0.238  |
|         |           | 202.84       | *            | -5.074E-02          | 3.931E-02 | 6.252E-02      | 3.375E-03 | -0.812  |
|         |           | 374.96       |              | 3.286E-02           | 1.567E-01 | 2.659E-01      | 1.533E-02 | 0.124   |
| I-131   |           | 80.18        |              | 2.358E-01           | 5.879E+00 | 6.868E+00      | 5.987E-01 | 0.034   |
|         |           | 284.30       |              | -5.354E-01          | 1.276E+00 | 2.037E+00      | 1.298E-01 | -0.263  |
|         |           | 364.48       | *            | -2.129E-03          | 8.917E-02 | 1.501E-01      | 9.689E-03 | -0.014  |
|         |           | 636.97       |              | 6.404E-02           | 1.186E+00 | 1.914E+00      | 1.534E-01 | 0.033   |
|         |           | 722.89       |              | 4.557E+00           | 6.180E+00 | 9.366E+00      | 8.013E-01 | 0.486   |
| TE-132  |           | 49.72        |              | 1.997E+01           | 2.437E+01 | 4.213E+01      | 4.284E+00 | 0.474   |
|         |           | 111.76       |              | 2.253E+00           | 2.584E+01 | 4.183E+01      | 3.865E+00 | 0.054   |
|         |           | 116.30       |              | 1.679E+01           | 2.442E+01 | 4.019E+01      | 3.632E+00 | 0.418   |
|         |           | 228.16       | *            | 3.873E-01           | 5.591E-01 | 9.425E-01      | 1.341E-01 | 0.411   |
| BA-133  |           | 53.15        |              | 5.824E-01           | 4.432E+00 | 7.488E+00      | 5.942E-01 | 0.078   |
|         |           | 79.62        |              | 2.549E-01           | 1.487E+00 | 2.017E+00      | 3.071E-01 | 0.126   |
|         |           | 81.00        |              | 4.871E-02           | 1.219E-01 | 1.454E-01      | 2.315E-02 | 0.335   |
|         |           | 276.40       |              | 3.381E-01           | 3.291E-01 | 5.165E-01      | 6.671E-02 | 0.655   |
|         |           | 302.84       |              | -2.673E-02          | 1.311E-01 | 1.828E-01      | 2.127E-02 | -0.146  |
|         |           | 356.01       | *            | -1.210E-02          | 4.171E-02 | 5.683E-02      | 6.565E-03 | -0.213  |
|         |           | 383.85       |              | -2.108E-02          | 2.304E-01 | 3.851E-01      | 4.178E-02 | -0.055  |
| I-133   | +         | 510.53       |              | 1.031E+00           | 2.304E-01 | Half-Life      | too short |         |
|         |           | 529.87       | *            | -3.779E-04          | 2.304E-01 | Half-Life      | too short |         |
|         |           | 706.58       |              | -4.884E-03          | 2.304E-01 | Half-Life      | too short |         |
|         |           | 856.28       |              | 1.820E-01           | 2.304E-01 | Half-Life      | too short |         |
|         |           | 875.33       |              | -4.770E-02          | 2.304E-01 | Half-Life      | too short |         |
|         |           | 1236.41      |              | 1.979E+00           | 2.304E-01 | Half-Life      | too short |         |
|         |           | 1298.22      |              | -4.610E-02          | 2.304E-01 | Half-Life      | too short |         |
| CS-134  |           | 475.35       |              | -2.241E-01          | 1.502E+00 | 2.459E+00      | 1.562E-01 | -0.091  |
|         |           | 563.23       |              | 2.067E-01           | 2.911E-01 | 4.910E-01      | 3.469E-02 | 0.421   |
|         |           | 569.32       |              | 9.634E-02           | 1.573E-01 | 2.640E-01      | 1.887E-02 | 0.365   |
|         |           | 604.70       |              | -2.740E-02          | 3.374E-02 | 4.368E-02      | 3.175E-03 | -0.627  |
|         | +         | 795.84       | *            | 1.236E-01           | 5.409E-02 | 7.273E-02      | 7.034E-03 | 1.699   |
|         |           | 801.93       |              | -4.625E-01          | 3.695E-01 | 4.946E-01      | 4.825E-02 | -0.935  |
|         |           | 1038.57      |              | -1.616E+00          | 3.002E+00 | 4.840E+00      | 4.258E-01 | -0.334  |
|         |           | 1167.94      |              | -4.650E-01          | 1.916E+00 | 3.121E+00      | 1.770E-01 | -0.149  |
|         |           | 1365.15      |              | 6.376E-01           | 1.018E+00 | 1.659E+00      | 1.320E-01 | 0.384   |
| CS-135  |           | 268.24       | *            | 3.142E-01           | 1.490E-01 | 2.343E-01      | 1.771E-02 | 1.341   |



---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| I-135   | 288.45    |              |     | 9.094E+09           | 1.490E-01 | Half-Life      | too short |         |
|         | 417.63    |              |     | 1.646E+09           | 1.490E-01 | Half-Life      | too short |         |
|         | 546.56    |              |     | 7.617E+09           | 1.490E-01 | Half-Life      | too short |         |
|         | 836.80    |              |     | 1.540E+10           | 1.490E-01 | Half-Life      | too short |         |
|         | 1038.76   |              |     | -6.232E+09          | 1.490E-01 | Half-Life      | too short |         |
|         | 1124.00   |              |     | 1.734E+10           | 1.490E-01 | Half-Life      | too short |         |
|         | 1131.51   |              |     | 1.251E+09           | 1.490E-01 | Half-Life      | too short |         |
|         | 1260.41   | *            |     | -8.989E+08          | 1.490E-01 | Half-Life      | too short |         |
|         | 1457.56   |              |     | 9.552E+11           | 1.490E-01 | Half-Life      | too short |         |
|         | 1678.03   |              |     | 3.184E+08           | 1.490E-01 | Half-Life      | too short |         |
|         | 1706.46   |              |     | 4.603E+09           | 1.490E-01 | Half-Life      | too short |         |
|         | 1791.20   |              |     | -1.569E+08          | 1.490E-01 | Half-Life      | too short |         |
| CS-136  | 66.91     |              |     | -7.448E-01          | 9.114E-01 | 1.292E+00      | 1.951E-01 | -0.577  |
|         | 86.29     |              | +   | 6.133E+00           | 1.554E+00 | 1.906E+00      | 2.513E-01 | 3.217   |
|         | 153.22    |              |     | 1.927E-01           | 5.694E-01 | 9.758E-01      | 6.717E-02 | 0.197   |
|         | 163.89    |              |     | 6.159E-01           | 8.627E-01 | 1.490E+00      | 1.018E-01 | 0.413   |
|         | 176.55    |              |     | 1.372E-01           | 3.026E-01 | 5.163E-01      | 3.129E-02 | 0.266   |
|         | 273.65    |              |     | -6.672E-01          | 4.296E-01 | 5.553E-01      | 3.617E-02 | -1.201  |
|         | 340.57    |              |     | 5.111E-01           | 1.365E-01 | 2.220E-01      | 1.366E-02 | 2.302   |
|         | 818.51    |              |     | 1.259E-02           | 5.437E-02 | 9.092E-02      | 9.078E-03 | 0.138   |
|         | 1048.07   | *            |     | -6.957E-02          | 8.565E-02 | 1.353E-01      | 1.213E-02 | -0.514  |
|         | 1235.34   |              |     | 1.521E+00           | 6.300E-01 | 9.957E-01      | 1.024E-01 | 1.527   |
| BA-137M | 661.65    |              | *   | 2.143E-02           | 3.016E-02 | 5.224E-02      | 3.982E-03 | 0.410   |
| CS-137  | 661.65    |              | *   | 2.265E-02           | 3.188E-02 | 5.523E-02      | 4.220E-03 | 0.410   |
| CE-139  | 165.85    |              | *   | -3.139E-02          | 2.434E-02 | 3.930E-02      | 2.063E-03 | -0.799  |
| BA-140  | 162.64    |              |     | 4.991E-01           | 6.210E-01 | 1.075E+00      | 6.516E-02 | 0.464   |
|         | 304.84    |              |     | -3.044E-01          | 1.167E+00 | 1.617E+00      | 4.411E-01 | -0.188  |
| LA-140  | 423.70    |              |     | -1.382E+00          | 1.532E+00 | 2.331E+00      | 7.418E-01 | -0.593  |
|         | 537.32    | *            |     | 7.942E-02           | 1.979E-01 | 3.279E-01      | 1.072E-01 | 0.242   |
|         | 328.77    |              | +   | 6.930E-01           | 4.211E-01 | 4.541E-01      | 2.942E-02 | 1.526   |
|         | 432.53    |              |     | -1.614E-01          | 1.587E+00 | 2.626E+00      | 1.741E-01 | -0.061  |
|         | 487.03    |              |     | 1.204E-01           | 1.005E-01 | 1.759E-01      | 1.255E-02 | 0.685   |
|         | 751.79    |              |     | 1.348E+00           | 1.393E+00 | 2.424E+00      | 2.381E-01 | 0.556   |
|         | 815.85    |              |     | -4.097E-02          | 2.471E-01 | 4.025E-01      | 4.350E-02 | -0.102  |
|         | 867.82    |              |     | -3.347E-01          | 1.168E+00 | 1.783E+00      | 1.989E-01 | -0.188  |
|         | 919.63    |              |     | 5.155E-01           | 2.374E+00 | 3.640E+00      | 4.598E-01 | 0.142   |
|         | 925.24    |              |     | -1.058E-01          | 8.951E-01 | 1.445E+00      | 1.637E-01 | -0.073  |
|         | 1596.49   | *            |     | -5.002E-02          | 7.290E-02 | 9.095E-02      | 6.240E-03 | -0.550  |
| CE-141  | 145.44    |              | *   | 6.405E-02           | 5.775E-02 | 9.416E-02      | 5.375E-03 | 0.680   |
| CE-143  | 57.37     |              |     | -8.519E-04          | 5.775E-02 | Half-Life      | too short |         |
|         | 231.56    |              |     | -3.105E-04          | 5.775E-02 | Half-Life      | too short |         |
|         | 293.26    | *            |     | 6.755E-04           | 5.775E-02 | Half-Life      | too short |         |
|         | 350.59    |              | +   | 3.869E-02           | 5.775E-02 | Half-Life      | too short |         |
|         | 490.36    |              |     | 1.367E-03           | 5.775E-02 | Half-Life      | too short |         |
| CE-144  | 664.57    |              |     | 1.637E-03           | 5.775E-02 | Half-Life      | too short |         |
|         | 721.93    |              |     | 9.266E-05           | 5.775E-02 | Half-Life      | too short |         |
|         | 80.11     |              |     | 1.670E-01           | 2.737E+00 | 3.202E+00      | 2.773E-01 | 0.052   |
|         | 133.54    | *            |     | -1.004E-01          | 2.129E-01 | 2.944E-01      | 4.162E-02 | -0.341  |
| PM-144  | 476.78    |              |     | -2.925E-02          | 5.350E-02 | 8.565E-02      | 6.355E-03 | -0.341  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 618.01       |     | 1.334E-02           | 2.753E-02 | 4.165E-02      | 3.171E-03 | 0.320   |
|         |           | 696.49       | *   | 1.424E-02           | 2.677E-02 | 4.595E-02      | 3.730E-03 | 0.310   |
|         |           | 778.57       |     | -1.077E+00          | 1.915E+00 | 3.062E+00      | 2.862E-01 | -0.352  |
| PR-144  |           | 696.49       | *   | 9.649E-01           | 1.814E+00 | 3.113E+00      | 2.527E-01 | 0.310   |
|         |           | 1489.15      |     | -1.345E+01          | 9.852E+00 | 1.342E+01      | 9.693E-01 | -1.002  |
| PM-146  |           | 453.90       | *   | 1.107E-02           | 3.296E-02 | 5.551E-02      | 4.938E-03 | 0.199   |
|         |           | 633.02       |     | -2.266E-01          | 1.102E+00 | 1.746E+00      | 6.480E-01 | -0.130  |
|         |           | 735.90       |     | 7.772E-03           | 1.140E-01 | 1.862E-01      | 5.330E-02 | 0.042   |
|         |           | 747.13       |     | -1.220E-02          | 7.139E-02 | 1.173E-01      | 1.664E-02 | -0.104  |
| ND-147  | +         | 91.11        |     | 9.965E-01           | 3.416E-01 | 4.581E-01      | 4.309E-02 | 2.175   |
|         |           | 319.41       |     | 9.109E-01           | 2.706E+00 | 4.427E+00      | 2.557E-01 | 0.206   |
|         |           | 439.89       |     | 2.653E+00           | 4.554E+00 | 7.770E+00      | 4.741E-01 | 0.341   |
|         |           | 531.02       | *   | -1.165E-01          | 4.288E-01 | 6.893E-01      | 9.617E-02 | -0.169  |
| PM-149  |           | 285.90       | *   | 7.794E+01           | 7.514E+01 | 1.260E+02      | 1.782E+01 | 0.618   |
| EU-152  |           | 121.78       |     | 1.330E-02           | 6.378E-02 | 1.031E-01      | 7.949E-03 | 0.129   |
|         |           | 244.69       |     | 1.780E-01           | 2.951E-01 | 4.394E-01      | 2.455E-02 | 0.405   |
|         |           | 344.27       | *   | -3.745E-02          | 8.985E-02 | 1.280E-01      | 8.350E-03 | -0.293  |
|         |           | 443.98       |     | 2.806E-02           | 7.774E-01 | 1.259E+00      | 7.718E-02 | 0.022   |
|         |           | 778.89       |     | -1.834E-01          | 2.217E-01 | 3.480E-01      | 3.254E-02 | -0.527  |
|         |           | 867.32       |     | -2.615E-01          | 7.243E-01 | 1.065E+00      | 1.148E-01 | -0.246  |
|         | +         | 964.01       |     | 5.933E-01           | 3.026E-01 | 4.916E-01      | 5.036E-02 | 1.207   |
|         |           | 1085.78      |     | -1.241E-01          | 3.162E-01 | 5.133E-01      | 3.978E-02 | -0.242  |
|         |           | 1112.02      |     | -1.345E-01          | 3.021E-01 | 4.118E-01      | 2.932E-02 | -0.327  |
|         |           | 1407.95      |     | 4.106E-02           | 1.597E-01 | 2.652E-01      | 1.970E-02 | 0.155   |
| GD-153  |           | 69.67        |     | -5.977E-02          | 1.720E+00 | 2.720E+00      | 2.208E-01 | -0.022  |
|         | +         | 83.37        |     | 4.474E+01           | 1.683E+01 | 2.379E+01      | 2.113E+00 | 1.880   |
|         |           | 97.43        | *   | -7.516E-02          | 8.347E-02 | 1.161E-01      | 9.076E-03 | -0.648  |
|         |           | 103.18       |     | -1.441E-01          | 1.003E-01 | 1.537E-01      | 1.109E-02 | -0.937  |
| EU-154  |           | 123.07       |     | -9.679E-03          | 4.449E-02 | 7.074E-02      | 6.690E-03 | -0.137  |
|         |           | 247.94       |     | -1.331E-01          | 3.312E-01 | 4.658E-01      | 4.388E-02 | -0.286  |
|         |           | 591.81       |     | -5.747E-02          | 4.715E-01 | 7.576E-01      | 8.058E-02 | -0.076  |
|         |           | 723.30       |     | 1.638E-01           | 1.580E-01 | 2.438E-01      | 2.298E-02 | 0.672   |
|         |           | 756.87       |     | -3.628E-01          | 6.154E-01 | 9.825E-01      | 1.205E-01 | -0.369  |
|         |           | 873.19       |     | -1.963E-01          | 2.474E-01 | 3.813E-01      | 5.310E-02 | -0.515  |
|         |           | 996.32       |     | -1.678E-01          | 2.860E-01 | 4.395E-01      | 8.037E-02 | -0.382  |
|         |           | 1004.76      |     | -4.660E-02          | 1.645E-01 | 2.600E-01      | 3.197E-02 | -0.179  |
|         |           | 1274.45      | *   | -6.224E-02          | 9.937E-02 | 1.555E-01      | 1.553E-02 | -0.400  |
| EU-155  |           | 48.70        |     | -2.033E+00          | 3.248E+00 | 5.362E+00      | 4.068E-01 | -0.379  |
|         |           | 60.01        |     | 3.394E+00           | 5.488E+00 | 8.463E+00      | 6.458E-01 | 0.401   |
|         | +         | 86.54        |     | 5.697E-01           | 1.339E-01 | 1.801E-01      | 1.659E-02 | 3.163   |
|         |           | 105.31       | *   | 1.837E-01           | 1.007E-01 | 1.716E-01      | 1.227E-02 | 1.070   |
| TB-160  | +         | 86.79        |     | 1.520E+00           | 3.569E-01 | 4.844E-01      | 4.432E-02 | 3.138   |
|         |           | 197.04       |     | -4.026E-01          | 4.730E-01 | 7.599E-01      | 4.081E-02 | -0.530  |
|         |           | 215.65       |     | -7.758E-01          | 6.513E-01 | 9.946E-01      | 5.429E-02 | -0.780  |
|         |           | 298.57       |     | 9.719E-02           | 1.543E-01 | 1.662E-01      | 9.548E-03 | 0.585   |
|         |           | 879.36       | *   | 7.779E-02           | 1.114E-01 | 1.901E-01      | 2.088E-02 | 0.409   |
|         |           | 962.29       |     | 9.274E-01           | 5.206E-01 | 8.153E-01      | 8.376E-02 | 1.137   |
|         |           | 966.15       |     | 1.964E+00           | 3.091E-01 | 4.967E-01      | 5.069E-02 | 3.953   |
|         |           | 1177.93      |     | 8.678E-02           | 2.867E-01 | 4.831E-01      | 2.697E-02 | 0.180   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| HO-166M | 1271.85   |              |     | 1.038E-01           | 5.735E-01 | 9.539E-01      | 6.446E-02 | 0.109   |
|         | 80.57     |              |     | 1.201E-01           | 3.430E-01 | 4.084E-01      | 3.549E-02 | 0.294   |
|         | 184.41    |              |     | 8.274E-02           | 3.358E-02 | 5.506E-02      | 2.925E-03 | 1.503   |
|         | 280.46    |              |     | -1.045E-01          | 7.253E-02 | 1.105E-01      | 6.305E-03 | -0.946  |
|         | 410.95    |              |     | 4.676E-01           | 1.987E-01 | 3.613E-01      | 2.127E-02 | 1.294   |
|         | 711.68    | *            |     | 1.025E-02           | 4.751E-02 | 8.015E-02      | 6.681E-03 | 0.128   |
|         | 752.31    |              |     | 8.896E-02           | 2.247E-01 | 3.808E-01      | 3.405E-02 | 0.234   |
| TM-171  | 810.29    |              |     | -2.899E-02          | 4.833E-02 | 7.659E-02      | 7.541E-03 | -0.378  |
|         | 51.35     |              |     | -2.566E+01          | 3.893E+01 | 6.403E+01      | 5.075E+00 | -0.401  |
|         | 52.39     |              |     | -1.157E+01          | 1.971E+01 | 3.248E+01      | 2.580E+00 | -0.356  |
|         | 59.40     |              |     | 7.669E+00           | 3.016E+01 | 4.582E+01      | 3.479E+00 | 0.167   |
|         | 66.72     | *            |     | -2.441E+01          | 3.300E+01 | 4.721E+01      | 3.775E+00 | -0.517  |
| LU-176  | 88.36     | +            |     | 1.122E+00           | 2.634E-01 | 3.506E-01      | 3.219E-02 | 3.200   |
|         | 201.83    |              |     | -2.237E-02          | 2.404E-02 | 3.878E-02      | 2.092E-03 | -0.577  |
|         | 306.84    | *            |     | 2.113E-02           | 2.050E-02 | 3.358E-02      | 1.933E-03 | 0.629   |
| LU-177  | 401.10    |              |     | 3.042E+00           | 5.481E+00 | 9.382E+00      | 5.453E-01 | 0.324   |
|         | 112.95    |              |     | 2.238E-01           | 1.439E+00 | 2.334E+00      | 1.504E-01 | 0.096   |
| LU-177M | 208.36    | +            | *   | 3.269E+00           | 1.272E+00 | 1.729E+00      | 9.380E-02 | 1.891   |
|         | 52.97     |              |     | -4.947E-01          | 2.018E+00 | 3.367E+00      | 2.673E-01 | -0.147  |
|         | 54.07     |              |     | 1.560E+00           | 1.036E+00 | 1.815E+00      | 1.435E-01 | 0.859   |
|         | 61.30     |              |     | 2.144E+00           | 1.668E+00 | 2.627E+00      | 2.030E-01 | 0.816   |
|         | 121.62    |              |     | 6.103E-02           | 3.267E-01 | 5.280E-01      | 3.132E-02 | 0.116   |
|         | 147.16    |              |     | -4.925E-02          | 6.047E-01 | 9.550E-01      | 5.197E-02 | -0.052  |
|         | 171.86    |              |     | -2.936E-01          | 3.951E-01 | 6.492E-01      | 3.417E-02 | -0.452  |
|         | 218.09    |              |     | 3.298E-01           | 7.225E-01 | 1.216E+00      | 6.654E-02 | 0.271   |
|         | 268.79    | +            |     | 2.674E+00           | 1.115E+00 | 1.262E+00      | 7.156E-02 | 2.118   |
|         | 319.02    |              |     | 8.140E-02           | 2.112E-01 | 3.463E-01      | 1.999E-02 | 0.235   |
|         | 367.43    |              |     | 3.945E-02           | 6.978E-01 | 1.178E+00      | 6.804E-02 | 0.033   |
|         | 413.65    | *            |     | -3.733E-01          | 1.471E-01 | 2.136E-01      | 1.262E-02 | -1.748  |
|         | 56.28     |              |     | -6.812E-01          | 1.068E+00 | 1.750E+00      | 1.363E-01 | -0.389  |
|         | 57.53     |              |     | -4.397E-01          | 5.557E-01 | 9.040E-01      | 6.971E-02 | -0.486  |
|         | 65.20     |              |     | -6.180E-01          | 1.113E+00 | 1.608E+00      | 1.275E-01 | -0.384  |
|         | 133.02    |              |     | 1.325E-03           | 6.686E-02 | 9.494E-02      | 5.371E-03 | 0.014   |
|         | 136.25    |              |     | -3.097E-02          | 4.135E-01 | 6.567E-01      | 3.677E-02 | -0.047  |
| W-181   | 345.85    |              |     | -1.147E-01          | 1.774E-01 | 2.517E-01      | 1.456E-02 | -0.456  |
|         | 482.03    | *            |     | -4.784E-03          | 3.138E-02 | 5.126E-02      | 3.281E-03 | -0.093  |
|         | 56.28     |              |     | -2.681E-01          | 4.184E-01 | 6.856E-01      | 5.341E-02 | -0.391  |
| TA-182  | 57.53     |              |     | -1.724E-01          | 2.180E-01 | 3.546E-01      | 2.735E-02 | -0.486  |
|         | 65.20     | *            |     | -2.405E-01          | 4.331E-01 | 6.257E-01      | 4.963E-02 | -0.384  |
|         | 67.75     |              |     | -1.444E-01          | 1.290E-01 | 1.811E-01      | 1.456E-02 | -0.798  |
|         | 100.10    |              |     | 2.530E-01           | 1.653E-01 | 2.804E-01      | 2.108E-02 | 0.902   |
|         | 152.43    |              |     | -6.836E-02          | 3.167E-01 | 4.966E-01      | 2.671E-02 | -0.138  |
|         | 222.10    |              |     | 9.047E-02           | 2.973E-01 | 4.974E-01      | 2.730E-02 | 0.182   |
|         | 1001.68   |              |     | -9.049E-02          | 1.604E+00 | 2.516E+00      | 2.402E-01 | -0.036  |
|         | 1121.28   | +            |     | 7.394E-01           | 1.976E-01 | 2.920E-01      | 2.011E-02 | 2.533   |
|         | 1189.05   |              |     | 8.564E-03           | 2.608E-01 | 4.320E-01      | 2.470E-02 | 0.020   |
|         | 1221.42   | *            |     | 1.035E-02           | 1.557E-01 | 2.578E-01      | 1.577E-02 | 0.040   |
| RE-183  | 1230.97   |              |     | 3.106E-01           | 4.413E-01 | 6.577E-01      | 4.102E-02 | 0.472   |
|         | 57.98     |              |     | -2.009E-01          | 2.245E-01 | 3.456E-01      | 2.655E-02 | -0.581  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| RE-184  |           | 59.32        |     | 2.893E-02           | 1.240E-01 | 1.882E-01      | 1.430E-02 | 0.154   |
|         |           | 67.20        |     | -1.144E-01          | 2.301E-01 | 3.328E-01      | 2.667E-02 | -0.344  |
|         |           | 162.32       | *   | 6.927E-02           | 9.137E-02 | 1.580E-01      | 8.342E-03 | 0.438   |
|         | +         | 208.81       |     | 2.974E+00           | 1.157E+00 | 1.577E+00      | 8.559E-02 | 1.885   |
|         |           | 291.72       |     | -1.115E+00          | 8.993E-01 | 1.177E+00      | 6.746E-02 | -0.948  |
|         |           | 57.98        |     | -7.408E-01          | 8.279E-01 | 1.274E+00      | 9.790E-02 | -0.581  |
|         |           | 59.32        |     | 1.066E-01           | 4.569E-01 | 6.935E-01      | 5.269E-02 | 0.154   |
|         |           | 67.20        |     | -4.218E-01          | 8.484E-01 | 1.227E+00      | 9.832E-02 | -0.344  |
|         |           | 161.27       |     | -1.328E-01          | 2.972E-01 | 4.959E-01      | 2.623E-02 | -0.268  |
|         |           | 216.55       |     | -1.845E-01          | 2.243E-01 | 3.611E-01      | 1.973E-02 | -0.511  |
|         |           | 252.85       | *   | -1.187E-01          | 1.879E-01 | 3.000E-01      | 1.685E-02 | -0.396  |
|         |           | 318.01       |     | 2.522E-02           | 3.660E-01 | 5.918E-01      | 3.415E-02 | 0.043   |
|         |           | 792.07       |     | 6.120E-01           | 9.323E-01 | 1.392E+00      | 1.330E-01 | 0.440   |
|         |           | 903.28       |     | -3.940E-01          | 9.839E-01 | 1.323E+00      | 1.485E-01 | -0.298  |
| OS-185  |           | 920.93       |     | 2.040E-02           | 3.668E-01 | 5.865E-01      | 6.427E-02 | 0.035   |
|         |           | 59.72        |     | 1.647E-01           | 3.268E-01 | 5.018E-01      | 3.817E-02 | 0.328   |
|         |           | 61.14        |     | 2.104E-01           | 1.831E-01 | 2.871E-01      | 2.216E-02 | 0.733   |
|         |           | 69.30        |     | -1.299E-01          | 3.091E-01 | 4.823E-01      | 3.907E-02 | -0.269  |
|         |           | 592.07       |     | -1.942E-01          | 1.925E+00 | 3.097E+00      | 2.218E-01 | -0.063  |
|         |           | 646.12       | *   | -5.235E-04          | 3.317E-02 | 5.323E-02      | 4.003E-03 | -0.010  |
|         |           | 717.42       |     | -1.172E-01          | 7.190E-01 | 1.187E+00      | 9.994E-02 | -0.099  |
|         |           | 874.81       |     | -1.808E-01          | 4.721E-01 | 7.524E-01      | 8.207E-02 | -0.240  |
|         |           | 880.27       |     | 2.048E-01           | 6.189E-01 | 1.034E+00      | 1.137E-01 | 0.198   |
|         |           | 155.03       | *   | 1.508E-01           | 1.493E-01 | 2.602E-01      | 1.392E-02 | 0.580   |
| RE-188  |           | 477.96       |     | 1.698E+00           | 2.341E+00 | 4.004E+00      | 2.551E-01 | 0.424   |
|         |           | 633.10       |     | -1.450E-01          | 2.204E+00 | 3.531E+00      | 2.625E-01 | -0.041  |
|         | +         | 63.58        |     | 1.029E+02           | 9.786E+01 | 9.863E+01      | 7.749E+00 | 1.044   |
| W-188   |           | 227.08       |     | -7.681E-01          | 1.071E+01 | 1.766E+01      | 9.734E-01 | -0.043  |
|         | *         | 290.67       |     | -8.881E+00          | 7.093E+00 | 9.277E+00      | 5.313E-01 | -0.957  |
| IR-192  | +         | 295.96       |     | 1.174E+00           | 1.646E-01 | 2.496E-01      | 1.455E-02 | 4.703   |
|         |           | 308.46       |     | 5.622E-02           | 7.845E-02 | 1.308E-01      | 7.618E-03 | 0.430   |
|         |           | 316.51       | *   | -2.116E-02          | 2.809E-02 | 4.359E-02      | 2.528E-03 | -0.485  |
|         |           | 468.07       |     | 1.200E-03           | 6.048E-02 | 8.676E-02      | 6.182E-03 | 0.014   |
|         |           | 604.41       |     | -2.637E-01          | 4.468E-01 | 5.881E-01      | 7.146E-02 | -0.448  |
| AU-195  |           | 612.46       |     | 3.244E+00           | 8.000E-01 | 1.319E+00      | 1.157E-01 | 2.460   |
|         |           | 65.12        |     | -1.032E-01          | 2.011E-01 | 2.911E-01      | 2.308E-02 | -0.355  |
|         |           | 66.83        |     | -9.275E-02          | 1.096E-01 | 1.561E-01      | 1.249E-02 | -0.594  |
|         | +         | 75.70        |     | 1.441E+00           | 2.605E-01 | 4.459E-01      | 3.745E-02 | 3.231   |
|         |           | 98.88        | *   | 2.463E-01           | 2.103E-01 | 3.539E-01      | 2.707E-02 | 0.696   |
| TL-200  | +         | 129.76       |     | 3.481E+00           | 3.770E+00 | 4.498E+00      | 2.573E-01 | 0.774   |
|         |           | 367.94       | *   | 1.356E-05           | 3.770E+00 | Half-Life      | too short |         |
|         |           | 579.30       |     | 3.874E-03           | 3.770E+00 | Half-Life      | too short |         |
|         |           | 828.27       |     | 3.381E-03           | 3.770E+00 | Half-Life      | too short |         |
| TL-201  |           | 1205.75      |     | 6.612E-04           | 3.770E+00 | Half-Life      | too short |         |
|         |           | 68.90        |     | -2.169E+00          | 4.652E+00 | 7.611E+00      | 6.153E-01 | -0.285  |
|         |           | 70.82        |     | 2.428E+00           | 2.852E+00 | 4.369E+00      | 3.567E-01 | 0.556   |
|         |           | 80.30        |     | 2.128E+00           | 6.175E+00 | 7.352E+00      | 6.374E-01 | 0.289   |
|         |           | 135.34       |     | 6.984E+00           | 2.227E+01 | 3.589E+01      | 2.015E+00 | 0.195   |
|         |           | 167.43       | *   | -1.178E+00          | 5.496E+00 | 9.215E+00      | 4.837E-01 | -0.128  |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| TL-202  |           | 68.90        |     | -1.993E-01          | 4.274E-01 | 6.992E-01      | 5.653E-02 | -0.285  |
|         |           | 70.82        |     | 2.224E-01           | 2.613E-01 | 4.003E-01      | 3.268E-02 | 0.556   |
|         |           | 80.30        |     | 1.950E-01           | 5.659E-01 | 6.738E-01      | 5.842E-02 | 0.289   |
| HG-203  |           | 439.56       | *   | 3.107E-02           | 5.454E-02 | 9.299E-02      | 5.669E-03 | 0.334   |
|         |           | 70.83        |     | 9.698E-01           | 1.143E+00 | 1.743E+00      | 2.323E-01 | 0.556   |
|         |           | 72.87        |     | 6.908E-01           | 6.733E-01 | 1.028E+00      | 1.333E-01 | 0.672   |
|         |           | 82.60        |     | 4.290E-01           | 1.134E+00 | 1.690E+00      | 2.345E-01 | 0.254   |
| BI-207  |           | 279.20       | *   | 5.192E-02           | 3.379E-02 | 5.816E-02      | 3.527E-03 | 0.893   |
|         |           | 72.80        |     | 1.660E-01           | 1.959E-01 | 2.990E-01      | 2.468E-02 | 0.555   |
|         | +         | 74.97        |     | 7.996E-01           | 1.446E-01 | 2.262E-01      | 1.891E-02 | 3.535   |
|         | +         | 84.90        |     | 5.789E-01           | 2.177E-01 | 3.027E-01      | 2.724E-02 | 1.912   |
| TL-207  |           | 569.67       |     | 1.335E-02           | 2.466E-02 | 4.123E-02      | 2.889E-03 | 0.324   |
|         |           | 1063.62      | *   | 1.915E-02           | 4.168E-02 | 7.157E-02      | 5.908E-03 | 0.268   |
|         |           | 1770.23      |     | -1.537E-01          | 3.772E-01 | 4.791E-01      | 2.898E-02 | -0.321  |
|         |           | 81.07        |     | 9.779E-02           | 2.682E-01 | 3.196E-01      | 2.788E-02 | 0.306   |
|         | +         | 83.78        |     | 3.817E-01           | 1.435E-01 | 2.022E-01      | 1.802E-02 | 1.888   |
|         |           | 94.90        |     | 6.023E-01           | 2.368E-01 | 3.732E-01      | 3.038E-02 | 1.614   |
|         |           | 122.32       |     | 1.047E-01           | 1.509E+00 | 2.428E+00      | 1.648E-01 | 0.043   |
|         |           | 144.24       |     | 1.880E-01           | 6.405E-01 | 1.018E+00      | 7.103E-02 | 0.185   |
|         |           | 154.21       |     | 2.709E-01           | 3.426E-01 | 5.938E-01      | 3.951E-02 | 0.456   |
|         | +         | 269.46       |     | 6.263E-01           | 2.614E-01 | 3.059E-01      | 1.817E-02 | 2.048   |
| PO-209  |           | 323.87       | *   | -4.119E-01          | 6.610E-01 | 8.873E-01      | 1.465E-01 | -0.464  |
|         | +         | 338.28       |     | 7.840E+00           | 1.698E+00 | 2.127E+00      | 2.239E-01 | 3.686   |
|         |           | 445.03       |     | 6.775E-01           | 1.835E+00 | 3.018E+00      | 3.158E-01 | 0.224   |
|         |           | 260.50       |     | 2.638E-01           | 7.776E+00 | 1.275E+01      | 7.193E-01 | 0.021   |
|         |           | 262.80       |     | -2.752E+01          | 2.150E+01 | 3.313E+01      | 1.873E+00 | -0.831  |
| BI-210  |           | 896.60       | *   | 1.466E+00           | 5.891E+00 | 9.778E+00      | 1.103E+00 | 0.150   |
|         |           | 46.50        | *   | 3.207E+00           | 4.862E+00 | 8.404E+00      | 6.502E-01 | 0.382   |
|         |           | 46.50        | *   | 3.207E+00           | 4.862E+00 | 8.404E+00      | 6.502E-01 | 0.382   |
| PB-210  |           | 46.50        | *   | 3.207E+00           | 4.860E+00 | 8.404E+00      | 5.590E-01 | 0.382   |
| PB-211  |           | 404.84       | *   | -1.018E+00          | 1.002E+00 | 1.220E+00      | 7.608E-01 | -0.834  |
| PO-215  |           | 427.08       |     | 1.338E+00           | 1.782E+00 | 2.735E+00      | 1.691E+00 | 0.489   |
|         |           | 831.96       |     | -5.160E-02          | 1.021E+00 | 1.673E+00      | 1.052E+00 | -0.031  |
|         |           | 81.07        |     | 9.779E-02           | 2.682E-01 | 3.196E-01      | 2.788E-02 | 0.306   |
|         | +         | 83.78        |     | 3.817E-01           | 1.435E-01 | 2.022E-01      | 1.802E-02 | 1.888   |
|         |           | 94.90        |     | 6.023E-01           | 2.368E-01 | 3.732E-01      | 3.038E-02 | 1.614   |
|         |           | 122.32       |     | 1.047E-01           | 1.509E+00 | 2.428E+00      | 1.648E-01 | 0.043   |
|         |           | 144.24       |     | 1.880E-01           | 6.405E-01 | 1.018E+00      | 7.103E-02 | 0.185   |
|         |           | 154.21       |     | 2.709E-01           | 3.426E-01 | 5.938E-01      | 3.951E-02 | 0.456   |
|         | +         | 269.46       |     | 6.263E-01           | 2.614E-01 | 3.059E-01      | 1.817E-02 | 2.048   |
|         | +         | 323.87       | *   | -4.119E-01          | 6.610E-01 | 8.873E-01      | 1.465E-01 | -0.464  |
| RN-219  |           | 338.28       |     | 7.840E+00           | 1.698E+00 | 2.127E+00      | 2.239E-01 | 3.686   |
|         |           | 445.03       |     | 6.775E-01           | 1.835E+00 | 3.018E+00      | 3.158E-01 | 0.224   |
|         | +         | 271.23       |     | 8.035E-01           | 3.381E-01 | 3.918E-01      | 3.141E-02 | 2.051   |
|         |           | 401.81       | *   | 3.487E-01           | 3.386E-01 | 5.856E-01      | 7.972E-02 | 0.595   |
| RN-220  |           | 549.76       | *   | -1.937E+00          | 2.088E+01 | 3.384E+01      | 2.326E+00 | -0.057  |
| RA-223  |           | 81.07        |     | 9.779E-02           | 2.682E-01 | 3.196E-01      | 2.788E-02 | 0.306   |
|         | +         | 83.78        |     | 3.817E-01           | 1.435E-01 | 2.022E-01      | 1.802E-02 | 1.888   |
|         |           | 94.90        |     | 6.023E-01           | 2.368E-01 | 3.732E-01      | 3.038E-02 | 1.614   |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Activity Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|---------------------|-----------|----------------|-----------|---------|
| AC-227  |           | 122.32       |              | 1.047E-01           | 1.509E+00 | 2.428E+00      | 1.648E-01 | 0.043   |
|         |           | 144.24       |              | 1.880E-01           | 6.405E-01 | 1.018E+00      | 7.103E-02 | 0.185   |
|         |           | 154.21       |              | 2.709E-01           | 3.426E-01 | 5.938E-01      | 3.951E-02 | 0.456   |
|         | +         | 269.46       |              | 6.263E-01           | 2.614E-01 | 3.059E-01      | 1.817E-02 | 2.048   |
|         |           | 323.87       | *            | -4.119E-01          | 6.610E-01 | 8.873E-01      | 1.465E-01 | -0.464  |
|         | +         | 338.28       |              | 7.840E+00           | 1.698E+00 | 2.127E+00      | 2.239E-01 | 3.686   |
|         |           | 445.03       |              | 6.775E-01           | 1.835E+00 | 3.018E+00      | 3.158E-01 | 0.224   |
|         |           | 79.80        |              | 3.269E-01           | 2.130E+00 | 2.506E+00      | 5.390E-01 | 0.130   |
|         |           | 236.00       |              | 7.397E-01           | 2.456E-01 | 3.822E-01      | 3.943E-02 | 1.935   |
|         |           | 256.20       | *            | 1.703E-01           | 3.124E-01 | 5.217E-01      | 7.247E-02 | 0.326   |
|         |           | 286.10       |              | 1.452E+00           | 1.310E+00 | 2.208E+00      | 2.543E-01 | 0.658   |
|         | +         | 299.80       |              | 2.334E+00           | 1.680E+00 | 2.110E+00      | 3.432E-01 | 1.106   |
|         |           | 304.40       |              | -1.028E+00          | 1.731E+00 | 2.339E+00      | 4.041E-01 | -0.440  |
|         |           | 334.20       |              | 8.115E-01           | 2.896E+00 | 2.991E+00      | 5.482E-01 | 0.271   |
| TH-227  |           | 79.80        |              | 3.269E-01           | 2.130E+00 | 2.506E+00      | 5.459E-01 | 0.130   |
|         | +         | 94.00        |              | 9.617E+00           | 3.673E+00 | 3.518E+00      | 7.613E-01 | 2.734   |
|         |           | 236.00       |              | 7.397E-01           | 2.425E-01 | 3.822E-01      | 3.402E-02 | 1.935   |
|         |           | 256.20       | *            | 1.703E-01           | 3.128E-01 | 5.217E-01      | 8.787E-02 | 0.326   |
|         |           | 286.10       |              | 1.452E+00           | 1.950E+00 | 2.208E+00      | 2.212E+00 | 0.658   |
|         | +         | 299.80       |              | 2.334E+00           | 1.680E+00 | 2.110E+00      | 3.432E-01 | 1.106   |
|         |           | 304.40       |              | -1.028E+00          | 1.731E+00 | 2.339E+00      | 4.041E-01 | -0.440  |
|         |           | 334.20       |              | 8.115E-01           | 2.896E+00 | 2.991E+00      | 5.482E-01 | 0.271   |
|         | +         | 85.43        |              | 5.714E-01           | 2.149E-01 | 3.106E-01      | 2.807E-02 | 1.840   |
|         | +         | 88.47        |              | 6.459E-01           | 1.516E-01 | 1.996E-01      | 1.828E-02 | 3.236   |
| TH-229  |           | 100.00       |              | 2.687E-01           | 1.719E-01 | 2.920E-01      | 2.199E-02 | 0.920   |
|         |           | 193.63       | *            | -8.130E-02          | 4.208E-01 | 6.990E-01      | 3.743E-02 | -0.116  |
|         |           | 210.97       |              | 2.163E+00           | 7.454E-01 | 1.211E+00      | 6.581E-02 | 1.787   |
|         |           | 283.67       | *            | -4.664E-01          | 1.293E+00 | 2.068E+00      | 2.842E-01 | -0.226  |
|         | +         | 301.29       |              | 9.335E-01           | 6.617E-01 | 8.163E-01      | 8.509E-02 | 1.144   |
| TH-231  |           | 81.07        |              | 9.779E-02           | 2.682E-01 | 3.196E-01      | 2.788E-02 | 0.306   |
|         | +         | 83.78        |              | 3.817E-01           | 1.435E-01 | 2.022E-01      | 1.802E-02 | 1.888   |
|         |           | 94.90        |              | 6.023E-01           | 2.368E-01 | 3.732E-01      | 3.038E-02 | 1.614   |
|         |           | 122.32       |              | 1.047E-01           | 1.509E+00 | 2.428E+00      | 1.648E-01 | 0.043   |
| U-231   |           | 144.24       |              | 1.880E-01           | 6.405E-01 | 1.018E+00      | 7.103E-02 | 0.185   |
|         |           | 154.21       |              | 2.709E-01           | 3.426E-01 | 5.938E-01      | 3.951E-02 | 0.456   |
|         | +         | 269.46       |              | 6.263E-01           | 2.614E-01 | 3.059E-01      | 1.817E-02 | 2.048   |
|         |           | 323.87       | *            | -4.119E-01          | 6.610E-01 | 8.873E-01      | 1.465E-01 | -0.464  |
|         | +         | 338.28       |              | 7.840E+00           | 1.698E+00 | 2.127E+00      | 2.239E-01 | 3.686   |
|         |           | 445.03       |              | 6.775E-01           | 1.835E+00 | 3.018E+00      | 3.158E-01 | 0.224   |
|         | +         | 84.21        |              | 1.610E+01           | 6.056E+00 | 8.551E+00      | 7.649E-01 | 1.883   |
|         | +         | 92.29        |              | 9.305E+00           | 3.027E+00 | 3.593E+00      | 3.059E-01 | 2.589   |
|         |           | 95.87        | *            | 5.600E-01           | 1.038E+00 | 1.545E+00      | 1.238E-01 | 0.362   |
|         |           | 108.00       |              | -8.744E-01          | 1.859E+00 | 2.956E+00      | 2.010E-01 | -0.296  |
|         | +         | 75.28        |              | 2.333E+01           | 5.155E+00 | 6.717E+00      | 1.022E+00 | 3.474   |
|         | +         | 86.59        |              | 9.261E+00           | 3.203E+00 | 2.938E+00      | 7.929E-01 | 3.152   |
|         | +         | 300.12       |              | 6.506E-01           | 4.644E-01 | 5.854E-01      | 7.852E-02 | 1.111   |
|         |           | 311.98       | *            | -4.027E-03          | 5.055E-02 | 8.126E-02      | 4.978E-03 | -0.050  |
| PA-233  |           | 340.50       |              | 2.765E+00           | 9.135E-01 | 1.111E+00      | 2.551E-01 | 2.489   |
|         |           | 398.62       |              | -1.531E-01          | 1.705E+00 | 2.842E+00      | 7.348E-01 | -0.054  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|---------------------|-----------|----------------|-----------|---------|
| PA-234  | +         | 415.76       |              | -6.245E-01          | 1.277E+00 | 2.068E+00      | 4.265E-01 | -0.302  |
|         |           | 63.00        |              | 2.989E+00           | 2.868E+00 | 2.942E+00      | 4.434E-01 | 1.016   |
|         |           | 94.67        |              | 5.607E-01           | 1.823E-01 | 2.787E-01      | 3.371E-02 | 2.012   |
|         |           | 98.44        |              | 7.417E-02           | 9.847E-02 | 1.429E-01      | 7.952E-02 | 0.519   |
|         |           | 99.86        |              | 7.003E-01           | 4.363E-01 | 7.417E-01      | 5.595E-02 | 0.944   |
|         |           | 111.00       |              | 3.481E-02           | 1.672E-01 | 2.719E-01      | 2.917E-02 | 0.128   |
|         |           | 131.20       |              | 5.701E-02           | 1.098E-01 | 1.596E-01      | 9.082E-03 | 0.357   |
|         |           | 152.70       |              | 9.329E-02           | 3.018E-01 | 4.815E-01      | 7.539E-02 | 0.194   |
|         |           | 186.00       |              | 6.265E+00           | 2.510E+00 | 2.259E+00      | 6.883E-01 | 2.773   |
|         |           | 226.40       |              | -5.041E-02          | 3.337E-01 | 5.488E-01      | 6.265E-02 | -0.092  |
|         | +         | 227.20       |              | 1.405E-01           | 3.577E-01 | 5.996E-01      | 3.305E-02 | 0.234   |
|         |           | 248.90       |              | 2.313E-01           | 7.399E-01 | 1.082E+00      | 2.320E-01 | 0.214   |
|         |           | 293.70       |              | 6.076E+00           | 1.263E+00 | 1.462E+00      | 2.347E-01 | 4.156   |
|         |           | 369.80       |              | -2.559E-01          | 6.630E-01 | 1.093E+00      | 2.275E-01 | -0.234  |
|         |           | 568.70       |              | -9.589E-02          | 8.019E-01 | 1.294E+00      | 9.060E-02 | -0.074  |
|         |           | 569.50       |              | 1.184E-01           | 2.188E-01 | 3.659E-01      | 2.563E-02 | 0.324   |
|         |           | 574.00       |              | 6.612E-01           | 1.230E+00 | 2.003E+00      | 1.410E-01 | 0.330   |
|         |           | 699.00       |              | -3.405E-01          | 5.576E-01 | 8.939E-01      | 1.687E-01 | -0.381  |
|         |           | 706.10       |              | 2.092E-01           | 8.017E-01 | 1.348E+00      | 6.001E-01 | 0.155   |
|         |           | 733.00       |              | 2.676E-02           | 3.074E-01 | 4.437E-01      | 9.854E-02 | 0.060   |
|         |           | 742.81       |              | 1.765E-01           | 1.029E+00 | 1.716E+00      | 1.154E+00 | 0.103   |
|         |           | 796.30       |              | 1.877E+00           | 9.803E-01 | 1.394E+00      | 3.817E-01 | 1.347   |
|         |           | 805.60       |              | 5.875E-01           | 8.146E-01 | 1.367E+00      | 4.238E-01 | 0.430   |
|         |           | 819.60       |              | -9.049E-03          | 8.952E-01 | 1.473E+00      | 5.651E-01 | -0.006  |
|         |           | 826.30       |              | -5.183E-01          | 6.848E-01 | 1.003E+00      | 4.518E-01 | -0.517  |
|         |           | 831.60       |              | -1.339E-01          | 5.287E-01 | 8.540E-01      | 2.590E-01 | -0.157  |
|         |           | 876.40       |              | 1.507E-01           | 6.897E-01 | 1.116E+00      | 1.150E+00 | 0.135   |
|         |           | 880.51       |              | -2.765E-02          | 2.261E-01 | 3.668E-01      | 4.037E-02 | -0.075  |
|         |           | 883.24       |              | -1.545E-01          | 2.546E-01 | 3.627E-01      | 2.451E-01 | -0.426  |
|         |           | 899.00       |              | 3.096E-01           | 6.956E-01 | 1.146E+00      | 5.079E-01 | 0.270   |
|         |           | 925.00       |              | -1.550E-01          | 9.378E-01 | 1.509E+00      | 1.644E-01 | -0.103  |
|         |           | 926.50       |              | -9.207E-02          | 1.441E-01 | 2.209E-01      | 5.773E-02 | -0.417  |
|         |           | 946.00       | *            | 6.441E-02           | 2.329E-01 | 3.852E-01      | 7.599E-02 | 0.167   |
|         |           | 949.00       |              | 2.595E-01           | 3.502E-01 | 5.961E-01      | 6.261E-02 | 0.435   |
|         |           | 980.50       |              | 3.519E-02           | 5.694E-01 | 9.261E-01      | 9.212E-02 | 0.038   |
|         |           | 1394.10      |              | -7.245E-01          | 1.099E+00 | 1.509E+00      | 9.800E-01 | -0.480  |
| PA-234M |           | 766.42       |              | 2.304E+01           | 1.634E+01 | 1.849E+01      | 9.397E+00 | 1.246   |
|         |           | 1001.03      | *            | 1.262E+00           | 3.637E+00 | 5.870E+00      | 6.333E-01 | 0.215   |
| U-235   | +         | 89.95        |              | 4.000E+00           | 1.807E+00 | 1.795E+00      | 5.552E-01 | 2.229   |
|         |           | 93.35        |              | 2.992E+00           | 1.259E+00 | 1.146E+00      | 3.203E-01 | 2.611   |
|         |           | 105.00       |              | 1.706E+00           | 1.098E+00 | 1.675E+00      | 4.928E-01 | 1.019   |
|         |           | 143.76       | *            | -2.299E-02          | 1.956E-01 | 3.065E-01      | 4.964E-02 | -0.075  |
|         |           | 163.35       |              | 4.127E-01           | 3.917E-01 | 6.724E-01      | 1.198E-01 | 0.614   |
| NP-236  | +         | 185.71       |              | 2.320E-01           | 6.160E-02 | 8.361E-02      | 4.447E-03 | 2.775   |
|         |           | 205.31       |              | 5.605E-01           | 4.790E-01 | 7.249E-01      | 1.295E-01 | 0.773   |
|         |           | 94.67        |              | 4.274E-01           | 1.331E-01 | 2.116E-01      | 1.729E-02 | 2.020   |
|         |           | 98.44        |              | 5.601E-02           | 6.772E-02 | 1.080E-01      | 8.318E-03 | 0.519   |
|         |           | 111.00       |              | 2.633E-02           | 1.265E-01 | 2.057E-01      | 1.353E-02 | 0.128   |
|         |           | 160.31       | *            | -7.519E-03          | 6.712E-02 | 1.132E-01      | 5.999E-03 | -0.066  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| NP-239  |           | 99.55        |     | 1.719E-01           | 1.468E-01 | 2.470E-01      | 1.871E-02 | 0.696   |
|         |           | 117.00       | *   | 1.684E-01           | 1.708E-01 | 2.840E-01      | 1.758E-02 | 0.593   |
|         | +         | 209.75       |     | 2.349E+00           | 9.138E-01 | 1.253E+00      | 6.807E-02 | 1.874   |
|         |           | 228.18       |     | 1.302E-01           | 1.870E-01 | 3.166E-01      | 1.746E-02 | 0.411   |
|         |           | 277.60       |     | 2.334E-01           | 1.501E-01 | 2.585E-01      | 1.472E-02 | 0.903   |
|         |           | 334.30       |     | 4.464E-01           | 1.638E+00 | 1.693E+00      | 9.791E-02 | 0.264   |
| AM-241  |           | 59.54        | *   | 5.090E-02           | 1.750E-01 | 2.662E-01      | 2.208E-02 | 0.191   |
| CM-243  |           | 99.55        |     | 1.769E-01           | 1.511E-01 | 2.541E-01      | 1.926E-02 | 0.696   |
|         |           | 103.76       | *   | -3.374E-02          | 9.059E-02 | 1.450E-01      | 1.038E-02 | -0.233  |
|         |           | 117.00       |     | 1.732E-01           | 1.757E-01 | 2.922E-01      | 1.809E-02 | 0.593   |
|         | +         | 209.75       |     | 2.315E+00           | 9.008E-01 | 1.236E+00      | 6.710E-02 | 1.874   |
|         |           | 228.18       |     | 1.316E-01           | 1.889E-01 | 3.199E-01      | 1.764E-02 | 0.411   |
|         |           | 277.60       |     | 2.353E-01           | 1.513E-01 | 2.606E-01      | 1.484E-02 | 0.903   |
| AM-246  |           | 798.80       |     | -2.118E-02          | 1.214E-01 | 1.693E-01      | 1.636E-02 | -0.125  |
|         |           | 1036.00      |     | -1.885E-01          | 2.334E-01 | 3.688E-01      | 3.265E-02 | -0.511  |
|         |           | 1062.04      |     | 1.867E-01           | 1.813E-01 | 3.210E-01      | 2.661E-02 | 0.582   |
|         |           | 1078.86      | *   | 6.152E-02           | 1.146E-01 | 1.974E-01      | 1.562E-02 | 0.312   |
| CM-247  |           | 278.00       |     | 1.292E+00           | 6.148E-01 | 1.077E+00      | 6.136E-02 | 1.200   |
|         |           | 287.40       |     | 9.374E-01           | 1.037E+00 | 1.746E+00      | 9.985E-02 | 0.537   |
|         |           | 402.60       | *   | 1.348E-02           | 3.037E-02 | 5.173E-02      | 3.013E-03 | 0.261   |
| CF-249  |           | 252.85       |     | -4.456E-01          | 7.054E-01 | 1.126E+00      | 6.326E-02 | -0.396  |
|         |           | 333.44       |     | 6.484E-02           | 2.143E-01 | 2.223E-01      | 1.285E-02 | 0.292   |
|         |           | 387.95       | *   | -1.249E-02          | 3.211E-02 | 5.293E-02      | 3.043E-03 | -0.236  |
| CF-251  |           | 176.60       | *   | 4.670E-02           | 1.050E-01 | 1.791E-01      | 9.459E-03 | 0.261   |
|         |           | 227.00       |     | -3.456E-02          | 3.213E-01 | 5.293E-01      | 2.917E-02 | -0.065  |
|         |           | 285.00       |     | -3.328E-02          | 1.484E+00 | 2.410E+00      | 1.377E-01 | -0.014  |



# VAX/VMS Nuclide Identification Report Generated

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
*
*                               DETECTOR DATA                                *
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630011          *
* Acquisition date   : 23-JAN-2010 11:49:21 Detector SN#      :                *
* Detector ID        : GAM18                               Sensitivity       : 5.000    *
* Geometry           : CAN                               Energy tolerance: 1.500    *
* Elapsed live time  : 0 02:00:00.00                      Abundance limit : 75.000    *
* Elapsed real time  : 0 02:00:02.16                      Half life ratio  : 8.000    *
*****
*
*                               SAMPLE DATA                                *
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID              *
* Sample ID          : G244630011                      Analyst initials: MXR1        *
* Batch Number       : 941639                          Sample Quantity : 1.4616E+02 GRAM *
* Recovery           : 1.00000                          Carrier Weight  : 0.00000    *
*****
*
*                               QC DATA                                    *
*
* Standard Weight    : 0.00000                                                                    *
* CALIB. DATE/TIME   : 23-APR-2009 11:59:23 MS Isotope      :                *
* MSD DPM             : 0.000                               MSD Isotope      :                *
* LCS DPM             : 0.000                               LCS Isotope      :                *
* LCSD DPM            : 0.000                               LCSD Isotope     :                *
*****

```

## Combined Activity-MDA Report

### ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act error | MDA<br>(pCi/GRAM ) |           |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 3.360E+01               | 2.862E+00 | 4.371E-01          | 0.000E+00 |
| CD-109  | 4.812E+00               | 1.107E+00 | 1.184E+00          | 0.000E+00 |
| SN-126  | 4.731E-01               | 1.088E-01 | 1.172E-01          | 0.000E+00 |
| TL-208  | 6.375E-01               | 7.932E-02 | 4.426E-02          | 0.000E+00 |
| BI-211  | 5.197E+00               | 4.783E-01 | 2.896E-01          | 0.000E+00 |
| BI-212  | 1.693E+00               | 3.928E-01 | 3.592E-01          | 0.000E+00 |
| PB-212  | 2.146E+00               | 1.788E-01 | 7.622E-02          | 0.000E+00 |
| PO-212  | 2.146E+00               | 1.788E-01 | 7.622E-02          | 0.000E+00 |
| BI-214  | 1.469E+00               | 1.882E-01 | 8.605E-02          | 0.000E+00 |
| PB-214  | 1.808E+00               | 1.903E-01 | 9.575E-02          | 0.000E+00 |
| PO-214  | 1.808E+00               | 1.903E-01 | 9.575E-02          | 0.000E+00 |
| PO-216  | 2.146E+00               | 1.788E-01 | 7.622E-02          | 0.000E+00 |
| PO-218  | 1.808E+00               | 1.903E-01 | 9.575E-02          | 0.000E+00 |
| RA-224  | 5.474E+00               | 9.652E-01 | 8.661E-01          | 0.000E+00 |
| RA-226  | 1.469E+00               | 1.882E-01 | 8.605E-02          | 0.000E+00 |
| AC-228  | 2.116E+00               | 3.654E-01 | 1.742E-01          | 0.000E+00 |
| RA-228  | 2.116E+00               | 3.654E-01 | 1.742E-01          | 0.000E+00 |
| TH-228  | 2.179E+00               | 1.815E-01 | 7.736E-02          | 0.000E+00 |
| TH-230  | 1.469E+00               | 1.882E-01 | 8.605E-02          | 0.000E+00 |
| TH-232  | 2.116E+00               | 3.654E-01 | 1.742E-01          | 0.000E+00 |
| TH-234  | 2.565E+00               | 2.422E+00 | 2.333E+00          | 0.000E+00 |
| U-234   | 1.469E+00               | 1.882E-01 | 8.605E-02          | 0.000E+00 |
| NP-237  | 1.389E+00               | 4.255E-01 | 3.495E-01          | 0.000E+00 |
| U-238   | 2.565E+00               | 2.422E+00 | 2.333E+00          | 0.000E+00 |
| AM-243  | 4.455E-01               | 7.892E-02 | 9.505E-02          | 0.000E+00 |
| ANH-511 | 1.119E-01               | 5.246E-02 | 3.744E-02          | 0.000E+00 |

### ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L. Act error<br>) Ided | MDA<br>(pCi/GRAM ) |                      |
|---------|-------------------------------------|--------------------------|--------------------|----------------------|
| BE-7    | 7.036E-02                           | 2.438E-01                | 4.298E-01          | 0.000E+00 NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| NA-22   | -3.472E-02 | 3.571E-02 | 5.618E-02 | 0.000E+00 | NOT IDENT. |
| NA-24   | 0.000E+00  | 6.192E+05 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| AL-26   | 1.834E-02  | 2.052E-02 | 3.852E-02 | 0.000E+00 | NOT IDENT. |
| TI-44   | 0.000E+00  | 6.166E-02 | 8.699E-02 | 0.000E+00 | FAIL ABUN  |
| SC-46   | -4.798E-03 | 2.817E-02 | 4.721E-02 | 0.000E+00 | FAIL ABUN  |
| V-48    | 1.245E-02  | 5.438E-02 | 9.265E-02 | 0.000E+00 | NOT IDENT. |
| CR-51   | 2.785E-01  | 2.952E-01 | 5.264E-01 | 0.000E+00 | NOT IDENT. |
| MN-52   | 8.413E-02  | 1.660E-01 | 2.908E-01 | 0.000E+00 | NOT IDENT. |
| MN-54   | -6.369E-03 | 3.180E-02 | 5.376E-02 | 0.000E+00 | NOT IDENT. |
| CO-56   | 3.667E-04  | 3.017E-02 | 5.154E-02 | 0.000E+00 | FAIL ABUN  |
| CO-57   | 3.686E-03  | 2.146E-02 | 3.764E-02 | 0.000E+00 | NOT IDENT. |
| CO-58   | -2.050E-02 | 3.148E-02 | 5.177E-02 | 0.000E+00 | NOT IDENT. |
| FE-59   | -8.976E-02 | 7.167E-02 | 1.127E-01 | 0.000E+00 | NOT IDENT. |
| CO-60   | -4.281E-03 | 3.318E-02 | 5.525E-02 | 0.000E+00 | NOT IDENT. |
| ZN-65   | 8.731E-02  | 8.303E-02 | 1.324E-01 | 0.000E+00 | NOT IDENT. |
| GE-68   | 7.637E-01  | 1.014E+00 | 1.823E+00 | 0.000E+00 | NOT IDENT. |
| AS-73   | 7.193E-01  | 1.002E+00 | 1.902E+00 | 0.000E+00 | NOT IDENT. |
| AS-74   | -1.743E-02 | 7.223E-02 | 1.208E-01 | 0.000E+00 | NOT IDENT. |
| SE-75   | -1.759E-02 | 3.955E-02 | 5.887E-02 | 0.000E+00 | NOT IDENT. |
| BR-77   | 1.144E+00  | 7.442E+00 | 1.292E+01 | 0.000E+00 | FAIL ABUN  |
| SR-82   | -2.445E-01 | 3.170E-01 | 5.218E-01 | 0.000E+00 | NOT IDENT. |
| RB-83   | 6.411E-03  | 5.088E-02 | 8.823E-02 | 0.000E+00 | NOT IDENT. |
| RB-84   | -2.408E-02 | 5.545E-02 | 9.142E-02 | 0.000E+00 | NOT IDENT. |
| KR-85   | 0.000E+00  | 6.424E+00 | 1.099E+01 | 0.000E+00 | NOT IDENT. |
| SR-85   | 0.000E+00  | 3.289E-02 | 5.626E-02 | 0.000E+00 | NOT IDENT. |
| RB-86   | 6.107E-01  | 6.367E-01 | 1.157E+00 | 0.000E+00 | NOT IDENT. |
| Y-88    | 1.504E-02  | 2.549E-02 | 4.576E-02 | 0.000E+00 | NOT IDENT. |
| ZR-88   | 7.143E-03  | 2.411E-02 | 4.329E-02 | 0.000E+00 | NOT IDENT. |
| Y-91    | 6.588E+00  | 1.494E+01 | 2.607E+01 | 0.000E+00 | NOT IDENT. |
| NB-94   | -5.700E-03 | 2.516E-02 | 4.331E-02 | 0.000E+00 | NOT IDENT. |
| NB-95   | 0.000E+00  | 4.153E-02 | 6.874E-02 | 0.000E+00 | NOT IDENT. |
| NB-95M  | 1.217E-01  | 1.138E-01 | 1.845E-01 | 0.000E+00 | NOT IDENT. |
| ZR-95   | -2.547E-02 | 5.626E-02 | 9.469E-02 | 0.000E+00 | NOT IDENT. |
| NB-97   | 0.000E+00  | 6.797E+04 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| ZR-97   | 0.000E+00  | 1.476E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| MO-99   | 2.038E+00  | 8.399E+00 | 1.475E+01 | 0.000E+00 | NOT IDENT. |
| TC-99M  | 0.000E+00  | 2.474E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | 2.919E-03  | 2.722E-02 | 4.856E-02 | 0.000E+00 | NOT IDENT. |
| RH-102  | -3.174E-03 | 2.259E-02 | 3.900E-02 | 0.000E+00 | NOT IDENT. |
| RU-103  | 4.289E-02  | 2.970E-02 | 5.454E-02 | 0.000E+00 | FAIL ABUN  |
| RH-106  | -2.588E-02 | 2.535E-01 | 4.253E-01 | 0.000E+00 | FAIL ABUN  |
| RU-106  | -2.588E-02 | 2.535E-01 | 4.253E-01 | 0.000E+00 | FAIL ABUN  |
| AG-108M | -1.000E-02 | 2.504E-02 | 4.308E-02 | 0.000E+00 | NOT IDENT. |
| AG-110M | -1.564E-02 | 2.748E-02 | 4.679E-02 | 0.000E+00 | NOT IDENT. |
| IN-111  | -2.041E-01 | 8.840E-01 | 1.345E+00 | 0.000E+00 | NOT IDENT. |
| IN-113M | 1.993E-02  | 3.481E-02 | 6.321E-02 | 0.000E+00 | NOT IDENT. |
| SN-113  | 1.993E-02  | 3.481E-02 | 6.321E-02 | 0.000E+00 | NOT IDENT. |
| IN-114M | 1.045E-01  | 1.647E-01 | 2.685E-01 | 0.000E+00 | NOT IDENT. |
| CD-115  | 1.790E+00  | 7.915E+00 | 1.365E+01 | 0.000E+00 | NOT IDENT. |
| SN-117M | -2.904E-02 | 4.522E-02 | 8.109E-02 | 0.000E+00 | NOT IDENT. |
| SB-122  | 1.564E-01  | 1.622E+00 | 2.783E+00 | 0.000E+00 | NOT IDENT. |
| I-123   | 0.000E+00  | 4.067E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TE-123M | -9.821E-03 | 2.350E-02 | 4.244E-02 | 0.000E+00 | NOT IDENT. |
| I-124   | 1.115E-01  | 6.170E-01 | 9.068E-01 | 0.000E+00 | FAIL ABUN  |
| SB-124  | -7.388E-03 | 5.301E-02 | 8.791E-02 | 0.000E+00 | FAIL ABUN  |
| SB-125  | 5.189E-02  | 6.975E-02 | 1.268E-01 | 0.000E+00 | FAIL ABUN  |
| TE-125M | -5.951E+00 | 8.400E+00 | 1.439E+01 | 0.000E+00 | NOT IDENT. |
| I-126   | -7.538E-02 | 1.452E-01 | 2.479E-01 | 0.000E+00 | NOT IDENT. |
| SB-126  | 2.866E-02  | 1.293E-01 | 1.969E-01 | 0.000E+00 | FAIL ABUN  |
| SB-127  | -7.157E-01 | 1.007E+00 | 1.684E+00 | 0.000E+00 | NOT IDENT. |
| XE-127  | -5.074E-02 | 3.853E-02 | 6.580E-02 | 0.000E+00 | NOT IDENT. |
| I-131   | -2.129E-03 | 8.739E-02 | 1.559E-01 | 0.000E+00 | NOT IDENT. |
| TE-132  | 3.873E-01  | 5.479E-01 | 9.894E-01 | 0.000E+00 | NOT IDENT. |
| BA-133  | -1.210E-02 | 4.087E-02 | 5.906E-02 | 0.000E+00 | NOT IDENT. |
| I-133   | 0.000E+00  | 4.117E+03 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-134  | 0.000E+00  | 5.301E-02 | 7.420E-02 | 0.000E+00 | FAIL ABUN  |
| CS-135  | 0.000E+00  | 1.461E-01 | 2.451E-01 | 0.000E+00 | NOT IDENT. |
| I-135   | 0.000E+00  | 3.259E+15 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-136  | -6.957E-02 | 8.394E-02 | 1.372E-01 | 0.000E+00 | FAIL ABUN  |
| BA-137M | 2.143E-02  | 2.955E-02 | 5.353E-02 | 0.000E+00 | NOT IDENT. |
| CS-137  | 2.265E-02  | 3.124E-02 | 5.659E-02 | 0.000E+00 | NOT IDENT. |
| CE-139  | -3.139E-02 | 2.385E-02 | 4.155E-02 | 0.000E+00 | NOT IDENT. |
| BA-140  | 7.942E-02  | 1.940E-01 | 3.376E-01 | 0.000E+00 | NOT IDENT. |
| LA-140  | -5.002E-02 | 7.144E-02 | 9.127E-02 | 0.000E+00 | FAIL ABUN  |
| CE-141  | 6.405E-02  | 5.659E-02 | 9.982E-02 | 0.000E+00 | NOT IDENT. |
| CE-143  | 0.000E+00  | 1.976E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CE-144  | -1.004E-01 | 2.086E-01 | 3.127E-01 | 0.000E+00 | NOT IDENT. |
| PM-144  | 1.424E-02  | 2.624E-02 | 4.703E-02 | 0.000E+00 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PR-144  | 9.649E-01  | 1.778E+00 | 3.186E+00 | 0.000E+00 | NOT IDENT. |
| PM-146  | 1.107E-02  | 3.230E-02 | 5.738E-02 | 0.000E+00 | NOT IDENT. |
| ND-147  | -1.165E-01 | 4.202E-01 | 7.099E-01 | 0.000E+00 | FAIL ABUN  |
| PM-149  | 7.794E+01  | 7.364E+01 | 1.316E+02 | 0.000E+00 | NOT IDENT. |
| EU-152  | -3.745E-02 | 8.805E-02 | 1.331E-01 | 0.000E+00 | FAIL ABUN  |
| GD-153  | -7.516E-02 | 8.180E-02 | 1.241E-01 | 0.000E+00 | FAIL ABUN  |
| EU-154  | -6.224E-02 | 9.738E-02 | 1.569E-01 | 0.000E+00 | NOT IDENT. |
| EU-155  | 0.000E+00  | 9.867E-02 | 1.832E-01 | 0.000E+00 | FAIL ABUN  |
| TB-160  | 7.779E-02  | 1.092E-01 | 1.935E-01 | 0.000E+00 | FAIL ABUN  |
| HO-166M | 1.025E-02  | 4.656E-02 | 8.199E-02 | 0.000E+00 | NOT IDENT. |
| TM-171  | -2.441E+01 | 3.234E+01 | 5.089E+01 | 0.000E+00 | NOT IDENT. |
| LU-176  | 2.113E-02  | 2.009E-02 | 3.502E-02 | 0.000E+00 | FAIL ABUN  |
| LU-177  | 0.000E+00  | 1.247E+00 | 1.819E+00 | 0.000E+00 | FAIL ABUN  |
| LU-177M | -3.733E-01 | 1.441E-01 | 2.212E-01 | 0.000E+00 | FAIL ABUN  |
| HF-181  | -4.784E-03 | 3.075E-02 | 5.292E-02 | 0.000E+00 | NOT IDENT. |
| W-181   | -2.405E-01 | 4.245E-01 | 6.748E-01 | 0.000E+00 | NOT IDENT. |
| TA-182  | 1.035E-02  | 1.526E-01 | 2.604E-01 | 0.000E+00 | FAIL ABUN  |
| RE-183  | 6.927E-02  | 8.954E-02 | 1.671E-01 | 0.000E+00 | FAIL ABUN  |
| RE-184  | -1.187E-01 | 1.841E-01 | 3.142E-01 | 0.000E+00 | NOT IDENT. |
| OS-185  | -5.235E-04 | 3.251E-02 | 5.458E-02 | 0.000E+00 | NOT IDENT. |
| RE-188  | 1.508E-01  | 1.463E-01 | 2.754E-01 | 0.000E+00 | NOT IDENT. |
| W-188   | -8.881E+00 | 6.951E+00 | 9.686E+00 | 0.000E+00 | FAIL ABUN  |
| IR-192  | -2.116E-02 | 2.752E-02 | 4.543E-02 | 0.000E+00 | FAIL ABUN  |
| AU-195  | 2.463E-01  | 2.061E-01 | 3.783E-01 | 0.000E+00 | FAIL ABUN  |
| TL-200  | 0.000E+00  | 3.189E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TL-201  | -1.178E+00 | 5.386E+00 | 9.739E+00 | 0.000E+00 | NOT IDENT. |
| TL-202  | 3.107E-02  | 5.345E-02 | 9.619E-02 | 0.000E+00 | NOT IDENT. |
| HG-203  | 5.192E-02  | 3.312E-02 | 6.077E-02 | 0.000E+00 | NOT IDENT. |
| BI-207  | 1.915E-02  | 4.085E-02 | 7.252E-02 | 0.000E+00 | FAIL ABUN  |
| TL-207  | -4.119E-01 | 6.478E-01 | 9.242E-01 | 0.000E+00 | FAIL ABUN  |
| PO-209  | 1.466E+00  | 5.773E+00 | 9.949E+00 | 0.000E+00 | NOT IDENT. |
| BI-210  | 3.207E+00  | 4.765E+00 | 9.127E+00 | 0.000E+00 | NOT IDENT. |
| PB-210  | 3.207E+00  | 4.765E+00 | 9.127E+00 | 0.000E+00 | NOT IDENT. |
| PO-210  | 3.207E+00  | 4.763E+00 | 9.127E+00 | 0.000E+00 | NOT IDENT. |
| PB-211  | -1.018E+00 | 9.815E-01 | 1.265E+00 | 0.000E+00 | NOT IDENT. |
| PO-215  | -4.119E-01 | 6.478E-01 | 9.242E-01 | 0.000E+00 | FAIL ABUN  |
| RN-219  | 3.487E-01  | 3.318E-01 | 6.070E-01 | 0.000E+00 | FAIL ABUN  |
| RN-220  | -1.937E+00 | 2.046E+01 | 3.483E+01 | 0.000E+00 | NOT IDENT. |
| RA-223  | -4.119E-01 | 6.478E-01 | 9.242E-01 | 0.000E+00 | FAIL ABUN  |
| AC-227  | 1.703E-01  | 3.062E-01 | 5.463E-01 | 0.000E+00 | FAIL ABUN  |
| TH-227  | 1.703E-01  | 3.066E-01 | 5.463E-01 | 0.000E+00 | FAIL ABUN  |
| TH-229  | -8.130E-02 | 4.123E-01 | 7.365E-01 | 0.000E+00 | FAIL ABUN  |
| PA-231  | -4.664E-01 | 1.267E+00 | 2.161E+00 | 0.000E+00 | FAIL ABUN  |
| TH-231  | -4.119E-01 | 6.478E-01 | 9.242E-01 | 0.000E+00 | FAIL ABUN  |
| U-231   | 5.600E-01  | 1.017E+00 | 1.653E+00 | 0.000E+00 | FAIL ABUN  |
| PA-233  | -4.027E-03 | 4.953E-02 | 8.471E-02 | 0.000E+00 | FAIL ABUN  |
| PA-234  | 6.441E-02  | 2.282E-01 | 3.915E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234M | 1.262E+00  | 3.565E+00 | 5.957E+00 | 0.000E+00 | NOT IDENT. |
| U-235   | -2.299E-02 | 1.917E-01 | 3.250E-01 | 0.000E+00 | FAIL ABUN  |
| NP-236  | -7.519E-03 | 6.578E-02 | 1.198E-01 | 0.000E+00 | NOT IDENT. |
| NP-239  | 1.684E-01  | 1.674E-01 | 3.025E-01 | 0.000E+00 | FAIL ABUN  |
| AM-241  | 5.090E-02  | 1.715E-01 | 2.876E-01 | 0.000E+00 | NOT IDENT. |
| CM-243  | -3.374E-02 | 8.878E-02 | 1.548E-01 | 0.000E+00 | FAIL ABUN  |
| AM-246  | 6.152E-02  | 1.124E-01 | 2.000E-01 | 0.000E+00 | NOT IDENT. |
| CM-247  | 1.348E-02  | 2.976E-02 | 5.362E-02 | 0.000E+00 | NOT IDENT. |
| CF-249  | -1.249E-02 | 3.147E-02 | 5.490E-02 | 0.000E+00 | NOT IDENT. |
| CF-251  | 4.670E-02  | 1.029E-01 | 1.891E-01 | 0.000E+00 | NOT IDENT. |

## VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 13:53:46.34

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630011.CNF;1
Sample date        : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 11:49:21
Sample ID          : G244630011      Sample quantity   : 1.46160E+02 GRAM
Detector name      : GAM18            Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00    Elapsed real time: 0 02:00:02.16  0.0%
Energy tolerance   : 1.50000 keV      Analyst Initials : MXR1
Abundance limit    : 75.00000          Sensitivity       : 5.00000
Batch ID           : 941639            Detector SN#      :
Matrix Spike ID    :                  LCS ID           : 1032-A
*****

```

## Nuclide Line Activity Report

## Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| K-40    | 1460.81 | 2643  | 10.67* | 1.893E+00 | 3.360E+01               | 3.360E+01              | 8.69              |
| CD-109  | 88.03   | 439   | 3.72*  | 6.444E+00 | 4.705E+00               | 4.812E+00              | 23.48             |
| SN-126  | 64.28   | 115   | 9.60   | 3.020E+00 | 1.015E+00               | 1.015E+00              | 95.87             |
|         | 86.94   | 439   | 8.90   | 6.444E+00 | 1.967E+00               | 1.967E+00              | 46.77             |
|         | 87.57   | 439   | 37.00* | 6.444E+00 | 4.731E-01               | 4.731E-01              | 23.48             |
| TL-208  | 277.35  | ----- | 6.80   | 6.258E+00 | -----                   | Line Not Found         | -----             |
|         | 510.84  | 188   | 21.60  | 4.311E+00 | 5.183E-01               | 5.183E-01              | 48.53             |
|         | 583.14  | 822   | 84.20* | 3.935E+00 | 6.375E-01               | 6.375E-01              | 12.70             |
|         | 860.37  | 138   | 12.46  | 2.916E+00 | 9.758E-01               | 9.758E-01              | 31.60             |
| BI-211  | 72.87   | ----- | 1.27   | 4.622E+00 | -----                   | Line Not Found         | -----             |
|         | 351.07  | 1427  | 12.94* | 5.451E+00 | 5.197E+00               | 5.197E+00              | 9.39              |
| BI-212  | 727.18  | 260   | 11.80* | 3.338E+00 | 1.693E+00               | 1.693E+00              | 23.67             |
|         | 785.46  | ----- | 1.97   | 3.140E+00 | -----                   | Line Not Found         | -----             |
|         | 1620.62 | 23    | 2.75   | 1.770E+00 | 1.231E+00               | 1.231E+00              | 102.39            |
| PB-212  | 74.81   | 565   | 10.70  | 4.933E+00 | 2.748E+00               | 2.748E+00              | 20.35             |
|         | 77.11   | 924   | 18.00  | 5.258E+00 | 2.508E+00               | 2.508E+00              | 13.60             |
|         | 87.30   | 439   | 8.00   | 6.444E+00 | 2.188E+00               | 2.188E+00              | 25.52             |
|         | 238.63  | 2532  | 44.60* | 6.792E+00 | 2.146E+00               | 2.146E+00              | 8.50              |
|         | 300.09  | 100   | 3.41   | 5.982E+00 | 1.259E+00               | 1.259E+00              | 70.59             |
| PO-212  | 74.81   | 565   | 10.70  | 4.933E+00 | 2.748E+00               | 2.748E+00              | 20.35             |
|         | 77.11   | 924   | 18.00  | 5.258E+00 | 2.508E+00               | 2.508E+00              | 13.60             |
|         | 87.30   | 439   | 8.00   | 6.444E+00 | 2.188E+00               | 2.188E+00              | 25.52             |
|         | 115.19  | ----- | 0.60   | 8.058E+00 | -----                   | Line Not Found         | -----             |
|         | 238.63  | 2532  | 44.60* | 6.792E+00 | 2.146E+00               | 2.146E+00              | 8.50              |
|         | 300.09  | 100   | 3.41   | 5.982E+00 | 1.259E+00               | 1.259E+00              | 70.59             |
| BI-214  | 609.31  | 1010  | 46.30* | 3.812E+00 | 1.469E+00               | 1.469E+00              | 13.07             |
|         | 1120.29 | 215   | 15.10  | 2.335E+00 | 1.565E+00               | 1.565E+00              | 27.53             |
|         | 1764.49 | 232   | 15.80  | 1.695E+00 | 2.221E+00               | 2.221E+00              | 17.38             |
| PB-214  | 74.81   | 565   | 6.21   | 4.933E+00 | 4.735E+00               | 4.735E+00              | 19.54             |
|         | 77.11   | 924   | 10.50  | 5.258E+00 | 4.299E+00               | 4.299E+00              | 15.59             |
|         | 87.30   | 439   | 4.67   | 6.444E+00 | 3.748E+00               | 3.748E+00              | 24.71             |
|         | 241.98  | 568   | 7.49   | 6.747E+00 | 2.887E+00               | 2.887E+00              | 18.85             |

Nuclide Type:

| Nuclide | Energy  | Area | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM    | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|------|--------|-----------|----------------------------|------------------------|-------------------|
| PO-214  | 295.21  | 696  | 19.20  | 6.040E+00 | 1.541E+00                  | 1.541E+00              | 15.32             |
|         | 351.92  | 1427 | 37.20* | 5.451E+00 | 1.808E+00                  | 1.808E+00              | 10.74             |
|         | 74.81   | 565  | 6.21   | 4.933E+00 | 4.735E+00                  | 4.735E+00              | 19.54             |
|         | 77.11   | 924  | 10.50  | 5.258E+00 | 4.299E+00                  | 4.299E+00              | 15.59             |
|         | 87.30   | 439  | 4.67   | 6.444E+00 | 3.748E+00                  | 3.748E+00              | 24.71             |
|         | 241.98  | 568  | 7.49   | 6.747E+00 | 2.887E+00                  | 2.887E+00              | 18.85             |
| PO-216  | 295.21  | 696  | 19.20  | 6.040E+00 | 1.541E+00                  | 1.541E+00              | 15.32             |
|         | 351.92  | 1427 | 37.20* | 5.451E+00 | 1.808E+00                  | 1.808E+00              | 10.74             |
|         | 74.81   | 565  | 10.70  | 4.933E+00 | 2.748E+00                  | 2.748E+00              | 20.35             |
|         | 77.11   | 924  | 18.00  | 5.258E+00 | 2.508E+00                  | 2.508E+00              | 13.60             |
|         | 87.30   | 439  | 8.00   | 6.444E+00 | 2.188E+00                  | 2.188E+00              | 25.52             |
|         | 238.63  | 2532 | 44.60* | 6.792E+00 | 2.146E+00                  | 2.146E+00              | 8.50              |
| PO-218  | 300.09  | 100  | 3.41   | 5.982E+00 | 1.259E+00                  | 1.259E+00              | 70.59             |
|         | 74.81   | 565  | 6.21   | 4.933E+00 | 4.735E+00                  | 4.735E+00              | 19.54             |
|         | 77.11   | 924  | 10.50  | 5.258E+00 | 4.299E+00                  | 4.299E+00              | 15.59             |
|         | 87.30   | 439  | 4.67   | 6.444E+00 | 3.748E+00                  | 3.748E+00              | 24.71             |
|         | 241.98  | 568  | 7.49   | 6.747E+00 | 2.887E+00                  | 2.887E+00              | 18.85             |
|         | 295.21  | 696  | 19.20  | 6.040E+00 | 1.541E+00                  | 1.541E+00              | 15.32             |
| RA-224  | 351.92  | 1427 | 37.20* | 5.451E+00 | 1.808E+00                  | 1.808E+00              | 10.74             |
| RA-226  | 240.98  | 568  | 3.95*  | 6.747E+00 | 5.474E+00                  | 5.474E+00              | 17.99             |
|         | 609.31  | 1010 | 46.30* | 3.812E+00 | 1.469E+00                  | 1.469E+00              | 13.07             |
| AC-228  | 1120.29 | 215  | 15.10  | 2.335E+00 | 1.565E+00                  | 1.565E+00              | 27.53             |
|         | 1764.49 | 232  | 15.80  | 1.695E+00 | 2.221E+00                  | 2.221E+00              | 17.38             |
|         | 338.32  | 465  | 11.40  | 5.580E+00 | 1.878E+00                  | 1.878E+00              | 44.94             |
|         | 911.07  | 634  | 27.70* | 2.780E+00 | 2.116E+00                  | 2.116E+00              | 17.62             |
| RA-228  | 969.11  | 410  | 16.60  | 2.639E+00 | 2.404E+00                  | 2.404E+00              | 27.81             |
|         | 338.32  | 465  | 11.40  | 5.580E+00 | 1.878E+00                  | 1.878E+00              | 44.94             |
|         | 911.07  | 634  | 27.70* | 2.780E+00 | 2.116E+00                  | 2.116E+00              | 17.62             |
| TH-228  | 969.11  | 410  | 16.60  | 2.639E+00 | 2.404E+00                  | 2.404E+00              | 27.81             |
|         | 74.81   | 565  | 10.70  | 4.933E+00 | 2.748E+00                  | 2.789E+00              | 18.11             |
|         | 77.11   | 924  | 18.00  | 5.258E+00 | 2.508E+00                  | 2.545E+00              | 13.60             |
|         | 87.30   | 439  | 8.00   | 6.444E+00 | 2.188E+00                  | 2.221E+00              | 23.48             |
| TH-230  | 238.63  | 2532 | 44.60* | 6.792E+00 | 2.146E+00                  | 2.179E+00              | 8.50              |
|         | 300.09  | 100  | 3.41   | 5.982E+00 | 1.259E+00                  | 1.278E+00              | 91.59             |
|         | 609.31  | 1010 | 46.30* | 3.812E+00 | 1.469E+00                  | 1.469E+00              | 13.07             |
|         | 1120.29 | 215  | 15.10  | 2.335E+00 | 1.565E+00                  | 1.565E+00              | 27.53             |
| TH-232  | 1764.49 | 232  | 15.80  | 1.695E+00 | 2.221E+00                  | 2.221E+00              | 17.38             |
|         | 338.32  | 465  | 11.40  | 5.580E+00 | 1.878E+00                  | 1.878E+00              | 19.79             |
|         | 911.07  | 634  | 27.70* | 2.780E+00 | 2.116E+00                  | 2.116E+00              | 17.62             |
|         | 969.11  | 410  | 16.60  | 2.639E+00 | 2.404E+00                  | 2.404E+00              | 27.81             |
| TH-234  | 63.29   | 115  | 3.80*  | 3.020E+00 | 2.565E+00                  | 2.565E+00              | 96.36             |
|         | 92.38   | 365  | 5.41   | 6.968E+00 | 2.489E+00                  | 2.489E+00              | 36.21             |
| U-234   | 609.31  | 1010 | 46.30* | 3.812E+00 | 1.469E+00                  | 1.469E+00              | 13.07             |
|         | 1120.29 | 215  | 15.10  | 2.335E+00 | 1.565E+00                  | 1.565E+00              | 27.53             |
|         | 1764.49 | 232  | 15.80  | 1.695E+00 | 2.221E+00                  | 2.221E+00              | 17.38             |
| NP-237  | 86.50   | 439  | 12.60* | 6.444E+00 | 1.389E+00                  | 1.389E+00              | 31.26             |
| U-238   | 95.87   | ---  | 2.60   | 7.180E+00 | ----- Line Not Found ----- |                        | ---               |
|         | 63.29   | 115  | 3.80*  | 3.020E+00 | 2.565E+00                  | 2.565E+00              | 96.36             |
|         | 92.38   | 365  | 5.41   | 6.968E+00 | 2.489E+00                  | 2.489E+00              | 32.53             |

Nuclide Type:

| Nuclide | Energy | Area  | %Abn    | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|--------|-------|---------|-----------|-------------------------|------------------------|-------------------|
| AM-243  | 74.67  | 565   | 66.00*  | 4.933E+00 | 4.455E-01               | 4.455E-01              | 18.08             |
|         | 86.72  | 439   | 0.34    | 6.444E+00 | 5.209E+01               | 5.209E+01              | 23.48             |
|         | 117.66 | ----- | 0.55    | 8.112E+00 | -----                   | Line Not Found         | -----             |
|         | 142.18 | ----- | 0.13    | 8.232E+00 | -----                   | Line Not Found         | -----             |
| ANH-511 | 511.00 | 188   | 100.00* | 4.311E+00 | 1.119E-01               | 1.119E-01              | 47.81             |

Flag: "\*" = Keyline

Summary of Nuclide Activity  
Sample ID : G244630011

Page : 4  
Acquisition date : 23-JAN-2010 11:49:21

Total number of lines in spectrum 38  
Number of unidentified lines 4  
Number of lines tentatively identified by NID 34 89.47%

Nuclide Type :

| Nuclide | Hlife     | Decay | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | Decay Corr<br>2-Sigma Error | 2-Sigma<br>%Error | Flags |
|---------|-----------|-------|-------------------------|------------------------|-----------------------------|-------------------|-------|
| K-40    | 1.28E+09Y | 1.00  | 3.360E+01               | 3.360E+01              | 0.292E+01                   | 8.69              |       |
| CD-109  | 464.00D   | 1.02  | 4.705E+00               | 4.812E+00              | 1.130E+00                   | 23.48             |       |
| SN-126  | 1.00E+05Y | 1.00  | 4.731E-01               | 4.731E-01              | 1.111E-01                   | 23.48             |       |
| TL-208  | 1.41E+10Y | 1.00  | 6.375E-01               | 6.375E-01              | 0.809E-01                   | 12.70             |       |
| BI-211  | 7.04E+08Y | 1.00  | 5.197E+00               | 5.197E+00              | 0.488E+00                   | 9.39              |       |
| BI-212  | 1.41E+10Y | 1.00  | 1.693E+00               | 1.693E+00              | 0.401E+00                   | 23.67             |       |
| PB-212  | 1.41E+10Y | 1.00  | 2.146E+00               | 2.146E+00              | 0.182E+00                   | 8.50              |       |
| PO-212  | 1.41E+10Y | 1.00  | 2.146E+00               | 2.146E+00              | 0.182E+00                   | 8.50              |       |
| BI-214  | 1600.00Y  | 1.00  | 1.469E+00               | 1.469E+00              | 0.192E+00                   | 13.07             |       |
| PB-214  | 1600.00Y  | 1.00  | 1.808E+00               | 1.808E+00              | 0.194E+00                   | 10.74             |       |
| PO-214  | 1600.00Y  | 1.00  | 1.808E+00               | 1.808E+00              | 0.194E+00                   | 10.74             |       |
| PO-216  | 1.41E+10Y | 1.00  | 2.146E+00               | 2.146E+00              | 0.182E+00                   | 8.50              |       |
| PO-218  | 1600.00Y  | 1.00  | 1.808E+00               | 1.808E+00              | 0.194E+00                   | 10.74             |       |
| RA-224  | 1.41E+10Y | 1.00  | 5.474E+00               | 5.474E+00              | 0.985E+00                   | 17.99             |       |
| RA-226  | 1600.00Y  | 1.00  | 1.469E+00               | 1.469E+00              | 0.192E+00                   | 13.07             |       |
| AC-228  | 1.41E+10Y | 1.00  | 2.116E+00               | 2.116E+00              | 0.373E+00                   | 17.62             |       |
| RA-228  | 1.41E+10Y | 1.00  | 2.116E+00               | 2.116E+00              | 0.373E+00                   | 17.62             |       |
| TH-228  | 1.91Y     | 1.02  | 2.146E+00               | 2.179E+00              | 0.185E+00                   | 8.50              |       |
| TH-230  | 4.47E+09Y | 1.00  | 1.469E+00               | 1.469E+00              | 0.192E+00                   | 13.07             |       |
| TH-232  | 1.41E+10Y | 1.00  | 2.116E+00               | 2.116E+00              | 0.373E+00                   | 17.62             |       |
| TH-234  | 4.47E+09Y | 1.00  | 2.565E+00               | 2.565E+00              | 2.471E+00                   | 96.36             |       |
| U-234   | 4.47E+09Y | 1.00  | 1.469E+00               | 1.469E+00              | 0.192E+00                   | 13.07             |       |
| NP-237  | 2.14E+06Y | 1.00  | 1.389E+00               | 1.389E+00              | 0.434E+00                   | 31.26             |       |
| U-238   | 4.47E+09Y | 1.00  | 2.565E+00               | 2.565E+00              | 2.471E+00                   | 96.36             |       |
| AM-243  | 7380.00Y  | 1.00  | 4.455E-01               | 4.455E-01              | 0.805E-01                   | 18.08             |       |
| ANH-511 | 1.00E+09Y | 1.00  | 1.119E-01               | 1.119E-01              | 0.535E-01                   | 47.81             |       |

Total Activity : 8.509E+01 8.523E+01

Grand Total Activity : 8.509E+01 8.523E+01

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

| It | Energy  | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | %Eff     | Flags |
|----|---------|------|-------|------|---------|------|----|----------|------|----------|-------|
| 5  | 84.20   | 225  | 542   | 1.45 | 167.52  | 164  | 27 | 3.12E-02 | 36.5 | 6.12E+00 | T     |
| 5  | 90.05   | 282  | 587   | 1.34 | 179.21  | 164  | 27 | 3.92E-02 | 32.9 | 6.71E+00 | T     |
| 0  | 129.41  | 86   | 631   | 1.77 | 257.90  | 254  | 9  | 1.19E-02 | **** | 8.25E+00 | T     |
| 0  | 186.01  | 373  | 531   | 1.46 | 371.05  | 366  | 10 | 5.18E-02 | 26.0 | 7.65E+00 | T     |
| 0  | 209.44  | 215  | 462   | 1.08 | 417.90  | 414  | 9  | 2.99E-02 | 38.5 | 7.26E+00 | T     |
| 0  | 270.21  | 211  | 421   | 1.34 | 539.40  | 534  | 12 | 2.92E-02 | 41.3 | 6.35E+00 | T     |
| 0  | 328.40  | 139  | 380   | 1.20 | 655.74  | 649  | 13 | 1.93E-02 | 60.4 | 5.68E+00 | T     |
| 0  | 463.20  | 134  | 230   | 1.44 | 925.26  | 919  | 11 | 1.87E-02 | 47.0 | 4.60E+00 | T     |
| 0  | 768.40  | 116  | 150   | 1.47 | 1535.50 | 1527 | 13 | 1.61E-02 | 47.4 | 3.20E+00 |       |
| 0  | 794.60  | 113  | 106   | 1.51 | 1587.90 | 1581 | 14 | 1.58E-02 | 42.7 | 3.11E+00 | T     |
| 2  | 964.56  | 88   | 109   | 1.83 | 1927.73 | 1921 | 23 | 1.22E-02 | 50.0 | 2.65E+00 | T     |
| 0  | 1238.85 | 179  | 271   | 5.66 | 2476.24 | 2463 | 32 | 2.48E-02 | 58.0 | 2.15E+00 | T     |
| 0  | 1377.02 | 85   | 92    | 1.38 | 2752.55 | 2741 | 23 | 1.18E-02 | 62.7 | 1.98E+00 | T     |
| 0  | 1589.39 | 61   | 78    | 2.33 | 3177.25 | 3164 | 26 | 8.47E-03 | 83.3 | 1.79E+00 |       |
| 0  | 1630.60 | 22   | 41    | 1.53 | 3259.66 | 3253 | 15 | 3.11E-03 | **** | 1.76E+00 |       |
| 0  | 1729.01 | 70   | 7     | 2.83 | 3456.47 | 3449 | 13 | 9.65E-03 | 28.4 | 1.71E+00 |       |

Flags: "T" = Tentatively associated



```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630011.CNF;1
* Acquisition date   : 23-JAN-2010 11:49:21  Detector SN#      :
* Detector ID        : GAM18                  Sensitivity       : 5.00000
* Geometry           : CAN                    Energy tolerance: 1.50000
* Elapsed live time  : 0 02:00:00.00          Abundance limit  : 75.00000
* Elapsed real time  : 0 02:00:02.16          Half life ratio  : 8.00000
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 8-JAN-2010 12:00:00.  Nuclide Library : SOLID
* Sample ID          : G244630011             Analyst initials: MXR1
* Batch Number       : 941639                 Sample Quantity : 1.46160E+02 GRAM
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 23-APR-2009 11:59:23.2MS Isotope      :
* MSD ID             :                          MSD Isotope   :
* LCS ID             : 1032-A                    LCS Isotope   :
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| K-40    | 3.360E+01              | 2.921E+00 | 4.346E-01         | 3.298E-02 | 77.308  |
| CD-109  | 4.812E+00              | 1.130E+00 | 1.105E+00         | 1.021E-01 | 4.355   |
| SN-126  | 4.731E-01              | 1.111E-01 | 1.093E-01         | 1.007E-02 | 4.328   |
| TL-208  | 6.375E-01              | 8.094E-02 | 4.307E-02         | 3.376E-03 | 14.802  |
| BI-211  | 5.197E+00              | 4.881E-01 | 2.785E-01         | 1.788E-02 | 18.659  |
| BI-212  | 1.693E+00              | 4.008E-01 | 3.513E-01         | 3.499E-02 | 4.820   |
| PB-212  | 2.146E+00              | 1.825E-01 | 7.268E-02         | 5.192E-03 | 29.532  |
| PO-212  | 2.146E+00              | 1.825E-01 | 7.268E-02         | 5.192E-03 | 29.532  |
| BI-214  | 1.469E+00              | 1.921E-01 | 8.382E-02         | 7.487E-03 | 17.531  |
| PB-214  | 1.808E+00              | 1.942E-01 | 9.210E-02         | 7.619E-03 | 19.627  |
| PO-214  | 1.808E+00              | 1.942E-01 | 9.210E-02         | 7.619E-03 | 19.627  |
| PO-216  | 2.146E+00              | 1.825E-01 | 7.268E-02         | 5.192E-03 | 29.532  |
| PO-218  | 1.808E+00              | 1.942E-01 | 9.210E-02         | 7.619E-03 | 19.627  |
| RA-224  | 5.474E+00              | 9.849E-01 | 8.261E-01         | 4.602E-02 | 6.626   |
| RA-226  | 1.469E+00              | 1.921E-01 | 8.382E-02         | 7.487E-03 | 17.531  |
| AC-228  | 2.116E+00              | 3.729E-01 | 1.713E-01         | 2.269E-02 | 12.356  |
| RA-228  | 2.116E+00              | 3.729E-01 | 1.713E-01         | 2.269E-02 | 12.356  |
| TH-228  | 2.179E+00              | 1.852E-01 | 7.377E-02         | 5.270E-03 | 29.532  |

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| TH-230  | 1.469E+00              | 1.921E-01 | 8.382E-02         | 7.487E-03 | 17.531  |
| TH-232  | 2.116E+00              | 3.729E-01 | 1.713E-01         | 2.269E-02 | 12.356  |
| TH-234  | 2.565E+00              | 2.471E+00 | 2.162E+00         | 3.812E-01 | 1.186   |
| U-234   | 1.469E+00              | 1.921E-01 | 8.382E-02         | 7.487E-03 | 17.531  |
| NP-237  | 1.389E+00              | 4.342E-01 | 3.260E-01         | 7.355E-02 | 4.261   |
| U-238   | 2.565E+00              | 2.471E+00 | 2.162E+00         | 3.812E-01 | 1.186   |
| AM-243  | 4.455E-01              | 8.053E-02 | 8.838E-02         | 7.375E-03 | 5.040   |
| ANH-511 | 1.119E-01              | 5.353E-02 | 3.632E-02         | 2.398E-03 | 3.083   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| BE-7    | 7.036E-02                          |              | 2.487E-01 | 4.163E-01           | 3.016E-02 | 0.169   |
| NA-22   | -3.472E-02                         |              | 3.644E-02 | 5.568E-02           | 3.789E-03 | -0.624  |
| NA-24   | -2.707E-01                         |              | 3.159E-01 | Half-Life too short |           |         |
| AL-26   | 1.834E-02                          |              | 2.094E-02 | 3.850E-02           | 2.248E-03 | 0.476   |
| TI-44   | 4.628E-01                          | +            | 6.292E-02 | 8.098E-02           | 6.924E-03 | 5.715   |
| SC-46   | -4.798E-03                         |              | 2.874E-02 | 4.639E-02           | 5.174E-03 | -0.103  |
| V-48    | 1.245E-02                          |              | 5.549E-02 | 9.126E-02           | 9.027E-03 | 0.136   |
| CR-51   | 2.785E-01                          |              | 3.013E-01 | 5.052E-01           | 3.253E-02 | 0.551   |
| MN-52   | 8.413E-02                          |              | 1.694E-01 | 2.890E-01           | 2.130E-02 | 0.291   |
| MN-54   | -6.369E-03                         |              | 3.245E-02 | 5.275E-02           | 5.404E-03 | -0.121  |
| CO-56   | 3.667E-04                          |              | 3.079E-02 | 5.059E-02           | 5.281E-03 | 0.007   |
| CO-57   | 3.686E-03                          |              | 2.190E-02 | 3.537E-02           | 2.095E-03 | 0.104   |
| CO-58   | -2.050E-02                         |              | 3.212E-02 | 5.076E-02           | 5.011E-03 | -0.404  |
| FE-59   | -8.976E-02                         |              | 7.313E-02 | 1.113E-01           | 9.162E-03 | -0.806  |
| CO-60   | -4.281E-03                         |              | 3.386E-02 | 5.481E-02           | 4.142E-03 | -0.078  |
| ZN-65   | 8.731E-02                          |              | 8.473E-02 | 1.308E-01           | 9.215E-03 | 0.667   |
| GE-68   | 7.637E-01                          |              | 1.035E+00 | 1.800E+00           | 1.430E-01 | 0.424   |
| AS-73   | 7.193E-01                          |              | 1.022E+00 | 1.756E+00           | 1.392E-01 | 0.410   |
| AS-74   | -1.743E-02                         |              | 7.370E-02 | 1.176E-01           | 8.450E-03 | -0.148  |
| SE-75   | -1.759E-02                         |              | 4.035E-02 | 5.626E-02           | 3.218E-03 | -0.313  |
| BR-77   | 1.144E+00                          |              | 7.594E+00 | 1.254E+01           | 8.367E-01 | 0.091   |
| SR-82   | -2.445E-01                         |              | 3.235E-01 | 5.111E-01           | 4.760E-02 | -0.478  |
| RB-83   | 6.411E-03                          |              | 5.192E-02 | 8.562E-02           | 5.711E-03 | 0.075   |
| RB-84   | -2.408E-02                         |              | 5.658E-02 | 8.982E-02           | 9.899E-03 | -0.268  |
| KR-85   | 1.563E+01                          |              | 6.555E+00 | 1.066E+01           | 7.062E-01 | 1.466   |
| SR-85   | 8.004E-02                          |              | 3.356E-02 | 5.458E-02           | 3.616E-03 | 1.466   |
| RB-86   | 6.107E-01                          |              | 6.497E-01 | 1.142E+00           | 9.090E-02 | 0.535   |
| Y-88    | 1.504E-02                          |              | 2.601E-02 | 4.575E-02           | 2.606E-03 | 0.329   |
| ZR-88   | 7.143E-03                          |              | 2.460E-02 | 4.174E-02           | 2.401E-03 | 0.171   |
| Y-91    | 6.588E+00                          |              | 1.524E+01 | 2.580E+01           | 1.526E+00 | 0.255   |
| NB-94   | -5.700E-03                         |              | 2.567E-02 | 4.232E-02           | 3.472E-03 | -0.135  |
| NB-95   | 7.718E-02                          |              | 4.238E-02 | 6.731E-02           | 6.157E-03 | 1.147   |
| NB-95M  | 1.217E-01                          |              | 1.161E-01 | 1.759E-01           | 1.290E-02 | 0.692   |
| ZR-95   | -2.547E-02                         |              | 5.741E-02 | 9.269E-02           | 9.121E-03 | -0.275  |
| NB-97   | -3.569E-02                         |              | 3.468E-02 | Half-Life too short |           |         |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| ZR-97   | 2.673E+00                          |              | 7.532E-01 | Half-Life too short |           |         |
| MO-99   | 2.038E+00                          |              | 8.570E+00 | 1.443E+01           | 2.202E+00 | 0.141   |
| TC-99M  | -1.203E+10                         |              | 1.262E+10 | Half-Life too short |           |         |
| RH-101  | 2.919E-03                          |              | 2.778E-02 | 4.611E-02           | 2.479E-03 | 0.063   |
| RH-102  | -3.174E-03                         |              | 2.305E-02 | 3.777E-02           | 2.399E-03 | -0.084  |
| RU-103  | 4.289E-02                          |              | 3.031E-02 | 5.287E-02           | 6.865E-03 | 0.811   |
| RH-106  | -2.588E-02                         |              | 2.587E-01 | 4.144E-01           | 5.214E-02 | -0.062  |
| RU-106  | -2.588E-02                         |              | 2.587E-01 | 4.144E-01           | 3.050E-02 | -0.062  |
| AG-108M | -1.000E-02                         |              | 2.555E-02 | 4.164E-02           | 2.720E-03 | -0.240  |
| AG-110M | -1.564E-02                         |              | 2.804E-02 | 4.565E-02           | 3.601E-03 | -0.343  |
| IN-111  | -2.041E-01                         |              | 9.020E-01 | 1.284E+00           | 7.174E-02 | -0.159  |
| IN-113M | 1.993E-02                          |              | 3.552E-02 | 6.095E-02           | 3.739E-03 | 0.327   |
| SN-113  | 1.993E-02                          |              | 3.552E-02 | 6.095E-02           | 3.739E-03 | 0.327   |
| IN-114M | 1.045E-01                          |              | 1.681E-01 | 2.548E-01           | 1.360E-02 | 0.410   |
| CD-115  | 1.790E+00                          |              | 8.076E+00 | 1.326E+01           | 8.909E-01 | 0.135   |
| SN-117M | -2.904E-02                         |              | 4.615E-02 | 7.663E-02           | 4.073E-03 | -0.379  |
| SB-122  | 1.564E-01                          |              | 1.655E+00 | 2.706E+00           | 1.885E-01 | 0.058   |
| I-123   | -1.699E+00                         |              | 2.075E+00 | Half-Life too short |           |         |
| TE-123M | -9.821E-03                         |              | 2.398E-02 | 4.011E-02           | 2.164E-03 | -0.245  |
| I-124   | 1.115E-01                          |              | 6.296E-01 | 8.830E-01           | 6.385E-02 | 0.126   |
| SB-124  | -7.388E-03                         |              | 5.409E-02 | 8.772E-02           | 6.052E-03 | -0.084  |
| SB-125  | 5.189E-02                          |              | 7.118E-02 | 1.225E-01           | 7.654E-03 | 0.424   |
| TE-125M | -5.951E+00                         |              | 8.572E+00 | 1.349E+01           | 1.186E+00 | -0.441  |
| I-126   | -7.538E-02                         |              | 1.482E-01 | 2.419E-01           | 1.860E-02 | -0.312  |
| SB-126  | 2.866E-02                          |              | 1.319E-01 | 1.925E-01           | 1.630E-02 | 0.149   |
| SB-127  | -7.157E-01                         |              | 1.027E+00 | 1.645E+00           | 1.784E-01 | -0.435  |
| XE-127  | -5.074E-02                         |              | 3.931E-02 | 6.252E-02           | 3.375E-03 | -0.812  |
| I-131   | -2.129E-03                         |              | 8.917E-02 | 1.501E-01           | 9.689E-03 | -0.014  |
| TE-132  | 3.873E-01                          |              | 5.591E-01 | 9.425E-01           | 1.341E-01 | 0.411   |
| BA-133  | -1.210E-02                         |              | 4.171E-02 | 5.683E-02           | 6.565E-03 | -0.213  |
| I-133   | -3.779E-04                         |              | 2.101E-03 | Half-Life too short |           |         |
| CS-134  | 1.236E-01                          | +            | 5.409E-02 | 7.273E-02           | 7.034E-03 | 1.699   |
| CS-135  | 3.142E-01                          |              | 1.490E-01 | 2.343E-01           | 1.771E-02 | 1.341   |
| I-135   | -8.989E+08                         |              | 1.663E+09 | Half-Life too short |           |         |
| CS-136  | -6.957E-02                         |              | 8.565E-02 | 1.353E-01           | 1.213E-02 | -0.514  |
| BA-137M | 2.143E-02                          |              | 3.016E-02 | 5.224E-02           | 3.982E-03 | 0.410   |
| CS-137  | 2.265E-02                          |              | 3.188E-02 | 5.523E-02           | 4.220E-03 | 0.410   |
| CE-139  | -3.139E-02                         |              | 2.434E-02 | 3.930E-02           | 2.063E-03 | -0.799  |
| BA-140  | 7.942E-02                          |              | 1.979E-01 | 3.279E-01           | 1.072E-01 | 0.242   |
| LA-140  | -5.002E-02                         |              | 7.290E-02 | 9.095E-02           | 6.240E-03 | -0.550  |
| CE-141  | 6.405E-02                          |              | 5.775E-02 | 9.416E-02           | 5.375E-03 | 0.680   |
| CE-143  | 6.755E-04                          |              | 1.008E-04 | Half-Life too short |           |         |
| CE-144  | -1.004E-01                         |              | 2.129E-01 | 2.944E-01           | 4.162E-02 | -0.341  |
| PM-144  | 1.424E-02                          |              | 2.677E-02 | 4.595E-02           | 3.730E-03 | 0.310   |
| PR-144  | 9.649E-01                          |              | 1.814E+00 | 3.113E+00           | 2.527E-01 | 0.310   |
| PM-146  | 1.107E-02                          |              | 3.296E-02 | 5.551E-02           | 4.938E-03 | 0.199   |
| ND-147  | -1.165E-01                         |              | 4.288E-01 | 6.893E-01           | 9.617E-02 | -0.169  |
| PM-149  | 7.794E+01                          |              | 7.514E+01 | 1.260E+02           | 1.782E+01 | 0.618   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| EU-152  | -3.745E-02                         |              | 8.985E-02 | 1.280E-01           | 8.350E-03 | -0.293  |
| GD-153  | -7.516E-02                         |              | 8.347E-02 | 1.161E-01           | 9.076E-03 | -0.648  |
| EU-154  | -6.224E-02                         |              | 9.937E-02 | 1.555E-01           | 1.553E-02 | -0.400  |
| EU-155  | 1.837E-01                          |              | 1.007E-01 | 1.716E-01           | 1.227E-02 | 1.070   |
| TB-160  | 7.779E-02                          |              | 1.114E-01 | 1.901E-01           | 2.088E-02 | 0.409   |
| HO-166M | 1.025E-02                          |              | 4.751E-02 | 8.015E-02           | 6.681E-03 | 0.128   |
| TM-171  | -2.441E+01                         |              | 3.300E+01 | 4.721E+01           | 3.775E+00 | -0.517  |
| LU-176  | 2.113E-02                          |              | 2.050E-02 | 3.358E-02           | 1.933E-03 | 0.629   |
| LU-177  | 3.269E+00                          | +            | 1.272E+00 | 1.729E+00           | 9.380E-02 | 1.891   |
| LU-177M | -3.733E-01                         |              | 1.471E-01 | 2.136E-01           | 1.262E-02 | -1.748  |
| HF-181  | -4.784E-03                         |              | 3.138E-02 | 5.126E-02           | 3.281E-03 | -0.093  |
| W-181   | -2.405E-01                         |              | 4.331E-01 | 6.257E-01           | 4.963E-02 | -0.384  |
| TA-182  | 1.035E-02                          |              | 1.557E-01 | 2.578E-01           | 1.577E-02 | 0.040   |
| RE-183  | 6.927E-02                          |              | 9.137E-02 | 1.580E-01           | 8.342E-03 | 0.438   |
| RE-184  | -1.187E-01                         |              | 1.879E-01 | 3.000E-01           | 1.685E-02 | -0.396  |
| OS-185  | -5.235E-04                         |              | 3.317E-02 | 5.323E-02           | 4.003E-03 | -0.010  |
| RE-188  | 1.508E-01                          |              | 1.493E-01 | 2.602E-01           | 1.392E-02 | 0.580   |
| W-188   | -8.881E+00                         |              | 7.093E+00 | 9.277E+00           | 5.313E-01 | -0.957  |
| IR-192  | -2.116E-02                         |              | 2.809E-02 | 4.359E-02           | 2.528E-03 | -0.485  |
| AU-195  | 2.463E-01                          |              | 2.103E-01 | 3.539E-01           | 2.707E-02 | 0.696   |
| TL-200  | 1.356E-05                          |              | 1.627E-04 | Half-Life too short |           |         |
| TL-201  | -1.178E+00                         |              | 5.496E+00 | 9.215E+00           | 4.837E-01 | -0.128  |
| TL-202  | 3.107E-02                          |              | 5.454E-02 | 9.299E-02           | 5.669E-03 | 0.334   |
| HG-203  | 5.192E-02                          |              | 3.379E-02 | 5.816E-02           | 3.527E-03 | 0.893   |
| BI-207  | 1.915E-02                          |              | 4.168E-02 | 7.157E-02           | 5.908E-03 | 0.268   |
| TL-207  | -4.119E-01                         |              | 6.610E-01 | 8.873E-01           | 1.465E-01 | -0.464  |
| PO-209  | 1.466E+00                          |              | 5.891E+00 | 9.778E+00           | 1.103E+00 | 0.150   |
| BI-210  | 3.207E+00                          |              | 4.862E+00 | 8.404E+00           | 6.502E-01 | 0.382   |
| PB-210  | 3.207E+00                          |              | 4.862E+00 | 8.404E+00           | 6.502E-01 | 0.382   |
| PO-210  | 3.207E+00                          |              | 4.860E+00 | 8.404E+00           | 5.590E-01 | 0.382   |
| PB-211  | -1.018E+00                         |              | 1.002E+00 | 1.220E+00           | 7.608E-01 | -0.834  |
| PO-215  | -4.119E-01                         |              | 6.610E-01 | 8.873E-01           | 1.465E-01 | -0.464  |
| RN-219  | 3.487E-01                          |              | 3.386E-01 | 5.856E-01           | 7.972E-02 | 0.595   |
| RN-220  | -1.937E+00                         |              | 2.088E+01 | 3.384E+01           | 2.326E+00 | -0.057  |
| RA-223  | -4.119E-01                         |              | 6.610E-01 | 8.873E-01           | 1.465E-01 | -0.464  |
| AC-227  | 1.703E-01                          |              | 3.124E-01 | 5.217E-01           | 7.247E-02 | 0.326   |
| TH-227  | 1.703E-01                          |              | 3.128E-01 | 5.217E-01           | 8.787E-02 | 0.326   |
| TH-229  | -8.130E-02                         |              | 4.208E-01 | 6.990E-01           | 3.743E-02 | -0.116  |
| PA-231  | -4.664E-01                         |              | 1.293E+00 | 2.068E+00           | 2.842E-01 | -0.226  |
| TH-231  | -4.119E-01                         |              | 6.610E-01 | 8.873E-01           | 1.465E-01 | -0.464  |
| U-231   | 5.600E-01                          |              | 1.038E+00 | 1.545E+00           | 1.238E-01 | 0.362   |
| PA-233  | -4.027E-03                         |              | 5.055E-02 | 8.126E-02           | 4.978E-03 | -0.050  |
| PA-234  | 6.441E-02                          |              | 2.329E-01 | 3.852E-01           | 7.599E-02 | 0.167   |
| PA-234M | 1.262E+00                          |              | 3.637E+00 | 5.870E+00           | 6.333E-01 | 0.215   |
| U-235   | -2.299E-02                         |              | 1.956E-01 | 3.065E-01           | 4.964E-02 | -0.075  |
| NP-236  | -7.519E-03                         |              | 6.712E-02 | 1.132E-01           | 5.999E-03 | -0.066  |
| NP-239  | 1.684E-01                          |              | 1.708E-01 | 2.840E-01           | 1.758E-02 | 0.593   |
| AM-241  | 5.090E-02                          |              | 1.750E-01 | 2.662E-01           | 2.208E-02 | 0.191   |

----- Non-Identified Nuclides -----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| CM-243  | -3.374E-02                         |              | 9.059E-02 | 1.450E-01         | 1.038E-02 | -0.233  |
| AM-246  | 6.152E-02                          |              | 1.146E-01 | 1.974E-01         | 1.562E-02 | 0.312   |
| CM-247  | 1.348E-02                          |              | 3.037E-02 | 5.173E-02         | 3.013E-03 | 0.261   |
| CF-249  | -1.249E-02                         |              | 3.211E-02 | 5.293E-02         | 3.043E-03 | -0.236  |
| CF-251  | 4.670E-02                          |              | 1.050E-01 | 1.791E-01         | 9.459E-03 | 0.261   |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     *
*               GEL Laboratories LLC   *
*               2040 Savage Road      *
*               Charleston, SC 29414  *
*                                     *
*****
*               DETECTOR DATA        *
*                                     *
* Configuration      : SYSSYSROOT:[ALPHA.ARCHIVE.GAMMA]G244630011 *
* Acquisition date   : 23-JAN-2010 11:49:21 Detector SN#      : *
* Detector ID       : GAM18          Sensitivity              : 5.000 *
* Geometry          : CAN             Energy tolerance:       1.500 *
* Elapsed live time: 0 02:00:00.00    Abundance limit :       75.000 *
* Elapsed real time: 0 02:00:02.16    Half life ratio :       8.000 *
*****
*               SAMPLE DATA          *
*                                     *
* Sample date       : 8-JAN-2010 12:00:00 Nuclide Library : SOLID *
* Sample ID        : G244630011      Analyst initials: MXR1  *
* Batch Number     : 941639          Sample Quantity : 1.4616E+02 GRAM *
* Recovery         : 1.00000         Carrier Weight : 0.00000 *
*****
*               QC DATA              *
*                                     *
* CALIB. DATE/TIME : 23-APR-2009 11:59:23 MS Isotope        : *
* MSD DPM          : 0.000           MSD Isotope           : *
* LCS DPM          : 0.000           LCS Isotope           : *
* LCSD DPM         : 0.000           LCSD Isotope          : *
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act Error | DLC<br>(pCi/GRAM ) | TPU       |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 3.360E+01               | 2.862E+00 | 2.187E-01          | 1.460E+00 |
| CD-109  | 4.812E+00               | 1.107E+00 | 5.924E-01          | 5.649E-01 |
| SN-126  | 4.731E-01               | 1.088E-01 | 5.861E-02          | 5.553E-02 |
| TL-208  | 6.375E-01               | 7.932E-02 | 2.214E-02          | 4.047E-02 |
| BI-211  | 5.197E+00               | 4.783E-01 | 1.449E-01          | 2.440E-01 |
| BI-212  | 1.693E+00               | 3.928E-01 | 1.797E-01          | 2.004E-01 |
| PB-212  | 2.146E+00               | 1.788E-01 | 3.813E-02          | 9.125E-02 |
| PO-212  | 2.146E+00               | 1.788E-01 | 3.813E-02          | 9.125E-02 |
| BI-214  | 1.469E+00               | 1.882E-01 | 4.305E-02          | 9.603E-02 |
| PB-214  | 1.808E+00               | 1.903E-01 | 4.790E-02          | 9.712E-02 |
| PO-214  | 1.808E+00               | 1.903E-01 | 4.790E-02          | 9.712E-02 |
| PO-216  | 2.146E+00               | 1.788E-01 | 3.813E-02          | 9.125E-02 |
| PO-218  | 1.808E+00               | 1.903E-01 | 4.790E-02          | 9.712E-02 |
| RA-224  | 5.474E+00               | 9.652E-01 | 4.333E-01          | 4.925E-01 |
| RA-226  | 1.469E+00               | 1.882E-01 | 4.305E-02          | 9.603E-02 |
| AC-228  | 2.116E+00               | 3.654E-01 | 8.714E-02          | 1.864E-01 |
| RA-228  | 2.116E+00               | 3.654E-01 | 8.714E-02          | 1.864E-01 |
| TH-228  | 2.179E+00               | 1.815E-01 | 3.871E-02          | 9.262E-02 |
| TH-230  | 1.469E+00               | 1.882E-01 | 4.305E-02          | 9.603E-02 |
| TH-232  | 2.116E+00               | 3.654E-01 | 8.714E-02          | 1.864E-01 |
| TH-234  | 2.565E+00               | 2.422E+00 | 1.167E+00          | 1.236E+00 |
| U-234   | 1.469E+00               | 1.882E-01 | 4.305E-02          | 9.603E-02 |
| NP-237  | 1.389E+00               | 4.255E-01 | 1.748E-01          | 2.171E-01 |
| U-238   | 2.565E+00               | 2.422E+00 | 1.167E+00          | 1.236E+00 |
| AM-243  | 4.455E-01               | 7.892E-02 | 4.755E-02          | 4.027E-02 |
| ANH-511 | 1.119E-01               | 5.246E-02 | 1.873E-02          | 2.676E-02 |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L Act error | DLC<br>(pCi/GRAM ) | TPU                  |
|---------|-------------------------------------|---------------|--------------------|----------------------|
| BE-7    | 7.036E-02                           | 2.438E-01     | 2.150E-01          | 1.244E-01 NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| NA-22   | -3.472E-02 | 3.571E-02 | 2.811E-02 | 1.822E-02 | NOT IDENT. |
| NA-24   | -2.707E+05 | 6.192E+05 | 0.000E+00 | 3.159E+05 | SHORT HLIF |
| AL-26   | 1.834E-02  | 2.052E-02 | 1.927E-02 | 1.047E-02 | NOT IDENT. |
| TI-44   | 4.628E-01  | 6.166E-02 | 4.352E-02 | 3.146E-02 | FAIL ABUN  |
| SC-46   | -4.798E-03 | 2.817E-02 | 2.362E-02 | 1.437E-02 | FAIL ABUN  |
| V-48    | 1.245E-02  | 5.438E-02 | 4.635E-02 | 2.775E-02 | NOT IDENT. |
| CR-51   | 2.785E-01  | 2.952E-01 | 2.633E-01 | 1.506E-01 | NOT IDENT. |
| MN-52   | 8.413E-02  | 1.660E-01 | 1.455E-01 | 8.469E-02 | NOT IDENT. |
| MN-54   | -6.369E-03 | 3.180E-02 | 2.690E-02 | 1.622E-02 | NOT IDENT. |
| CO-56   | 3.667E-04  | 3.017E-02 | 2.578E-02 | 1.539E-02 | FAIL ABUN  |
| CO-57   | 3.686E-03  | 2.146E-02 | 1.883E-02 | 1.095E-02 | NOT IDENT. |
| CO-58   | -2.050E-02 | 3.148E-02 | 2.590E-02 | 1.606E-02 | NOT IDENT. |
| FE-59   | -8.976E-02 | 7.167E-02 | 5.639E-02 | 3.657E-02 | NOT IDENT. |
| CO-60   | -4.281E-03 | 3.318E-02 | 2.764E-02 | 1.693E-02 | NOT IDENT. |
| ZN-65   | 8.731E-02  | 8.303E-02 | 6.625E-02 | 4.236E-02 | NOT IDENT. |
| GE-68   | 7.637E-01  | 1.014E+00 | 9.121E-01 | 5.174E-01 | NOT IDENT. |
| AS-73   | 7.193E-01  | 1.002E+00 | 9.514E-01 | 5.110E-01 | NOT IDENT. |
| AS-74   | -1.743E-02 | 7.223E-02 | 6.044E-02 | 3.685E-02 | NOT IDENT. |
| SE-75   | -1.759E-02 | 3.955E-02 | 2.945E-02 | 2.018E-02 | NOT IDENT. |
| BR-77   | 1.144E+00  | 7.442E+00 | 6.465E+00 | 3.797E+00 | FAIL ABUN  |
| SR-82   | -2.445E-01 | 3.170E-01 | 2.611E-01 | 1.617E-01 | NOT IDENT. |
| RB-83   | 6.411E-03  | 5.088E-02 | 4.414E-02 | 2.596E-02 | NOT IDENT. |
| RB-84   | -2.408E-02 | 5.545E-02 | 4.574E-02 | 2.829E-02 | NOT IDENT. |
| KR-85   | 1.563E+01  | 6.424E+00 | 5.497E+00 | 3.277E+00 | NOT IDENT. |
| SR-85   | 8.004E-02  | 3.289E-02 | 2.815E-02 | 1.678E-02 | NOT IDENT. |
| RB-86   | 6.107E-01  | 6.367E-01 | 5.787E-01 | 3.248E-01 | NOT IDENT. |
| Y-88    | 1.504E-02  | 2.549E-02 | 2.289E-02 | 1.301E-02 | NOT IDENT. |
| ZR-88   | 7.143E-03  | 2.411E-02 | 2.166E-02 | 1.230E-02 | NOT IDENT. |
| Y-91    | 6.588E+00  | 1.494E+01 | 1.304E+01 | 7.622E+00 | NOT IDENT. |
| NB-94   | -5.700E-03 | 2.516E-02 | 2.167E-02 | 1.284E-02 | NOT IDENT. |
| NB-95   | 7.718E-02  | 4.153E-02 | 3.439E-02 | 2.119E-02 | NOT IDENT. |
| NB-95M  | 1.217E-01  | 1.138E-01 | 9.229E-02 | 5.806E-02 | NOT IDENT. |
| ZR-95   | -2.547E-02 | 5.626E-02 | 4.737E-02 | 2.870E-02 | NOT IDENT. |
| NB-97   | -3.569E+04 | 6.797E+04 | 0.000E+00 | 3.468E+04 | SHORT HLIF |
| ZR-97   | 2.673E+06  | 1.476E+06 | 0.000E+00 | 7.532E+05 | SHORT HLIF |
| MO-99   | 2.038E+00  | 8.399E+00 | 7.381E+00 | 4.285E+00 | NOT IDENT. |
| TC-99M  | -1.203E+16 | 2.474E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | 2.919E-03  | 2.722E-02 | 2.429E-02 | 1.389E-02 | NOT IDENT. |
| RH-102  | -3.174E-03 | 2.259E-02 | 1.951E-02 | 1.153E-02 | NOT IDENT. |
| RU-103  | 4.289E-02  | 2.970E-02 | 2.729E-02 | 1.515E-02 | FAIL ABUN  |
| RH-106  | -2.588E-02 | 2.535E-01 | 2.128E-01 | 1.293E-01 | FAIL ABUN  |
| RU-106  | -2.588E-02 | 2.535E-01 | 2.128E-01 | 1.293E-01 | FAIL ABUN  |
| AG-108M | -1.000E-02 | 2.504E-02 | 2.155E-02 | 1.278E-02 | NOT IDENT. |
| AG-110M | -1.564E-02 | 2.748E-02 | 2.341E-02 | 1.402E-02 | NOT IDENT. |
| IN-111  | -2.041E-01 | 8.840E-01 | 6.731E-01 | 4.510E-01 | NOT IDENT. |
| IN-113M | 1.993E-02  | 3.481E-02 | 3.163E-02 | 1.776E-02 | NOT IDENT. |
| SN-113  | 1.993E-02  | 3.481E-02 | 3.163E-02 | 1.776E-02 | NOT IDENT. |
| IN-114M | 1.045E-01  | 1.647E-01 | 1.343E-01 | 8.403E-02 | NOT IDENT. |
| CD-115  | 1.790E+00  | 7.915E+00 | 6.831E+00 | 4.038E+00 | NOT IDENT. |
| SN-117M | -2.904E-02 | 4.522E-02 | 4.057E-02 | 2.307E-02 | NOT IDENT. |
| SB-122  | 1.564E-01  | 1.622E+00 | 1.392E+00 | 8.277E-01 | NOT IDENT. |
| I-123   | -1.699E+06 | 4.067E+06 | 0.000E+00 | 2.075E+06 | SHORT HLIF |
| TE-123M | -9.821E-03 | 2.350E-02 | 2.123E-02 | 1.199E-02 | NOT IDENT. |
| I-124   | 1.115E-01  | 6.170E-01 | 4.536E-01 | 3.148E-01 | FAIL ABUN  |
| SB-124  | -7.388E-03 | 5.301E-02 | 4.398E-02 | 2.705E-02 | FAIL ABUN  |
| SB-125  | 5.189E-02  | 6.975E-02 | 6.343E-02 | 3.559E-02 | FAIL ABUN  |
| TE-125M | -5.951E+00 | 8.400E+00 | 7.200E+00 | 4.286E+00 | NOT IDENT. |
| I-126   | -7.538E-02 | 1.452E-01 | 1.240E-01 | 7.411E-02 | NOT IDENT. |
| SB-126  | 2.866E-02  | 1.293E-01 | 9.852E-02 | 6.596E-02 | FAIL ABUN  |
| SE-127  | -7.157E-01 | 1.007E+00 | 8.424E-01 | 5.135E-01 | NOT IDENT. |
| XB-127  | -5.074E-02 | 3.853E-02 | 3.292E-02 | 1.966E-02 | NOT IDENT. |
| I-131   | -2.129E-03 | 8.739E-02 | 7.802E-02 | 4.459E-02 | NOT IDENT. |
| TE-132  | 3.873E-01  | 5.479E-01 | 4.950E-01 | 2.795E-01 | NOT IDENT. |
| BA-133  | -1.210E-02 | 4.087E-02 | 2.955E-02 | 2.085E-02 | NOT IDENT. |
| I-133   | -3.779E+02 | 4.117E+03 | 0.000E+00 | 2.101E+03 | SHORT HLIF |
| CS-134  | 1.236E-01  | 5.301E-02 | 3.712E-02 | 2.705E-02 | FAIL ABUN  |
| CS-135  | 3.142E-01  | 1.461E-01 | 1.226E-01 | 7.452E-02 | NOT IDENT. |
| I-135   | -8.989E+14 | 3.259E+15 | 0.000E+00 | 1.663E+15 | SHORT HLIF |
| CS-136  | -6.957E-02 | 8.394E-02 | 6.864E-02 | 4.283E-02 | FAIL ABUN  |
| BA-137M | 2.143E-02  | 2.955E-02 | 2.678E-02 | 1.508E-02 | NOT IDENT. |
| CS-137  | 2.265E-02  | 3.124E-02 | 2.831E-02 | 1.594E-02 | NOT IDENT. |
| CE-139  | -3.139E-02 | 2.385E-02 | 2.079E-02 | 1.217E-02 | NOT IDENT. |
| BA-140  | 7.942E-02  | 1.940E-01 | 1.689E-01 | 9.896E-02 | NOT IDENT. |
| LA-140  | -5.002E-02 | 7.144E-02 | 4.566E-02 | 3.645E-02 | FAIL ABUN  |
| CE-141  | 6.405E-02  | 5.659E-02 | 4.994E-02 | 2.887E-02 | NOT IDENT. |
| CE-143  | 6.755E+02  | 1.976E+02 | 0.000E+00 | 1.008E+02 | SHORT HLIF |
| CE-144  | -1.004E-01 | 2.086E-01 | 1.564E-01 | 1.064E-01 | NOT IDENT. |
| PM-144  | 1.424E-02  | 2.624E-02 | 2.353E-02 | 1.339E-02 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PR-144  | 9.649E-01  | 1.778E+00 | 1.594E+00 | 9.070E-01 | NOT IDENT. |
| PM-146  | 1.107E-02  | 3.230E-02 | 2.871E-02 | 1.648E-02 | NOT IDENT. |
| ND-147  | -1.165E-01 | 4.202E-01 | 3.552E-01 | 2.144E-01 | FAIL ABUN  |
| PM-149  | 7.794E+01  | 7.364E+01 | 6.586E+01 | 3.757E+01 | NOT IDENT. |
| EU-152  | -3.745E-02 | 8.805E-02 | 6.659E-02 | 4.492E-02 | FAIL ABUN  |
| GD-153  | -7.516E-02 | 8.180E-02 | 6.210E-02 | 4.174E-02 | FAIL ABUN  |
| EU-154  | -6.224E-02 | 9.738E-02 | 7.851E-02 | 4.968E-02 | NOT IDENT. |
| EU-155  | 1.837E-01  | 9.867E-02 | 9.166E-02 | 5.034E-02 | FAIL ABUN  |
| TB-160  | 7.779E-02  | 1.092E-01 | 9.680E-02 | 5.572E-02 | FAIL ABUN  |
| HO-166M | 1.025E-02  | 4.656E-02 | 4.102E-02 | 2.376E-02 | NOT IDENT. |
| TM-171  | -2.441E+01 | 3.234E+01 | 2.546E+01 | 1.650E+01 | NOT IDENT. |
| LU-176  | 2.113E-02  | 2.009E-02 | 1.752E-02 | 1.025E-02 | FAIL ABUN  |
| LU-177  | 3.269E+00  | 1.247E+00 | 9.100E-01 | 6.360E-01 | FAIL ABUN  |
| LU-177M | -3.733E-01 | 1.441E-01 | 1.107E-01 | 7.353E-02 | FAIL ABUN  |
| HF-181  | -4.784E-03 | 3.075E-02 | 2.647E-02 | 1.569E-02 | NOT IDENT. |
| W-181   | -2.405E-01 | 4.245E-01 | 3.376E-01 | 2.166E-01 | NOT IDENT. |
| TA-182  | 1.035E-02  | 1.526E-01 | 1.303E-01 | 7.786E-02 | FAIL ABUN  |
| RE-183  | 6.927E-02  | 8.954E-02 | 8.362E-02 | 4.568E-02 | FAIL ABUN  |
| RE-184  | -1.187E-01 | 1.841E-01 | 1.572E-01 | 9.394E-02 | NOT IDENT. |
| OS-185  | -5.235E-04 | 3.251E-02 | 2.730E-02 | 1.659E-02 | NOT IDENT. |
| RE-188  | 1.508E-01  | 1.463E-01 | 1.378E-01 | 7.463E-02 | NOT IDENT. |
| W-188   | -8.881E+00 | 6.951E+00 | 4.846E+00 | 3.547E+00 | FAIL ABUN  |
| IR-192  | -2.116E-02 | 2.752E-02 | 2.273E-02 | 1.404E-02 | FAIL ABUN  |
| AU-195  | 2.463E-01  | 2.061E-01 | 1.892E-01 | 1.051E-01 | FAIL ABUN  |
| TL-200  | 1.356E+01  | 3.189E+02 | 0.000E+00 | 1.627E+02 | SHORT HLIF |
| TL-201  | -1.178E+00 | 5.386E+00 | 4.872E+00 | 2.748E+00 | NOT IDENT. |
| TL-202  | 3.107E-02  | 5.345E-02 | 4.812E-02 | 2.727E-02 | NOT IDENT. |
| HG-203  | 5.192E-02  | 3.312E-02 | 3.041E-02 | 1.690E-02 | NOT IDENT. |
| BI-207  | 1.915E-02  | 4.085E-02 | 3.628E-02 | 2.084E-02 | FAIL ABUN  |
| TL-207  | -4.119E-01 | 6.478E-01 | 4.624E-01 | 3.305E-01 | FAIL ABUN  |
| PO-209  | 1.466E+00  | 5.773E+00 | 4.977E+00 | 2.946E+00 | NOT IDENT. |
| BI-210  | 3.207E+00  | 4.765E+00 | 4.566E+00 | 2.431E+00 | NOT IDENT. |
| PB-210  | 3.207E+00  | 4.765E+00 | 4.566E+00 | 2.431E+00 | NOT IDENT. |
| PO-210  | 3.207E+00  | 4.763E+00 | 4.566E+00 | 2.430E+00 | NOT IDENT. |
| PB-211  | -1.018E+00 | 9.815E-01 | 6.327E-01 | 5.008E-01 | NOT IDENT. |
| PO-215  | -4.119E-01 | 6.478E-01 | 4.624E-01 | 3.305E-01 | FAIL ABUN  |
| RN-219  | 3.487E-01  | 3.318E-01 | 3.037E-01 | 1.693E-01 | FAIL ABUN  |
| RN-220  | -1.937E+00 | 2.046E+01 | 1.742E+01 | 1.044E+01 | NOT IDENT. |
| RA-223  | -4.119E-01 | 6.478E-01 | 4.624E-01 | 3.305E-01 | FAIL ABUN  |
| AC-227  | 1.703E-01  | 3.062E-01 | 2.733E-01 | 1.562E-01 | FAIL ABUN  |
| TH-227  | 1.703E-01  | 3.066E-01 | 2.733E-01 | 1.564E-01 | FAIL ABUN  |
| TH-229  | -8.130E-02 | 4.123E-01 | 3.684E-01 | 2.104E-01 | FAIL ABUN  |
| PA-231  | -4.664E-01 | 1.267E+00 | 1.081E+00 | 6.466E-01 | FAIL ABUN  |
| TH-231  | -4.119E-01 | 6.478E-01 | 4.624E-01 | 3.305E-01 | FAIL ABUN  |
| U-231   | 5.600E-01  | 1.017E+00 | 8.269E-01 | 5.189E-01 | FAIL ABUN  |
| PA-233  | -4.027E-03 | 4.953E-02 | 4.238E-02 | 2.527E-02 | FAIL ABUN  |
| PA-234  | 6.441E-02  | 2.282E-01 | 1.958E-01 | 1.164E-01 | FAIL ABUN  |
| PA-234M | 1.262E+00  | 3.565E+00 | 2.980E+00 | 1.819E+00 | NOT IDENT. |
| U-235   | -2.299E-02 | 1.917E-01 | 1.626E-01 | 9.782E-02 | FAIL ABUN  |
| NP-236  | -7.519E-03 | 6.578E-02 | 5.994E-02 | 3.356E-02 | NOT IDENT. |
| NP-239  | 1.684E-01  | 1.674E-01 | 1.513E-01 | 8.540E-02 | FAIL ABUN  |
| AM-241  | 5.090E-02  | 1.715E-01 | 1.439E-01 | 8.749E-02 | NOT IDENT. |
| CM-243  | -3.374E-02 | 8.878E-02 | 7.745E-02 | 4.529E-02 | FAIL ABUN  |
| AM-246  | 6.152E-02  | 1.124E-01 | 1.001E-01 | 5.732E-02 | NOT IDENT. |
| CM-247  | 1.348E-02  | 2.976E-02 | 2.683E-02 | 1.518E-02 | NOT IDENT. |
| CF-249  | -1.249E-02 | 3.147E-02 | 2.747E-02 | 1.606E-02 | NOT IDENT. |
| CF-251  | 4.670E-02  | 1.029E-01 | 9.460E-02 | 5.250E-02 | NOT IDENT. |



\*\*\*\*\*  
 \* GEL Laboratories LLC \*  
 \* 2040 SAVAGE ROAD \*  
 \* CHARLESTON ,SC 29417 \*  
 \* GAMMA SPECTROSCOPY BACKGROUND REPORT \*  
 \*\*\*\*\*

| ENERGY | MDA COUNTS |
|--------|------------|
|--------|------------|

|       |          |
|-------|----------|
| 46.50 | 338.4682 |
| 46.50 | 338.4682 |
| 46.50 | 338.4682 |
| 48.70 | 381.7780 |
| 49.72 | 333.9690 |
| 51.35 | 392.1426 |
| 52.39 | 397.3541 |
| 52.97 | 396.4190 |
| 53.15 | 383.9529 |
| 53.44 | 369.8032 |
| 54.07 | 343.2935 |
| 56.28 | 400.4249 |
| 56.28 | 400.4293 |
| 57.37 | 0.0000   |
| 57.53 | 403.1738 |
| 57.53 | 403.1760 |
| 57.60 | 392.1754 |
| 57.98 | 405.6782 |
| 57.98 | 405.6782 |
| 59.32 | 369.9228 |
| 59.32 | 369.9228 |
| 59.40 | 370.0269 |
| 59.54 | 370.2089 |
| 59.72 | 356.4634 |
| 60.01 | 356.8253 |
| 61.10 | 382.0569 |
| 61.14 | 382.1099 |
| 61.30 | 382.3205 |
| 63.00 | 448.6323 |
| 63.29 | 449.0706 |
| 63.29 | 449.0706 |
| 63.58 | 449.5075 |
| 64.28 | 518.2394 |
| 65.12 | 506.8686 |
| 65.20 | 507.0023 |
| 65.20 | 507.0023 |
| 66.05 | 491.2797 |
| 66.72 | 516.6791 |
| 66.83 | 526.8887 |
| 66.91 | 527.0234 |
| 67.20 | 507.4490 |
| 67.20 | 507.4490 |
| 67.75 | 541.3738 |
| 67.85 | 548.7316 |
| 68.90 | 549.6068 |
| 68.90 | 549.6068 |
| 69.30 | 547.2235 |
| 69.67 | 537.4633 |
| 70.82 | 508.9409 |
| 70.82 | 508.9409 |
| 70.83 | 508.9570 |
| 72.80 | 567.4826 |
| 72.87 | 567.6043 |
| 72.87 | 567.6043 |
| 74.67 | 570.2018 |
| 74.81 | 570.4405 |
| 74.81 | 570.4405 |
| 74.81 | 570.4405 |
| 74.81 | 570.4405 |
| 74.81 | 570.4405 |
| 74.81 | 570.4405 |
| 74.97 | 570.7118 |
| 75.28 | 571.2396 |
| 75.70 | 571.9513 |
| 77.11 | 574.3235 |
| 77.11 | 574.3235 |

|        |          |
|--------|----------|
| 77.11  | 574.3235 |
| 77.11  | 574.3235 |
| 77.11  | 574.3235 |
| 77.11  | 574.3235 |
| 77.11  | 574.3235 |
| 78.38  | 556.1743 |
| 79.62  | 557.6608 |
| 79.80  | 536.1053 |
| 79.80  | 536.1053 |
| 80.11  | 536.5778 |
| 80.18  | 536.6849 |
| 80.30  | 510.0229 |
| 80.30  | 510.0229 |
| 80.57  | 510.4142 |
| 81.00  | 493.1017 |
| 81.07  | 493.1999 |
| 81.07  | 493.1999 |
| 81.07  | 493.1999 |
| 81.07  | 493.1999 |
| 82.60  | 540.3406 |
| 83.37  | 542.9928 |
| 83.78  | 475.8492 |
| 83.78  | 475.8492 |
| 83.78  | 475.8492 |
| 83.78  | 475.8492 |
| 84.21  | 476.4109 |
| 84.90  | 477.3077 |
| 85.43  | 477.9948 |
| 86.29  | 479.1063 |
| 86.50  | 479.3763 |
| 86.54  | 479.4269 |
| 86.59  | 479.4920 |
| 86.72  | 479.6584 |
| 86.79  | 479.7451 |
| 86.94  | 479.9404 |
| 87.30  | 480.4033 |
| 87.30  | 480.4033 |
| 87.30  | 480.4033 |
| 87.30  | 480.4033 |
| 87.30  | 480.4033 |
| 87.30  | 480.4033 |
| 87.57  | 480.7481 |
| 87.88  | 481.1435 |
| 88.03  | 481.3363 |
| 88.36  | 481.7558 |
| 88.47  | 481.8957 |
| 89.95  | 483.7713 |
| 91.11  | 485.2299 |
| 92.29  | 486.7054 |
| 92.38  | 486.8187 |
| 92.38  | 486.8187 |
| 93.35  | 488.0217 |
| 94.00  | 488.8270 |
| 94.67  | 432.3125 |
| 94.67  | 432.3189 |
| 94.90  | 432.5679 |
| 94.90  | 432.5679 |
| 94.90  | 432.5679 |
| 94.90  | 432.5679 |
| 95.87  | 436.7257 |
| 95.87  | 436.7257 |
| 96.73  | 532.6711 |
| 97.43  | 514.8647 |
| 98.44  | 445.4432 |
| 98.44  | 445.4432 |
| 98.88  | 434.2305 |
| 99.55  | 435.9827 |
| 99.55  | 435.9827 |
| 99.86  | 413.2906 |
| 100.00 | 413.4313 |
| 100.10 | 413.5337 |
| 103.18 | 526.2586 |
| 103.76 | 478.3979 |
| 105.00 | 407.7642 |
| 105.31 | 408.0599 |
| 108.00 | 480.9767 |
| 109.28 | 486.6543 |

|        |          |
|--------|----------|
| 111.00 | 442.3686 |
| 111.00 | 442.3686 |
| 111.76 | 438.8146 |
| 112.95 | 438.8921 |
| 115.19 | 431.2942 |
| 116.30 | 422.5553 |
| 117.00 | 398.1698 |
| 117.00 | 398.1698 |
| 117.66 | 406.3600 |
| 121.11 | 374.2158 |
| 121.62 | 388.8962 |
| 121.78 | 389.0258 |
| 122.06 | 388.1531 |
| 122.32 | 388.3614 |
| 122.32 | 388.3614 |
| 122.32 | 388.3614 |
| 122.32 | 388.3614 |
| 123.07 | 396.6797 |
| 127.23 | 420.0619 |
| 129.76 | 460.1670 |
| 131.20 | 468.7605 |
| 133.02 | 456.9445 |
| 133.54 | 482.7210 |
| 135.34 | 440.3687 |
| 136.00 | 446.5770 |
| 136.25 | 452.4455 |
| 136.48 | 460.5662 |
| 140.51 | 480.0489 |
| 140.51 | 0.0000   |
| 142.18 | 494.1255 |
| 142.65 | 476.2393 |
| 143.76 | 486.3897 |
| 144.24 | 483.3723 |
| 144.24 | 483.3723 |
| 144.24 | 483.3723 |
| 144.24 | 483.3723 |
| 145.22 | 432.4780 |
| 145.44 | 432.6540 |
| 147.16 | 494.0217 |
| 152.43 | 505.6667 |
| 152.70 | 477.9288 |
| 153.22 | 483.9088 |
| 154.21 | 460.2001 |
| 154.21 | 460.2001 |
| 154.21 | 460.2001 |
| 154.21 | 460.2001 |
| 155.03 | 459.1014 |
| 156.02 | 473.9566 |
| 158.56 | 468.9598 |
| 159.00 | 0.0000   |
| 159.00 | 459.5862 |
| 160.31 | 449.9764 |
| 161.27 | 454.2539 |
| 162.32 | 414.1709 |
| 162.64 | 411.7235 |
| 163.35 | 388.1728 |
| 163.89 | 393.8687 |
| 165.85 | 454.1506 |
| 167.43 | 411.4093 |
| 171.28 | 418.4893 |
| 171.86 | 427.9062 |
| 172.10 | 409.1039 |
| 176.55 | 403.8113 |
| 176.60 | 403.8418 |
| 181.06 | 423.4986 |
| 184.41 | 396.2102 |
| 185.71 | 415.9893 |
| 186.00 | 416.1717 |
| 190.27 | 393.7573 |
| 192.34 | 417.3135 |
| 193.63 | 419.0363 |
| 197.04 | 433.3012 |
| 198.01 | 404.7892 |
| 198.60 | 391.9715 |
| 200.40 | 402.4040 |
| 201.83 | 452.3223 |
| 202.84 | 463.3676 |
| 205.31 | 361.3492 |

|        |          |
|--------|----------|
| 208.36 | 448.2639 |
| 208.81 | 450.0659 |
| 209.75 | 440.1433 |
| 209.75 | 440.1433 |
| 210.97 | 373.3599 |
| 215.65 | 435.5627 |
| 216.55 | 425.9012 |
| 218.09 | 389.1211 |
| 222.10 | 397.9789 |
| 223.80 | 404.6980 |
| 226.40 | 378.7316 |
| 227.00 | 384.8859 |
| 227.08 | 384.9250 |
| 227.20 | 362.5113 |
| 228.16 | 351.2186 |
| 228.18 | 351.2269 |
| 228.18 | 351.2269 |
| 231.56 | 0.0000   |
| 235.69 | 388.7533 |
| 236.00 | 406.2934 |
| 236.00 | 406.2934 |
| 238.63 | 340.0168 |
| 238.63 | 340.0168 |
| 238.63 | 340.0168 |
| 238.63 | 340.0168 |
| 239.00 | 340.1711 |
| 240.98 | 341.0007 |
| 241.98 | 341.4194 |
| 241.98 | 341.4194 |
| 241.98 | 341.4194 |
| 244.69 | 305.1967 |
| 245.39 | 302.2570 |
| 247.94 | 314.4159 |
| 248.90 | 287.4750 |
| 249.79 | 283.6468 |
| 252.40 | 307.4224 |
| 252.85 | 318.6785 |
| 252.85 | 318.6785 |
| 254.15 | 0.0000   |
| 256.20 | 296.6493 |
| 256.20 | 296.6493 |
| 260.50 | 297.1150 |
| 260.90 | 295.2171 |
| 262.80 | 321.3687 |
| 264.65 | 299.3497 |
| 268.24 | 275.9326 |
| 268.79 | 292.5397 |
| 269.46 | 302.2140 |
| 269.46 | 302.2140 |
| 269.46 | 302.2140 |
| 269.46 | 302.2140 |
| 271.23 | 262.0278 |
| 273.65 | 376.7511 |
| 276.40 | 291.4343 |
| 277.35 | 284.1345 |
| 277.60 | 284.2098 |
| 277.60 | 284.2098 |
| 278.00 | 260.4677 |
| 278.60 | 263.7552 |
| 279.20 | 274.3165 |
| 279.53 | 287.9260 |
| 280.46 | 360.0172 |
| 281.68 | 359.4505 |
| 283.67 | 311.1503 |
| 284.30 | 324.9422 |
| 285.00 | 304.2765 |
| 285.90 | 275.2639 |
| 286.10 | 275.3201 |
| 286.10 | 275.3201 |
| 287.40 | 276.7537 |
| 288.45 | 0.0000   |
| 290.67 | 336.6211 |
| 290.80 | 336.6699 |
| 291.72 | 340.3671 |
| 293.26 | 0.0000   |
| 293.70 | 281.9756 |
| 295.21 | 321.3208 |
| 295.21 | 321.3208 |

|        |          |
|--------|----------|
| 295.21 | 321.3208 |
| 295.96 | 330.0337 |
| 296.50 | 330.2194 |
| 297.23 | 330.4669 |
| 298.57 | 330.9287 |
| 299.80 | 293.1152 |
| 299.80 | 293.1152 |
| 300.09 | 258.3592 |
| 300.09 | 258.3592 |
| 300.09 | 258.3592 |
| 300.09 | 258.3592 |
| 300.12 | 258.3666 |
| 301.29 | 267.1836 |
| 302.84 | 272.7227 |
| 303.76 | 293.4540 |
| 303.91 | 293.4960 |
| 304.40 | 278.2779 |
| 304.40 | 278.2779 |
| 304.84 | 269.8652 |
| 306.84 | 227.3784 |
| 308.46 | 243.2103 |
| 311.98 | 239.7686 |
| 316.51 | 266.7680 |
| 318.01 | 249.8576 |
| 319.02 | 243.6081 |
| 319.41 | 248.0332 |
| 320.08 | 228.6853 |
| 323.87 | 308.0734 |
| 323.87 | 308.0734 |
| 323.87 | 308.0734 |
| 323.87 | 308.0734 |
| 325.23 | 266.6481 |
| 328.77 | 266.6814 |
| 333.44 | 241.5213 |
| 334.20 | 241.6925 |
| 334.20 | 241.6925 |
| 334.30 | 241.7160 |
| 338.28 | 253.6472 |
| 338.28 | 253.6472 |
| 338.28 | 253.6472 |
| 338.28 | 253.6472 |
| 338.32 | 253.6577 |
| 338.32 | 253.6577 |
| 338.32 | 253.6577 |
| 340.50 | 272.2973 |
| 340.57 | 272.3161 |
| 344.27 | 261.7153 |
| 345.85 | 276.9009 |
| 350.59 | 0.0000   |
| 351.07 | 271.3771 |
| 351.92 | 244.5638 |
| 351.92 | 244.5638 |
| 351.92 | 244.5638 |
| 355.39 | 0.0000   |
| 356.01 | 252.8602 |
| 364.48 | 223.1473 |
| 366.43 | 232.5800 |
| 367.43 | 214.6684 |
| 367.94 | 0.0000   |
| 369.80 | 226.9104 |
| 374.96 | 224.2768 |
| 383.85 | 213.1160 |
| 387.95 | 242.4242 |
| 388.63 | 236.1062 |
| 391.69 | 215.4397 |
| 391.69 | 215.4397 |
| 392.90 | 222.1348 |
| 398.62 | 237.1295 |
| 400.65 | 236.5871 |
| 401.10 | 226.4272 |
| 401.81 | 212.5713 |
| 402.60 | 230.4318 |
| 404.84 | 277.5819 |
| 410.95 | 181.2650 |
| 411.60 | 200.1529 |
| 413.65 | 294.5990 |
| 414.70 | 236.4400 |
| 415.30 | 212.0499 |

|        |          |
|--------|----------|
| 415.76 | 210.2412 |
| 417.63 | 0.0000   |
| 418.52 | 164.3994 |
| 423.70 | 218.1912 |
| 427.08 | 175.0089 |
| 427.89 | 178.9259 |
| 432.53 | 192.9332 |
| 433.93 | 200.7894 |
| 439.47 | 186.2703 |
| 439.56 | 186.2822 |
| 439.89 | 183.4481 |
| 443.98 | 190.7538 |
| 444.90 | 189.9203 |
| 445.03 | 180.2980 |
| 445.03 | 180.2980 |
| 445.03 | 180.2980 |
| 445.03 | 180.2980 |
| 453.90 | 169.8367 |
| 463.38 | 184.0388 |
| 468.07 | 191.1962 |
| 473.00 | 182.0281 |
| 475.06 | 186.2337 |
| 475.35 | 185.2874 |
| 476.78 | 195.3389 |
| 477.59 | 170.7720 |
| 477.96 | 156.0057 |
| 482.03 | 160.4120 |
| 484.57 | 198.3887 |
| 487.03 | 132.1541 |
| 490.36 | 0.0000   |
| 492.35 | 188.4855 |
| 497.08 | 126.0631 |
| 507.63 | 0.0000   |
| 510.53 | 0.0000   |
| 510.84 | 171.6643 |
| 511.00 | 171.6819 |
| 511.85 | 171.7795 |
| 511.85 | 171.7795 |
| 513.99 | 161.9023 |
| 513.99 | 161.9023 |
| 520.41 | 150.3920 |
| 520.65 | 150.4173 |
| 527.90 | 148.0621 |
| 528.96 | 0.0000   |
| 529.64 | 147.2063 |
| 529.87 | 0.0000   |
| 531.02 | 160.6375 |
| 537.32 | 145.8793 |
| 543.00 | 174.2400 |
| 546.56 | 0.0000   |
| 549.76 | 166.6995 |
| 552.65 | 173.2217 |
| 555.20 | 157.9115 |
| 563.23 | 160.7826 |
| 563.90 | 180.6912 |
| 568.70 | 173.8907 |
| 569.32 | 158.2366 |
| 569.50 | 161.3955 |
| 569.67 | 161.4143 |
| 573.80 | 166.9536 |
| 574.00 | 157.6318 |
| 574.64 | 162.9506 |
| 578.91 | 159.8536 |
| 579.30 | 0.0000   |
| 583.14 | 142.6465 |
| 585.48 | 155.1888 |
| 591.81 | 145.5023 |
| 592.07 | 145.5257 |
| 593.00 | 155.1678 |
| 595.88 | 170.3359 |
| 600.56 | 165.4595 |
| 602.52 | 0.0000   |
| 602.71 | 178.1372 |
| 602.71 | 178.1372 |
| 603.60 | 192.4849 |
| 604.41 | 203.2759 |
| 604.70 | 215.7922 |
| 609.31 | 153.4213 |

|        |          |
|--------|----------|
| 609.31 | 153.4213 |
| 609.31 | 153.4213 |
| 609.31 | 153.4213 |
| 610.33 | 153.5120 |
| 612.46 | 155.8467 |
| 614.37 | 163.1898 |
| 618.01 | 140.1658 |
| 621.84 | 157.7556 |
| 621.84 | 157.7556 |
| 631.29 | 143.3856 |
| 633.02 | 147.8701 |
| 633.10 | 143.5274 |
| 634.78 | 150.1929 |
| 635.90 | 155.7290 |
| 636.97 | 136.2091 |
| 645.85 | 147.8210 |
| 646.12 | 136.8927 |
| 656.30 | 177.1051 |
| 657.75 | 175.4059 |
| 657.90 | 0.0000   |
| 661.65 | 172.0939 |
| 661.65 | 172.0939 |
| 664.57 | 0.0000   |
| 666.33 | 187.2810 |
| 666.33 | 187.2810 |
| 675.00 | 151.0681 |
| 677.61 | 155.9141 |
| 685.20 | 154.6692 |
| 692.80 | 161.8215 |
| 695.00 | 151.7036 |
| 696.49 | 146.1960 |
| 696.49 | 146.1960 |
| 697.00 | 148.1089 |
| 697.49 | 139.7087 |
| 698.33 | 157.5889 |
| 698.50 | 157.6025 |
| 699.00 | 167.9655 |
| 702.63 | 155.1138 |
| 706.10 | 143.1432 |
| 706.58 | 0.0000   |
| 706.67 | 148.8386 |
| 709.31 | 160.3538 |
| 711.68 | 144.4896 |
| 713.82 | 155.9900 |
| 717.42 | 155.3249 |
| 720.50 | 149.5995 |
| 721.93 | 0.0000   |
| 722.20 | 144.8423 |
| 722.78 | 138.3740 |
| 722.78 | 138.3740 |
| 722.89 | 138.3800 |
| 722.95 | 138.3829 |
| 723.30 | 138.4096 |
| 724.18 | 143.3560 |
| 727.18 | 134.1870 |
| 733.00 | 114.5288 |
| 735.90 | 125.1163 |
| 739.58 | 125.4271 |
| 742.81 | 122.7474 |
| 744.21 | 131.4645 |
| 747.13 | 138.3779 |
| 751.79 | 131.9439 |
| 752.31 | 143.5374 |
| 753.82 | 120.5037 |
| 755.35 | 137.9581 |
| 756.15 | 154.4173 |
| 756.87 | 151.5731 |
| 763.93 | 116.2402 |
| 765.79 | 152.9077 |
| 766.42 | 159.6027 |
| 766.84 | 175.5684 |
| 776.49 | 172.4662 |
| 778.00 | 171.6100 |
| 778.57 | 160.9280 |
| 778.89 | 165.8289 |
| 783.80 | 135.8977 |
| 785.46 | 135.5576 |
| 792.07 | 139.6398 |

|         |          |
|---------|----------|
| 795.84  | 119.6565 |
| 796.30  | 111.2530 |
| 798.80  | 124.8802 |
| 801.93  | 153.7878 |
| 805.60  | 119.4811 |
| 810.29  | 144.4703 |
| 810.76  | 145.4927 |
| 815.85  | 119.0381 |
| 817.79  | 112.1931 |
| 818.51  | 102.2959 |
| 819.60  | 102.3462 |
| 826.30  | 132.5481 |
| 828.27  | 0.0000   |
| 831.60  | 152.8350 |
| 831.96  | 149.8627 |
| 834.83  | 170.0553 |
| 836.80  | 0.0000   |
| 846.75  | 119.6561 |
| 848.13  | 118.7226 |
| 856.28  | 0.0000   |
| 856.80  | 100.4097 |
| 860.37  | 108.2213 |
| 867.32  | 127.1361 |
| 867.82  | 125.4055 |
| 871.10  | 111.7613 |
| 873.19  | 136.2655 |
| 874.81  | 124.1470 |
| 875.33  | 0.0000   |
| 876.40  | 114.0462 |
| 879.36  | 105.0117 |
| 880.27  | 110.1511 |
| 880.51  | 119.3423 |
| 881.50  | 125.5150 |
| 883.24  | 128.6686 |
| 884.67  | 96.0482  |
| 889.25  | 99.3030  |
| 896.60  | 109.8714 |
| 898.02  | 109.9367 |
| 899.00  | 114.0916 |
| 903.28  | 139.4430 |
| 911.07  | 121.8844 |
| 911.07  | 121.8844 |
| 911.07  | 121.8844 |
| 919.63  | 107.7938 |
| 920.93  | 109.7364 |
| 925.00  | 113.2201 |
| 925.24  | 112.1924 |
| 926.50  | 124.7217 |
| 935.52  | 97.0056  |
| 937.48  | 136.7488 |
| 944.10  | 91.0551  |
| 946.00  | 100.5488 |
| 949.00  | 97.5221  |
| 962.29  | 124.6775 |
| 964.01  | 119.3373 |
| 966.15  | 107.6736 |
| 968.20  | 107.7566 |
| 969.11  | 107.7960 |
| 969.11  | 107.7960 |
| 969.11  | 107.7960 |
| 977.42  | 115.9131 |
| 980.50  | 100.8351 |
| 983.50  | 100.9491 |
| 989.30  | 96.9115  |
| 996.32  | 112.1158 |
| 1001.03 | 94.1302  |
| 1001.68 | 100.5711 |
| 1004.76 | 107.1147 |
| 1021.30 | 0.0000   |
| 1024.50 | 0.0000   |
| 1034.80 | 122.3799 |
| 1036.00 | 118.8750 |
| 1037.82 | 118.9509 |
| 1038.57 | 114.3344 |
| 1038.76 | 0.0000   |
| 1045.16 | 121.1314 |
| 1046.59 | 124.9240 |
| 1048.07 | 125.9222 |



|         |          |
|---------|----------|
| 1050.47 | 94.2895  |
| 1050.47 | 94.2895  |
| 1062.04 | 95.6143  |
| 1063.62 | 105.9848 |
| 1076.63 | 105.5313 |
| 1077.35 | 110.2669 |
| 1078.86 | 106.5563 |
| 1085.78 | 117.2101 |
| 1099.22 | 134.8485 |
| 1112.02 | 131.8611 |
| 1112.84 | 123.5516 |
| 1115.52 | 116.9800 |
| 1120.29 | 130.5586 |
| 1120.29 | 130.5586 |
| 1120.29 | 130.5586 |
| 1120.29 | 130.5586 |
| 1120.51 | 130.5681 |
| 1121.28 | 132.2758 |
| 1124.00 | 0.0000   |
| 1129.67 | 117.7980 |
| 1131.51 | 0.0000   |
| 1147.95 | 0.0000   |
| 1167.94 | 116.6057 |
| 1173.22 | 110.9663 |
| 1175.09 | 124.6696 |
| 1177.93 | 117.9615 |
| 1189.05 | 141.8645 |
| 1204.90 | 127.8327 |
| 1205.75 | 0.0000   |
| 1213.00 | 129.1496 |
| 1221.42 | 132.4530 |
| 1230.97 | 128.3889 |
| 1235.34 | 138.9893 |
| 1236.41 | 0.0000   |
| 1238.25 | 125.2002 |
| 1246.25 | 125.5122 |
| 1260.41 | 0.0000   |
| 1271.85 | 98.3862  |
| 1274.45 | 111.5226 |
| 1274.54 | 121.5739 |
| 1291.56 | 94.9278  |
| 1298.22 | 0.0000   |
| 1312.09 | 83.3156  |
| 1325.50 | 94.8618  |
| 1325.50 | 94.8618  |
| 1332.49 | 88.9238  |
| 1333.61 | 85.8838  |
| 1360.21 | 61.8164  |
| 1362.66 | 0.0000   |
| 1365.15 | 53.8380  |
| 1368.21 | 74.0898  |
| 1368.53 | 0.0000   |
| 1376.25 | 70.3788  |
| 1384.27 | 59.9052  |
| 1394.10 | 75.9330  |
| 1395.20 | 76.9964  |
| 1407.95 | 73.0908  |
| 1434.06 | 42.0661  |
| 1436.60 | 52.6193  |
| 1457.56 | 0.0000   |
| 1460.81 | 54.0221  |
| 1489.15 | 65.1018  |
| 1509.49 | 45.0630  |
| 1596.49 | 47.7726  |
| 1620.62 | 32.0818  |
| 1678.03 | 0.0000   |
| 1691.02 | 29.4543  |
| 1691.02 | 29.4543  |
| 1706.46 | 0.0000   |
| 1750.46 | 0.0000   |
| 1764.49 | 20.9692  |
| 1764.49 | 20.9692  |
| 1764.49 | 20.9692  |
| 1764.49 | 20.9692  |
| 1770.23 | 28.4392  |
| 1771.40 | 24.8912  |
| 1791.20 | 0.0000   |
| 1808.65 | 17.1432  |

1836.01

24.3479

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G244630011

|                             |            |      |
|-----------------------------|------------|------|
| Total Uranium Activity      | 7.6190E+00 | ug/g |
| Total Uranium Counting Unc. | 7.2052E+00 | ug/g |
| Total Uranium Tpu           | 3.6761E-06 | ug/g |
| Total Uranium Mda           | 3.4732E+00 | ug/g |

```

*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON ,SC 29417                *
*               GROSS GAMMA REPORT                  *
*
*****
*
*  BATCH ID      : 941639                          SAMPLE ID   : G244630011
*  ANALYST       : MXR1                             DETECTOR    : GAM18
*  SAMPLE DATE   : 8-JAN-2010 12:00:00.00          COUNT TIME   : 0 02:00:00.00
*  ANALYSIS DATE : 23-JAN-2010 11:49:21.02          SAMPLE ALQT  : 146.160 GRAM
*
*****

```

```

GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.187E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.449E+00
GROSS GAMMA MDA      (pCi/GRAM ) : 2.796E+00
GROSS GAMMA DLC      (pCi/GRAM ) : 1.360E+00

```

VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 14:30:08.96

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630012.CNF;1
Sample date    : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 12:29:41
Sample ID     : G244630012 Sample quantity : 1.22660E+02 GRAM
Detector name  : GAM14 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:01.63 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity : 5.00000
Batch ID      : 941639 Detector SN# :
Matrix Spike ID : LCS ID : 1032-A
*****

```

| Pk | It | Energy   | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | Fit      |
|----|----|----------|------|-------|------|---------|------|----|----------|------|----------|
| 1  | 0  | 46.29*   | 108  | 542   | 2.20 | 92.18   | 87   | 11 | 1.50E-02 | 43.8 |          |
| 2  | 0  | 63.42*   | 112  | 649   | 1.47 | 126.39  | 121  | 9  | 1.55E-02 | 42.9 |          |
| 3  | 1  | 74.87    | 706  | 680   | 1.54 | 149.28  | 142  | 18 | 9.81E-02 | 8.1  | 2.45E+00 |
| 4  | 1  | 77.19*   | 1038 | 567   | 1.35 | 153.91  | 142  | 18 | 1.44E-01 | 5.4  |          |
| 5  | 0  | 88.06    | 330  | 1026  | 1.19 | 175.63  | 170  | 12 | 4.58E-02 | 20.2 |          |
| 6  | 0  | 93.15*   | 358  | 644   | 1.46 | 185.79  | 182  | 10 | 4.97E-02 | 14.9 |          |
| 7  | 0  | 128.94   | 90   | 389   | 1.76 | 257.30  | 253  | 8  | 1.25E-02 | 39.5 |          |
| 8  | 0  | 185.65*  | 210  | 442   | 1.48 | 370.61  | 366  | 11 | 2.91E-02 | 21.2 |          |
| 9  | 0  | 209.07*  | 201  | 343   | 1.34 | 417.42  | 412  | 11 | 2.79E-02 | 19.4 |          |
| 10 | 4  | 238.60*  | 1742 | 245   | 1.44 | 476.43  | 469  | 35 | 2.42E-01 | 2.9  | 2.21E+00 |
| 11 | 4  | 241.59   | 358  | 219   | 1.54 | 482.40  | 469  | 35 | 4.98E-02 | 10.5 |          |
| 12 | 0  | 270.68   | 154  | 307   | 1.77 | 540.53  | 534  | 14 | 2.13E-02 | 25.6 |          |
| 13 | 0  | 276.80   | 61   | 318   | 0.89 | 552.76  | 549  | 13 | 8.50E-03 | 61.2 |          |
| 14 | 0  | 295.13   | 472  | 290   | 1.21 | 589.39  | 582  | 14 | 6.56E-02 | 8.9  |          |
| 15 | 0  | 299.85   | 68   | 268   | 1.13 | 598.83  | 595  | 11 | 9.46E-03 | 48.2 |          |
| 16 | 0  | 338.58   | 364  | 225   | 1.49 | 676.22  | 670  | 14 | 5.06E-02 | 10.3 |          |
| 17 | 0  | 351.89   | 846  | 164   | 1.46 | 702.83  | 698  | 11 | 1.18E-01 | 4.5  |          |
| 18 | 0  | 462.87   | 64   | 99    | 0.74 | 924.65  | 920  | 9  | 8.93E-03 | 30.5 |          |
| 19 | 0  | 510.55*  | 184  | 153   | 1.99 | 1019.96 | 1011 | 19 | 2.56E-02 | 19.5 |          |
| 20 | 0  | 569.83*  | 124  | 142   | 3.20 | 1138.46 | 1132 | 13 | 1.72E-02 | 22.8 |          |
| 21 | 0  | 583.44*  | 433  | 122   | 1.66 | 1165.68 | 1159 | 13 | 6.01E-02 | 7.2  |          |
| 22 | 0  | 609.38*  | 516  | 169   | 1.43 | 1217.54 | 1211 | 15 | 7.17E-02 | 7.1  |          |
| 23 | 0  | 662.39   | 162  | 174   | 1.55 | 1323.50 | 1315 | 18 | 2.24E-02 | 20.9 |          |
| 24 | 0  | 727.72*  | 171  | 93    | 1.98 | 1454.14 | 1446 | 18 | 2.38E-02 | 15.5 |          |
| 25 | 0  | 796.12   | 39   | 84    | 2.08 | 1590.91 | 1582 | 13 | 5.36E-03 | 51.7 |          |
| 26 | 0  | 861.21   | 73   | 65    | 1.33 | 1721.07 | 1717 | 12 | 1.02E-02 | 24.3 |          |
| 27 | 0  | 911.78*  | 349  | 89    | 1.85 | 1822.21 | 1815 | 16 | 4.85E-02 | 7.9  |          |
| 28 | 0  | 935.08   | 28   | 47    | 1.70 | 1868.80 | 1864 | 11 | 3.82E-03 | 51.8 |          |
| 29 | 1  | 965.37   | 52   | 48    | 2.08 | 1929.38 | 1920 | 28 | 7.21E-03 | 30.4 | 1.18E+00 |
| 30 | 1  | 969.59*  | 206  | 34    | 2.08 | 1937.83 | 1920 | 28 | 2.86E-02 | 9.6  |          |
| 31 | 0  | 1121.12  | 150  | 92    | 1.92 | 2240.94 | 2233 | 19 | 2.08E-02 | 17.6 |          |
| 32 | 0  | 1461.65* | 1355 | 22    | 2.01 | 2922.28 | 2912 | 19 | 1.88E-01 | 2.9  |          |
| 33 | 0  | 1588.91  | 29   | 19    | 1.76 | 3176.98 | 3172 | 11 | 3.97E-03 | 35.2 |          |
| 34 | 0  | 1765.25* | 109  | 11    | 1.59 | 3529.98 | 3522 | 15 | 1.52E-02 | 12.0 |          |

Flag: "\*" = Peak area was modified by background subtraction

## VMS Nuclide Identification Report V3.1 Generated 23-JAN-2010 14:30:11

Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630012.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8  
 Sample title : MXR1  
 Sample date : 8-JAN-2010 12:00:00 Acquisition date : 23-JAN-2010 12:29:41  
 Sample ID : G244630012 Sample quantity : 122.66 GRAM  
 Sample type : SOLID Sample geometry :  
 Detector name : GAMMA14 Detector geometry: CAN  
 Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:01.63 0.0%  
 Peak Width (FWHM): 3.00 Confidence level : 5.00 %  
 Energy tolerance : 1.50 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 0.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 75.00 WTM error limit : 3.00

## Full Combined Activity-MDA Report

## ---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| K-40    | +         | 1460.81      | *   | 3.211E+01           | 2.969E+00 | 5.681E-01      | 4.125E-02 | 56.519  |
| CD-109  | +         | 88.03        | *   | 3.909E+00           | 1.619E+00 | 1.488E+00      | 1.302E-01 | 2.626   |
| SN-126  | +         | 64.28        |     | 7.656E-01           | 6.662E-01 | 7.895E-01      | 1.125E-01 | 0.970   |
|         | +         | 86.94        |     | 1.597E+00           | 9.248E-01 | 5.973E-01      | 2.471E-01 | 2.674   |
|         | +         | 87.57        | *   | 3.842E-01           | 1.591E-01 | 1.468E-01      | 1.277E-02 | 2.617   |
| BA-137M | +         | 661.65       | *   | 2.231E-01           | 9.439E-02 | 5.950E-02      | 3.538E-03 | 3.749   |
| CS-137  | +         | 661.65       | *   | 2.358E-01           | 9.979E-02 | 6.290E-02      | 3.755E-03 | 3.749   |
| TL-208  | +         | 277.35       |     | 5.501E-01           | 6.757E-01 | 6.206E-01      | 6.563E-02 | 0.886   |
|         | +         | 510.84       |     | 8.455E-01           | 3.404E-01 | 2.199E-01      | 2.242E-02 | 3.845   |
|         | +         | 583.14       | *   | 5.704E-01           | 9.123E-02 | 6.192E-02      | 4.235E-03 | 9.211   |
|         | +         | 860.37       |     | 9.275E-01           | 4.593E-01 | 4.795E-01      | 4.511E-02 | 1.934   |
| BI-210  | +         | 46.50        | *   | 4.546E+00           | 4.000E+00 | 3.998E+00      | 2.964E-01 | 1.137   |
| PB-210  | +         | 46.50        | *   | 4.546E+00           | 4.000E+00 | 3.998E+00      | 2.964E-01 | 1.137   |
| PO-210  | +         | 46.50        | *   | 4.546E+00           | 3.996E+00 | 3.998E+00      | 2.509E-01 | 1.137   |
| BI-211  |           | 72.87        |     | 1.456E+01           | 4.038E+00 | 6.225E+00      | 4.587E-01 | 2.340   |
|         | +         | 351.07       | *   | 4.792E+00           | 5.289E-01 | 3.489E-01      | 2.211E-02 | 13.732  |
| PB-212  | +         | 74.81        |     | 3.318E+00           | 6.671E-01 | 5.615E-01      | 6.734E-02 | 5.910   |
|         | +         | 77.11        |     | 2.795E+00           | 3.700E-01 | 3.223E-01      | 2.482E-02 | 8.674   |
|         | +         | 87.30        |     | 1.777E+00           | 7.572E-01 | 6.803E-01      | 9.005E-02 | 2.612   |
|         | +         | 238.63       | *   | 2.147E+00           | 2.012E-01 | 9.902E-02      | 7.212E-03 | 21.686  |
|         | +         | 300.09       |     | 1.295E+00           | 1.252E+00 | 1.251E+00      | 1.034E-01 | 1.035   |
| PO-212  | +         | 74.81        |     | 3.318E+00           | 6.671E-01 | 5.615E-01      | 6.734E-02 | 5.910   |
|         | +         | 77.11        |     | 2.795E+00           | 3.700E-01 | 3.223E-01      | 2.482E-02 | 8.674   |
|         | +         | 87.30        |     | 1.777E+00           | 7.572E-01 | 6.803E-01      | 9.005E-02 | 2.612   |
|         | +         | 115.19       |     | 8.169E-01           | 4.110E+00 | 6.669E+00      | 4.853E-01 | 0.122   |
|         | +         | 238.63       | *   | 2.147E+00           | 2.012E-01 | 9.902E-02      | 7.212E-03 | 21.686  |
|         | +         | 300.09       |     | 1.295E+00           | 1.252E+00 | 1.251E+00      | 1.034E-01 | 1.035   |
| BI-214  | +         | 609.31       | *   | 1.285E+00           | 2.088E-01 | 1.204E-01      | 9.527E-03 | 10.673  |
|         | +         | 1120.29      |     | 1.996E+00           | 7.248E-01 | 5.063E-01      | 4.691E-02 | 3.942   |
|         | +         | 1764.49      |     | 2.002E+00           | 4.960E-01 | 3.166E-01      | 1.899E-02 | 6.325   |
| PB-214  | +         | 74.81        |     | 5.718E+00           | 1.102E+00 | 9.675E-01      | 1.021E-01 | 5.910   |
|         | +         | 77.11        |     | 4.792E+00           | 7.319E-01 | 5.525E-01      | 5.985E-02 | 8.674   |
|         | +         | 87.30        |     | 3.044E+00           | 1.283E+00 | 1.165E+00      | 1.352E-01 | 2.612   |
|         | +         | 241.98       |     | 2.653E+00           | 5.982E-01 | 5.958E-01      | 4.786E-02 | 4.453   |

----- Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PO-214  | +         | 295.21       |     | 1.576E+00           | 3.120E-01 | 2.183E-01      | 1.867E-02 | 7.218   |
|         | +         | 351.92       | *   | 1.667E+00           | 2.035E-01 | 1.237E-01      | 1.015E-02 | 13.471  |
|         | +         | 74.81        |     | 5.718E+00           | 1.102E+00 | 9.675E-01      | 1.021E-01 | 5.910   |
|         | +         | 77.11        |     | 4.792E+00           | 7.319E-01 | 5.525E-01      | 5.985E-02 | 8.674   |
|         | +         | 87.30        |     | 3.044E+00           | 1.283E+00 | 1.165E+00      | 1.352E-01 | 2.612   |
|         | +         | 241.98       |     | 2.653E+00           | 5.982E-01 | 5.958E-01      | 4.786E-02 | 4.453   |
| PO-216  | +         | 295.21       |     | 1.576E+00           | 3.120E-01 | 2.183E-01      | 1.867E-02 | 7.218   |
|         | +         | 351.92       | *   | 1.667E+00           | 2.035E-01 | 1.237E-01      | 1.015E-02 | 13.471  |
|         | +         | 74.81        |     | 3.318E+00           | 6.671E-01 | 5.615E-01      | 6.734E-02 | 5.910   |
|         | +         | 77.11        |     | 2.795E+00           | 3.700E-01 | 3.223E-01      | 2.482E-02 | 8.674   |
|         | +         | 87.30        |     | 1.777E+00           | 7.572E-01 | 6.803E-01      | 9.005E-02 | 2.612   |
|         | +         | 238.63       | *   | 2.147E+00           | 2.012E-01 | 9.902E-02      | 7.212E-03 | 21.686  |
| PO-218  | +         | 300.09       |     | 1.295E+00           | 1.252E+00 | 1.251E+00      | 1.034E-01 | 1.035   |
|         | +         | 74.81        |     | 5.718E+00           | 1.102E+00 | 9.675E-01      | 1.021E-01 | 5.910   |
|         | +         | 77.11        |     | 4.792E+00           | 7.319E-01 | 5.525E-01      | 5.985E-02 | 8.674   |
|         | +         | 87.30        |     | 3.044E+00           | 1.283E+00 | 1.165E+00      | 1.352E-01 | 2.612   |
|         | +         | 241.98       |     | 2.653E+00           | 5.982E-01 | 5.958E-01      | 4.786E-02 | 4.453   |
|         | +         | 295.21       |     | 1.576E+00           | 3.120E-01 | 2.183E-01      | 1.867E-02 | 7.218   |
| RA-224  | +         | 351.92       | *   | 1.667E+00           | 2.035E-01 | 1.237E-01      | 1.015E-02 | 13.471  |
|         | +         | 240.98       | *   | 5.031E+00           | 1.099E+00 | 1.126E+00      | 6.474E-02 | 4.467   |
| RA-226  | +         | 609.31       | *   | 1.285E+00           | 2.088E-01 | 1.204E-01      | 9.527E-03 | 10.673  |
|         | +         | 1120.29      |     | 1.996E+00           | 7.248E-01 | 5.063E-01      | 4.691E-02 | 3.942   |
| AC-228  | +         | 1764.49      |     | 2.002E+00           | 4.960E-01 | 3.166E-01      | 1.899E-02 | 6.325   |
|         | +         | 338.32       |     | 2.273E+00           | 1.037E+00 | 4.049E-01      | 1.650E-01 | 5.613   |
|         | +         | 911.07       | *   | 2.092E+00           | 4.103E-01 | 2.379E-01      | 2.794E-02 | 8.793   |
|         | +         | 969.11       |     | 2.180E+00           | 6.600E-01 | 3.645E-01      | 8.513E-02 | 5.979   |
| RA-228  | +         | 338.32       |     | 2.273E+00           | 1.037E+00 | 4.049E-01      | 1.650E-01 | 5.613   |
|         | +         | 911.07       | *   | 2.092E+00           | 4.103E-01 | 2.379E-01      | 2.794E-02 | 8.793   |
|         | +         | 969.11       |     | 2.180E+00           | 6.600E-01 | 3.645E-01      | 8.513E-02 | 5.979   |
|         | +         | 74.81        |     | 3.368E+00           | 6.007E-01 | 5.700E-01      | 4.331E-02 | 5.910   |
| TH-228  | +         | 77.11        |     | 2.838E+00           | 3.756E-01 | 3.271E-01      | 2.519E-02 | 8.674   |
|         | +         | 87.30        |     | 1.804E+00           | 7.471E-01 | 6.906E-01      | 5.989E-02 | 2.612   |
|         | +         | 238.63       | *   | 2.180E+00           | 2.043E-01 | 1.005E-01      | 7.321E-03 | 21.686  |
|         | +         | 300.09       |     | 1.314E+00           | 1.485E+00 | 1.269E+00      | 7.482E-01 | 1.035   |
| TH-230  | +         | 609.31       | *   | 1.285E+00           | 2.088E-01 | 1.204E-01      | 9.527E-03 | 10.673  |
|         | +         | 1120.29      |     | 1.996E+00           | 7.248E-01 | 5.063E-01      | 4.691E-02 | 3.942   |
|         | +         | 1764.49      |     | 2.002E+00           | 4.960E-01 | 3.166E-01      | 1.899E-02 | 6.325   |
|         | +         | 338.32       |     | 2.273E+00           | 4.843E-01 | 4.049E-01      | 2.326E-02 | 5.613   |
| TH-232  | +         | 911.07       | *   | 2.092E+00           | 4.103E-01 | 2.379E-01      | 2.794E-02 | 8.793   |
|         | +         | 969.11       |     | 2.180E+00           | 6.600E-01 | 3.645E-01      | 8.513E-02 | 5.979   |
|         | +         | 63.29        | *   | 1.934E+00           | 1.693E+00 | 2.043E+00      | 3.512E-01 | 0.947   |
|         | +         | 92.38        |     | 2.764E+00           | 9.622E-01 | 9.456E-01      | 1.699E-01 | 2.923   |
| U-234   | +         | 609.31       | *   | 1.285E+00           | 2.088E-01 | 1.204E-01      | 9.527E-03 | 10.673  |
|         | +         | 1120.29      |     | 1.996E+00           | 7.248E-01 | 5.063E-01      | 4.691E-02 | 3.942   |
|         | +         | 1764.49      |     | 2.002E+00           | 4.960E-01 | 3.166E-01      | 1.899E-02 | 6.325   |
|         | +         | 63.29        | *   | 1.934E+00           | 1.693E+00 | 2.043E+00      | 3.512E-01 | 0.947   |
| U-238   | +         | 92.38        |     | 2.764E+00           | 8.560E-01 | 9.456E-01      | 7.911E-02 | 2.923   |
|         | +         | 74.67        | *   | 5.380E-01           | 9.575E-02 | 9.124E-02      | 6.847E-03 | 5.896   |
| AM-243  | +         | 86.72        |     | 4.231E+01           | 1.753E+01 | 1.585E+01      | 1.365E+00 | 2.670   |

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 117.66       |     | 1.235E+00           | 4.295E+00 | 6.990E+00      | 5.039E-01 | 0.177   |
|         |           | 142.18       |     | 4.759E+00           | 1.993E+01 | 3.224E+01      | 2.027E+00 | 0.148   |
| ANH-511 | +         | 511.00       | *   | 1.826E-01           | 7.193E-02 | 4.751E-02      | 2.791E-03 | 3.844   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| BE-7    |           | 477.59       | *   | 3.813E-01           | 3.498E-01 | 6.101E-01           | 4.112E-02 | 0.625   |
| NA-22   |           | 1274.54      | *   | -1.252E-02          | 5.114E-02 | 8.230E-02           | 5.376E-03 | -0.152  |
| NA-24   |           | 1368.53      | *   | -2.620E-01          | 5.114E-02 | Half-Life too short |           |         |
| AL-26   |           | 1129.67      |     | 9.379E-01           | 2.177E+00 | 3.259E+00           | 2.058E-01 | 0.288   |
|         |           | 1808.65      | *   | 2.436E-02           | 3.004E-02 | 5.613E-02           | 3.254E-03 | 0.434   |
| TI-44   |           | 67.85        |     | -7.077E-03          | 6.400E-02 | 7.579E-02           | 5.334E-03 | -0.093  |
|         | +         | 78.38        | *   | 5.159E-01           | 6.829E-02 | 9.019E-02           | 7.042E-03 | 5.720   |
| SC-46   |           | 889.25       | *   | 1.866E-02           | 4.262E-02 | 7.372E-02           | 6.812E-03 | 0.253   |
|         | +         | 1120.51      |     | 3.414E-01           | 1.219E-01 | 1.481E-01           | 9.587E-03 | 2.306   |
| V-48    |           | 944.10       |     | -2.288E-01          | 9.686E-01 | 1.584E+00           | 1.416E-01 | -0.144  |
|         |           | 983.50       | *   | -2.108E-02          | 7.717E-02 | 1.255E-01           | 1.066E-02 | -0.168  |
|         |           | 1312.09      |     | 6.176E-02           | 9.023E-02 | 1.581E-01           | 1.092E-02 | 0.391   |
| CR-51   |           | 320.08       | *   | -2.944E-02          | 4.008E-01 | 6.634E-01           | 4.286E-02 | -0.044  |
| MN-52   |           | 744.21       |     | 1.842E-01           | 2.800E-01 | 4.727E-01           | 3.336E-02 | 0.390   |
|         |           | 848.13       |     | 3.893E+00           | 7.235E+00 | 1.261E+01           | 1.084E+00 | 0.309   |
|         | +         | 935.52       |     | 3.204E-01           | 3.334E-01 | 4.800E-01           | 4.332E-02 | 0.667   |
|         |           | 1246.25      |     | 8.747E+00           | 8.065E+00 | 1.441E+01           | 8.981E-01 | 0.607   |
|         |           | 1333.61      |     | 1.037E+00           | 5.420E+00 | 9.085E+00           | 6.474E-01 | 0.114   |
|         |           | 1434.06      | *   | 1.568E-01           | 2.607E-01 | 4.573E-01           | 3.205E-02 | 0.343   |
| MN-54   |           | 834.83       | *   | -3.997E-04          | 4.187E-02 | 7.019E-02           | 5.887E-03 | -0.006  |
| CO-56   |           | 846.75       | *   | 1.370E-02           | 4.233E-02 | 7.269E-02           | 6.231E-03 | 0.188   |
|         |           | 977.42       |     | 1.557E+00           | 3.253E+00 | 4.973E+00           | 4.259E-01 | 0.313   |
|         |           | 1037.82      |     | -6.742E-02          | 3.276E-01 | 5.342E-01           | 4.426E-02 | -0.126  |
|         |           | 1175.09      |     | 8.645E-01           | 2.364E+00 | 4.028E+00           | 2.226E-01 | 0.215   |
|         |           | 1238.25      |     | 1.343E-01           | 1.046E-01 | 1.868E-01           | 1.213E-02 | 0.719   |
|         |           | 1360.21      |     | -2.858E-01          | 1.168E+00 | 1.863E+00           | 1.323E-01 | -0.153  |
|         |           | 1771.40      |     | 1.390E-01           | 2.004E-01 | 3.435E-01           | 2.050E-02 | 0.405   |
| CO-57   |           | 122.06       | *   | -2.432E-02          | 2.872E-02 | 4.469E-02           | 3.179E-03 | -0.544  |
|         |           | 136.48       |     | -4.672E-02          | 2.407E-01 | 3.838E-01           | 2.817E-02 | -0.122  |
| CO-58   |           | 810.76       | *   | -3.457E-02          | 4.499E-02 | 6.717E-02           | 5.405E-03 | -0.515  |
| FE-59   |           | 142.65       |     | 8.975E-02           | 3.093E+00 | 4.966E+00           | 3.114E-01 | 0.018   |
|         |           | 192.34       |     | -3.980E-02          | 1.148E+00 | 1.746E+00           | 2.038E-01 | -0.023  |
|         |           | 1099.22      | *   | -1.127E-02          | 9.948E-02 | 1.633E-01           | 1.257E-02 | -0.069  |
|         |           | 1291.56      |     | 6.220E-02           | 1.368E-01 | 2.347E-01           | 1.910E-02 | 0.265   |
| CO-60   |           | 1173.22      |     | 3.608E-03           | 4.904E-02 | 8.153E-02           | 4.491E-03 | 0.044   |
|         |           | 1332.49      | *   | 1.316E-02           | 4.269E-02 | 7.244E-02           | 5.163E-03 | 0.182   |
| ZN-65   |           | 1115.52      | *   | 1.974E-02           | 1.083E-01 | 1.578E-01           | 1.037E-02 | 0.125   |
| GE-68   |           | 1077.35      | *   | 8.869E-01           | 1.394E+00 | 2.432E+00           | 1.748E-01 | 0.365   |
| AS-73   |           | 53.44        | *   | 2.840E-01           | 6.989E-01 | 1.157E+00           | 7.541E-02 | 0.245   |
| AS-74   |           | 595.88       | *   | -3.032E-02          | 9.928E-02 | 1.578E-01           | 9.437E-03 | -0.192  |
|         |           | 634.78       |     | -1.981E-01          | 3.761E-01 | 5.838E-01           | 3.487E-02 | -0.339  |



---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| SE-75   |           | 66.05        |     | -2.997E+00          | 5.536E+00 | 7.714E+00      | 7.015E-01 | -0.388  |
|         |           | 96.73        |     | 2.710E-01           | 9.678E-01 | 1.385E+00      | 1.839E-01 | 0.196   |
|         |           | 121.11       |     | -1.744E-01          | 1.564E-01 | 2.398E-01      | 2.426E-02 | -0.727  |
|         |           | 136.00       |     | -1.784E-02          | 4.519E-02 | 7.150E-02      | 4.722E-03 | -0.249  |
|         |           | 198.60       |     | 7.840E-01           | 1.988E+00 | 3.334E+00      | 2.308E-01 | 0.235   |
|         |           | 264.65       | *   | -4.893E-03          | 5.386E-02 | 7.692E-02      | 4.516E-03 | -0.064  |
|         |           | 279.53       |     | 1.691E-01           | 1.329E-01 | 2.069E-01      | 1.303E-02 | 0.817   |
|         |           | 303.91       |     | 4.252E-01           | 2.405E+00 | 3.518E+00      | 3.362E-01 | 0.121   |
|         |           | 400.65       |     | 1.387E-01           | 2.816E-01 | 4.763E-01      | 4.242E-02 | 0.291   |
| BR-77   | +         | 87.88        |     | 8.212E+02           | 3.401E+02 | 3.693E+02      | 3.226E+01 | 2.224   |
|         |           | 200.40       |     | 3.072E+01           | 1.724E+02 | 2.918E+02      | 1.623E+01 | 0.105   |
|         | +         | 239.00       |     | 3.353E+02           | 2.759E+01 | 4.145E+01      | 2.380E+00 | 8.088   |
|         |           | 249.79       |     | -5.354E+01          | 7.196E+01 | 1.166E+02      | 6.737E+00 | -0.459  |
|         |           | 281.68       |     | -6.618E+01          | 1.073E+02 | 1.491E+02      | 8.698E+00 | -0.444  |
|         |           | 297.23       |     | 3.695E+02           | 1.076E+02 | 1.368E+02      | 7.976E+00 | 2.702   |
|         |           | 303.76       |     | 1.456E+02           | 1.935E+02 | 2.945E+02      | 1.716E+01 | 0.494   |
|         |           | 439.47       |     | 1.140E+02           | 1.506E+02 | 2.583E+02      | 1.461E+01 | 0.441   |
|         |           | 484.57       |     | -3.643E+01          | 2.305E+02 | 3.736E+02      | 2.169E+01 | -0.098  |
|         |           | 520.65       | *   | 1.307E+00           | 1.112E+01 | 1.831E+01      | 1.079E+00 | 0.071   |
|         |           | 574.64       |     | -2.731E+01          | 2.536E+02 | 3.527E+02      | 2.105E+01 | -0.077  |
|         |           | 578.91       |     | 6.217E+01           | 1.012E+02 | 1.509E+02      | 9.014E+00 | 0.412   |
|         |           | 585.48       |     | 1.802E+03           | 2.977E+02 | 5.421E+02      | 3.240E+01 | 3.324   |
|         |           | 755.35       |     | -2.988E+00          | 1.749E+02 | 2.812E+02      | 2.029E+01 | -0.011  |
|         |           | 817.79       |     | 1.029E+02           | 1.335E+02 | 2.373E+02      | 1.929E+01 | 0.434   |
| SR-82   |           | 698.33       |     | 1.117E+01           | 3.864E+01 | 6.370E+01      | 4.094E+00 | 0.175   |
|         |           | 776.49       | *   | -8.116E-02          | 3.888E-01 | 6.131E-01      | 4.609E-02 | -0.132  |
|         |           | 1395.20      |     | -2.588E+00          | 1.212E+01 | 1.934E+01      | 1.366E+00 | -0.134  |
| RB-83   |           | 520.41       | *   | 2.954E-03           | 7.514E-02 | 1.231E-01      | 7.257E-03 | 0.024   |
|         |           | 529.64       |     | -5.196E-02          | 1.139E-01 | 1.800E-01      | 1.064E-02 | -0.289  |
|         |           | 552.65       |     | -1.743E-01          | 2.196E-01 | 3.375E-01      | 2.007E-02 | -0.516  |
| RB-84   |           | 881.50       | *   | 2.082E-02           | 7.245E-02 | 1.241E-01      | 1.131E-02 | 0.168   |
| KR-85   |           | 513.99       | *   | 2.160E+01           | 8.671E+00 | 1.466E+01      | 8.619E-01 | 1.474   |
| SR-85   |           | 513.99       | *   | 1.106E-01           | 4.441E-02 | 7.506E-02      | 4.415E-03 | 1.474   |
| RB-86   |           | 1076.63      | *   | -1.523E-02          | 8.550E-01 | 1.416E+00      | 1.020E-01 | -0.011  |
| Y-88    |           | 898.02       |     | -3.472E-02          | 4.295E-02 | 6.655E-02      | 6.269E-03 | -0.522  |
|         |           | 1836.01      | *   | -2.425E-03          | 3.625E-02 | 5.774E-02      | 3.279E-03 | -0.042  |
| ZR-88   |           | 392.90       | *   | 8.390E-03           | 3.247E-02 | 5.435E-02      | 2.959E-03 | 0.154   |
| Y-91    |           | 1204.90      | *   | 9.058E+00           | 2.117E+01 | 3.610E+01      | 2.100E+00 | 0.251   |
| NB-94   |           | 702.63       | *   | 6.307E-03           | 3.906E-02 | 6.380E-02      | 4.138E-03 | 0.099   |
|         |           | 871.10       |     | -2.628E-02          | 3.881E-02 | 6.142E-02      | 5.498E-03 | -0.428  |
| NB-95   |           | 765.79       | *   | 3.430E-02           | 4.988E-02 | 8.406E-02      | 6.190E-03 | 0.408   |
| NB-95M  |           | 235.69       | *   | 7.594E-01           | 1.817E-01 | 2.982E-01      | 2.229E-02 | 2.546   |
| ZR-95   |           | 724.18       |     | 8.907E-02           | 1.194E-01 | 1.787E-01      | 1.377E-02 | 0.498   |
|         |           | 756.15       | *   | 9.314E-03           | 7.676E-02 | 1.248E-01      | 1.030E-02 | 0.075   |
| NB-97   |           | 657.90       | *   | 6.838E-02           | 7.676E-02 | Half-Life      | too short |         |
|         |           | 1024.50      |     | -3.726E+00          | 7.676E-02 | Half-Life      | too short |         |
| ZR-97   |           | 254.15       |     | -4.579E+00          | 7.676E-02 | Half-Life      | too short |         |
|         |           | 355.39       |     | 4.336E+00           | 7.676E-02 | Half-Life      | too short |         |
|         |           | 507.63       | *   | 3.336E+00           | 7.676E-02 | Half-Life      | too short |         |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         | 602.52    |              |     | 2.275E+00           | 7.676E-02 | Half-Life      | too short |         |
|         | 1021.30   |              |     | -3.230E-01          | 7.676E-02 | Half-Life      | too short |         |
|         | 1147.95   |              |     | -1.125E+00          | 7.676E-02 | Half-Life      | too short |         |
|         | 1362.66   |              |     | 4.881E+00           | 7.676E-02 | Half-Life      | too short |         |
|         | 1750.46   |              |     | -2.357E+00          | 7.676E-02 | Half-Life      | too short |         |
| MO-99   | 140.51    |              |     | -4.680E+00          | 2.957E+01 | 4.696E+01      | 1.271E+01 | -0.100  |
|         | 181.06    |              |     | -1.294E+01          | 2.057E+01 | 2.912E+01      | 4.958E+00 | -0.444  |
|         | 366.43    |              |     | -6.898E+01          | 8.834E+01 | 1.396E+02      | 7.838E+00 | -0.494  |
|         | 739.58    | *            |     | -3.471E+00          | 1.348E+01 | 2.128E+01      | 3.047E+00 | -0.163  |
|         | 778.00    |              |     | -5.222E+01          | 3.528E+01 | 4.839E+01      | 3.649E+00 | -1.079  |
| TC-99M  | 140.51    | *            |     | -5.340E+09          | 3.528E+01 | Half-Life      | too short |         |
| RH-101  | 127.23    |              |     | 3.943E-02           | 4.204E-02 | 6.157E-02      | 4.236E-03 | 0.640   |
|         | 198.01    | *            |     | 2.664E-02           | 3.630E-02 | 6.154E-02      | 3.414E-03 | 0.433   |
|         | 325.23    |              |     | -2.750E-01          | 2.477E-01 | 3.888E-01      | 2.250E-02 | -0.707  |
| RH-102  | 418.52    |              |     | 1.433E-01           | 3.206E-01 | 5.409E-01      | 3.011E-02 | 0.265   |
|         | 475.06    | *            |     | -2.784E-03          | 3.156E-02 | 5.145E-02      | 2.973E-03 | -0.054  |
|         | 631.29    |              |     | 9.131E-03           | 5.683E-02 | 9.334E-02      | 5.577E-03 | 0.098   |
|         | 697.49    |              |     | 3.570E-02           | 8.777E-02 | 1.459E-01      | 9.359E-03 | 0.245   |
|         | 766.84    |              |     | 1.270E-01           | 1.280E-01 | 2.196E-01      | 1.620E-02 | 0.578   |
|         | 1046.59   |              |     | 2.314E-03           | 1.269E-01 | 2.111E-01      | 1.616E-02 | 0.011   |
|         | 1112.84   |              |     | 6.505E-02           | 2.800E-01 | 4.259E-01      | 2.814E-02 | 0.153   |
| RU-103  | 497.08    | *            |     | -1.580E-02          | 4.042E-02 | 6.420E-02      | 8.130E-03 | -0.246  |
| +       | 610.33    |              |     | 1.385E+01           | 2.910E+00 | 3.154E+00      | 4.884E-01 | 4.391   |
| RH-106  | 511.85    | +            |     | 9.120E-01           | 3.592E-01 | 4.486E-01      | 2.636E-02 | 2.033   |
|         | 621.84    | *            |     | -5.935E-02          | 3.489E-01 | 5.588E-01      | 6.609E-02 | -0.106  |
|         | 1050.47   |              |     | -6.075E-02          | 2.770E+00 | 4.509E+00      | 3.426E-01 | -0.013  |
| RU-106  | 511.85    | +            |     | 9.120E-01           | 3.592E-01 | 4.486E-01      | 2.636E-02 | 2.033   |
|         | 621.84    | *            |     | -5.935E-02          | 3.488E-01 | 5.588E-01      | 3.342E-02 | -0.106  |
|         | 1050.47   |              |     | -6.075E-02          | 2.770E+00 | 4.509E+00      | 3.426E-01 | -0.013  |
| AG-108M | 433.93    | *            |     | -2.246E-02          | 3.467E-02 | 5.467E-02      | 3.358E-03 | -0.411  |
|         | 614.37    |              |     | -5.678E-03          | 4.863E-02 | 6.735E-02      | 4.351E-03 | -0.084  |
|         | 722.95    |              |     | 1.219E-02           | 5.002E-02 | 7.148E-02      | 5.138E-03 | 0.171   |
| AG-110M | 657.75    | *            |     | 2.368E-02           | 4.291E-02 | 6.352E-02      | 4.012E-03 | 0.373   |
|         | 677.61    |              |     | -4.151E-02          | 3.294E-01 | 5.273E-01      | 3.421E-02 | -0.079  |
|         | 706.67    |              |     | 1.629E-02           | 2.428E-01 | 3.939E-01      | 2.698E-02 | 0.041   |
|         | 763.93    |              |     | -1.555E-01          | 2.011E-01 | 3.045E-01      | 2.321E-02 | -0.511  |
|         | 884.67    |              |     | -1.571E-03          | 5.260E-02 | 8.781E-02      | 8.279E-03 | -0.018  |
|         | 937.48    |              |     | 1.640E-01           | 1.225E-01 | 2.048E-01      | 1.905E-02 | 0.801   |
|         | 1384.27   |              |     | -1.057E-01          | 1.707E-01 | 2.571E-01      | 1.896E-02 | -0.411  |
| IN-111  | 171.28    |              |     | 4.168E-01           | 1.096E+00 | 1.776E+00      | 9.580E-02 | 0.235   |
|         | 245.39    | *            |     | -1.309E+00          | 1.094E+00 | 1.735E+00      | 9.997E-02 | -0.755  |
| IN-113M | 391.69    | *            |     | 4.988E-03           | 4.754E-02 | 7.892E-02      | 4.618E-03 | 0.063   |
| SN-113  | 391.69    | *            |     | 4.988E-03           | 4.754E-02 | 7.892E-02      | 4.618E-03 | 0.063   |
| IN-114M | 190.27    | *            |     | -3.348E-02          | 2.268E-01 | 3.305E-01      | 1.819E-02 | -0.101  |
| CD-115  | 260.90    |              |     | -2.706E+01          | 1.347E+02 | 2.232E+02      | 1.295E+01 | -0.121  |
|         | 492.35    |              |     | 1.438E+01           | 3.560E+01 | 5.990E+01      | 3.492E+00 | 0.240   |
|         | 527.90    | *            |     | -7.201E+00          | 1.150E+01 | 1.795E+01      | 1.061E+00 | -0.401  |
| SN-117M | 156.02    |              |     | 2.464E+00           | 2.653E+00 | 4.383E+00      | 2.523E-01 | 0.562   |
|         | 158.56    | *            |     | -1.751E-02          | 6.517E-02 | 1.032E-01      | 5.839E-03 | -0.170  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| SB-122  | 563.90    | *            |     | 9.950E-02           | 2.785E+00 | 3.933E+00           | 2.345E-01 | 0.025   |
|         | 692.80    |              |     | 1.914E+01           | 4.694E+01 | 7.813E+01           | 4.964E+00 | 0.245   |
| I-123   | 159.00    | *            |     | -1.185E-01          | 4.694E+01 | Half-Life too short |           |         |
|         | 528.96    |              |     | -2.263E+02          | 4.694E+01 | Half-Life too short |           |         |
| TE-123M | 159.00    | *            |     | -6.608E-04          | 3.348E-02 | 5.353E-02           | 3.062E-03 | -0.012  |
| I-124   | 602.71    | *            |     | 2.103E-01           | 8.037E-01 | 1.157E+00           | 6.923E-02 | 0.182   |
|         | 722.78    |              |     | 1.196E+00           | 5.138E+00 | 7.334E+00           | 4.957E-01 | 0.163   |
|         | 1325.50   |              |     | -6.820E+00          | 3.601E+01 | 5.786E+01           | 4.080E+00 | -0.118  |
|         | 1376.25   |              |     | 5.211E+01           | 2.945E+01 | 5.760E+01           | 4.083E+00 | 0.905   |
|         | 1509.49   |              |     | 3.728E+00           | 1.524E+01 | 2.573E+01           | 1.765E+00 | 0.145   |
|         | 1691.02   |              |     | 7.169E-01           | 3.151E+00 | 5.366E+00           | 3.381E-01 | 0.134   |
| SB-124  | 602.71    |              |     | 1.241E-02           | 4.741E-02 | 6.827E-02           | 4.085E-03 | 0.182   |
|         | 645.85    |              |     | -2.082E-01          | 5.324E-01 | 8.352E-01           | 5.587E-02 | -0.249  |
|         | 709.31    |              |     | 1.436E-01           | 3.210E+00 | 5.198E+00           | 3.418E-01 | 0.028   |
|         | 713.82    |              |     | -1.801E+00          | 1.921E+00 | 2.833E+00           | 3.033E-01 | -0.636  |
|         | 722.78    |              |     | 1.022E-01           | 4.393E-01 | 6.272E-01           | 4.387E-02 | 0.163   |
| +       | 968.20    |              |     | 2.241E+01           | 4.737E+00 | 8.404E+00           | 7.287E-01 | 2.667   |
|         | 1045.16   |              |     | 9.363E-01           | 2.707E+00 | 4.627E+00           | 3.550E-01 | 0.202   |
|         | 1325.50   |              |     | -6.229E-01          | 3.289E+00 | 5.284E+00           | 3.727E-01 | -0.118  |
|         | 1368.21   |              |     | -1.875E-01          | 1.777E+00 | 2.874E+00           | 3.609E-01 | -0.065  |
|         | 1436.60   |              |     | -1.564E+00          | 4.297E+00 | 6.703E+00           | 4.696E-01 | -0.233  |
|         | 1691.02   | *            |     | 1.446E-02           | 6.355E-02 | 1.082E-01           | 7.316E-03 | 0.134   |
| SB-125  | 427.89    | *            |     | -3.495E-02          | 9.983E-02 | 1.608E-01           | 9.424E-03 | -0.217  |
| +       | 463.38    |              |     | 5.728E-01           | 3.521E-01 | 5.556E-01           | 3.729E-02 | 1.031   |
|         | 600.56    |              |     | 4.049E-02           | 1.919E-01 | 3.165E-01           | 2.173E-02 | 0.128   |
|         | 635.90    |              |     | -1.327E-01          | 2.943E-01 | 4.601E-01           | 3.193E-02 | -0.288  |
| TE-125M | 109.28    | *            |     | -1.170E+01          | 1.053E+01 | 1.623E+01           | 1.524E+00 | -0.721  |
| I-126   | 388.63    |              |     | -5.858E-02          | 2.164E-01 | 3.518E-01           | 1.922E-02 | -0.167  |
|         | 666.33    | *            |     | -4.582E-02          | 2.219E-01 | 3.025E-01           | 1.817E-02 | -0.151  |
|         | 753.82    |              |     | 2.138E-01           | 1.550E+00 | 2.524E+00           | 1.815E-01 | 0.085   |
| SB-126  | 223.80    |              |     | -1.737E+00          | 4.277E+00 | 7.062E+00           | 4.011E-01 | -0.246  |
|         | 278.60    |              |     | 4.477E+00           | 3.019E+00 | 4.746E+00           | 2.767E-01 | 0.943   |
| +       | 296.50    |              |     | 1.560E+01           | 2.932E+00 | 3.942E+00           | 2.299E-01 | 3.959   |
|         | 414.70    |              |     | -7.034E-02          | 8.747E-02 | 1.377E-01           | 7.641E-03 | -0.511  |
|         | 415.30    |              |     | -4.799E+00          | 7.040E+00 | 1.115E+01           | 6.189E-01 | -0.431  |
|         | 555.20    |              |     | -1.326E+00          | 4.316E+00 | 6.881E+00           | 4.095E-01 | -0.193  |
|         | 573.80    |              |     | 3.278E-02           | 1.311E+00 | 1.849E+00           | 1.104E-01 | 0.018   |
|         | 593.00    |              |     | -2.064E-01          | 1.009E+00 | 1.617E+00           | 9.668E-02 | -0.128  |
|         | 656.30    |              |     | -8.802E-01          | 4.307E+00 | 5.884E+00           | 3.502E-01 | -0.150  |
|         | 666.33    |              |     | -1.914E-02          | 9.269E-02 | 1.264E-01           | 7.590E-03 | -0.151  |
|         | 675.00    |              |     | -8.728E-02          | 2.135E+00 | 3.441E+00           | 2.106E-01 | -0.025  |
|         | 695.00    |              |     | -8.367E-02          | 8.988E-02 | 1.348E-01           | 8.607E-03 | -0.621  |
|         | 797.00    |              |     | 9.434E-02           | 3.053E-01 | 5.040E-01           | 3.231E-02 | 0.187   |
|         | 720.50    | *            |     | 5.881E-02           | 1.717E-01 | 2.484E-01           | 1.671E-02 | 0.237   |
|         | 856.80    |              |     | 1.699E-01           | 5.164E-01 | 7.769E-01           | 6.780E-02 | 0.219   |
|         | 989.30    |              |     | -1.353E+00          | 1.405E+00 | 2.122E+00           | 1.787E-01 | -0.637  |
|         | 1034.80   |              |     | 2.703E+00           | 8.984E+00 | 1.534E+01           | 1.200E+00 | 0.176   |
|         | 1213.00   |              |     | -1.153E+00          | 5.602E+00 | 9.099E+00           | 5.366E-01 | -0.127  |
| SB-127  | 61.10     |              |     | 4.335E+01           | 6.193E+01 | 9.028E+01           | 8.772E+00 | 0.480   |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         | 252.40    |              |     | 1.191E+00           | 5.195E+00 | 7.628E+00      | 3.169E+00 | 0.156   |
|         | 290.80    |              |     | -1.155E+01          | 2.504E+01 | 3.508E+01      | 3.208E+00 | -0.329  |
|         | 411.60    |              |     | 1.261E+01           | 1.386E+01 | 2.371E+01      | 3.378E+00 | 0.532   |
|         | 444.90    |              |     | -6.333E+00          | 1.046E+01 | 1.650E+01      | 1.765E+00 | -0.384  |
|         | 473.00    |              |     | -2.834E+00          | 1.867E+00 | 2.717E+00      | 3.024E-01 | -1.043  |
|         | 543.00    |              |     | -4.710E+00          | 1.801E+01 | 2.884E+01      | 3.732E+00 | -0.163  |
|         | 603.60    |              |     | 4.663E+00           | 1.391E+01 | 2.016E+01      | 2.183E+00 | 0.231   |
|         | 685.20    | *            |     | -1.950E-01          | 1.447E+00 | 2.314E+00      | 2.240E-01 | -0.084  |
|         | 698.50    |              |     | 4.512E+00           | 1.694E+01 | 2.787E+01      | 4.101E+00 | 0.162   |
|         | 722.20    |              |     | 6.443E+00           | 3.551E+01 | 5.039E+01      | 4.917E+00 | 0.128   |
|         | 783.80    |              |     | 6.745E+00           | 4.054E+00 | 7.218E+00      | 8.460E-01 | 0.934   |
| XE-127  | 57.60     |              |     | 1.007E+00           | 6.309E+00 | 9.079E+00      | 5.980E-01 | 0.111   |
|         | 145.22    |              |     | 5.011E-01           | 7.720E-01 | 1.267E+00      | 7.817E-02 | 0.396   |
|         | 172.10    |              |     | -6.356E-02          | 1.365E-01 | 2.139E-01      | 1.154E-02 | -0.297  |
|         | 202.84    | *            |     | -5.797E-02          | 5.914E-02 | 8.219E-02      | 4.582E-03 | -0.705  |
|         | 374.96    |              |     | -2.070E-02          | 2.185E-01 | 3.527E-01      | 1.960E-02 | -0.059  |
| I-131   | 80.18     |              |     | 1.336E+00           | 5.392E+00 | 7.730E+00      | 6.204E-01 | 0.173   |
|         | 284.30    |              |     | -1.439E+00          | 1.869E+00 | 2.567E+00      | 1.663E-01 | -0.560  |
|         | 364.48    | *            |     | 8.353E-03           | 1.231E-01 | 2.044E-01      | 1.291E-02 | 0.041   |
|         | 636.97    |              |     | 6.895E-02           | 1.649E+00 | 2.683E+00      | 1.783E-01 | 0.026   |
|         | 722.89    |              |     | 2.003E+00           | 8.352E+00 | 1.193E+01      | 8.149E-01 | 0.168   |
| TE-132  | 49.72     |              |     | -1.534E+01          | 1.683E+01 | 2.293E+01      | 2.108E+00 | -0.669  |
|         | 111.76    |              |     | 7.704E-01           | 3.272E+01 | 5.281E+01      | 5.214E+00 | 0.015   |
|         | 116.30    |              |     | 2.821E+00           | 3.107E+01 | 5.023E+01      | 4.908E+00 | 0.056   |
|         | 228.16    | *            |     | 1.224E-01           | 7.392E-01 | 1.247E+00      | 1.783E-01 | 0.098   |
| BA-133  | 53.15     |              |     | 9.194E-01           | 2.978E+00 | 4.916E+00      | 3.203E-01 | 0.187   |
|         | 79.62     |              |     | 6.086E+00           | 1.829E+00 | 2.573E+00      | 3.817E-01 | 2.366   |
|         | 81.00     |              |     | -1.968E-01          | 1.311E-01 | 1.557E-01      | 2.424E-02 | -1.264  |
| +       | 276.40    |              |     | 5.436E-01           | 6.690E-01 | 7.110E-01      | 9.227E-02 | 0.765   |
|         | 302.84    |              |     | 2.113E-01           | 1.632E-01 | 2.543E-01      | 2.969E-02 | 0.831   |
|         | 356.01    | *            |     | -1.725E-03          | 5.357E-02 | 7.675E-02      | 8.823E-03 | -0.022  |
|         | 383.85    |              |     | -1.010E-01          | 3.215E-01 | 5.213E-01      | 5.585E-02 | -0.194  |
| I-133   | 510.53    | +            |     | 1.720E+00           | 3.215E-01 | Half-Life      | too short |         |
|         | 529.87    | *            |     | -3.352E-03          | 3.215E-01 | Half-Life      | too short |         |
|         | 706.58    |              |     | 2.169E-02           | 3.215E-01 | Half-Life      | too short |         |
|         | 856.28    |              |     | 1.424E-01           | 3.215E-01 | Half-Life      | too short |         |
|         | 875.33    |              |     | 4.662E-02           | 3.215E-01 | Half-Life      | too short |         |
|         | 1236.41   |              |     | 9.181E-01           | 3.215E-01 | Half-Life      | too short |         |
|         | 1298.22   |              |     | -8.771E-02          | 3.215E-01 | Half-Life      | too short |         |
| CS-134  | 475.35    |              |     | -3.435E-01          | 2.086E+00 | 3.384E+00      | 1.956E-01 | -0.102  |
|         | 563.23    |              |     | 7.777E-03           | 4.903E-01 | 6.912E-01      | 4.201E-02 | 0.011   |
| +       | 569.32    |              |     | 8.853E-01           | 4.075E-01 | 5.358E-01      | 3.287E-02 | 1.652   |
|         | 604.70    |              |     | -3.694E-03          | 4.213E-02 | 5.859E-02      | 3.523E-03 | -0.063  |
| +       | 795.84    | *            |     | 7.463E-02           | 7.732E-02 | 9.362E-02      | 7.368E-03 | 0.797   |
|         | 801.93    |              |     | -5.835E-01          | 5.145E-01 | 6.486E-01      | 5.153E-02 | -0.900  |
|         | 1038.57   |              |     | -2.389E+00          | 4.110E+00 | 6.461E+00      | 5.019E-01 | -0.370  |
|         | 1167.94   |              |     | 2.327E-01           | 2.833E+00 | 4.714E+00      | 2.644E-01 | 0.049   |
|         | 1365.15   |              |     | -4.681E-01          | 1.365E+00 | 2.146E+00      | 1.625E-01 | -0.218  |
| CS-135  | 268.24    | *            |     | 9.476E-02           | 1.982E-01 | 2.955E-01      | 2.267E-02 | 0.321   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| I-135   | 288.45    |              |     | 1.669E+10           | 1.982E-01 | Half-Life      | too short |         |
|         | 417.63    |              |     | 9.809E+09           | 1.982E-01 | Half-Life      | too short |         |
|         | 546.56    |              |     | 5.762E+09           | 1.982E-01 | Half-Life      | too short |         |
|         | 836.80    |              |     | 7.546E+09           | 1.982E-01 | Half-Life      | too short |         |
|         | 1038.76   |              |     | -8.386E+09          | 1.982E-01 | Half-Life      | too short |         |
|         | 1124.00   |              |     | 6.781E+10           | 1.982E-01 | Half-Life      | too short |         |
|         | 1131.51   |              |     | 3.963E+09           | 1.982E-01 | Half-Life      | too short |         |
|         | 1260.41   | *            |     | -1.180E+09          | 1.982E-01 | Half-Life      | too short |         |
|         | 1457.56   |              |     | 1.289E+11           | 1.982E-01 | Half-Life      | too short |         |
|         | 1678.03   |              |     | 3.416E+09           | 1.982E-01 | Half-Life      | too short |         |
|         | 1706.46   |              |     | -1.499E+10          | 1.982E-01 | Half-Life      | too short |         |
|         | 1791.20   |              |     | -4.368E+09          | 1.982E-01 | Half-Life      | too short |         |
| CS-136  | 66.91     |              |     | -6.535E-01          | 9.703E-01 | 1.243E+00      | 1.812E-01 | -0.526  |
|         | 86.29     |              |     | 5.400E+00           | 1.551E+00 | 2.236E+00      | 2.865E-01 | 2.416   |
|         | 153.22    |              |     | -1.937E-01          | 7.721E-01 | 1.225E+00      | 8.912E-02 | -0.158  |
|         | 163.89    |              |     | 4.597E-03           | 1.173E+00 | 1.876E+00      | 1.308E-01 | 0.002   |
|         | 176.55    |              |     | 3.255E-01           | 4.209E-01 | 6.857E-01      | 4.241E-02 | 0.475   |
|         | 273.65    |              |     | -2.202E-01          | 8.299E-01 | 7.814E-01      | 5.186E-02 | -0.282  |
|         | 340.57    |              |     | 6.895E-01           | 1.707E-01 | 2.942E-01      | 1.797E-02 | 2.343   |
|         | 818.51    |              |     | 3.593E-02           | 7.516E-02 | 1.309E-01      | 1.067E-02 | 0.274   |
|         | 1048.07   | *            |     | -9.045E-02          | 1.255E-01 | 1.957E-01      | 1.574E-02 | -0.462  |
|         | 1235.34   |              |     | -2.385E-02          | 6.959E-01 | 1.144E+00      | 1.165E-01 | -0.021  |
|         | 165.85    | *            |     | -2.747E-02          | 3.291E-02 | 5.075E-02      | 2.725E-03 | -0.541  |
| CE-139  | 162.64    |              |     | 4.494E-01           | 8.450E-01 | 1.378E+00      | 8.618E-02 | 0.326   |
| BA-140  | 304.84    |              |     | -8.869E-01          | 1.525E+00 | 2.084E+00      | 5.689E-01 | -0.426  |
|         | 423.70    |              |     | 7.349E-01           | 2.072E+00 | 3.458E+00      | 1.098E+00 | 0.213   |
| LA-140  | 537.32    | *            |     | 1.422E-01           | 2.774E-01 | 4.625E-01      | 1.505E-01 | 0.307   |
|         | 328.77    |              |     | 4.006E-01           | 3.281E-01 | 5.721E-01      | 3.705E-02 | 0.700   |
|         | 432.53    |              |     | -2.396E-01          | 2.132E+00 | 3.483E+00      | 2.177E-01 | -0.069  |
|         | 487.03    |              |     | 1.923E-02           | 1.374E-01 | 2.272E-01      | 1.494E-02 | 0.085   |
|         | 751.79    |              |     | -1.032E+00          | 1.835E+00 | 2.807E+00      | 2.316E-01 | -0.368  |
|         | 815.85    |              |     | 1.318E-01           | 3.298E-01 | 5.708E-01      | 5.223E-02 | 0.231   |
|         | 867.82    |              |     | 4.137E-01           | 1.746E+00 | 2.591E+00      | 2.421E-01 | 0.160   |
|         | 919.63    |              |     | -8.001E-01          | 3.591E+00 | 5.033E+00      | 5.591E-01 | -0.159  |
|         | 925.24    |              |     | 1.057E+00           | 1.282E+00 | 2.269E+00      | 2.187E-01 | 0.466   |
|         | 1596.49   | *            |     | -5.065E-03          | 9.560E-02 | 1.423E-01      | 9.435E-03 | -0.036  |
| CE-141  | 145.44    | *            |     | 1.143E-02           | 7.080E-02 | 1.142E-01      | 7.287E-03 | 0.100   |
| CE-143  | 57.37     |              |     | 1.157E-04           | 7.080E-02 | Half-Life      | too short |         |
|         | 231.56    |              |     | 2.913E-04           | 7.080E-02 | Half-Life      | too short |         |
|         | 293.26    | *            |     | 1.046E-03           | 7.080E-02 | Half-Life      | too short |         |
|         | 350.59    |              |     | 3.618E-02           | 7.080E-02 | Half-Life      | too short |         |
|         | 490.36    |              |     | -3.159E-03          | 7.080E-02 | Half-Life      | too short |         |
|         | 664.57    |              |     | 4.926E-03           | 7.080E-02 | Half-Life      | too short |         |
|         | 721.93    |              |     | 1.347E-04           | 7.080E-02 | Half-Life      | too short |         |
| CE-144  | 80.11     |              |     | 9.956E-01           | 2.512E+00 | 3.621E+00      | 2.883E-01 | 0.275   |
|         | 133.54    | *            |     | 7.448E-02           | 2.643E-01 | 3.756E-01      | 5.468E-02 | 0.198   |
| PM-144  | 476.78    |              |     | 5.603E-02           | 7.379E-02 | 1.264E-01      | 8.762E-03 | 0.443   |
|         | 618.01    |              |     | 1.151E-02           | 3.654E-02 | 5.908E-02      | 3.733E-03 | 0.195   |
|         | 696.49    | *            |     | -1.249E-02          | 4.078E-02 | 6.441E-02      | 4.127E-03 | -0.194  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PR-144  |           | 778.57       |     | -4.149E+00          | 2.467E+00 | 3.300E+00      | 2.492E-01 | -1.257  |
|         |           | 696.49       | *   | -8.463E-01          | 2.763E+00 | 4.365E+00      | 2.795E-01 | -0.194  |
|         |           | 1489.15      |     | -2.375E+00          | 1.194E+01 | 1.889E+01      | 1.304E+00 | -0.126  |
| PM-146  |           | 453.90       | *   | 3.082E-02           | 4.678E-02 | 7.976E-02      | 6.828E-03 | 0.386   |
|         |           | 633.02       |     | -7.348E-01          | 1.493E+00 | 2.286E+00      | 8.426E-01 | -0.321  |
|         |           | 735.90       |     | 2.247E-02           | 1.916E-01 | 2.695E-01      | 7.586E-02 | 0.083   |
| ND-147  |           | 747.13       |     | -6.990E-02          | 1.077E-01 | 1.639E-01      | 2.156E-02 | -0.427  |
|         |           | 91.11        |     | 8.830E-01           | 5.007E-01 | 5.768E-01      | 5.302E-02 | 1.531   |
|         |           | 319.41       |     | 7.503E-01           | 3.554E+00 | 5.963E+00      | 3.461E-01 | 0.126   |
| PM-149  |           | 439.89       |     | 6.772E+00           | 6.215E+00 | 1.085E+01      | 6.141E-01 | 0.624   |
|         |           | 531.02       | *   | 6.890E-02           | 5.974E-01 | 9.830E-01      | 1.334E-01 | 0.070   |
|         |           | 285.90       | *   | 3.422E+01           | 9.655E+01 | 1.592E+02      | 2.260E+01 | 0.215   |
| EU-152  |           | 121.78       |     | -1.126E-01          | 8.439E-02 | 1.282E-01      | 1.109E-02 | -0.878  |
|         |           | 244.69       |     | -1.836E-01          | 3.522E-01 | 5.769E-01      | 3.323E-02 | -0.318  |
|         |           | 344.27       | *   | -1.083E-02          | 1.168E-01 | 1.668E-01      | 1.079E-02 | -0.065  |
|         |           | 443.98       |     | -4.250E-01          | 1.051E+00 | 1.685E+00      | 9.555E-02 | -0.252  |
|         |           | 778.89       |     | -4.829E-01          | 2.866E-01 | 3.837E-01      | 2.898E-02 | -1.259  |
|         |           | 867.32       |     | 7.374E-02           | 1.068E+00 | 1.555E+00      | 1.382E-01 | 0.047   |
| +       |           | 964.01       |     | 6.323E-01           | 3.877E-01 | 6.242E-01      | 5.443E-02 | 1.013   |
|         |           | 1085.78      |     | 1.413E-01           | 4.471E-01 | 7.609E-01      | 5.368E-02 | 0.186   |
|         |           | 1112.02      |     | 9.928E-02           | 3.778E-01 | 5.954E-01      | 3.942E-02 | 0.167   |
| GD-153  |           | 1407.95      |     | 2.134E-02           | 2.146E-01 | 3.553E-01      | 2.504E-02 | 0.060   |
|         |           | 69.67        |     | 3.853E-01           | 1.919E+00 | 2.754E+00      | 1.969E-01 | 0.140   |
|         |           | 83.37        |     | 2.159E+00           | 2.124E+01 | 2.544E+01      | 2.103E+00 | 0.085   |
|         |           | 97.43        | *   | 1.070E-01           | 9.705E-02 | 1.437E-01      | 1.153E-02 | 0.744   |
|         |           | 103.18       |     | -6.823E-02          | 1.203E-01 | 1.904E-01      | 1.469E-02 | -0.358  |
|         |           | 123.07       |     | 1.886E-02           | 6.251E-02 | 9.410E-02      | 9.628E-03 | 0.200   |
| EU-154  |           | 247.94       |     | -2.898E-01          | 4.017E-01 | 6.508E-01      | 6.198E-02 | -0.445  |
|         |           | 591.81       |     | 3.874E-01           | 6.688E-01 | 1.131E+00      | 1.117E-01 | 0.343   |
|         |           | 723.30       |     | 3.756E-02           | 2.127E-01 | 3.016E-01      | 2.380E-02 | 0.125   |
|         |           | 756.87       |     | 9.018E-01           | 8.186E-01 | 1.428E+00      | 1.574E-01 | 0.631   |
|         |           | 873.19       |     | 8.771E-02           | 3.281E-01 | 5.604E-01      | 7.008E-02 | 0.156   |
|         |           | 996.32       |     | -1.081E-01          | 4.246E-01 | 6.918E-01      | 1.220E-01 | -0.156  |
|         |           | 1004.76      |     | 6.622E-02           | 2.265E-01 | 3.861E-01      | 4.382E-02 | 0.172   |
|         |           | 1274.45      | *   | -3.611E-02          | 1.428E-01 | 2.295E-01      | 2.251E-02 | -0.157  |
| EU-155  |           | 48.70        |     | 5.466E-01           | 2.129E+00 | 3.081E+00      | 1.975E-01 | 0.177   |
|         |           | 60.01        |     | 4.289E+00           | 5.205E+00 | 7.642E+00      | 5.081E-01 | 0.561   |
|         |           | 86.54        |     | 5.036E-01           | 1.358E-01 | 2.072E-01      | 1.799E-02 | 2.430   |
|         |           | 105.31       | *   | 1.443E-01           | 1.209E-01 | 2.024E-01      | 1.566E-02 | 0.713   |
|         |           | 86.79        | +   | 1.235E+00           | 5.115E-01 | 5.519E-01      | 4.756E-02 | 2.238   |
|         |           | 197.04       |     | 4.204E-01           | 6.206E-01 | 1.050E+00      | 5.821E-02 | 0.400   |
| TB-160  |           | 215.65       |     | -5.491E-02          | 8.328E-01 | 1.318E+00      | 7.434E-02 | -0.042  |
|         |           | 298.57       | +   | 1.882E-01           | 1.817E-01 | 2.293E-01      | 1.337E-02 | 0.821   |
|         |           | 879.36       | *   | -9.397E-02          | 1.481E-01 | 2.343E-01      | 2.128E-02 | -0.401  |
|         |           | 962.29       |     | 4.624E-01           | 6.530E-01 | 1.008E+00      | 8.805E-02 | 0.459   |
|         |           | 966.15       | +   | 4.338E-01           | 2.660E-01 | 4.977E-01      | 4.327E-02 | 0.872   |
|         |           | 1177.93      |     | -4.546E-01          | 3.810E-01 | 5.628E-01      | 3.125E-02 | -0.808  |
| HO-166M |           | 1271.85      |     | -1.114E-01          | 7.727E-01 | 1.254E+00      | 8.142E-02 | -0.089  |
|         |           | 80.57        |     | -4.561E-01          | 3.270E-01 | 4.345E-01      | 3.478E-02 | -1.050  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| TM-171  | +         | 184.41       |     | 1.363E-01           | 5.832E-02 | 7.425E-02      | 4.061E-03 | 1.836   |
|         |           | 280.46       |     | 1.355E-02           | 1.013E-01 | 1.481E-01      | 8.639E-03 | 0.091   |
|         |           | 410.95       |     | 3.520E-01           | 2.834E-01 | 4.950E-01      | 2.738E-02 | 0.711   |
|         |           | 711.68       | *   | 6.410E-03           | 6.984E-02 | 1.126E-01      | 7.440E-03 | 0.057   |
|         |           | 752.31       |     | -6.889E-03          | 2.911E-01 | 4.676E-01      | 3.354E-02 | -0.015  |
|         |           | 810.29       |     | -7.202E-02          | 6.823E-02 | 9.882E-02      | 7.922E-03 | -0.729  |
|         |           | 51.35        |     | -2.108E+01          | 2.851E+01 | 3.936E+01      | 2.552E+00 | -0.536  |
|         |           | 52.39        |     | -9.671E+00          | 1.409E+01 | 2.068E+01      | 1.345E+00 | -0.468  |
|         |           | 59.40        |     | 2.238E+01           | 2.809E+01 | 4.121E+01      | 2.730E+00 | 0.543   |
|         |           | 66.72        | *   | -2.853E+01          | 3.287E+01 | 4.516E+01      | 3.149E+00 | -0.632  |
| LU-176  | +         | 88.36        |     | 9.113E-01           | 3.775E-01 | 4.142E-01      | 3.609E-02 | 2.200   |
|         |           | 201.83       |     | -8.669E-03          | 3.273E-02 | 5.147E-02      | 2.866E-03 | -0.168  |
|         |           | 306.84       | *   | -1.294E-02          | 2.852E-02 | 4.186E-02      | 2.438E-03 | -0.309  |
| LU-177  |           | 401.10       |     | 3.933E+00           | 7.399E+00 | 1.254E+01      | 6.881E-01 | 0.314   |
|         |           | 112.95       |     | 4.964E-01           | 1.820E+00 | 2.962E+00      | 2.175E-01 | 0.168   |
| LU-177M | +         | 208.36       | *   | 4.364E+00           | 1.708E+00 | 2.226E+00      | 1.247E-01 | 1.961   |
|         |           | 52.97        |     | -1.134E-01          | 1.397E+00 | 2.198E+00      | 1.431E-01 | -0.052  |
|         |           | 54.07        |     | 6.028E-01           | 7.276E-01 | 1.219E+00      | 7.957E-02 | 0.495   |
|         |           | 61.30        |     | 1.848E+00           | 1.626E+00 | 2.419E+00      | 1.622E-01 | 0.764   |
|         |           | 121.62       |     | -5.235E-01          | 4.298E-01 | 6.578E-01      | 4.678E-02 | -0.796  |
|         |           | 147.16       |     | -9.879E-01          | 7.484E-01 | 1.136E+00      | 6.927E-02 | -0.870  |
|         |           | 171.86       |     | -2.987E-01          | 5.496E-01 | 8.579E-01      | 4.630E-02 | -0.348  |
|         |           | 218.09       |     | 4.110E-01           | 8.899E-01 | 1.519E+00      | 8.590E-02 | 0.270   |
|         |           | 268.79       |     | 1.313E+00           | 1.017E+00 | 1.578E+00      | 9.182E-02 | 0.832   |
|         |           | 319.02       |     | 5.290E-02           | 2.803E-01 | 4.699E-01      | 2.726E-02 | 0.113   |
| HF-181  |           | 367.43       |     | -1.826E-01          | 9.781E-01 | 1.601E+00      | 8.975E-02 | -0.114  |
|         |           | 413.65       | *   | -2.754E-01          | 2.074E-01 | 3.162E-01      | 1.753E-02 | -0.871  |
|         |           | 56.28        |     | -5.329E-01          | 8.631E-01 | 1.381E+00      | 9.062E-02 | -0.386  |
|         |           | 57.53        |     | 6.554E-02           | 5.302E-01 | 7.619E-01      | 5.017E-02 | 0.086   |
|         |           | 65.20        |     | 4.748E-01           | 1.089E+00 | 1.579E+00      | 1.088E-01 | 0.301   |
|         |           | 133.02       |     | 1.838E-02           | 8.410E-02 | 1.192E-01      | 7.921E-03 | 0.154   |
|         |           | 136.25       |     | -2.613E-01          | 5.283E-01 | 8.325E-01      | 5.425E-02 | -0.314  |
|         |           | 345.85       |     | -1.838E-02          | 2.967E-01 | 3.330E-01      | 1.903E-02 | -0.055  |
|         |           | 482.03       | *   | -2.882E-02          | 4.647E-02 | 7.303E-02      | 4.236E-03 | -0.395  |
|         |           | 56.28        |     | -2.090E-01          | 3.382E-01 | 5.411E-01      | 3.551E-02 | -0.386  |
| W-181   |           | 57.53        |     | 2.548E-02           | 2.079E-01 | 2.987E-01      | 1.967E-02 | 0.085   |
|         |           | 65.20        | *   | 1.847E-01           | 4.237E-01 | 6.141E-01      | 4.231E-02 | 0.301   |
| TA-182  |           | 67.75        |     | -1.658E-02          | 1.526E-01 | 1.807E-01      | 1.271E-02 | -0.092  |
|         |           | 100.10       |     | 1.591E-02           | 2.072E-01 | 3.241E-01      | 2.550E-02 | 0.049   |
|         |           | 152.43       |     | -8.110E-02          | 3.946E-01 | 6.272E-01      | 3.697E-02 | -0.129  |
|         |           | 222.10       |     | -1.690E-01          | 3.624E-01 | 5.969E-01      | 3.386E-02 | -0.283  |
|         |           | 1001.68      |     | 1.239E+00           | 2.273E+00 | 3.940E+00      | 3.257E-01 | 0.315   |
| RE-183  | +         | 1121.28      |     | 9.431E-01           | 3.368E-01 | 4.139E-01      | 2.675E-02 | 2.278   |
|         |           | 1189.05      |     | 1.649E-01           | 3.511E-01 | 6.009E-01      | 3.402E-02 | 0.274   |
|         |           | 1221.42      | *   | 1.595E-01           | 2.299E-01 | 3.981E-01      | 2.381E-02 | 0.401   |
|         |           | 1230.97      |     | 1.542E-01           | 5.152E-01 | 8.692E-01      | 5.282E-02 | 0.177   |
|         |           | 57.98        |     | 4.752E-02           | 2.091E-01 | 3.017E-01      | 1.989E-02 | 0.157   |
|         |           | 59.32        |     | 9.288E-02           | 1.154E-01 | 1.694E-01      | 1.122E-02 | 0.548   |
|         |           | 67.20        |     | -9.661E-02          | 2.473E-01 | 3.224E-01      | 2.257E-02 | -0.300  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| RE-184  |           | 162.32       | *   | 7.970E-02           | 1.245E-01 | 2.039E-01      | 1.123E-02 | 0.391   |
|         | +         | 208.81       |     | 3.958E+00           | 1.550E+00 | 2.042E+00      | 1.145E-01 | 1.939   |
|         |           | 291.72       |     | -5.148E-01          | 1.130E+00 | 1.586E+00      | 9.253E-02 | -0.325  |
|         |           | 57.98        |     | 1.752E-01           | 7.709E-01 | 1.112E+00      | 7.335E-02 | 0.157   |
|         |           | 59.32        |     | 3.422E-01           | 4.252E-01 | 6.239E-01      | 4.132E-02 | 0.548   |
|         |           | 67.20        |     | -3.561E-01          | 9.115E-01 | 1.188E+00      | 8.318E-02 | -0.300  |
|         |           | 161.27       |     | 1.572E-01           | 4.046E-01 | 6.566E-01      | 3.644E-02 | 0.239   |
|         |           | 216.55       |     | 4.775E-02           | 2.777E-01 | 4.693E-01      | 2.650E-02 | 0.102   |
|         |           | 252.85       | *   | -2.600E-03          | 2.851E-01 | 4.144E-01      | 2.397E-02 | -0.006  |
|         |           | 318.01       |     | -3.353E-01          | 4.929E-01 | 7.913E-01      | 4.593E-02 | -0.424  |
| OS-185  |           | 792.07       |     | -4.017E-01          | 1.283E+00 | 1.708E+00      | 1.323E-01 | -0.235  |
|         |           | 903.28       |     | 4.815E-01           | 1.104E+00 | 1.787E+00      | 1.668E-01 | 0.269   |
|         |           | 920.93       |     | -1.403E-01          | 5.365E-01 | 8.352E-01      | 7.659E-02 | -0.168  |
|         |           | 59.72        |     | 2.474E-01           | 3.090E-01 | 4.534E-01      | 3.009E-02 | 0.546   |
|         |           | 61.14        |     | 1.364E-01           | 1.792E-01 | 2.621E-01      | 1.755E-02 | 0.520   |
|         |           | 69.30        |     | 3.531E-02           | 3.453E-01 | 4.902E-01      | 3.494E-02 | 0.072   |
|         |           | 592.07       |     | 1.034E+00           | 2.743E+00 | 4.579E+00      | 2.738E-01 | 0.226   |
|         |           | 646.12       | *   | -1.978E-02          | 4.544E-02 | 7.103E-02      | 4.236E-03 | -0.279  |
|         |           | 717.42       |     | -2.694E-01          | 9.756E-01 | 1.538E+00      | 1.028E-01 | -0.175  |
|         |           | 874.81       |     | 1.858E-01           | 6.368E-01 | 1.090E+00      | 9.824E-02 | 0.170   |
| RE-188  |           | 880.27       |     | -1.523E-01          | 8.175E-01 | 1.347E+00      | 1.225E-01 | -0.113  |
|         |           | 155.03       | *   | 2.072E-01           | 2.009E-01 | 3.330E-01      | 1.930E-02 | 0.622   |
|         |           | 477.96       |     | 5.558E+00           | 3.278E+00 | 5.909E+00      | 3.420E-01 | 0.941   |
|         |           | 633.10       |     | -1.413E+00          | 2.972E+00 | 4.635E+00      | 2.769E-01 | -0.305  |
| W-188   | +         | 63.58        |     | 7.767E+01           | 6.688E+01 | 8.859E+01      | 6.031E+00 | 0.877   |
|         |           | 227.08       |     | -3.972E-01          | 1.385E+01 | 2.320E+01      | 1.321E+00 | -0.017  |
| IR-192  |           | 290.67       | *   | -3.582E+00          | 8.828E+00 | 1.243E+01      | 7.250E-01 | -0.288  |
|         | +         | 295.96       |     | 1.201E+00           | 2.259E-01 | 3.060E-01      | 1.813E-02 | 3.923   |
|         |           | 308.46       |     | -5.076E-02          | 1.009E-01 | 1.636E-01      | 9.631E-03 | -0.310  |
|         |           | 316.51       | *   | -1.305E-02          | 3.862E-02 | 6.314E-02      | 3.685E-03 | -0.207  |
| AU-195  |           | 468.07       |     | 4.530E-02           | 8.092E-02 | 1.206E-01      | 8.016E-03 | 0.376   |
|         |           | 604.41       |     | 1.299E-01           | 5.665E-01 | 8.123E-01      | 9.296E-02 | 0.160   |
|         |           | 612.46       |     | 3.240E+00           | 1.091E+00 | 1.825E+00      | 1.408E-01 | 1.776   |
|         |           | 65.12        |     | 1.045E-01           | 1.967E-01 | 2.861E-01      | 1.970E-02 | 0.365   |
|         |           | 66.83        |     | -9.034E-02          | 1.088E-01 | 1.497E-01      | 1.045E-02 | -0.604  |
|         | +         | 75.70        |     | 1.740E+00           | 3.097E-01 | 5.234E-01      | 3.970E-02 | 3.325   |
| TL-200  |           | 98.88        | *   | 3.448E-01           | 2.831E-01 | 4.208E-01      | 3.339E-02 | 0.819   |
|         | +         | 129.76       |     | 4.728E+00           | 3.745E+00 | 5.637E+00      | 3.819E-01 | 0.839   |
|         |           | 367.94       | *   | -3.047E-05          | 3.745E+00 | Half-Life      | too short |         |
|         |           | 579.30       |     | 1.702E-03           | 3.745E+00 | Half-Life      | too short |         |
| TL-201  |           | 828.27       |     | -3.613E-04          | 3.745E+00 | Half-Life      | too short |         |
|         |           | 1205.75      |     | 1.757E-03           | 3.745E+00 | Half-Life      | too short |         |
|         |           | 68.90        |     | 1.246E+00           | 5.842E+00 | 7.766E+00      | 5.515E-01 | 0.160   |
|         |           | 70.82        |     | 1.694E+00           | 3.107E+00 | 4.512E+00      | 3.260E-01 | 0.376   |
| TL-202  |           | 80.30        |     | -5.700E-02          | 5.760E+00 | 8.173E+00      | 6.521E-01 | -0.007  |
|         |           | 135.34       |     | -7.856E+00          | 2.858E+01 | 4.544E+01      | 2.977E+00 | -0.173  |
|         |           | 167.43       | *   | -6.356E+00          | 7.607E+00 | 1.173E+01      | 6.299E-01 | -0.542  |
|         |           | 68.90        |     | 1.139E-01           | 5.341E-01 | 7.100E-01      | 5.043E-02 | 0.160   |
|         |           | 70.82        |     | 1.545E-01           | 2.833E-01 | 4.114E-01      | 2.973E-02 | 0.376   |



---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| HG-203  |           | 80.30        |     | -5.199E-03          | 5.253E-01 | 7.454E-01      | 5.947E-02 | -0.007  |
|         |           | 439.56       | *   | 5.764E-02           | 7.463E-02 | 1.281E-01      | 7.246E-03 | 0.450   |
|         |           | 70.83        |     | 6.765E-01           | 1.235E+00 | 1.790E+00      | 2.286E-01 | 0.378   |
|         |           | 72.87        |     | 2.893E+00           | 8.526E-01 | 1.236E+00      | 1.536E-01 | 2.340   |
| BI-207  |           | 82.60        |     | -7.539E-01          | 1.890E+00 | 1.865E+00      | 2.515E-01 | -0.404  |
|         |           | 279.20       | *   | 7.897E-02           | 4.954E-02 | 7.839E-02      | 4.850E-03 | 1.007   |
|         |           | 72.80        |     | 7.802E-01           | 2.330E-01 | 3.584E-01      | 2.639E-02 | 2.177   |
|         | +         | 74.97        |     | 9.657E-01           | 1.719E-01 | 2.654E-01      | 1.998E-02 | 3.639   |
|         |           | 84.90        |     | 4.359E-01           | 2.393E-01 | 3.574E-01      | 3.010E-02 | 1.220   |
|         | +         | 569.67       |     | 1.380E-01           | 6.348E-02 | 8.374E-02      | 4.996E-03 | 1.648   |
| TL-207  |           | 1063.62      | *   | -2.909E-03          | 5.373E-02 | 8.874E-02      | 6.568E-03 | -0.033  |
|         |           | 1770.23      |     | 6.405E-01           | 4.293E-01 | 8.537E-01      | 5.099E-02 | 0.750   |
|         |           | 81.07        |     | -4.304E-01          | 2.835E-01 | 3.440E-01      | 2.769E-02 | -1.251  |
|         |           | 83.78        |     | 2.938E-02           | 1.643E-01 | 2.180E-01      | 1.812E-02 | 0.135   |
|         |           | 94.90        |     | 1.047E+00           | 3.131E-01 | 4.839E-01      | 3.959E-02 | 2.164   |
|         |           | 122.32       |     | -1.209E+00          | 1.991E+00 | 3.129E+00      | 2.456E-01 | -0.386  |
| PO-209  |           | 144.24       |     | 3.707E-01           | 7.621E-01 | 1.243E+00      | 9.405E-02 | 0.298   |
|         |           | 154.21       |     | 3.128E-01           | 4.636E-01 | 7.596E-01      | 5.344E-02 | 0.412   |
|         | +         | 269.46       |     | 6.786E-01           | 3.492E-01 | 3.780E-01      | 2.298E-02 | 1.795   |
|         |           | 323.87       | *   | -1.160E+00          | 7.606E-01 | 1.130E+00      | 1.866E-01 | -1.026  |
|         | +         | 338.28       |     | 9.490E+00           | 2.188E+00 | 2.719E+00      | 2.856E-01 | 3.490   |
|         |           | 445.03       |     | -1.423E+00          | 2.482E+00 | 3.928E+00      | 4.007E-01 | -0.362  |
| PB-211  |           | 260.50       |     | -3.672E-01          | 1.039E+01 | 1.734E+01      | 1.006E+00 | -0.021  |
|         |           | 262.80       |     | -1.890E+01          | 3.005E+01 | 4.672E+01      | 2.713E+00 | -0.404  |
|         |           | 896.60       | *   | 2.022E+00           | 7.489E+00 | 1.281E+01      | 1.199E+00 | 0.158   |
| BI-212  |           | 404.84       | *   | -9.809E-02          | 1.079E+00 | 1.768E+00      | 1.102E+00 | -0.055  |
|         |           | 427.08       |     | -2.178E-01          | 2.223E+00 | 3.631E+00      | 2.244E+00 | -0.060  |
|         |           | 831.96       |     | -8.900E-01          | 1.473E+00 | 2.149E+00      | 1.346E+00 | -0.414  |
| PO-215  | +         | 727.18       | *   | 1.961E+00           | 6.307E-01 | 7.744E-01      | 6.588E-02 | 2.532   |
|         |           | 785.46       |     | 3.642E+00           | 2.028E+00 | 3.666E+00      | 2.804E-01 | 0.993   |
|         |           | 1620.62      |     | 1.419E+00           | 1.293E+00 | 2.440E+00      | 1.598E-01 | 0.582   |
|         |           | 81.07        |     | -4.304E-01          | 2.835E-01 | 3.440E-01      | 2.769E-02 | -1.251  |
|         |           | 83.78        |     | 2.938E-02           | 1.643E-01 | 2.180E-01      | 1.812E-02 | 0.135   |
|         |           | 94.90        |     | 1.047E+00           | 3.131E-01 | 4.839E-01      | 3.959E-02 | 2.164   |
| RN-219  |           | 122.32       |     | -1.209E+00          | 1.991E+00 | 3.129E+00      | 2.456E-01 | -0.386  |
|         |           | 144.24       |     | 3.707E-01           | 7.621E-01 | 1.243E+00      | 9.405E-02 | 0.298   |
|         |           | 154.21       |     | 3.128E-01           | 4.636E-01 | 7.596E-01      | 5.344E-02 | 0.412   |
|         | +         | 269.46       |     | 6.786E-01           | 3.492E-01 | 3.780E-01      | 2.298E-02 | 1.795   |
|         |           | 323.87       | *   | -1.160E+00          | 7.606E-01 | 1.130E+00      | 1.866E-01 | -1.026  |
|         | +         | 338.28       |     | 9.490E+00           | 2.188E+00 | 2.719E+00      | 2.856E-01 | 3.490   |
| RN-220  |           | 445.03       |     | -1.423E+00          | 2.482E+00 | 3.928E+00      | 4.007E-01 | -0.362  |
|         | +         | 271.23       |     | 8.706E-01           | 4.505E-01 | 5.044E-01      | 4.096E-02 | 1.726   |
|         |           | 401.81       | *   | 1.751E-02           | 4.623E-01 | 7.639E-01      | 1.030E-01 | 0.023   |
| RA-223  |           | 549.76       | *   | 9.590E+00           | 2.951E+01 | 4.915E+01      | 2.922E+00 | 0.195   |
|         |           | 81.07        |     | -4.304E-01          | 2.835E-01 | 3.440E-01      | 2.769E-02 | -1.251  |
|         |           | 83.78        |     | 2.938E-02           | 1.643E-01 | 2.180E-01      | 1.812E-02 | 0.135   |
|         |           | 94.90        |     | 1.047E+00           | 3.131E-01 | 4.839E-01      | 3.959E-02 | 2.164   |
|         |           | 122.32       |     | -1.209E+00          | 1.991E+00 | 3.129E+00      | 2.456E-01 | -0.386  |
|         |           | 144.24       |     | 3.707E-01           | 7.621E-01 | 1.243E+00      | 9.405E-02 | 0.298   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| AC-227  |           | 154.21       |     | 3.128E-01           | 4.636E-01 | 7.596E-01      | 5.344E-02 | 0.412   |
|         | +         | 269.46       |     | 6.786E-01           | 3.492E-01 | 3.780E-01      | 2.298E-02 | 1.795   |
|         |           | 323.87       | *   | -1.160E+00          | 7.606E-01 | 1.130E+00      | 1.866E-01 | -1.026  |
|         | +         | 338.28       |     | 9.490E+00           | 2.188E+00 | 2.719E+00      | 2.856E-01 | 3.490   |
|         |           | 445.03       |     | -1.423E+00          | 2.482E+00 | 3.928E+00      | 4.007E-01 | -0.362  |
|         |           | 79.80        |     | 5.723E+00           | 2.315E+00 | 3.105E+00      | 6.595E-01 | 1.843   |
|         |           | 236.00       |     | 2.575E+00           | 4.471E-01 | 6.575E-01      | 6.847E-02 | 3.916   |
|         |           | 256.20       | *   | -5.441E-02          | 4.327E-01 | 6.788E-01      | 9.475E-02 | -0.080  |
|         |           | 286.10       |     | 1.142E+00           | 1.626E+00 | 2.786E+00      | 3.226E-01 | 0.410   |
|         | +         | 299.80       |     | 2.399E+00           | 2.345E+00 | 2.868E+00      | 4.673E-01 | 0.837   |
| TH-227  |           | 304.40       |     | -7.863E-01          | 2.199E+00 | 3.090E+00      | 5.348E-01 | -0.254  |
|         |           | 334.20       |     | -1.276E+00          | 2.835E+00 | 3.937E+00      | 7.214E-01 | -0.324  |
|         |           | 79.80        |     | 5.723E+00           | 2.324E+00 | 3.105E+00      | 6.681E-01 | 1.843   |
|         | +         | 94.00        |     | 1.068E+01           | 3.938E+00 | 4.278E+00      | 9.254E-01 | 2.497   |
|         |           | 236.00       |     | 2.575E+00           | 4.264E-01 | 6.575E-01      | 5.926E-02 | 3.916   |
|         |           | 256.20       | *   | -5.441E-02          | 4.327E-01 | 6.788E-01      | 1.147E-01 | -0.080  |
|         |           | 286.10       |     | 1.142E+00           | 1.984E+00 | 2.786E+00      | 2.791E+00 | 0.410   |
|         | +         | 299.80       |     | 2.399E+00           | 2.345E+00 | 2.868E+00      | 4.673E-01 | 0.837   |
|         |           | 304.40       |     | -7.863E-01          | 2.199E+00 | 3.090E+00      | 5.348E-01 | -0.254  |
|         |           | 334.20       |     | -1.276E+00          | 2.835E+00 | 3.937E+00      | 7.214E-01 | -0.324  |
| TH-229  |           | 85.43        |     | 8.384E-01           | 2.472E-01 | 3.772E-01      | 3.197E-02 | 2.222   |
|         | +         | 88.47        |     | 5.246E-01           | 2.173E-01 | 2.384E-01      | 2.075E-02 | 2.200   |
|         |           | 100.00       |     | 2.605E-02           | 2.154E-01 | 3.376E-01      | 2.658E-02 | 0.077   |
|         |           | 193.63       | *   | -1.431E-01          | 5.664E-01 | 9.351E-01      | 5.164E-02 | -0.153  |
|         |           | 210.97       |     | 2.284E+00           | 9.560E-01 | 1.544E+00      | 8.674E-02 | 1.479   |
|         |           | 283.67       | *   | -8.892E-01          | 1.893E+00 | 2.651E+00      | 3.657E-01 | -0.335  |
|         | +         | 301.29       |     | 9.597E-01           | 9.305E-01 | 1.131E+00      | 1.184E-01 | 0.849   |
|         |           | 81.07        |     | -4.304E-01          | 2.835E-01 | 3.440E-01      | 2.769E-02 | -1.251  |
|         |           | 83.78        |     | 2.938E-02           | 1.643E-01 | 2.180E-01      | 1.812E-02 | 0.135   |
|         |           | 94.90        |     | 1.047E+00           | 3.131E-01 | 4.839E-01      | 3.959E-02 | 2.164   |
| U-231   |           | 122.32       |     | -1.209E+00          | 1.991E+00 | 3.129E+00      | 2.456E-01 | -0.386  |
|         |           | 144.24       |     | 3.707E-01           | 7.621E-01 | 1.243E+00      | 9.405E-02 | 0.298   |
|         |           | 154.21       |     | 3.128E-01           | 4.636E-01 | 7.596E-01      | 5.344E-02 | 0.412   |
|         | +         | 269.46       |     | 6.786E-01           | 3.492E-01 | 3.780E-01      | 2.298E-02 | 1.795   |
|         |           | 323.87       | *   | -1.160E+00          | 7.606E-01 | 1.130E+00      | 1.866E-01 | -1.026  |
|         | +         | 338.28       |     | 9.490E+00           | 2.188E+00 | 2.719E+00      | 2.856E-01 | 3.490   |
|         |           | 445.03       |     | -1.423E+00          | 2.482E+00 | 3.928E+00      | 4.007E-01 | -0.362  |
|         |           | 84.21        |     | 2.577E+00           | 6.491E+00 | 9.311E+00      | 7.777E-01 | 0.277   |
|         | +         | 92.29        |     | 1.038E+01           | 3.215E+00 | 4.409E+00      | 3.692E-01 | 2.355   |
|         |           | 95.87        | *   | 1.139E+00           | 1.353E+00 | 1.979E+00      | 1.606E-01 | 0.576   |
| PA-233  |           | 108.00       |     | -1.047E+00          | 2.279E+00 | 3.616E+00      | 2.717E-01 | -0.289  |
|         | +         | 75.28        |     | 2.818E+01           | 6.161E+00 | 8.130E+00      | 1.201E+00 | 3.466   |
|         | +         | 86.59        |     | 7.522E+00           | 3.655E+00 | 3.368E+00      | 9.030E-01 | 2.234   |
|         | +         | 300.12       |     | 6.689E-01           | 6.510E-01 | 7.931E-01      | 1.067E-01 | 0.843   |
|         |           | 311.98       | *   | 2.111E-02           | 7.063E-02 | 1.190E-01      | 7.348E-03 | 0.177   |
|         |           | 340.50       |     | 3.525E+00           | 1.147E+00 | 1.454E+00      | 3.337E-01 | 2.425   |
|         |           | 398.62       |     | -1.477E+00          | 2.356E+00 | 3.701E+00      | 9.544E-01 | -0.399  |
|         |           | 415.76       |     | -5.816E-01          | 1.870E+00 | 3.021E+00      | 6.199E-01 | -0.193  |
|         | +         | 63.00        |     | 2.255E+00           | 1.963E+00 | 2.597E+00      | 3.781E-01 | 0.868   |
|         |           |              |     |                     |           |                |           |         |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 94.67        |     | 9.113E-01           | 2.455E-01 | 3.591E-01      | 4.350E-02 | 2.537   |
|         |           | 98.44        |     | 1.314E-01           | 1.361E-01 | 1.707E-01      | 9.509E-02 | 0.770   |
|         |           | 99.86        |     | 1.695E-01           | 5.439E-01 | 8.580E-01      | 6.762E-02 | 0.198   |
|         |           | 111.00       |     | -9.079E-03          | 2.078E-01 | 3.346E-01      | 3.766E-02 | -0.027  |
|         |           | 131.20       |     | 4.974E-02           | 1.410E-01 | 2.011E-01      | 1.351E-02 | 0.247   |
|         |           | 152.70       |     | -1.017E-01          | 3.797E-01 | 6.016E-01      | 9.530E-02 | -0.169  |
|         | +         | 186.00       |     | 4.908E+00           | 2.564E+00 | 2.746E+00      | 8.375E-01 | 1.787   |
|         |           | 226.40       |     | 1.058E-01           | 4.313E-01 | 7.297E-01      | 8.396E-02 | 0.145   |
|         |           | 227.20       |     | -8.989E-03          | 4.684E-01 | 7.850E-01      | 4.470E-02 | -0.011  |
|         |           | 248.90       |     | -5.129E-01          | 9.246E-01 | 1.501E+00      | 3.225E-01 | -0.342  |
|         | +         | 293.70       |     | 7.564E+00           | 1.819E+00 | 1.853E+00      | 2.982E-01 | 4.083   |
|         |           | 369.80       |     | 2.086E-01           | 9.083E-01 | 1.519E+00      | 3.154E-01 | 0.137   |
|         | +         | 568.70       |     | 4.490E+00           | 2.066E+00 | 2.697E+00      | 1.609E-01 | 1.665   |
|         | +         | 569.50       |     | 1.225E+00           | 5.635E-01 | 7.421E-01      | 4.428E-02 | 1.650   |
|         |           | 574.00       |     | -8.320E-02          | 1.886E+00 | 2.640E+00      | 1.576E-01 | -0.032  |
|         |           | 699.00       |     | 5.004E-01           | 8.192E-01 | 1.372E+00      | 2.498E-01 | 0.365   |
|         |           | 706.10       |     | -3.770E-01          | 1.236E+00 | 1.933E+00      | 8.552E-01 | -0.195  |
|         |           | 733.00       |     | -1.641E-01          | 4.815E-01 | 6.401E-01      | 1.382E-01 | -0.256  |
|         |           | 742.81       |     | 9.968E-01           | 1.763E+00 | 2.747E+00      | 1.841E+00 | 0.363   |
|         | +         | 796.30       |     | 1.450E+00           | 1.548E+00 | 1.833E+00      | 4.912E-01 | 0.792   |
|         |           | 805.60       |     | 7.733E-01           | 1.145E+00 | 1.901E+00      | 5.791E-01 | 0.407   |
|         |           | 819.60       |     | -1.148E+00          | 1.347E+00 | 1.980E+00      | 7.508E-01 | -0.580  |
|         |           | 826.30       |     | 4.467E-01           | 8.894E-01 | 1.512E+00      | 6.756E-01 | 0.295   |
|         |           | 831.60       |     | -4.003E-01          | 7.206E-01 | 1.128E+00      | 3.357E-01 | -0.355  |
|         |           | 876.40       |     | 2.411E-01           | 9.353E-01 | 1.542E+00      | 1.586E+00 | 0.156   |
|         |           | 880.51       |     | -6.141E-02          | 2.952E-01 | 4.855E-01      | 4.419E-02 | -0.126  |
|         |           | 883.24       |     | -1.012E-01          | 3.105E-01 | 4.928E-01      | 3.316E-01 | -0.205  |
|         |           | 899.00       |     | -7.581E-01          | 9.450E-01 | 1.371E+00      | 6.014E-01 | -0.553  |
|         |           | 925.00       |     | 1.079E+00           | 1.327E+00 | 2.349E+00      | 2.145E-01 | 0.459   |
|         |           | 926.50       |     | 4.063E-02           | 1.986E-01 | 3.365E-01      | 8.564E-02 | 0.121   |
|         |           | 946.00       | *   | 1.495E-01           | 3.403E-01 | 5.854E-01      | 1.106E-01 | 0.255   |
|         |           | 949.00       |     | 3.997E-01           | 5.259E-01 | 9.246E-01      | 8.215E-02 | 0.432   |
|         |           | 980.50       |     | -1.266E-01          | 7.544E-01 | 1.238E+00      | 1.055E-01 | -0.102  |
|         |           | 1394.10      |     | -5.526E-01          | 1.385E+00 | 2.080E+00      | 1.350E+00 | -0.266  |
| PA-234M |           | 766.42       |     | 1.224E+01           | 1.466E+01 | 2.275E+01      | 1.150E+01 | 0.538   |
|         |           | 1001.03      | *   | 3.496E+00           | 5.156E+00 | 9.016E+00      | 8.716E-01 | 0.388   |
| U-235   |           | 89.95        |     | 2.588E+00           | 2.093E+00 | 2.138E+00      | 6.596E-01 | 1.210   |
|         | +         | 93.35        |     | 3.323E+00           | 1.358E+00 | 1.365E+00      | 3.812E-01 | 2.434   |
|         |           | 105.00       |     | 1.244E+00           | 1.235E+00 | 1.973E+00      | 5.834E-01 | 0.631   |
|         |           | 143.76       | *   | 1.210E-01           | 2.345E-01 | 3.819E-01      | 6.287E-02 | 0.317   |
|         |           | 163.35       |     | 8.751E-02           | 5.276E-01 | 8.486E-01      | 1.517E-01 | 0.103   |
|         | +         | 185.71       |     | 1.818E-01           | 7.776E-02 | 1.017E-01      | 5.567E-03 | 1.788   |
|         |           | 205.31       |     | 3.701E-01           | 6.144E-01 | 9.226E-01      | 1.653E-01 | 0.401   |
| NP-236  |           | 94.67        |     | 6.940E-01           | 1.759E-01 | 2.726E-01      | 2.235E-02 | 2.546   |
|         |           | 98.44        |     | 9.932E-02           | 8.709E-02 | 1.291E-01      | 1.028E-02 | 0.769   |
|         |           | 111.00       |     | -6.868E-03          | 1.572E-01 | 2.531E-01      | 1.875E-02 | -0.027  |
|         |           | 160.31       | *   | -2.364E-02          | 9.356E-02 | 1.482E-01      | 8.283E-03 | -0.159  |
| NP-237  |           | 86.50        | *   | 1.228E+00           | 4.167E-01 | 5.054E-01      | 1.130E-01 | 2.429   |
|         |           | 95.87        |     | 1.021E+00           | 1.236E+00 | 1.774E+00      | 4.340E-01 | 0.576   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| NP-239  |           | 99.55        |     | 1.378E-01           | 1.883E-01 | 2.892E-01      | 2.284E-02 | 0.477   |
|         |           | 117.00       | *   | 2.079E-01           | 2.150E-01 | 3.575E-01      | 2.584E-02 | 0.582   |
|         | +         | 209.75       |     | 3.126E+00           | 1.224E+00 | 1.586E+00      | 8.902E-02 | 1.970   |
|         |           | 228.18       |     | 4.127E-02           | 2.468E-01 | 4.163E-01      | 2.372E-02 | 0.099   |
|         | +         | 277.60       |     | 2.653E-01           | 3.250E-01 | 3.526E-01      | 2.055E-02 | 0.752   |
| AM-241  |           | 334.30       |     | -7.507E-01          | 1.600E+00 | 2.226E+00      | 1.282E-01 | -0.337  |
|         |           | 59.54        | *   | 1.342E-01           | 1.630E-01 | 2.393E-01      | 1.777E-02 | 0.561   |
| CM-243  |           | 99.55        |     | 1.418E-01           | 1.938E-01 | 2.976E-01      | 2.350E-02 | 0.477   |
|         |           | 103.76       | *   | 3.365E-02           | 1.098E-01 | 1.791E-01      | 1.377E-02 | 0.188   |
|         |           | 117.00       |     | 2.139E-01           | 2.212E-01 | 3.678E-01      | 2.658E-02 | 0.582   |
|         | +         | 209.75       |     | 3.081E+00           | 1.206E+00 | 1.564E+00      | 8.776E-02 | 1.970   |
|         |           | 228.18       |     | 4.170E-02           | 2.493E-01 | 4.207E-01      | 2.397E-02 | 0.099   |
| AM-246  | +         | 277.60       |     | 2.675E-01           | 3.277E-01 | 3.555E-01      | 2.072E-02 | 0.752   |
|         |           | 798.80       |     | 2.421E-02           | 1.657E-01 | 2.334E-01      | 1.831E-02 | 0.104   |
|         |           | 1036.00      |     | 5.949E-02           | 3.020E-01 | 5.109E-01      | 3.988E-02 | 0.116   |
|         |           | 1062.04      |     | -7.271E-02          | 2.331E-01 | 3.756E-01      | 2.789E-02 | -0.194  |
|         |           | 1078.86      | *   | 1.345E-01           | 1.612E-01 | 2.850E-01      | 2.042E-02 | 0.472   |
| CM-247  | +         | 278.00       |     | 1.100E+00           | 1.348E+00 | 1.450E+00      | 8.451E-02 | 0.759   |
|         |           | 287.40       |     | 7.950E-01           | 1.418E+00 | 2.219E+00      | 1.295E-01 | 0.358   |
|         |           | 402.60       | *   | -3.397E-03          | 4.156E-02 | 6.822E-02      | 3.747E-03 | -0.050  |
| CF-249  |           | 252.85       |     | -9.759E-03          | 1.070E+00 | 1.556E+00      | 8.999E-02 | -0.006  |
|         |           | 333.44       |     | -1.685E-01          | 2.168E-01 | 2.951E-01      | 1.700E-02 | -0.571  |
|         |           | 387.95       | *   | 1.333E-02           | 4.178E-02 | 7.020E-02      | 3.838E-03 | 0.190   |
| CF-251  |           | 176.60       | *   | 1.105E-01           | 1.458E-01 | 2.374E-01      | 1.288E-02 | 0.466   |
|         |           | 227.00       |     | -1.467E-02          | 4.158E-01 | 6.965E-01      | 3.965E-02 | -0.021  |
|         |           | 285.00       |     | -5.437E-01          | 2.043E+00 | 3.049E+00      | 1.779E-01 | -0.178  |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630012      *
* Acquisition date   : 23-JAN-2010 12:29:41 Detector SN#      :             *
* Detector ID        : GAM14                      Sensitivity    : 5.000      *
* Geometry           : CAN                        Energy tolerance: 1.500      *
* Elapsed live time  : 0 02:00:00.00             Abundance limit : 75.000      *
* Elapsed real time  : 0 02:00:01.63             Half life ratio : 8.000      *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G244630012             Analyst initials: MXR1         *
* Batch Number       : 941639                 Sample Quantity : 1.2266E+02 GRAM  *
* Recovery           : 1.00000                Carrier Weight  : 0.00000      *
*****
*
*                                     QC DATA                                *
*
* Standard Weight    : 0.00000                                                         *
* CALIB. DATE/TIME   : 6-MAR-2009 11:43:06 MS Isotope      :                 *
* MSD DPM             : 0.000                      MSD Isotope :                 *
* LCS DPM             : 0.000                      LCS Isotope  :                 *
* LCSD DPM            : 0.000                      LCSD Isotope :                 *
*****

```

## Combined Activity-MDA Report

### ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act error | MDA<br>(pCi/GRAM ) |           |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 3.211E+01               | 2.909E+00 | 5.672E-01          | 0.000E+00 |
| CD-109  | 3.909E+00               | 1.587E+00 | 1.541E+00          | 0.000E+00 |
| SN-126  | 3.842E-01               | 1.560E-01 | 1.520E-01          | 0.000E+00 |
| BA-137M | 2.231E-01               | 9.251E-02 | 6.003E-02          | 0.000E+00 |
| CS-137  | 2.358E-01               | 9.780E-02 | 6.346E-02          | 0.000E+00 |
| TL-208  | 5.704E-01               | 8.941E-02 | 6.257E-02          | 0.000E+00 |
| BI-210  | 4.546E+00               | 3.920E+00 | 4.171E+00          | 0.000E+00 |
| PB-210  | 4.546E+00               | 3.920E+00 | 4.171E+00          | 0.000E+00 |
| PO-210  | 4.546E+00               | 3.916E+00 | 4.171E+00          | 0.000E+00 |
| BI-211  | 4.792E+00               | 5.183E-01 | 3.549E-01          | 0.000E+00 |
| PB-212  | 2.147E+00               | 1.972E-01 | 1.012E-01          | 0.000E+00 |
| PO-212  | 2.147E+00               | 1.972E-01 | 1.012E-01          | 0.000E+00 |
| BI-214  | 1.285E+00               | 2.047E-01 | 1.216E-01          | 0.000E+00 |
| PB-214  | 1.667E+00               | 1.994E-01 | 1.259E-01          | 0.000E+00 |
| PO-214  | 1.667E+00               | 1.994E-01 | 1.259E-01          | 0.000E+00 |
| PO-216  | 2.147E+00               | 1.972E-01 | 1.012E-01          | 0.000E+00 |
| PO-218  | 1.667E+00               | 1.994E-01 | 1.259E-01          | 0.000E+00 |
| RA-224  | 5.031E+00               | 1.077E+00 | 1.151E+00          | 0.000E+00 |
| RA-226  | 1.285E+00               | 2.047E-01 | 1.216E-01          | 0.000E+00 |
| AC-228  | 2.092E+00               | 4.021E-01 | 2.390E-01          | 0.000E+00 |
| RA-228  | 2.092E+00               | 4.021E-01 | 2.390E-01          | 0.000E+00 |
| TH-228  | 2.180E+00               | 2.002E-01 | 1.027E-01          | 0.000E+00 |
| TH-230  | 1.285E+00               | 2.047E-01 | 1.216E-01          | 0.000E+00 |
| TH-232  | 2.092E+00               | 4.021E-01 | 2.390E-01          | 0.000E+00 |
| TH-234  | 1.934E+00               | 1.659E+00 | 2.124E+00          | 0.000E+00 |
| U-234   | 1.285E+00               | 2.047E-01 | 1.216E-01          | 0.000E+00 |
| U-238   | 1.934E+00               | 1.659E+00 | 2.124E+00          | 0.000E+00 |
| AM-243  | 5.380E-01               | 9.383E-02 | 9.463E-02          | 0.000E+00 |
| ANH-511 | 1.826E-01               | 7.049E-02 | 4.809E-02          | 0.000E+00 |

### ---- Non-Identified Nuclides ----

| Key-Line<br>Activity | K.L. Act error | MDA |
|----------------------|----------------|-----|
|----------------------|----------------|-----|

| Nuclide | (pCi/GRAM  | ) Ided    | (pCi/GRAM | )         |            |
|---------|------------|-----------|-----------|-----------|------------|
| BE-7    | 3.813E-01  | 3.428E-01 | 6.182E-01 | 0.000E+00 | NOT IDENT. |
| NA-22   | -1.252E-02 | 5.011E-02 | 8.231E-02 | 0.000E+00 | NOT IDENT. |
| NA-24   | 0.000E+00  | 6.701E+05 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| AL-26   | 2.436E-02  | 2.944E-02 | 5.588E-02 | 0.000E+00 | NOT IDENT. |
| TI-44   | 0.000E+00  | 6.692E-02 | 9.348E-02 | 0.000E+00 | FAIL ABUN  |
| SC-46   | 1.866E-02  | 4.177E-02 | 7.409E-02 | 0.000E+00 | FAIL ABUN  |
| V-48    | -2.108E-02 | 7.563E-02 | 1.260E-01 | 0.000E+00 | NOT IDENT. |
| CR-51   | -2.944E-02 | 3.928E-01 | 6.756E-01 | 0.000E+00 | NOT IDENT. |
| MN-52   | 1.568E-01  | 2.555E-01 | 4.567E-01 | 0.000E+00 | FAIL ABUN  |
| MN-54   | -3.997E-04 | 4.103E-02 | 7.060E-02 | 0.000E+00 | NOT IDENT. |
| CO-56   | 1.370E-02  | 4.148E-02 | 7.310E-02 | 0.000E+00 | NOT IDENT. |
| CO-57   | -2.432E-02 | 2.815E-02 | 4.607E-02 | 0.000E+00 | NOT IDENT. |
| CO-58   | -3.457E-02 | 4.409E-02 | 6.759E-02 | 0.000E+00 | NOT IDENT. |
| FE-59   | -1.127E-02 | 9.749E-02 | 1.636E-01 | 0.000E+00 | NOT IDENT. |
| CO-60   | 1.316E-02  | 4.184E-02 | 7.242E-02 | 0.000E+00 | NOT IDENT. |
| ZN-65   | 1.974E-02  | 1.061E-01 | 1.581E-01 | 0.000E+00 | NOT IDENT. |
| GE-68   | 8.869E-01  | 1.367E+00 | 2.438E+00 | 0.000E+00 | NOT IDENT. |
| AS-73   | 2.840E-01  | 6.849E-01 | 1.205E+00 | 0.000E+00 | NOT IDENT. |
| AS-74   | -3.032E-02 | 9.729E-02 | 1.594E-01 | 0.000E+00 | NOT IDENT. |
| SE-75   | -4.893E-03 | 5.278E-02 | 7.853E-02 | 0.000E+00 | NOT IDENT. |
| BR-77   | 1.307E+00  | 1.090E+01 | 1.853E+01 | 0.000E+00 | FAIL ABUN  |
| SR-82   | -8.116E-02 | 3.810E-01 | 6.172E-01 | 0.000E+00 | NOT IDENT. |
| RB-83   | 2.954E-03  | 7.364E-02 | 1.246E-01 | 0.000E+00 | NOT IDENT. |
| RB-84   | 2.082E-02  | 7.100E-02 | 1.247E-01 | 0.000E+00 | NOT IDENT. |
| KR-85   | 0.000E+00  | 8.497E+00 | 1.483E+01 | 0.000E+00 | NOT IDENT. |
| SR-85   | 0.000E+00  | 4.352E-02 | 7.598E-02 | 0.000E+00 | NOT IDENT. |
| RB-86   | -1.523E-02 | 8.379E-01 | 1.420E+00 | 0.000E+00 | NOT IDENT. |
| Y-88    | -2.425E-03 | 3.552E-02 | 5.747E-02 | 0.000E+00 | NOT IDENT. |
| ZR-88   | 8.390E-03  | 3.182E-02 | 5.520E-02 | 0.000E+00 | NOT IDENT. |
| Y-91    | 9.058E+00  | 2.075E+01 | 3.613E+01 | 0.000E+00 | NOT IDENT. |
| NB-94   | 6.307E-03  | 3.828E-02 | 6.431E-02 | 0.000E+00 | NOT IDENT. |
| NB-95   | 3.430E-02  | 4.888E-02 | 8.464E-02 | 0.000E+00 | NOT IDENT. |
| NB-95M  | 0.000E+00  | 1.781E-01 | 3.049E-01 | 0.000E+00 | NOT IDENT. |
| ZR-95   | 9.314E-03  | 7.523E-02 | 1.257E-01 | 0.000E+00 | NOT IDENT. |
| NB-97   | 0.000E+00  | 1.072E+05 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| ZR-97   | 0.000E+00  | 2.037E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| MO-99   | -3.471E+00 | 1.321E+01 | 2.143E+01 | 0.000E+00 | NOT IDENT. |
| TC-99M  | 0.000E+00  | 3.307E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | 2.664E-02  | 3.558E-02 | 6.306E-02 | 0.000E+00 | NOT IDENT. |
| RH-102  | -2.784E-03 | 3.093E-02 | 5.213E-02 | 0.000E+00 | NOT IDENT. |
| RU-103  | -1.580E-02 | 3.961E-02 | 6.501E-02 | 0.000E+00 | FAIL ABUN  |
| RH-106  | -5.935E-02 | 3.419E-01 | 5.643E-01 | 0.000E+00 | FAIL ABUN  |
| RU-106  | -5.935E-02 | 3.419E-01 | 5.643E-01 | 0.000E+00 | FAIL ABUN  |
| AG-108M | -2.246E-02 | 3.398E-02 | 5.546E-02 | 0.000E+00 | NOT IDENT. |
| AG-110M | 2.368E-02  | 4.205E-02 | 6.409E-02 | 0.000E+00 | NOT IDENT. |
| IN-111  | -1.309E+00 | 1.072E+00 | 1.773E+00 | 0.000E+00 | NOT IDENT. |
| IN-113M | 4.988E-03  | 4.659E-02 | 8.016E-02 | 0.000E+00 | NOT IDENT. |
| SN-113  | 4.988E-03  | 4.659E-02 | 8.016E-02 | 0.000E+00 | NOT IDENT. |
| IN-114M | -3.348E-02 | 2.222E-01 | 3.388E-01 | 0.000E+00 | NOT IDENT. |
| CD-115  | -7.201E+00 | 1.127E+01 | 1.816E+01 | 0.000E+00 | NOT IDENT. |
| SN-117M | -1.751E-02 | 6.386E-02 | 1.061E-01 | 0.000E+00 | NOT IDENT. |
| SB-122  | 9.950E-02  | 2.730E+00 | 3.976E+00 | 0.000E+00 | NOT IDENT. |
| I-123   | 0.000E+00  | 5.883E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TE-123M | -6.608E-04 | 3.281E-02 | 5.500E-02 | 0.000E+00 | NOT IDENT. |
| I-124   | 2.103E-01  | 7.876E-01 | 1.169E+00 | 0.000E+00 | NOT IDENT. |
| SB-124  | 1.446E-02  | 6.228E-02 | 1.078E-01 | 0.000E+00 | FAIL ABUN  |
| SB-125  | -3.495E-02 | 9.783E-02 | 1.632E-01 | 0.000E+00 | FAIL ABUN  |
| TE-125M | -1.170E+01 | 1.032E+01 | 1.676E+01 | 0.000E+00 | NOT IDENT. |
| I-126   | -4.582E-02 | 2.174E-01 | 3.052E-01 | 0.000E+00 | NOT IDENT. |
| SB-126  | 5.881E-02  | 1.683E-01 | 2.503E-01 | 0.000E+00 | FAIL ABUN  |
| SB-127  | -1.950E-01 | 1.418E+00 | 2.333E+00 | 0.000E+00 | NOT IDENT. |
| XE-127  | -5.797E-02 | 5.796E-02 | 8.419E-02 | 0.000E+00 | NOT IDENT. |
| I-131   | 8.353E-03  | 1.206E-01 | 2.078E-01 | 0.000E+00 | NOT IDENT. |
| TE-132  | 1.224E-01  | 7.244E-01 | 1.275E+00 | 0.000E+00 | NOT IDENT. |
| BA-133  | -1.725E-03 | 5.250E-02 | 7.806E-02 | 0.000E+00 | FAIL ABUN  |
| I-133   | 0.000E+00  | 6.005E+03 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-134  | 7.463E-02  | 7.577E-02 | 9.422E-02 | 0.000E+00 | FAIL ABUN  |
| CS-135  | 9.476E-02  | 1.943E-01 | 3.016E-01 | 0.000E+00 | NOT IDENT. |
| I-135   | 0.000E+00  | 4.893E+15 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-136  | -9.045E-02 | 1.230E-01 | 1.962E-01 | 0.000E+00 | NOT IDENT. |
| CE-139  | -2.747E-02 | 3.225E-02 | 5.212E-02 | 0.000E+00 | NOT IDENT. |
| BA-140  | 1.422E-01  | 2.719E-01 | 4.679E-01 | 0.000E+00 | NOT IDENT. |
| LA-140  | -5.065E-03 | 9.369E-02 | 1.419E-01 | 0.000E+00 | NOT IDENT. |
| CE-141  | 1.143E-02  | 6.938E-02 | 1.175E-01 | 0.000E+00 | NOT IDENT. |
| CE-143  | 0.000E+00  | 2.867E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CE-144  | 7.448E-02  | 2.591E-01 | 3.868E-01 | 0.000E+00 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PM-144  | -1.249E-02 | 3.996E-02 | 6.494E-02 | 0.000E+00 | NOT IDENT. |
| PR-144  | -8.463E-01 | 2.708E+00 | 4.400E+00 | 0.000E+00 | NOT IDENT. |
| PM-146  | 3.082E-02  | 4.584E-02 | 8.087E-02 | 0.000E+00 | NOT IDENT. |
| ND-147  | 6.890E-02  | 5.854E-01 | 9.946E-01 | 0.000E+00 | NOT IDENT. |
| PM-149  | 3.422E+01  | 9.462E+01 | 1.624E+02 | 0.000E+00 | NOT IDENT. |
| EU-152  | -1.083E-02 | 1.145E-01 | 1.697E-01 | 0.000E+00 | FAIL ABUN  |
| GD-153  | 1.070E-01  | 9.511E-02 | 1.486E-01 | 0.000E+00 | NOT IDENT. |
| EU-154  | -3.611E-02 | 1.399E-01 | 2.296E-01 | 0.000E+00 | NOT IDENT. |
| EU-155  | 1.443E-01  | 1.185E-01 | 2.090E-01 | 0.000E+00 | NOT IDENT. |
| TB-160  | -9.397E-02 | 1.452E-01 | 2.355E-01 | 0.000E+00 | FAIL ABUN  |
| HO-166M | 6.410E-03  | 6.845E-02 | 1.135E-01 | 0.000E+00 | FAIL ABUN  |
| TM-171  | -2.853E+01 | 3.221E+01 | 4.691E+01 | 0.000E+00 | NOT IDENT. |
| LU-176  | -1.294E-02 | 2.795E-02 | 4.265E-02 | 0.000E+00 | FAIL ABUN  |
| LU-177  | 0.000E+00  | 1.674E+00 | 2.279E+00 | 0.000E+00 | FAIL ABUN  |
| LU-177M | -2.754E-01 | 2.032E-01 | 3.210E-01 | 0.000E+00 | NOT IDENT. |
| HF-181  | -2.882E-02 | 4.554E-02 | 7.398E-02 | 0.000E+00 | NOT IDENT. |
| W-181   | 1.847E-01  | 4.152E-01 | 6.380E-01 | 0.000E+00 | NOT IDENT. |
| TA-182  | 1.595E-01  | 2.253E-01 | 3.984E-01 | 0.000E+00 | FAIL ABUN  |
| RE-183  | 7.970E-02  | 1.220E-01 | 2.094E-01 | 0.000E+00 | FAIL ABUN  |
| RE-184  | -2.600E-03 | 2.794E-01 | 4.233E-01 | 0.000E+00 | NOT IDENT. |
| OS-185  | -1.978E-02 | 4.453E-02 | 7.168E-02 | 0.000E+00 | NOT IDENT. |
| RE-188  | 2.072E-01  | 1.969E-01 | 3.423E-01 | 0.000E+00 | NOT IDENT. |
| W-188   | -3.582E+00 | 8.651E+00 | 1.267E+01 | 0.000E+00 | FAIL ABUN  |
| IR-192  | -1.305E-02 | 3.785E-02 | 6.431E-02 | 0.000E+00 | FAIL ABUN  |
| AU-195  | 3.448E-01  | 2.774E-01 | 4.349E-01 | 0.000E+00 | FAIL ABUN  |
| TL-200  | 0.000E+00  | 4.458E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TL-201  | -6.356E+00 | 7.455E+00 | 1.204E+01 | 0.000E+00 | NOT IDENT. |
| TL-202  | 5.764E-02  | 7.313E-02 | 1.300E-01 | 0.000E+00 | NOT IDENT. |
| HG-203  | 7.897E-02  | 4.855E-02 | 7.997E-02 | 0.000E+00 | NOT IDENT. |
| BI-207  | -2.909E-03 | 5.266E-02 | 8.897E-02 | 0.000E+00 | FAIL ABUN  |
| TL-207  | -1.160E+00 | 7.454E-01 | 1.150E+00 | 0.000E+00 | FAIL ABUN  |
| PO-209  | 2.022E+00  | 7.339E+00 | 1.287E+01 | 0.000E+00 | NOT IDENT. |
| PB-211  | -9.809E-02 | 1.058E+00 | 1.795E+00 | 0.000E+00 | NOT IDENT. |
| BI-212  | 0.000E+00  | 6.181E-01 | 7.803E-01 | 0.000E+00 | FAIL ABUN  |
| PO-215  | -1.160E+00 | 7.454E-01 | 1.150E+00 | 0.000E+00 | FAIL ABUN  |
| RN-219  | 1.751E-02  | 4.531E-01 | 7.757E-01 | 0.000E+00 | FAIL ABUN  |
| RN-220  | 9.590E+00  | 2.892E+01 | 4.971E+01 | 0.000E+00 | NOT IDENT. |
| RA-223  | -1.160E+00 | 7.454E-01 | 1.150E+00 | 0.000E+00 | FAIL ABUN  |
| AC-227  | -5.441E-02 | 4.240E-01 | 6.933E-01 | 0.000E+00 | FAIL ABUN  |
| TH-227  | -5.441E-02 | 4.241E-01 | 6.933E-01 | 0.000E+00 | FAIL ABUN  |
| TH-229  | -1.431E-01 | 5.551E-01 | 9.584E-01 | 0.000E+00 | FAIL ABUN  |
| PA-231  | -8.892E-01 | 1.855E+00 | 2.704E+00 | 0.000E+00 | FAIL ABUN  |
| TH-231  | -1.160E+00 | 7.454E-01 | 1.150E+00 | 0.000E+00 | FAIL ABUN  |
| U-231   | 1.139E+00  | 1.326E+00 | 2.046E+00 | 0.000E+00 | FAIL ABUN  |
| PA-233  | 2.111E-02  | 6.921E-02 | 1.212E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234  | 1.495E-01  | 3.335E-01 | 5.878E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234M | 3.496E+00  | 5.053E+00 | 9.047E+00 | 0.000E+00 | NOT IDENT. |
| U-235   | 1.210E-01  | 2.298E-01 | 3.929E-01 | 0.000E+00 | FAIL ABUN  |
| NP-236  | -2.364E-02 | 9.169E-02 | 1.523E-01 | 0.000E+00 | NOT IDENT. |
| NP-237  | 0.000E+00  | 4.084E-01 | 5.232E-01 | 0.000E+00 | NOT IDENT. |
| NP-239  | 2.079E-01  | 2.107E-01 | 3.688E-01 | 0.000E+00 | FAIL ABUN  |
| AM-241  | 1.342E-01  | 1.598E-01 | 2.489E-01 | 0.000E+00 | NOT IDENT. |
| CM-243  | 3.365E-02  | 1.076E-01 | 1.850E-01 | 0.000E+00 | FAIL ABUN  |
| AM-246  | 1.345E-01  | 1.580E-01 | 2.857E-01 | 0.000E+00 | NOT IDENT. |
| CM-247  | -3.397E-03 | 4.073E-02 | 6.927E-02 | 0.000E+00 | FAIL ABUN  |
| CF-249  | 1.333E-02  | 4.095E-02 | 7.131E-02 | 0.000E+00 | NOT IDENT. |
| CF-251  | 1.105E-01  | 1.428E-01 | 2.436E-01 | 0.000E+00 | NOT IDENT. |

# VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 14:30:09.97

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                          *
*****
Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630012.CNF;1
Sample date   : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 12:29:41
Sample ID     : G244630012           Sample quantity : 1.22660E+02 GRAM
Detector name : GAM14               Detector geometry: CAN
Elapsed live time: 0 02:00:00.00    Elapsed real time: 0 02:00:01.63 0.0%
Energy tolerance : 1.50000 keV      Analyst Initials : MXR1
Abundance limit : 75.00000          Sensitivity     : 5.00000
Batch ID      : 941639              Detector SN#    :
Matrix Spike ID :                    LCS ID          : 1032-A
*****

```

## Nuclide Line Activity Report

### Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| K-40    | 1460.81 | 1355  | 10.67* | 1.211E+00 | 3.211E+01               | 3.211E+01              | 9.25              |
| CD-109  | 88.03   | 330   | 3.72*  | 7.095E+00 | 3.822E+00               | 3.909E+00              | 41.42             |
| SN-126  | 64.28   | 112   | 9.60   | 4.646E+00 | 7.656E-01               | 7.656E-01              | 87.01             |
|         | 86.94   | 330   | 8.90   | 7.095E+00 | 1.597E+00               | 1.597E+00              | 57.89             |
|         | 87.57   | 330   | 37.00* | 7.095E+00 | 3.842E-01               | 3.842E-01              | 41.42             |
| BA-137M | 661.65  | 162   | 89.98* | 2.466E+00 | 2.229E-01               | 2.231E-01              | 42.31             |
| CS-137  | 661.65  | 162   | 85.12* | 2.466E+00 | 2.356E-01               | 2.358E-01              | 42.31             |
| TL-208  | 277.35  | 61    | 6.80   | 5.009E+00 | 5.501E-01               | 5.501E-01              | 122.84            |
|         | 510.84  | 184   | 21.60  | 3.090E+00 | 8.455E-01               | 8.455E-01              | 40.26             |
|         | 583.14  | 433   | 84.20* | 2.757E+00 | 5.704E-01               | 5.704E-01              | 16.00             |
|         | 860.37  | 73    | 12.46  | 1.943E+00 | 9.275E-01               | 9.275E-01              | 49.52             |
| BI-210  | 46.50   | 108   | 4.05*  | 1.798E+00 | 4.540E+00               | 4.546E+00              | 87.98             |
| PB-210  | 46.50   | 108   | 4.05*  | 1.798E+00 | 4.540E+00               | 4.546E+00              | 87.98             |
| PO-210  | 46.50   | 108   | 4.05*  | 1.798E+00 | 4.540E+00               | 4.546E+00              | 87.90             |
| BI-211  | 72.87   | ----- | 1.27   | 5.875E+00 | -----                   | Line Not Found         | -----             |
|         | 351.07  | 846   | 12.94* | 4.177E+00 | 4.792E+00               | 4.792E+00              | 11.04             |
| PB-212  | 74.81   | 706   | 10.70  | 6.088E+00 | 3.318E+00               | 3.318E+00              | 20.10             |
|         | 77.11   | 1038  | 18.00  | 6.313E+00 | 2.795E+00               | 2.795E+00              | 13.24             |
|         | 87.30   | 330   | 8.00   | 7.095E+00 | 1.777E+00               | 1.777E+00              | 42.61             |
|         | 238.63  | 1742  | 44.60* | 5.568E+00 | 2.147E+00               | 2.147E+00              | 9.37              |
|         | 300.09  | 68    | 3.41   | 4.721E+00 | 1.295E+00               | 1.295E+00              | 96.74             |
| PO-212  | 74.81   | 706   | 10.70  | 6.088E+00 | 3.318E+00               | 3.318E+00              | 20.10             |
|         | 77.11   | 1038  | 18.00  | 6.313E+00 | 2.795E+00               | 2.795E+00              | 13.24             |
|         | 87.30   | 330   | 8.00   | 7.095E+00 | 1.777E+00               | 1.777E+00              | 42.61             |
|         | 115.19  | ----- | 0.60   | 7.689E+00 | -----                   | Line Not Found         | -----             |
|         | 238.63  | 1742  | 44.60* | 5.568E+00 | 2.147E+00               | 2.147E+00              | 9.37              |
|         | 300.09  | 68    | 3.41   | 4.721E+00 | 1.295E+00               | 1.295E+00              | 96.74             |
| BI-214  | 609.31  | 516   | 46.30* | 2.655E+00 | 1.285E+00               | 1.285E+00              | 16.26             |
|         | 1120.29 | 150   | 15.10  | 1.523E+00 | 1.996E+00               | 1.996E+00              | 36.31             |
|         | 1764.49 | 109   | 15.80  | 1.059E+00 | 2.002E+00               | 2.002E+00              | 24.77             |
| PB-214  | 74.81   | 706   | 6.21   | 6.088E+00 | 5.718E+00               | 5.718E+00              | 19.28             |
|         | 77.11   | 1038  | 10.50  | 6.313E+00 | 4.792E+00               | 4.792E+00              | 15.27             |



Nuclide Type:

| Nuclide | Energy  | Area | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|------|--------|-----------|-------------------------|------------------------|-------------------|
| PO-214  | 87.30   | 330  | 4.67   | 7.095E+00 | 3.044E+00               | 3.044E+00              | 42.13             |
|         | 241.98  | 358  | 7.49   | 5.520E+00 | 2.653E+00               | 2.653E+00              | 22.54             |
|         | 295.21  | 472  | 19.20  | 4.777E+00 | 1.576E+00               | 1.576E+00              | 19.80             |
|         | 351.92  | 846  | 37.20* | 4.177E+00 | 1.667E+00               | 1.667E+00              | 12.21             |
|         | 74.81   | 706  | 6.21   | 6.088E+00 | 5.718E+00               | 5.718E+00              | 19.28             |
|         | 77.11   | 1038 | 10.50  | 6.313E+00 | 4.792E+00               | 4.792E+00              | 15.27             |
|         | 87.30   | 330  | 4.67   | 7.095E+00 | 3.044E+00               | 3.044E+00              | 42.13             |
|         | 241.98  | 358  | 7.49   | 5.520E+00 | 2.653E+00               | 2.653E+00              | 22.54             |
|         | 295.21  | 472  | 19.20  | 4.777E+00 | 1.576E+00               | 1.576E+00              | 19.80             |
|         | 351.92  | 846  | 37.20* | 4.177E+00 | 1.667E+00               | 1.667E+00              | 12.21             |
| PO-216  | 74.81   | 706  | 10.70  | 6.088E+00 | 3.318E+00               | 3.318E+00              | 20.10             |
|         | 77.11   | 1038 | 18.00  | 6.313E+00 | 2.795E+00               | 2.795E+00              | 13.24             |
|         | 87.30   | 330  | 8.00   | 7.095E+00 | 1.777E+00               | 1.777E+00              | 42.61             |
|         | 238.63  | 1742 | 44.60* | 5.568E+00 | 2.147E+00               | 2.147E+00              | 9.37              |
|         | 300.09  | 68   | 3.41   | 4.721E+00 | 1.295E+00               | 1.295E+00              | 96.74             |
| PO-218  | 74.81   | 706  | 6.21   | 6.088E+00 | 5.718E+00               | 5.718E+00              | 19.28             |
|         | 77.11   | 1038 | 10.50  | 6.313E+00 | 4.792E+00               | 4.792E+00              | 15.27             |
|         | 87.30   | 330  | 4.67   | 7.095E+00 | 3.044E+00               | 3.044E+00              | 42.13             |
|         | 241.98  | 358  | 7.49   | 5.520E+00 | 2.653E+00               | 2.653E+00              | 22.54             |
|         | 295.21  | 472  | 19.20  | 4.777E+00 | 1.576E+00               | 1.576E+00              | 19.80             |
| RA-224  | 351.92  | 846  | 37.20* | 4.177E+00 | 1.667E+00               | 1.667E+00              | 12.21             |
| RA-226  | 240.98  | 358  | 3.95*  | 5.520E+00 | 5.031E+00               | 5.031E+00              | 21.84             |
| AC-228  | 609.31  | 516  | 46.30* | 2.655E+00 | 1.285E+00               | 1.285E+00              | 16.26             |
|         | 1120.29 | 150  | 15.10  | 1.523E+00 | 1.996E+00               | 1.996E+00              | 36.31             |
|         | 1764.49 | 109  | 15.80  | 1.059E+00 | 2.002E+00               | 2.002E+00              | 24.77             |
|         | 338.32  | 364  | 11.40  | 4.304E+00 | 2.273E+00               | 2.273E+00              | 45.63             |
|         | 911.07  | 349  | 27.70* | 1.843E+00 | 2.092E+00               | 2.092E+00              | 19.61             |
| RA-228  | 969.11  | 206  | 16.60  | 1.741E+00 | 2.180E+00               | 2.180E+00              | 30.28             |
|         | 338.32  | 364  | 11.40  | 4.304E+00 | 2.273E+00               | 2.273E+00              | 45.63             |
|         | 911.07  | 349  | 27.70* | 1.843E+00 | 2.092E+00               | 2.092E+00              | 19.61             |
| TH-228  | 969.11  | 206  | 16.60  | 1.741E+00 | 2.180E+00               | 2.180E+00              | 30.28             |
|         | 74.81   | 706  | 10.70  | 6.088E+00 | 3.318E+00               | 3.368E+00              | 17.83             |
|         | 77.11   | 1038 | 18.00  | 6.313E+00 | 2.795E+00               | 2.838E+00              | 13.24             |
|         | 87.30   | 330  | 8.00   | 7.095E+00 | 1.777E+00               | 1.804E+00              | 41.42             |
|         | 238.63  | 1742 | 44.60* | 5.568E+00 | 2.147E+00               | 2.180E+00              | 9.37              |
| TH-230  | 300.09  | 68   | 3.41   | 4.721E+00 | 1.295E+00               | 1.314E+00              | 112.98            |
|         | 609.31  | 516  | 46.30* | 2.655E+00 | 1.285E+00               | 1.285E+00              | 16.26             |
|         | 1120.29 | 150  | 15.10  | 1.523E+00 | 1.996E+00               | 1.996E+00              | 36.31             |
|         | 1764.49 | 109  | 15.80  | 1.059E+00 | 2.002E+00               | 2.002E+00              | 24.77             |
|         | 338.32  | 364  | 11.40  | 4.304E+00 | 2.273E+00               | 2.273E+00              | 21.31             |
| TH-232  | 911.07  | 349  | 27.70* | 1.843E+00 | 2.092E+00               | 2.092E+00              | 19.61             |
|         | 969.11  | 206  | 16.60  | 1.741E+00 | 2.180E+00               | 2.180E+00              | 30.28             |
|         | 63.29   | 112  | 3.80*  | 4.646E+00 | 1.934E+00               | 1.934E+00              | 87.55             |
| U-234   | 92.38   | 358  | 5.41   | 7.329E+00 | 2.764E+00               | 2.764E+00              | 34.81             |
|         | 609.31  | 516  | 46.30* | 2.655E+00 | 1.285E+00               | 1.285E+00              | 16.26             |
|         | 1120.29 | 150  | 15.10  | 1.523E+00 | 1.996E+00               | 1.996E+00              | 36.31             |
| U-238   | 1764.49 | 109  | 15.80  | 1.059E+00 | 2.002E+00               | 2.002E+00              | 24.77             |
|         | 63.29   | 112  | 3.80*  | 4.646E+00 | 1.934E+00               | 1.934E+00              | 87.55             |
|         | 92.38   | 358  | 5.41   | 7.329E+00 | 2.764E+00               | 2.764E+00              | 30.97             |

Nuclide Type:

| Nuclide | Energy | Area  | %Abn    | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|--------|-------|---------|-----------|-------------------------|------------------------|-------------------|
| AM-243  | 74.67  | 706   | 66.00*  | 6.088E+00 | 5.380E-01               | 5.380E-01              | 17.80             |
|         | 86.72  | 330   | 0.34    | 7.095E+00 | 4.231E+01               | 4.231E+01              | 41.42             |
|         | 117.66 | ----- | 0.55    | 7.685E+00 | -----                   | Line Not Found         | -----             |
|         | 142.18 | ----- | 0.13    | 7.399E+00 | -----                   | Line Not Found         | -----             |
| ANH-511 | 511.00 | 184   | 100.00* | 3.090E+00 | 1.826E-01               | 1.826E-01              | 39.39             |

Flag: "\*" = Keyline

Total number of lines in spectrum 34  
Number of unidentified lines 1  
Number of lines tentatively identified by NID 33 97.06%

Nuclide Type :

| Nuclide | Hlife     | Decay | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | Decay Corr<br>2-Sigma Error | 2-Sigma<br>%Error | Flags |
|---------|-----------|-------|-------------------------|------------------------|-----------------------------|-------------------|-------|
| K-40    | 1.28E+09Y | 1.00  | 3.211E+01               | 3.211E+01              | 0.297E+01                   | 9.25              |       |
| CD-109  | 464.00D   | 1.02  | 3.822E+00               | 3.909E+00              | 1.619E+00                   | 41.42             |       |
| SN-126  | 1.00E+05Y | 1.00  | 3.842E-01               | 3.842E-01              | 1.591E-01                   | 41.42             |       |
| BA-137M | 30.17Y    | 1.00  | 2.229E-01               | 2.231E-01              | 0.944E-01                   | 42.31             |       |
| CS-137  | 30.17Y    | 1.00  | 2.356E-01               | 2.358E-01              | 0.998E-01                   | 42.31             |       |
| TL-208  | 1.41E+10Y | 1.00  | 5.704E-01               | 5.704E-01              | 0.912E-01                   | 16.00             |       |
| BI-210  | 22.26Y    | 1.00  | 4.540E+00               | 4.546E+00              | 4.000E+00                   | 87.98             |       |
| PB-210  | 22.26Y    | 1.00  | 4.540E+00               | 4.546E+00              | 4.000E+00                   | 87.98             |       |
| PO-210  | 22.26Y    | 1.00  | 4.540E+00               | 4.546E+00              | 3.996E+00                   | 87.90             |       |
| BI-211  | 7.04E+08Y | 1.00  | 4.792E+00               | 4.792E+00              | 0.529E+00                   | 11.04             |       |
| PB-212  | 1.41E+10Y | 1.00  | 2.147E+00               | 2.147E+00              | 0.201E+00                   | 9.37              |       |
| PO-212  | 1.41E+10Y | 1.00  | 2.147E+00               | 2.147E+00              | 0.201E+00                   | 9.37              |       |
| BI-214  | 1600.00Y  | 1.00  | 1.285E+00               | 1.285E+00              | 0.209E+00                   | 16.26             |       |
| PB-214  | 1600.00Y  | 1.00  | 1.667E+00               | 1.667E+00              | 0.204E+00                   | 12.21             |       |
| PO-214  | 1600.00Y  | 1.00  | 1.667E+00               | 1.667E+00              | 0.204E+00                   | 12.21             |       |
| PO-216  | 1.41E+10Y | 1.00  | 2.147E+00               | 2.147E+00              | 0.201E+00                   | 9.37              |       |
| PO-218  | 1600.00Y  | 1.00  | 1.667E+00               | 1.667E+00              | 0.204E+00                   | 12.21             |       |
| RA-224  | 1.41E+10Y | 1.00  | 5.031E+00               | 5.031E+00              | 1.099E+00                   | 21.84             |       |
| RA-226  | 1600.00Y  | 1.00  | 1.285E+00               | 1.285E+00              | 0.209E+00                   | 16.26             |       |
| AC-228  | 1.41E+10Y | 1.00  | 2.092E+00               | 2.092E+00              | 0.410E+00                   | 19.61             |       |
| RA-228  | 1.41E+10Y | 1.00  | 2.092E+00               | 2.092E+00              | 0.410E+00                   | 19.61             |       |
| TH-228  | 1.91Y     | 1.02  | 2.147E+00               | 2.180E+00              | 0.204E+00                   | 9.37              |       |
| TH-230  | 4.47E+09Y | 1.00  | 1.285E+00               | 1.285E+00              | 0.209E+00                   | 16.26             |       |
| TH-232  | 1.41E+10Y | 1.00  | 2.092E+00               | 2.092E+00              | 0.410E+00                   | 19.61             |       |
| TH-234  | 4.47E+09Y | 1.00  | 1.934E+00               | 1.934E+00              | 1.693E+00                   | 87.55             |       |
| U-234   | 4.47E+09Y | 1.00  | 1.285E+00               | 1.285E+00              | 0.209E+00                   | 16.26             |       |
| U-238   | 4.47E+09Y | 1.00  | 1.934E+00               | 1.934E+00              | 1.693E+00                   | 87.55             |       |
| AM-243  | 7380.00Y  | 1.00  | 5.380E-01               | 5.380E-01              | 0.957E-01                   | 17.80             |       |
| ANH-511 | 1.00E+09Y | 1.00  | 1.826E-01               | 1.826E-01              | 0.719E-01                   | 39.39             |       |

Total Activity : 9.038E+01 9.052E+01

Grand Total Activity : 9.038E+01 9.052E+01

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

Unidentified Energy Lines  
Sample ID : G244630012

Page : 5  
Acquisition date : 23-JAN-2010 12:29:41

| It | Energy  | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | %Eff     | Flags |
|----|---------|------|-------|------|---------|------|----|----------|------|----------|-------|
| 0  | 128.94  | 90   | 389   | 1.76 | 257.30  | 253  | 8  | 1.25E-02 | 78.9 | 7.60E+00 | T     |
| 0  | 185.65  | 210  | 442   | 1.48 | 370.61  | 366  | 11 | 2.91E-02 | 42.4 | 6.53E+00 | T     |
| 0  | 209.07  | 201  | 343   | 1.34 | 417.42  | 412  | 11 | 2.79E-02 | 38.7 | 6.08E+00 | T     |
| 0  | 270.68  | 154  | 307   | 1.77 | 540.53  | 534  | 14 | 2.13E-02 | 51.1 | 5.09E+00 | T     |
| 0  | 462.87  | 64   | 99    | 0.74 | 924.65  | 920  | 9  | 8.93E-03 | 61.1 | 3.35E+00 | T     |
| 0  | 569.83  | 124  | 142   | 3.20 | 1138.46 | 1132 | 13 | 1.72E-02 | 45.6 | 2.81E+00 | T     |
| 0  | 727.72  | 171  | 93    | 1.98 | 1454.14 | 1446 | 18 | 2.38E-02 | 31.0 | 2.27E+00 | T     |
| 0  | 796.12  | 39   | 84    | 2.08 | 1590.91 | 1582 | 13 | 5.36E-03 | **** | 2.09E+00 | T     |
| 0  | 935.08  | 28   | 47    | 1.70 | 1868.80 | 1864 | 11 | 3.82E-03 | **** | 1.80E+00 | T     |
| 1  | 965.37  | 52   | 48    | 2.08 | 1929.38 | 1920 | 28 | 7.21E-03 | 60.7 | 1.75E+00 | T     |
| 0  | 1588.91 | 29   | 19    | 1.76 | 3176.98 | 3172 | 11 | 3.97E-03 | 70.4 | 1.14E+00 |       |

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630012.CNF;1
* Acquisition date   : 23-JAN-2010 12:29:41  Detector SN#      :
* Detector ID        : GAM14                  Sensitivity       : 5.00000
* Geometry           : CAN                    Energy tolerance  : 1.50000
* Elapsed live time  : 0 02:00:00.00          Abundance limit    : 75.00000
* Elapsed real time  : 0 02:00:01.63          Half life ratio    : 8.00000
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 8-JAN-2010 12:00:00.  Nuclide Library   : SOLID
* Sample ID          : G244630012            Analyst initials: MXR1
* Batch Number       : 941639                Sample Quantity   : 1.22660E+02 GRAM
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 6-MAR-2009 11:43:06.61MS Isotope      :
* MSD ID              :                      MSD Isotope      :
* LCS ID              : 1032-A                LCS Isotope      :
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| K-40    | 3.211E+01              | 2.969E+00 | 5.681E-01         | 4.125E-02 | 56.519  |
| CD-109  | 3.909E+00              | 1.619E+00 | 1.488E+00         | 1.302E-01 | 2.626   |
| SN-126  | 3.842E-01              | 1.591E-01 | 1.468E-01         | 1.277E-02 | 2.617   |
| BA-137M | 2.231E-01              | 9.439E-02 | 5.950E-02         | 3.538E-03 | 3.749   |
| CS-137  | 2.358E-01              | 9.979E-02 | 6.290E-02         | 3.755E-03 | 3.749   |
| TL-208  | 5.704E-01              | 9.123E-02 | 6.192E-02         | 4.235E-03 | 9.211   |
| BI-210  | 4.546E+00              | 4.000E+00 | 3.998E+00         | 2.964E-01 | 1.137   |
| PB-210  | 4.546E+00              | 4.000E+00 | 3.998E+00         | 2.964E-01 | 1.137   |
| PO-210  | 4.546E+00              | 3.996E+00 | 3.998E+00         | 2.509E-01 | 1.137   |
| BI-211  | 4.792E+00              | 5.289E-01 | 3.489E-01         | 2.211E-02 | 13.732  |
| PB-212  | 2.147E+00              | 2.012E-01 | 9.902E-02         | 7.212E-03 | 21.686  |
| PO-212  | 2.147E+00              | 2.012E-01 | 9.902E-02         | 7.212E-03 | 21.686  |
| BI-214  | 1.285E+00              | 2.088E-01 | 1.204E-01         | 9.527E-03 | 10.673  |
| PB-214  | 1.667E+00              | 2.035E-01 | 1.237E-01         | 1.015E-02 | 13.471  |
| PO-214  | 1.667E+00              | 2.035E-01 | 1.237E-01         | 1.015E-02 | 13.471  |
| PO-216  | 2.147E+00              | 2.012E-01 | 9.902E-02         | 7.212E-03 | 21.686  |
| PO-218  | 1.667E+00              | 2.035E-01 | 1.237E-01         | 1.015E-02 | 13.471  |
| RA-224  | 5.031E+00              | 1.099E+00 | 1.126E+00         | 6.474E-02 | 4.467   |

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| RA-226  | 1.285E+00              | 2.088E-01 | 1.204E-01         | 9.527E-03 | 10.673  |
| AC-228  | 2.092E+00              | 4.103E-01 | 2.379E-01         | 2.794E-02 | 8.793   |
| RA-228  | 2.092E+00              | 4.103E-01 | 2.379E-01         | 2.794E-02 | 8.793   |
| TH-228  | 2.180E+00              | 2.043E-01 | 1.005E-01         | 7.321E-03 | 21.686  |
| TH-230  | 1.285E+00              | 2.088E-01 | 1.204E-01         | 9.527E-03 | 10.673  |
| TH-232  | 2.092E+00              | 4.103E-01 | 2.379E-01         | 2.794E-02 | 8.793   |
| TH-234  | 1.934E+00              | 1.693E+00 | 2.043E+00         | 3.512E-01 | 0.947   |
| U-234   | 1.285E+00              | 2.088E-01 | 1.204E-01         | 9.527E-03 | 10.673  |
| U-238   | 1.934E+00              | 1.693E+00 | 2.043E+00         | 3.512E-01 | 0.947   |
| AM-243  | 5.380E-01              | 9.575E-02 | 9.124E-02         | 6.847E-03 | 5.896   |
| ANH-511 | 1.826E-01              | 7.193E-02 | 4.751E-02         | 2.791E-03 | 3.844   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| BE-7    | 3.813E-01                          |              | 3.498E-01 | 6.101E-01         | 4.112E-02 | 0.625   |
| NA-22   | -1.252E-02                         |              | 5.114E-02 | 8.230E-02         | 5.376E-03 | -0.152  |
| NA-24   | -2.620E-01                         |              | 3.419E-01 | Half-Life         | too short |         |
| AL-26   | 2.436E-02                          |              | 3.004E-02 | 5.613E-02         | 3.254E-03 | 0.434   |
| TI-44   | 5.159E-01                          | +            | 6.829E-02 | 9.019E-02         | 7.042E-03 | 5.720   |
| SC-46   | 1.866E-02                          |              | 4.262E-02 | 7.372E-02         | 6.812E-03 | 0.253   |
| V-48    | -2.108E-02                         |              | 7.717E-02 | 1.255E-01         | 1.066E-02 | -0.168  |
| CR-51   | -2.944E-02                         |              | 4.008E-01 | 6.634E-01         | 4.286E-02 | -0.044  |
| MN-52   | 1.568E-01                          |              | 2.607E-01 | 4.573E-01         | 3.205E-02 | 0.343   |
| MN-54   | -3.997E-04                         |              | 4.187E-02 | 7.019E-02         | 5.887E-03 | -0.006  |
| CO-56   | 1.370E-02                          |              | 4.233E-02 | 7.269E-02         | 6.231E-03 | 0.188   |
| CO-57   | -2.432E-02                         |              | 2.872E-02 | 4.469E-02         | 3.179E-03 | -0.544  |
| CO-58   | -3.457E-02                         |              | 4.499E-02 | 6.717E-02         | 5.405E-03 | -0.515  |
| FE-59   | -1.127E-02                         |              | 9.948E-02 | 1.633E-01         | 1.257E-02 | -0.069  |
| CO-60   | 1.316E-02                          |              | 4.269E-02 | 7.244E-02         | 5.163E-03 | 0.182   |
| ZN-65   | 1.974E-02                          |              | 1.083E-01 | 1.578E-01         | 1.037E-02 | 0.125   |
| GE-68   | 8.869E-01                          |              | 1.394E+00 | 2.432E+00         | 1.748E-01 | 0.365   |
| AS-73   | 2.840E-01                          |              | 6.989E-01 | 1.157E+00         | 7.541E-02 | 0.245   |
| AS-74   | -3.032E-02                         |              | 9.928E-02 | 1.578E-01         | 9.437E-03 | -0.192  |
| SE-75   | -4.893E-03                         |              | 5.386E-02 | 7.692E-02         | 4.516E-03 | -0.064  |
| BR-77   | 1.307E+00                          |              | 1.112E+01 | 1.831E+01         | 1.079E+00 | 0.071   |
| SR-82   | -8.116E-02                         |              | 3.888E-01 | 6.131E-01         | 4.609E-02 | -0.132  |
| RB-83   | 2.954E-03                          |              | 7.514E-02 | 1.231E-01         | 7.257E-03 | 0.024   |
| RB-84   | 2.082E-02                          |              | 7.245E-02 | 1.241E-01         | 1.131E-02 | 0.168   |
| KR-85   | 2.160E+01                          |              | 8.671E+00 | 1.466E+01         | 8.619E-01 | 1.474   |
| SR-85   | 1.106E-01                          |              | 4.441E-02 | 7.506E-02         | 4.415E-03 | 1.474   |
| RB-86   | -1.523E-02                         |              | 8.550E-01 | 1.416E+00         | 1.020E-01 | -0.011  |
| Y-88    | -2.425E-03                         |              | 3.625E-02 | 5.774E-02         | 3.279E-03 | -0.042  |
| ZR-88   | 8.390E-03                          |              | 3.247E-02 | 5.435E-02         | 2.959E-03 | 0.154   |
| Y-91    | 9.058E+00                          |              | 2.117E+01 | 3.610E+01         | 2.100E+00 | 0.251   |
| NB-94   | 6.307E-03                          |              | 3.906E-02 | 6.380E-02         | 4.138E-03 | 0.099   |
| NB-95   | 3.430E-02                          |              | 4.988E-02 | 8.406E-02         | 6.190E-03 | 0.408   |

----- Non-Identified Nuclides -----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| NB-95M  | 7.594E-01                          |              | 1.817E-01 | 2.982E-01         | 2.229E-02 | 2.546   |
| ZR-95   | 9.314E-03                          |              | 7.676E-02 | 1.248E-01         | 1.030E-02 | 0.075   |
| NB-97   | 6.838E-02                          |              | 5.469E-02 | Half-Life         | too short |         |
| ZR-97   | 3.336E+00                          |              | 1.039E+00 | Half-Life         | too short |         |
| MO-99   | -3.471E+00                         |              | 1.348E+01 | 2.128E+01         | 3.047E+00 | -0.163  |
| TC-99M  | -5.340E+09                         |              | 1.687E+10 | Half-Life         | too short |         |
| RH-101  | 2.664E-02                          |              | 3.630E-02 | 6.154E-02         | 3.414E-03 | 0.433   |
| RH-102  | -2.784E-03                         |              | 3.156E-02 | 5.145E-02         | 2.973E-03 | -0.054  |
| RU-103  | -1.580E-02                         |              | 4.042E-02 | 6.420E-02         | 8.130E-03 | -0.246  |
| RH-106  | -5.935E-02                         |              | 3.489E-01 | 5.588E-01         | 6.609E-02 | -0.106  |
| RU-106  | -5.935E-02                         |              | 3.488E-01 | 5.588E-01         | 3.342E-02 | -0.106  |
| AG-108M | -2.246E-02                         |              | 3.467E-02 | 5.467E-02         | 3.358E-03 | -0.411  |
| AG-110M | 2.368E-02                          |              | 4.291E-02 | 6.352E-02         | 4.012E-03 | 0.373   |
| IN-111  | -1.309E+00                         |              | 1.094E+00 | 1.735E+00         | 9.997E-02 | -0.755  |
| IN-113M | 4.988E-03                          |              | 4.754E-02 | 7.892E-02         | 4.618E-03 | 0.063   |
| SN-113  | 4.988E-03                          |              | 4.754E-02 | 7.892E-02         | 4.618E-03 | 0.063   |
| IN-114M | -3.348E-02                         |              | 2.268E-01 | 3.305E-01         | 1.819E-02 | -0.101  |
| CD-115  | -7.201E+00                         |              | 1.150E+01 | 1.795E+01         | 1.061E+00 | -0.401  |
| SN-117M | -1.751E-02                         |              | 6.517E-02 | 1.032E-01         | 5.839E-03 | -0.170  |
| SB-122  | 9.950E-02                          |              | 2.785E+00 | 3.933E+00         | 2.345E-01 | 0.025   |
| I-123   | -1.185E-01                         |              | 3.001E+00 | Half-Life         | too short |         |
| TE-123M | -6.608E-04                         |              | 3.348E-02 | 5.353E-02         | 3.062E-03 | -0.012  |
| I-124   | 2.103E-01                          |              | 8.037E-01 | 1.157E+00         | 6.923E-02 | 0.182   |
| SB-124  | 1.446E-02                          |              | 6.355E-02 | 1.082E-01         | 7.316E-03 | 0.134   |
| SB-125  | -3.495E-02                         |              | 9.983E-02 | 1.608E-01         | 9.424E-03 | -0.217  |
| TE-125M | -1.170E+01                         |              | 1.053E+01 | 1.623E+01         | 1.524E+00 | -0.721  |
| I-126   | -4.582E-02                         |              | 2.219E-01 | 3.025E-01         | 1.817E-02 | -0.151  |
| SB-126  | 5.881E-02                          |              | 1.717E-01 | 2.484E-01         | 1.671E-02 | 0.237   |
| SB-127  | -1.950E-01                         |              | 1.447E+00 | 2.314E+00         | 2.240E-01 | -0.084  |
| XE-127  | -5.797E-02                         |              | 5.914E-02 | 8.219E-02         | 4.582E-03 | -0.705  |
| I-131   | 8.353E-03                          |              | 1.231E-01 | 2.044E-01         | 1.291E-02 | 0.041   |
| TE-132  | 1.224E-01                          |              | 7.392E-01 | 1.247E+00         | 1.783E-01 | 0.098   |
| BA-133  | -1.725E-03                         |              | 5.357E-02 | 7.675E-02         | 8.823E-03 | -0.022  |
| I-133   | -3.352E-03                         |              | 3.064E-03 | Half-Life         | too short |         |
| CS-134  | 7.463E-02                          | +            | 7.732E-02 | 9.362E-02         | 7.368E-03 | 0.797   |
| CS-135  | 9.476E-02                          |              | 1.982E-01 | 2.955E-01         | 2.267E-02 | 0.321   |
| I-135   | -1.180E+09                         |              | 2.496E+09 | Half-Life         | too short |         |
| CS-136  | -9.045E-02                         |              | 1.255E-01 | 1.957E-01         | 1.574E-02 | -0.462  |
| CE-139  | -2.747E-02                         |              | 3.291E-02 | 5.075E-02         | 2.725E-03 | -0.541  |
| BA-140  | 1.422E-01                          |              | 2.774E-01 | 4.625E-01         | 1.505E-01 | 0.307   |
| LA-140  | -5.065E-03                         |              | 9.560E-02 | 1.423E-01         | 9.435E-03 | -0.036  |
| CE-141  | 1.143E-02                          |              | 7.080E-02 | 1.142E-01         | 7.287E-03 | 0.100   |
| CE-143  | 1.046E-03                          |              | 1.463E-04 | Half-Life         | too short |         |
| CE-144  | 7.448E-02                          |              | 2.643E-01 | 3.756E-01         | 5.468E-02 | 0.198   |
| PM-144  | -1.249E-02                         |              | 4.078E-02 | 6.441E-02         | 4.127E-03 | -0.194  |
| PR-144  | -8.463E-01                         |              | 2.763E+00 | 4.365E+00         | 2.795E-01 | -0.194  |
| PM-146  | 3.082E-02                          |              | 4.678E-02 | 7.976E-02         | 6.828E-03 | 0.386   |
| ND-147  | 6.890E-02                          |              | 5.974E-01 | 9.830E-01         | 1.334E-01 | 0.070   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| PM-149  | 3.422E+01                          |              | 9.655E+01 | 1.592E+02           | 2.260E+01 | 0.215   |
| EU-152  | -1.083E-02                         |              | 1.168E-01 | 1.668E-01           | 1.079E-02 | -0.065  |
| GD-153  | 1.070E-01                          |              | 9.705E-02 | 1.437E-01           | 1.153E-02 | 0.744   |
| EU-154  | -3.611E-02                         |              | 1.428E-01 | 2.295E-01           | 2.251E-02 | -0.157  |
| EU-155  | 1.443E-01                          |              | 1.209E-01 | 2.024E-01           | 1.566E-02 | 0.713   |
| TB-160  | -9.397E-02                         |              | 1.481E-01 | 2.343E-01           | 2.128E-02 | -0.401  |
| HO-166M | 6.410E-03                          |              | 6.984E-02 | 1.126E-01           | 7.440E-03 | 0.057   |
| TM-171  | -2.853E+01                         |              | 3.287E+01 | 4.516E+01           | 3.149E+00 | -0.632  |
| LU-176  | -1.294E-02                         |              | 2.852E-02 | 4.186E-02           | 2.438E-03 | -0.309  |
| LU-177  | 4.364E+00                          | +            | 1.708E+00 | 2.226E+00           | 1.247E-01 | 1.961   |
| LU-177M | -2.754E-01                         |              | 2.074E-01 | 3.162E-01           | 1.753E-02 | -0.871  |
| HF-181  | -2.882E-02                         |              | 4.647E-02 | 7.303E-02           | 4.236E-03 | -0.395  |
| W-181   | 1.847E-01                          |              | 4.237E-01 | 6.141E-01           | 4.231E-02 | 0.301   |
| TA-182  | 1.595E-01                          |              | 2.299E-01 | 3.981E-01           | 2.381E-02 | 0.401   |
| RE-183  | 7.970E-02                          |              | 1.245E-01 | 2.039E-01           | 1.123E-02 | 0.391   |
| RE-184  | -2.600E-03                         |              | 2.851E-01 | 4.144E-01           | 2.397E-02 | -0.006  |
| OS-185  | -1.978E-02                         |              | 4.544E-02 | 7.103E-02           | 4.236E-03 | -0.279  |
| RE-188  | 2.072E-01                          |              | 2.009E-01 | 3.330E-01           | 1.930E-02 | 0.622   |
| W-188   | -3.582E+00                         |              | 8.828E+00 | 1.243E+01           | 7.250E-01 | -0.288  |
| IR-192  | -1.305E-02                         |              | 3.862E-02 | 6.314E-02           | 3.685E-03 | -0.207  |
| AU-195  | 3.448E-01                          |              | 2.831E-01 | 4.208E-01           | 3.339E-02 | 0.819   |
| TL-200  | -3.047E-05                         |              | 2.275E-04 | Half-Life too short |           |         |
| TL-201  | -6.356E+00                         |              | 7.607E+00 | 1.173E+01           | 6.299E-01 | -0.542  |
| TL-202  | 5.764E-02                          |              | 7.463E-02 | 1.281E-01           | 7.246E-03 | 0.450   |
| HG-203  | 7.897E-02                          |              | 4.954E-02 | 7.839E-02           | 4.850E-03 | 1.007   |
| BI-207  | -2.909E-03                         |              | 5.373E-02 | 8.874E-02           | 6.568E-03 | -0.033  |
| TL-207  | -1.160E+00                         |              | 7.606E-01 | 1.130E+00           | 1.866E-01 | -1.026  |
| PO-209  | 2.022E+00                          |              | 7.489E+00 | 1.281E+01           | 1.199E+00 | 0.158   |
| PB-211  | -9.809E-02                         |              | 1.079E+00 | 1.768E+00           | 1.102E+00 | -0.055  |
| BI-212  | 1.961E+00                          | +            | 6.307E-01 | 7.744E-01           | 6.588E-02 | 2.532   |
| PO-215  | -1.160E+00                         |              | 7.606E-01 | 1.130E+00           | 1.866E-01 | -1.026  |
| RN-219  | 1.751E-02                          |              | 4.623E-01 | 7.639E-01           | 1.030E-01 | 0.023   |
| RN-220  | 9.590E+00                          |              | 2.951E+01 | 4.915E+01           | 2.922E+00 | 0.195   |
| RA-223  | -1.160E+00                         |              | 7.606E-01 | 1.130E+00           | 1.866E-01 | -1.026  |
| AC-227  | -5.441E-02                         |              | 4.327E-01 | 6.788E-01           | 9.475E-02 | -0.080  |
| TH-227  | -5.441E-02                         |              | 4.327E-01 | 6.788E-01           | 1.147E-01 | -0.080  |
| TH-229  | -1.431E-01                         |              | 5.664E-01 | 9.351E-01           | 5.164E-02 | -0.153  |
| PA-231  | -8.892E-01                         |              | 1.893E+00 | 2.651E+00           | 3.657E-01 | -0.335  |
| TH-231  | -1.160E+00                         |              | 7.606E-01 | 1.130E+00           | 1.866E-01 | -1.026  |
| U-231   | 1.139E+00                          |              | 1.353E+00 | 1.979E+00           | 1.606E-01 | 0.576   |
| PA-233  | 2.111E-02                          |              | 7.063E-02 | 1.190E-01           | 7.348E-03 | 0.177   |
| PA-234  | 1.495E-01                          |              | 3.403E-01 | 5.854E-01           | 1.106E-01 | 0.255   |
| PA-234M | 3.496E+00                          |              | 5.156E+00 | 9.016E+00           | 8.716E-01 | 0.388   |
| U-235   | 1.210E-01                          |              | 2.345E-01 | 3.819E-01           | 6.287E-02 | 0.317   |
| NP-236  | -2.364E-02                         |              | 9.356E-02 | 1.482E-01           | 8.283E-03 | -0.159  |
| NP-237  | 1.228E+00                          |              | 4.167E-01 | 5.054E-01           | 1.130E-01 | 2.429   |
| NP-239  | 2.079E-01                          |              | 2.150E-01 | 3.575E-01           | 2.584E-02 | 0.582   |
| AM-241  | 1.342E-01                          |              | 1.630E-01 | 2.393E-01           | 1.777E-02 | 0.561   |



---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| CM-243  | 3.365E-02                          |              | 1.098E-01 | 1.791E-01         | 1.377E-02 | 0.188   |
| AM-246  | 1.345E-01                          |              | 1.612E-01 | 2.850E-01         | 2.042E-02 | 0.472   |
| CM-247  | -3.397E-03                         |              | 4.156E-02 | 6.822E-02         | 3.747E-03 | -0.050  |
| CF-249  | 1.333E-02                          |              | 4.178E-02 | 7.020E-02         | 3.838E-03 | 0.190   |
| CF-251  | 1.105E-01                          |              | 1.458E-01 | 2.374E-01         | 1.288E-02 | 0.466   |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*                                     DETECTOR DATA                          *
*                                     *                                       *
* Configuration      : SYS$SYSROOT:[ALPHA.ARCHIVE.GAMMA]G244630012          *
* Acquisition date   : 23-JAN-2010 12:29:41 Detector SN# :                  *
* Detector ID        : GAM14 Sensitivity      : 5.000                      *
* Geometry           : CAN Energy tolerance: 1.500                        *
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000             *
* Elapsed real time  : 0 02:00:01.63 Half life ratio : 8.000              *
*****
*                                     SAMPLE DATA                            *
*                                     *                                       *
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G244630012 Analyst initials: MXR1                 *
* Batch Number       : 941639 Sample Quantity : 1.2266E+02 GRAM          *
* Recovery           : 1.00000 Carrier Weight : 0.00000                  *
*****
*                                     QC DATA                               *
*                                     *                                       *
* CALIB. DATE/TIME   : 6-MAR-2009 11:43:06 MS Isotope :                   *
* MSD DPM             : 0.000 MSD Isotope :                               *
* LCS DPM             : 0.000 LCS Isotope :                               *
* LCSD DPM            : 0.000 LCSD Isotope :                               *
*****

```

## Combined Activity-MDA Report

### ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act Error | DLC<br>(pCi/GRAM ) | TPU       |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 3.211E+01               | 2.909E+00 | 2.838E-01          | 1.484E+00 |
| CD-109  | 3.909E+00               | 1.587E+00 | 7.708E-01          | 8.095E-01 |
| SN-126  | 3.842E-01               | 1.560E-01 | 7.603E-02          | 7.957E-02 |
| BA-137M | 2.231E-01               | 9.251E-02 | 3.003E-02          | 4.720E-02 |
| CS-137  | 2.358E-01               | 9.780E-02 | 3.175E-02          | 4.990E-02 |
| TL-208  | 5.704E-01               | 8.941E-02 | 3.131E-02          | 4.562E-02 |
| BI-210  | 4.546E+00               | 3.920E+00 | 2.087E+00          | 2.000E+00 |
| PB-210  | 4.546E+00               | 3.920E+00 | 2.087E+00          | 2.000E+00 |
| PO-210  | 4.546E+00               | 3.916E+00 | 2.087E+00          | 1.998E+00 |
| BI-211  | 4.792E+00               | 5.183E-01 | 1.776E-01          | 2.644E-01 |
| PB-212  | 2.147E+00               | 1.972E-01 | 5.064E-02          | 1.006E-01 |
| PO-212  | 2.147E+00               | 1.972E-01 | 5.064E-02          | 1.006E-01 |
| BI-214  | 1.285E+00               | 2.047E-01 | 6.081E-02          | 1.044E-01 |
| PB-214  | 1.667E+00               | 1.994E-01 | 6.296E-02          | 1.018E-01 |
| PO-214  | 1.667E+00               | 1.994E-01 | 6.296E-02          | 1.018E-01 |
| PO-216  | 2.147E+00               | 1.972E-01 | 5.064E-02          | 1.006E-01 |
| PO-218  | 1.667E+00               | 1.994E-01 | 6.296E-02          | 1.018E-01 |
| RA-224  | 5.031E+00               | 1.077E+00 | 5.759E-01          | 5.493E-01 |
| RA-226  | 1.285E+00               | 2.047E-01 | 6.081E-02          | 1.044E-01 |
| AC-228  | 2.092E+00               | 4.021E-01 | 1.196E-01          | 2.051E-01 |
| RA-228  | 2.092E+00               | 4.021E-01 | 1.196E-01          | 2.051E-01 |
| TH-228  | 2.180E+00               | 2.002E-01 | 5.140E-02          | 1.021E-01 |
| TH-230  | 1.285E+00               | 2.047E-01 | 6.081E-02          | 1.044E-01 |
| TH-232  | 2.092E+00               | 4.021E-01 | 1.196E-01          | 2.051E-01 |
| TH-234  | 1.934E+00               | 1.659E+00 | 1.062E+00          | 8.467E-01 |
| U-234   | 1.285E+00               | 2.047E-01 | 6.081E-02          | 1.044E-01 |
| U-238   | 1.934E+00               | 1.659E+00 | 1.062E+00          | 8.467E-01 |
| AM-243  | 5.380E-01               | 9.383E-02 | 4.734E-02          | 4.787E-02 |
| ANH-511 | 1.826E-01               | 7.049E-02 | 2.406E-02          | 3.597E-02 |

### ---- Non-Identified Nuclides ----

| Key-Line<br>Activity | K.L Act error | DLC | TPU |
|----------------------|---------------|-----|-----|
|----------------------|---------------|-----|-----|

| Nuclide | (pCi/GRAM ) |           | (pCi/GRAM ) |           |            |
|---------|-------------|-----------|-------------|-----------|------------|
| BE-7    | 3.813E-01   | 3.428E-01 | 3.093E-01   | 1.749E-01 | NOT IDENT. |
| NA-22   | -1.252E-02  | 5.011E-02 | 4.118E-02   | 2.557E-02 | NOT IDENT. |
| NA-24   | -2.620E+05  | 6.701E+05 | 0.000E+00   | 3.419E+05 | SHORT HLIF |
| AL-26   | 2.436E-02   | 2.944E-02 | 2.796E-02   | 1.502E-02 | NOT IDENT. |
| TI-44   | 5.159E-01   | 6.692E-02 | 4.677E-02   | 3.414E-02 | FAIL ABUN  |
| SC-46   | 1.866E-02   | 4.177E-02 | 3.707E-02   | 2.131E-02 | FAIL ABUN  |
| V-48    | -2.108E-02  | 7.563E-02 | 6.303E-02   | 3.858E-02 | NOT IDENT. |
| CR-51   | -2.944E-02  | 3.928E-01 | 3.380E-01   | 2.004E-01 | NOT IDENT. |
| MN-52   | 1.568E-01   | 2.555E-01 | 2.285E-01   | 1.304E-01 | FAIL ABUN  |
| MN-54   | -3.997E-04  | 4.103E-02 | 3.532E-02   | 2.093E-02 | NOT IDENT. |
| CO-56   | 1.370E-02   | 4.148E-02 | 3.657E-02   | 2.116E-02 | NOT IDENT. |
| CO-57   | -2.432E-02  | 2.815E-02 | 2.305E-02   | 1.436E-02 | NOT IDENT. |
| CO-58   | -3.457E-02  | 4.409E-02 | 3.382E-02   | 2.250E-02 | NOT IDENT. |
| FE-59   | -1.127E-02  | 9.749E-02 | 8.186E-02   | 4.974E-02 | NOT IDENT. |
| CO-60   | 1.316E-02   | 4.184E-02 | 3.623E-02   | 2.135E-02 | NOT IDENT. |
| ZN-65   | 1.974E-02   | 1.061E-01 | 7.909E-02   | 5.415E-02 | NOT IDENT. |
| GE-68   | 8.869E-01   | 1.367E+00 | 1.220E+00   | 6.972E-01 | NOT IDENT. |
| AS-73   | 2.840E-01   | 6.849E-01 | 6.028E-01   | 3.494E-01 | NOT IDENT. |
| AS-74   | -3.032E-02  | 9.729E-02 | 7.975E-02   | 4.964E-02 | NOT IDENT. |
| SE-75   | -4.893E-03  | 5.278E-02 | 3.929E-02   | 2.693E-02 | NOT IDENT. |
| BR-77   | 1.307E+00   | 1.090E+01 | 9.270E+00   | 5.559E+00 | FAIL ABUN  |
| SR-82   | -8.116E-02  | 3.810E-01 | 3.088E-01   | 1.944E-01 | NOT IDENT. |
| RB-83   | 2.954E-03   | 7.364E-02 | 6.233E-02   | 3.757E-02 | NOT IDENT. |
| RB-84   | 2.082E-02   | 7.100E-02 | 6.240E-02   | 3.622E-02 | NOT IDENT. |
| KR-85   | 2.160E+01   | 8.497E+00 | 7.421E+00   | 4.335E+00 | NOT IDENT. |
| SR-85   | 1.106E-01   | 4.352E-02 | 3.801E-02   | 2.221E-02 | NOT IDENT. |
| RB-86   | -1.523E-02  | 8.379E-01 | 7.103E-01   | 4.275E-01 | NOT IDENT. |
| Y-88    | -2.425E-03  | 3.552E-02 | 2.875E-02   | 1.812E-02 | NOT IDENT. |
| ZR-88   | 8.390E-03   | 3.182E-02 | 2.762E-02   | 1.623E-02 | NOT IDENT. |
| Y-91    | 9.058E+00   | 2.075E+01 | 1.808E+01   | 1.059E+01 | NOT IDENT. |
| NB-94   | 6.307E-03   | 3.828E-02 | 3.218E-02   | 1.953E-02 | NOT IDENT. |
| NB-95   | 3.430E-02   | 4.888E-02 | 4.235E-02   | 2.494E-02 | NOT IDENT. |
| NB-95M  | 7.594E-01   | 1.781E-01 | 1.525E-01   | 9.087E-02 | NOT IDENT. |
| ZR-95   | 9.314E-03   | 7.523E-02 | 6.289E-02   | 3.838E-02 | NOT IDENT. |
| NB-97   | 6.838E+04   | 1.072E+05 | 0.000E+00   | 5.469E+04 | SHORT HLIF |
| ZR-97   | 3.336E+06   | 2.037E+06 | 0.000E+00   | 1.039E+06 | SHORT HLIF |
| MO-99   | -3.471E+00  | 1.321E+01 | 1.072E+01   | 6.742E+00 | NOT IDENT. |
| TC-99M  | -5.340E+15  | 3.307E+16 | 0.000E+00   | 0.000E+00 | SHORT HLIF |
| RH-101  | 2.664E-02   | 3.558E-02 | 3.155E-02   | 1.815E-02 | NOT IDENT. |
| RH-102  | -2.784E-03  | 3.093E-02 | 2.608E-02   | 1.578E-02 | NOT IDENT. |
| RU-103  | -1.580E-02  | 3.961E-02 | 3.252E-02   | 2.021E-02 | FAIL ABUN  |
| RH-106  | -5.935E-02  | 3.419E-01 | 2.823E-01   | 1.744E-01 | FAIL ABUN  |
| RU-106  | -5.935E-02  | 3.419E-01 | 2.823E-01   | 1.744E-01 | FAIL ABUN  |
| AG-108M | -2.246E-02  | 3.398E-02 | 2.775E-02   | 1.734E-02 | NOT IDENT. |
| AG-110M | 2.368E-02   | 4.205E-02 | 3.206E-02   | 2.145E-02 | NOT IDENT. |
| IN-111  | -1.309E+00  | 1.072E+00 | 8.869E-01   | 5.469E-01 | NOT IDENT. |
| IN-113M | 4.988E-03   | 4.659E-02 | 4.011E-02   | 2.377E-02 | NOT IDENT. |
| SN-113  | 4.988E-03   | 4.659E-02 | 4.011E-02   | 2.377E-02 | NOT IDENT. |
| IN-114M | -3.348E-02  | 2.222E-01 | 1.695E-01   | 1.134E-01 | NOT IDENT. |
| CD-115  | -7.201E+00  | 1.127E+01 | 9.086E+00   | 5.749E+00 | NOT IDENT. |
| SN-117M | -1.751E-02  | 6.386E-02 | 5.306E-02   | 3.258E-02 | NOT IDENT. |
| SB-122  | 9.950E-02   | 2.730E+00 | 1.989E+00   | 1.393E+00 | NOT IDENT. |
| I-123   | -1.185E+05  | 5.883E+06 | 0.000E+00   | 3.001E+06 | SHORT HLIF |
| TE-123M | -6.608E-04  | 3.281E-02 | 2.752E-02   | 1.674E-02 | NOT IDENT. |
| I-124   | 2.103E-01   | 7.876E-01 | 5.848E-01   | 4.018E-01 | NOT IDENT. |
| SB-124  | 1.446E-02   | 6.228E-02 | 5.395E-02   | 3.178E-02 | FAIL ABUN  |
| SB-125  | -3.495E-02  | 9.783E-02 | 8.163E-02   | 4.991E-02 | FAIL ABUN  |
| TE-125M | -1.170E+01  | 1.032E+01 | 8.384E+00   | 5.266E+00 | NOT IDENT. |
| I-126   | -4.582E-02  | 2.174E-01 | 1.527E-01   | 1.109E-01 | NOT IDENT. |
| SB-126  | 5.881E-02   | 1.683E-01 | 1.252E-01   | 8.587E-02 | FAIL ABUN  |
| SB-127  | -1.950E-01  | 1.418E+00 | 1.167E+00   | 7.237E-01 | NOT IDENT. |
| XE-127  | -5.797E-02  | 5.796E-02 | 4.212E-02   | 2.957E-02 | NOT IDENT. |
| I-131   | 8.353E-03   | 1.206E-01 | 1.039E-01   | 6.154E-02 | NOT IDENT. |
| TE-132  | 1.224E-01   | 7.244E-01 | 6.380E-01   | 3.696E-01 | NOT IDENT. |
| BA-133  | -1.725E-03  | 5.250E-02 | 3.905E-02   | 2.679E-02 | FAIL ABUN  |
| I-133   | -3.352E+03  | 6.005E+03 | 0.000E+00   | 3.064E+03 | SHORT HLIF |
| CS-134  | 7.463E-02   | 7.577E-02 | 4.714E-02   | 3.866E-02 | FAIL ABUN  |
| CS-135  | 9.476E-02   | 1.943E-01 | 1.509E-01   | 9.911E-02 | NOT IDENT. |
| I-135   | -1.180E+15  | 4.893E+15 | 0.000E+00   | 2.496E+15 | SHORT HLIF |
| CS-136  | -9.045E-02  | 1.230E-01 | 9.816E-02   | 6.275E-02 | NOT IDENT. |
| CE-139  | -2.747E-02  | 3.225E-02 | 2.607E-02   | 1.646E-02 | NOT IDENT. |
| BA-140  | 1.422E-01   | 2.719E-01 | 2.341E-01   | 1.387E-01 | NOT IDENT. |
| LA-140  | -5.065E-03  | 9.369E-02 | 7.101E-02   | 4.780E-02 | NOT IDENT. |
| CE-141  | 1.143E-02   | 6.938E-02 | 5.876E-02   | 3.540E-02 | NOT IDENT. |
| CE-143  | 1.046E+03   | 2.867E+02 | 0.000E+00   | 1.463E+02 | SHORT HLIF |
| CE-144  | 7.448E-02   | 2.591E-01 | 1.935E-01   | 1.322E-01 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PM-144  | -1.249E-02 | 3.996E-02 | 3.249E-02 | 2.039E-02 | NOT IDENT. |
| PR-144  | -8.463E-01 | 2.708E+00 | 2.201E+00 | 1.382E+00 | NOT IDENT. |
| PM-146  | 3.082E-02  | 4.584E-02 | 4.046E-02 | 2.339E-02 | NOT IDENT. |
| ND-147  | 6.890E-02  | 5.854E-01 | 4.976E-01 | 2.987E-01 | NOT IDENT. |
| PM-149  | 3.422E+01  | 9.462E+01 | 8.125E+01 | 4.828E+01 | NOT IDENT. |
| EU-152  | -1.083E-02 | 1.145E-01 | 8.492E-02 | 5.841E-02 | FAIL ABUN  |
| GD-153  | 1.070E-01  | 9.511E-02 | 7.434E-02 | 4.852E-02 | NOT IDENT. |
| EU-154  | -3.611E-02 | 1.399E-01 | 1.149E-01 | 7.138E-02 | NOT IDENT. |
| EU-155  | 1.443E-01  | 1.185E-01 | 1.046E-01 | 6.047E-02 | NOT IDENT. |
| TB-160  | -9.397E-02 | 1.452E-01 | 1.178E-01 | 7.406E-02 | FAIL ABUN  |
| HO-166M | 6.410E-03  | 6.845E-02 | 5.678E-02 | 3.492E-02 | FAIL ABUN  |
| TM-171  | -2.853E+01 | 3.221E+01 | 2.347E+01 | 1.643E+01 | NOT IDENT. |
| LU-176  | -1.294E-02 | 2.795E-02 | 2.134E-02 | 1.426E-02 | FAIL ABUN  |
| LU-177  | 4.364E+00  | 1.674E+00 | 1.140E+00 | 8.542E-01 | FAIL ABUN  |
| LU-177M | -2.754E-01 | 2.032E-01 | 1.606E-01 | 1.037E-01 | NOT IDENT. |
| HF-181  | -2.882E-02 | 4.554E-02 | 3.701E-02 | 2.324E-02 | NOT IDENT. |
| W-181   | 1.847E-01  | 4.152E-01 | 3.192E-01 | 2.119E-01 | NOT IDENT. |
| TA-182  | 1.595E-01  | 2.253E-01 | 1.993E-01 | 1.149E-01 | FAIL ABUN  |
| RE-183  | 7.970E-02  | 1.220E-01 | 1.048E-01 | 6.225E-02 | FAIL ABUN  |
| RE-184  | -2.600E-03 | 2.794E-01 | 2.118E-01 | 1.425E-01 | NOT IDENT. |
| OS-185  | -1.978E-02 | 4.453E-02 | 3.586E-02 | 2.272E-02 | NOT IDENT. |
| RE-188  | 2.072E-01  | 1.969E-01 | 1.712E-01 | 1.005E-01 | NOT IDENT. |
| W-188   | -3.582E+00 | 8.651E+00 | 6.339E+00 | 4.414E+00 | FAIL ABUN  |
| IR-192  | -1.305E-02 | 3.785E-02 | 3.217E-02 | 1.931E-02 | FAIL ABUN  |
| AU-195  | 3.448E-01  | 2.774E-01 | 2.176E-01 | 1.415E-01 | FAIL ABUN  |
| TL-200  | -3.047E+01 | 4.458E+02 | 0.000E+00 | 2.275E+02 | SHORT HLIF |
| TL-201  | -6.356E+00 | 7.455E+00 | 6.024E+00 | 3.803E+00 | NOT IDENT. |
| TL-202  | 5.764E-02  | 7.313E-02 | 6.502E-02 | 3.731E-02 | NOT IDENT. |
| HG-203  | 7.897E-02  | 4.855E-02 | 4.001E-02 | 2.477E-02 | NOT IDENT. |
| BI-207  | -2.909E-03 | 5.266E-02 | 4.451E-02 | 2.687E-02 | FAIL ABUN  |
| TL-207  | -1.160E+00 | 7.454E-01 | 5.755E-01 | 3.803E-01 | FAIL ABUN  |
| PO-209  | 2.022E+00  | 7.339E+00 | 6.441E+00 | 3.745E+00 | NOT IDENT. |
| PB-211  | -9.809E-02 | 1.058E+00 | 8.979E-01 | 5.396E-01 | NOT IDENT. |
| BI-212  | 1.961E+00  | 6.181E-01 | 3.904E-01 | 3.153E-01 | FAIL ABUN  |
| PO-215  | -1.160E+00 | 7.454E-01 | 5.755E-01 | 3.803E-01 | FAIL ABUN  |
| RN-219  | 1.751E-02  | 4.531E-01 | 3.881E-01 | 2.312E-01 | FAIL ABUN  |
| RN-220  | 9.590E+00  | 2.892E+01 | 2.487E+01 | 1.476E+01 | NOT IDENT. |
| RA-223  | -1.160E+00 | 7.454E-01 | 5.755E-01 | 3.803E-01 | FAIL ABUN  |
| AC-227  | -5.441E-02 | 4.240E-01 | 3.468E-01 | 2.163E-01 | FAIL ABUN  |
| TH-227  | -5.441E-02 | 4.241E-01 | 3.468E-01 | 2.164E-01 | FAIL ABUN  |
| TH-229  | -1.431E-01 | 5.551E-01 | 4.795E-01 | 2.832E-01 | FAIL ABUN  |
| PA-231  | -8.892E-01 | 1.855E+00 | 1.353E+00 | 9.464E-01 | FAIL ABUN  |
| TH-231  | -1.160E+00 | 7.454E-01 | 5.755E-01 | 3.803E-01 | FAIL ABUN  |
| U-231   | 1.139E+00  | 1.326E+00 | 1.023E+00 | 6.763E-01 | FAIL ABUN  |
| PA-233  | 2.111E-02  | 6.921E-02 | 6.066E-02 | 3.531E-02 | FAIL ABUN  |
| PA-234  | 1.495E-01  | 3.335E-01 | 2.941E-01 | 1.701E-01 | FAIL ABUN  |
| PA-234M | 3.496E+00  | 5.053E+00 | 4.526E+00 | 2.578E+00 | NOT IDENT. |
| U-235   | 1.210E-01  | 2.298E-01 | 1.966E-01 | 1.173E-01 | FAIL ABUN  |
| NP-236  | -2.364E-02 | 9.169E-02 | 7.619E-02 | 4.678E-02 | NOT IDENT. |
| NP-237  | 1.228E+00  | 4.084E-01 | 2.618E-01 | 2.084E-01 | NOT IDENT. |
| NP-239  | 2.079E-01  | 2.107E-01 | 1.845E-01 | 1.075E-01 | FAIL ABUN  |
| AM-241  | 1.342E-01  | 1.598E-01 | 1.245E-01 | 8.151E-02 | NOT IDENT. |
| CM-243  | 3.365E-02  | 1.076E-01 | 9.257E-02 | 5.489E-02 | FAIL ABUN  |
| AM-246  | 1.345E-01  | 1.580E-01 | 1.430E-01 | 8.062E-02 | NOT IDENT. |
| CM-247  | -3.397E-03 | 4.073E-02 | 3.466E-02 | 2.078E-02 | FAIL ABUN  |
| CF-249  | 1.333E-02  | 4.095E-02 | 3.568E-02 | 2.089E-02 | NOT IDENT. |
| CF-251  | 1.105E-01  | 1.428E-01 | 1.219E-01 | 7.288E-02 | NOT IDENT. |

\*\*\*\*\*  
 \* GEL Laboratories LLC \*  
 \* 2040 SAVAGE ROAD \*  
 \* CHARLESTON ,SC 29417 \*  
 \* GAMMA SPECTROSCOPY BACKGROUND REPORT \*  
 \*\*\*\*\*

ENERGY MDA COUNTS

|       |          |
|-------|----------|
| 46.50 | 432.8472 |
| 46.50 | 432.8472 |
| 46.50 | 432.8472 |
| 48.70 | 446.6029 |
| 49.72 | 466.7130 |
| 51.35 | 490.4691 |
| 52.39 | 489.6782 |
| 52.97 | 472.6414 |
| 53.15 | 457.6701 |
| 53.44 | 464.9861 |
| 54.07 | 456.0849 |
| 56.28 | 561.9706 |
| 56.28 | 561.9722 |
| 57.37 | 0.0000   |
| 57.53 | 533.2998 |
| 57.53 | 533.3008 |
| 57.60 | 533.3394 |
| 57.98 | 541.7878 |
| 57.98 | 541.7878 |
| 59.32 | 524.4098 |
| 59.32 | 524.4098 |
| 59.40 | 524.4535 |
| 59.54 | 521.2313 |
| 59.72 | 521.3287 |
| 60.01 | 521.4849 |
| 61.10 | 591.4604 |
| 61.14 | 591.4844 |
| 61.30 | 591.5817 |
| 63.00 | 643.5035 |
| 63.29 | 637.4824 |
| 63.29 | 637.4824 |
| 63.58 | 611.1670 |
| 64.28 | 646.4017 |
| 65.12 | 663.5284 |
| 65.20 | 663.5815 |
| 65.20 | 663.5815 |
| 66.05 | 677.4191 |
| 66.72 | 696.1375 |
| 66.83 | 696.2142 |
| 66.91 | 689.6209 |
| 67.20 | 673.1938 |
| 67.20 | 673.1938 |
| 67.75 | 673.5523 |
| 67.85 | 673.6166 |
| 68.90 | 663.8929 |
| 68.90 | 663.8929 |
| 69.30 | 667.8936 |
| 69.67 | 669.7972 |
| 70.82 | 678.8658 |
| 70.82 | 678.8658 |
| 70.83 | 678.8707 |
| 72.80 | 710.2032 |
| 72.87 | 710.2486 |
| 72.87 | 710.2486 |
| 74.67 | 659.1179 |
| 74.81 | 659.2020 |
| 74.81 | 659.2020 |
| 74.81 | 659.2020 |
| 74.81 | 659.2020 |
| 74.81 | 659.2020 |
| 74.81 | 659.2020 |
| 74.81 | 659.2020 |
| 74.97 | 659.2982 |
| 75.28 | 659.4844 |
| 75.70 | 659.7355 |
| 77.11 | 660.5767 |
| 77.11 | 660.5767 |

|        |          |
|--------|----------|
| 77.11  | 660.5767 |
| 77.11  | 660.5767 |
| 77.11  | 660.5767 |
| 77.11  | 660.5767 |
| 77.11  | 660.5767 |
| 78.38  | 567.6910 |
| 79.62  | 569.9976 |
| 79.80  | 570.0886 |
| 79.80  | 570.0886 |
| 80.11  | 630.8007 |
| 80.18  | 630.8395 |
| 80.30  | 630.9059 |
| 80.30  | 630.9059 |
| 80.57  | 700.0500 |
| 81.00  | 711.2565 |
| 81.07  | 711.3003 |
| 81.07  | 711.3003 |
| 81.07  | 711.3003 |
| 81.07  | 711.3003 |
| 82.60  | 678.5309 |
| 83.37  | 635.3997 |
| 83.78  | 641.2500 |
| 83.78  | 641.2500 |
| 83.78  | 641.2500 |
| 83.78  | 641.2500 |
| 84.21  | 639.7985 |
| 84.90  | 626.6625 |
| 85.43  | 596.5256 |
| 86.29  | 629.0896 |
| 86.50  | 629.2009 |
| 86.54  | 629.2236 |
| 86.59  | 629.2485 |
| 86.72  | 690.2208 |
| 86.79  | 690.2581 |
| 86.94  | 690.3477 |
| 87.30  | 727.7902 |
| 87.30  | 727.7902 |
| 87.30  | 727.7902 |
| 87.30  | 727.7902 |
| 87.30  | 727.7902 |
| 87.30  | 727.7902 |
| 87.57  | 727.9556 |
| 87.88  | 728.1445 |
| 88.03  | 728.2338 |
| 88.36  | 728.4359 |
| 88.47  | 728.5015 |
| 89.95  | 686.9872 |
| 91.11  | 687.6398 |
| 92.29  | 688.2998 |
| 92.38  | 688.3517 |
| 92.38  | 688.3517 |
| 93.35  | 549.4115 |
| 94.00  | 498.6436 |
| 94.67  | 510.8276 |
| 94.67  | 510.8295 |
| 94.90  | 509.2198 |
| 94.90  | 509.2198 |
| 94.90  | 509.2198 |
| 94.90  | 509.2198 |
| 95.87  | 514.7272 |
| 95.87  | 514.7272 |
| 96.73  | 492.9069 |
| 97.43  | 433.4495 |
| 98.44  | 440.6235 |
| 98.44  | 440.6235 |
| 98.88  | 435.6494 |
| 99.55  | 455.8187 |
| 99.55  | 455.8187 |
| 99.86  | 475.0604 |
| 100.00 | 483.6626 |
| 100.10 | 483.7006 |
| 103.18 | 503.5148 |
| 103.76 | 465.1530 |
| 105.00 | 428.0410 |
| 105.31 | 424.9208 |
| 108.00 | 479.5337 |
| 109.28 | 497.2073 |

|        |          |
|--------|----------|
| 111.00 | 456.8856 |
| 111.00 | 456.8856 |
| 111.76 | 457.1379 |
| 112.95 | 449.9782 |
| 115.19 | 458.2669 |
| 116.30 | 451.0575 |
| 117.00 | 401.5001 |
| 117.00 | 401.5001 |
| 117.66 | 420.0931 |
| 121.11 | 458.0064 |
| 121.62 | 455.9976 |
| 121.78 | 462.5623 |
| 122.06 | 442.0169 |
| 122.32 | 437.7512 |
| 122.32 | 437.7512 |
| 122.32 | 437.7512 |
| 122.32 | 437.7512 |
| 123.07 | 398.4904 |
| 127.23 | 427.2277 |
| 129.76 | 436.6852 |
| 131.20 | 451.0906 |
| 133.02 | 409.6200 |
| 133.54 | 409.7571 |
| 135.34 | 440.4819 |
| 136.00 | 441.7651 |
| 136.25 | 447.3177 |
| 136.48 | 436.4208 |
| 140.51 | 438.6467 |
| 140.51 | 0.0000   |
| 142.18 | 424.8026 |
| 142.65 | 440.3412 |
| 143.76 | 400.9910 |
| 144.24 | 405.5182 |
| 144.24 | 405.5182 |
| 144.24 | 405.5182 |
| 144.24 | 405.5182 |
| 145.22 | 394.7390 |
| 145.44 | 417.9519 |
| 147.16 | 466.9711 |
| 152.43 | 445.2204 |
| 152.70 | 445.2940 |
| 153.22 | 452.0803 |
| 154.21 | 415.7639 |
| 154.21 | 415.7639 |
| 154.21 | 415.7639 |
| 154.21 | 415.7639 |
| 155.03 | 404.8773 |
| 156.02 | 407.3366 |
| 158.56 | 441.2972 |
| 159.00 | 0.0000   |
| 159.00 | 422.5105 |
| 160.31 | 426.1734 |
| 161.27 | 382.9950 |
| 162.32 | 373.2022 |
| 162.64 | 373.2713 |
| 163.35 | 374.5419 |
| 163.89 | 367.9669 |
| 165.85 | 386.2459 |
| 167.43 | 386.5970 |
| 171.28 | 348.2497 |
| 171.86 | 386.4483 |
| 172.10 | 386.5010 |
| 176.55 | 344.7871 |
| 176.60 | 344.7965 |
| 181.06 | 396.3062 |
| 184.41 | 360.9351 |
| 185.71 | 372.0246 |
| 186.00 | 372.0825 |
| 190.27 | 380.1713 |
| 192.34 | 367.6414 |
| 193.63 | 375.4048 |
| 197.04 | 345.1891 |
| 198.01 | 339.9088 |
| 198.60 | 352.7404 |
| 200.40 | 357.6170 |
| 201.83 | 365.3912 |
| 202.84 | 394.8110 |
| 205.31 | 316.2466 |

|        |          |
|--------|----------|
| 208.36 | 353.2794 |
| 208.81 | 327.1623 |
| 209.75 | 304.7628 |
| 209.75 | 304.7628 |
| 210.97 | 311.0469 |
| 215.65 | 317.5001 |
| 216.55 | 304.5670 |
| 218.09 | 292.8612 |
| 222.10 | 311.8308 |
| 223.80 | 318.5295 |
| 226.40 | 303.2567 |
| 227.00 | 317.1733 |
| 227.08 | 317.1859 |
| 227.20 | 317.2027 |
| 228.16 | 314.5800 |
| 228.18 | 314.5841 |
| 228.18 | 314.5841 |
| 231.56 | 0.0000   |
| 235.69 | 328.6567 |
| 236.00 | 345.6797 |
| 236.00 | 345.6797 |
| 238.63 | 298.5123 |
| 238.63 | 298.5123 |
| 238.63 | 298.5123 |
| 238.63 | 298.5123 |
| 239.00 | 298.5634 |
| 240.98 | 298.8366 |
| 241.98 | 298.9742 |
| 241.98 | 298.9742 |
| 241.98 | 298.9742 |
| 244.69 | 299.3437 |
| 245.39 | 299.4400 |
| 247.94 | 299.7859 |
| 248.90 | 299.9156 |
| 249.79 | 300.0355 |
| 252.40 | 244.1019 |
| 252.85 | 255.0372 |
| 252.85 | 255.0372 |
| 254.15 | 0.0000   |
| 256.20 | 259.3102 |
| 256.20 | 259.3102 |
| 260.50 | 255.5876 |
| 260.90 | 250.9523 |
| 262.80 | 261.3630 |
| 264.65 | 236.0419 |
| 268.24 | 264.5886 |
| 268.79 | 256.8239 |
| 269.46 | 242.7993 |
| 269.46 | 242.7993 |
| 269.46 | 242.7993 |
| 269.46 | 242.7993 |
| 271.23 | 236.7117 |
| 273.65 | 273.0503 |
| 276.40 | 273.3689 |
| 277.35 | 220.0374 |
| 277.60 | 220.0631 |
| 277.60 | 220.0631 |
| 278.00 | 220.1001 |
| 278.60 | 220.1542 |
| 279.20 | 207.6277 |
| 279.53 | 215.5202 |
| 280.46 | 223.4726 |
| 281.68 | 245.6321 |
| 283.67 | 237.9559 |
| 284.30 | 252.2038 |
| 285.00 | 228.4023 |
| 285.90 | 213.4655 |
| 286.10 | 205.3845 |
| 286.10 | 205.3845 |
| 287.40 | 205.6310 |
| 288.45 | 0.0000   |
| 290.67 | 229.1615 |
| 290.80 | 229.1733 |
| 291.72 | 237.1643 |
| 293.26 | 0.0000   |
| 293.70 | 197.7971 |
| 295.21 | 197.9192 |
| 295.21 | 197.9192 |



|        |          |
|--------|----------|
| 295.21 | 197.9192 |
| 295.96 | 256.5791 |
| 296.50 | 256.6351 |
| 297.23 | 256.7109 |
| 298.57 | 256.8527 |
| 299.80 | 256.9779 |
| 299.80 | 256.9779 |
| 300.09 | 199.8948 |
| 300.09 | 199.8948 |
| 300.09 | 199.8948 |
| 300.09 | 199.8948 |
| 300.12 | 199.8973 |
| 301.29 | 193.6432 |
| 302.84 | 163.5863 |
| 303.76 | 166.8246 |
| 303.91 | 187.4887 |
| 304.40 | 203.4193 |
| 304.40 | 203.4193 |
| 304.84 | 211.4005 |
| 306.84 | 205.8871 |
| 308.46 | 207.2467 |
| 311.98 | 206.5790 |
| 316.51 | 223.2300 |
| 318.01 | 221.4436 |
| 319.02 | 198.5123 |
| 319.41 | 195.6652 |
| 320.08 | 202.4307 |
| 323.87 | 253.6488 |
| 323.87 | 253.6488 |
| 323.87 | 253.6488 |
| 323.87 | 253.6488 |
| 325.23 | 248.0132 |
| 328.77 | 205.0307 |
| 333.44 | 233.0349 |
| 334.20 | 212.2039 |
| 334.20 | 212.2039 |
| 334.30 | 212.2119 |
| 338.28 | 195.1376 |
| 338.28 | 195.1376 |
| 338.28 | 195.1376 |
| 338.28 | 195.1376 |
| 338.32 | 195.1426 |
| 338.32 | 195.1426 |
| 338.32 | 195.1426 |
| 340.50 | 165.9731 |
| 340.57 | 165.9773 |
| 344.27 | 177.4990 |
| 345.85 | 180.8311 |
| 350.59 | 0.0000   |
| 351.07 | 176.3244 |
| 351.92 | 182.5289 |
| 351.92 | 182.5289 |
| 351.92 | 182.5289 |
| 355.39 | 0.0000   |
| 356.01 | 179.8804 |
| 364.48 | 164.8224 |
| 366.43 | 177.6255 |
| 367.43 | 169.8773 |
| 367.94 | 0.0000   |
| 369.80 | 157.3170 |
| 374.96 | 161.5175 |
| 383.85 | 164.9607 |
| 387.95 | 147.4933 |
| 388.63 | 163.2644 |
| 391.69 | 155.5583 |
| 391.69 | 155.5583 |
| 392.90 | 148.7273 |
| 398.62 | 179.6073 |
| 400.65 | 156.0289 |
| 401.10 | 157.0397 |
| 401.81 | 170.9072 |
| 402.60 | 173.9182 |
| 404.84 | 184.9250 |
| 410.95 | 159.5358 |
| 411.60 | 161.5535 |
| 413.65 | 208.2748 |
| 414.70 | 192.4725 |
| 415.30 | 177.6256 |

|        |          |
|--------|----------|
| 415.76 | 169.7142 |
| 417.63 | 0.0000   |
| 418.52 | 149.9991 |
| 423.70 | 141.2962 |
| 427.08 | 144.4371 |
| 427.89 | 149.4580 |
| 432.53 | 130.7202 |
| 433.93 | 143.7557 |
| 439.47 | 125.0076 |
| 439.56 | 125.0122 |
| 439.89 | 117.0229 |
| 443.98 | 146.2174 |
| 444.90 | 146.2584 |
| 445.03 | 146.2655 |
| 445.03 | 146.2655 |
| 445.03 | 146.2655 |
| 445.03 | 146.2655 |
| 453.90 | 120.5493 |
| 463.38 | 137.6927 |
| 468.07 | 117.7106 |
| 473.00 | 159.6510 |
| 475.06 | 127.3966 |
| 475.35 | 131.4520 |
| 476.78 | 116.3336 |
| 477.59 | 109.2788 |
| 477.96 | 94.1125  |
| 482.03 | 135.7666 |
| 484.57 | 114.5767 |
| 487.03 | 102.4832 |
| 490.36 | 0.0000   |
| 492.35 | 98.5796  |
| 497.08 | 105.8395 |
| 507.63 | 0.0000   |
| 510.53 | 0.0000   |
| 510.84 | 106.2617 |
| 511.00 | 106.2667 |
| 511.85 | 106.2921 |
| 511.85 | 106.2921 |
| 513.99 | 93.7440  |
| 513.99 | 93.7440  |
| 520.41 | 113.7235 |
| 520.65 | 113.7316 |
| 527.90 | 122.1784 |
| 528.96 | 0.0000   |
| 529.64 | 117.1005 |
| 529.87 | 0.0000   |
| 531.02 | 105.8416 |
| 537.32 | 97.7925  |
| 543.00 | 116.5037 |
| 546.56 | 0.0000   |
| 549.76 | 111.5569 |
| 552.65 | 123.0151 |
| 555.20 | 111.7230 |
| 563.23 | 129.5898 |
| 563.90 | 133.0675 |
| 568.70 | 140.1614 |
| 569.32 | 121.4932 |
| 569.50 | 121.4989 |
| 569.67 | 121.5046 |
| 573.80 | 109.1631 |
| 574.00 | 109.1682 |
| 574.64 | 107.4530 |
| 578.91 | 95.4309  |
| 579.30 | 0.0000   |
| 583.14 | 102.1368 |
| 585.48 | 99.0704  |
| 591.81 | 91.9230  |
| 592.07 | 96.1081  |
| 593.00 | 105.5346 |
| 595.88 | 108.7506 |
| 600.56 | 104.6948 |
| 602.52 | 0.0000   |
| 602.71 | 103.0075 |
| 602.71 | 103.0075 |
| 603.60 | 103.0315 |
| 604.41 | 110.0398 |
| 604.70 | 115.2878 |
| 609.31 | 108.0796 |

|        |          |
|--------|----------|
| 609.31 | 108.0796 |
| 609.31 | 108.0796 |
| 609.31 | 108.0796 |
| 610.33 | 108.1073 |
| 612.46 | 117.2664 |
| 614.37 | 108.5681 |
| 618.01 | 99.3212  |
| 621.84 | 100.0028 |
| 621.84 | 100.0028 |
| 631.29 | 83.3570  |
| 633.02 | 95.0032  |
| 633.10 | 95.0054  |
| 634.78 | 95.0449  |
| 635.90 | 98.2403  |
| 636.97 | 89.8145  |
| 645.85 | 92.1295  |
| 646.12 | 93.1949  |
| 656.30 | 100.8586 |
| 657.75 | 83.1928  |
| 657.90 | 0.0000   |
| 661.65 | 86.1080  |
| 661.65 | 86.1080  |
| 664.57 | 0.0000   |
| 666.33 | 94.0094  |
| 666.33 | 94.0094  |
| 675.00 | 88.5158  |
| 677.61 | 87.5054  |
| 685.20 | 88.7326  |
| 692.80 | 89.9616  |
| 695.00 | 120.0117 |
| 696.49 | 115.7651 |
| 696.49 | 115.7651 |
| 697.00 | 99.6980  |
| 697.49 | 98.6372  |
| 698.33 | 99.7298  |
| 698.50 | 99.7343  |
| 699.00 | 95.4555  |
| 702.63 | 105.1969 |
| 706.10 | 111.7264 |
| 706.58 | 0.0000   |
| 706.67 | 104.2205 |
| 709.31 | 101.0592 |
| 711.68 | 87.1304  |
| 713.82 | 103.3172 |
| 717.42 | 89.3993  |
| 720.50 | 75.4500  |
| 721.93 | 0.0000   |
| 722.20 | 82.6693  |
| 722.78 | 80.8813  |
| 722.78 | 80.8813  |
| 722.89 | 80.8850  |
| 722.95 | 80.8850  |
| 723.30 | 84.4875  |
| 724.18 | 88.1007  |
| 727.18 | 78.8047  |
| 733.00 | 90.0777  |
| 735.90 | 82.9258  |
| 739.58 | 99.5940  |
| 742.81 | 88.8327  |
| 744.21 | 86.6934  |
| 747.13 | 101.9312 |
| 751.79 | 85.7543  |
| 752.31 | 77.0790  |
| 753.82 | 74.9331  |
| 755.35 | 80.3901  |
| 756.15 | 78.2314  |
| 756.87 | 61.9430  |
| 763.93 | 121.9039 |
| 765.79 | 96.9092  |
| 766.42 | 94.7442  |
| 766.84 | 95.8418  |
| 776.49 | 72.0328  |
| 778.00 | 90.6171  |
| 778.57 | 94.9948  |
| 778.89 | 96.0953  |
| 783.80 | 64.4952  |
| 785.46 | 65.6118  |
| 792.07 | 89.4326  |

|         |          |
|---------|----------|
| 795.84  | 63.9317  |
| 796.30  | 58.4583  |
| 798.80  | 67.6286  |
| 801.93  | 100.3348 |
| 805.60  | 70.2891  |
| 810.29  | 93.4460  |
| 810.76  | 89.0565  |
| 815.85  | 63.2865  |
| 817.79  | 58.7253  |
| 818.51  | 60.5698  |
| 819.60  | 78.9418  |
| 826.30  | 65.2639  |
| 828.27  | 0.0000   |
| 831.60  | 90.1823  |
| 831.96  | 90.1902  |
| 834.83  | 91.1629  |
| 836.80  | 0.0000   |
| 846.75  | 70.1568  |
| 848.13  | 67.4068  |
| 856.28  | 0.0000   |
| 856.80  | 57.0862  |
| 860.37  | 66.6489  |
| 867.32  | 74.6882  |
| 867.82  | 69.9286  |
| 871.10  | 85.3478  |
| 873.19  | 68.6779  |
| 874.81  | 66.8438  |
| 875.33  | 0.0000   |
| 876.40  | 65.9370  |
| 879.36  | 74.3392  |
| 880.27  | 67.8464  |
| 880.51  | 67.8494  |
| 881.50  | 60.4257  |
| 883.24  | 69.7464  |
| 884.67  | 66.9756  |
| 889.25  | 64.2439  |
| 896.60  | 56.8785  |
| 898.02  | 72.7489  |
| 899.00  | 76.4946  |
| 903.28  | 59.7539  |
| 911.07  | 72.9362  |
| 911.07  | 72.9362  |
| 911.07  | 72.9362  |
| 919.63  | 73.8612  |
| 920.93  | 76.4485  |
| 925.00  | 61.8831  |
| 925.24  | 62.8234  |
| 926.50  | 70.3415  |
| 935.52  | 60.1289  |
| 937.48  | 40.2806  |
| 944.10  | 69.6385  |
| 946.00  | 66.8398  |
| 949.00  | 69.7032  |
| 962.29  | 72.8472  |
| 964.01  | 54.7880  |
| 966.15  | 54.8092  |
| 968.20  | 54.8305  |
| 969.11  | 54.8399  |
| 969.11  | 54.8399  |
| 969.11  | 54.8399  |
| 977.42  | 45.4551  |
| 980.50  | 59.6944  |
| 983.50  | 68.2603  |
| 989.30  | 74.9770  |
| 996.32  | 77.9260  |
| 1001.03 | 64.6769  |
| 1001.68 | 66.5870  |
| 1004.76 | 59.9623  |
| 1021.30 | 0.0000   |
| 1024.50 | 0.0000   |
| 1034.80 | 51.6753  |
| 1036.00 | 51.6863  |
| 1037.82 | 61.2786  |
| 1038.57 | 66.0745  |
| 1038.76 | 0.0000   |
| 1045.16 | 60.4006  |
| 1046.59 | 65.2109  |
| 1048.07 | 81.5344  |

|         |          |
|---------|----------|
| 1050.47 | 65.2552  |
| 1050.47 | 65.2552  |
| 1062.04 | 58.6569  |
| 1063.62 | 56.7505  |
| 1076.63 | 62.6646  |
| 1077.35 | 58.8158  |
| 1078.86 | 57.8662  |
| 1085.78 | 62.7651  |
| 1099.22 | 65.8141  |
| 1112.02 | 65.9580  |
| 1112.84 | 68.3915  |
| 1115.52 | 63.2238  |
| 1120.29 | 67.0206  |
| 1120.29 | 67.0206  |
| 1120.29 | 67.0206  |
| 1120.29 | 67.0206  |
| 1120.51 | 67.0234  |
| 1121.28 | 67.0319  |
| 1124.00 | 0.0000   |
| 1129.67 | 63.3749  |
| 1131.51 | 0.0000   |
| 1147.95 | 0.0000   |
| 1167.94 | 72.4523  |
| 1173.22 | 67.6158  |
| 1175.09 | 59.7962  |
| 1177.93 | 75.5149  |
| 1189.05 | 70.7402  |
| 1204.90 | 71.9069  |
| 1205.75 | 0.0000   |
| 1213.00 | 92.7110  |
| 1221.42 | 77.0352  |
| 1230.97 | 73.1960  |
| 1235.34 | 100.9624 |
| 1236.41 | 0.0000   |
| 1238.25 | 79.2220  |
| 1246.25 | 57.5091  |
| 1260.41 | 0.0000   |
| 1271.85 | 55.7493  |
| 1274.45 | 65.7314  |
| 1274.54 | 65.7314  |
| 1291.56 | 47.9297  |
| 1298.22 | 0.0000   |
| 1312.09 | 42.0701  |
| 1325.50 | 41.1518  |
| 1325.50 | 41.1518  |
| 1332.49 | 38.1809  |
| 1333.61 | 39.1936  |
| 1360.21 | 44.3939  |
| 1362.66 | 0.0000   |
| 1365.15 | 39.3777  |
| 1368.21 | 31.3141  |
| 1368.53 | 0.0000   |
| 1376.25 | 18.2043  |
| 1384.27 | 38.4762  |
| 1394.10 | 39.5459  |
| 1395.20 | 36.5098  |
| 1407.95 | 39.6252  |
| 1434.06 | 27.5361  |
| 1436.60 | 36.7280  |
| 1457.56 | 0.0000   |
| 1460.81 | 26.6168  |
| 1489.15 | 23.6392  |
| 1509.49 | 22.6750  |
| 1596.49 | 23.6379  |
| 1620.62 | 13.6004  |
| 1678.03 | 0.0000   |
| 1691.02 | 9.5013   |
| 1691.02 | 9.5013   |
| 1706.46 | 0.0000   |
| 1750.46 | 0.0000   |
| 1764.49 | 13.8511  |
| 1764.49 | 13.8511  |
| 1764.49 | 13.8511  |
| 1764.49 | 13.8511  |
| 1770.23 | 3.6556   |
| 1771.40 | 5.4842   |
| 1791.20 | 0.0000   |
| 1808.65 | 8.5700   |

1836.01

15.0465

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G244630012

|                             |            |      |
|-----------------------------|------------|------|
| Total Uranium Activity      | 5.8103E+00 | ug/g |
| Total Uranium Counting Unc. | 4.9381E+00 | ug/g |
| Total Uranium Tpu           | 2.5195E-06 | ug/g |
| Total Uranium Mda           | 3.1621E+00 | ug/g |

```

*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON ,SC 29417                *
*               GROSS GAMMA REPORT                  *
*
*****
*
*  BATCH ID      : 941639                          SAMPLE ID   : G244630012
*  ANALYST       : MXR1                             DETECTOR    : GAM14
*  SAMPLE DATE   : 8-JAN-2010 12:00:00.00          COUNT TIME   : 0 02:00:00.00
*  ANALYSIS DATE : 23-JAN-2010 12:29:41.54          SAMPLE ALQT  : 122.660 GRAM
*
*****

```

```

GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.141E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.673E+00
GROSS GAMMA MDA      (pCi/GRAM ) : 4.279E+00
GROSS GAMMA DLC      (pCi/GRAM ) : 2.088E+00

```



## VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 16:05:53.55

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630013.CNF;1
Sample date        : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 14:05:28
Sample ID          : G244630013           Sample quantity  : 1.00830E+02 GRAM
Detector name      : GAM01                Detector geometry: CAN
Elapsed live time   : 0 02:00:00.00        Elapsed real time: 0 02:00:01.08  0.0%
Energy tolerance    : 1.50000 keV          Analyst Initials : MXR1
Abundance limit     : 75.00000             Sensitivity        : 5.00000
Batch ID           : 941639                Detector SN#       :
Matrix Spike ID    :                      LCS ID           : 1032-A
*****

```

| Pk | It | Energy   | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err  | Fit      |
|----|----|----------|------|-------|------|---------|------|----|----------|-------|----------|
| 1  | 0  | 63.04*   | 39   | 457   | 1.00 | 126.81  | 124  | 9  | 5.37E-03 | 106.5 |          |
| 2  | 2  | 74.83    | 324  | 424   | 1.17 | 150.38  | 146  | 13 | 4.50E-02 | 11.7  | 3.30E+00 |
| 3  | 2  | 77.15    | 508  | 384   | 1.14 | 155.01  | 146  | 13 | 7.05E-02 | 8.0   |          |
| 4  | 2  | 84.34    | 95   | 440   | 1.32 | 169.38  | 162  | 30 | 1.31E-02 | 37.9  | 1.54E+00 |
| 5  | 2  | 87.33    | 235  | 409   | 1.29 | 175.35  | 162  | 30 | 3.27E-02 | 16.1  |          |
| 6  | 2  | 89.92    | 122  | 331   | 1.23 | 180.54  | 162  | 30 | 1.70E-02 | 26.9  |          |
| 7  | 2  | 92.82*   | 299  | 338   | 1.27 | 186.34  | 162  | 30 | 4.15E-02 | 13.6  |          |
| 8  | 0  | 186.18*  | 225  | 247   | 1.33 | 372.95  | 369  | 9  | 3.13E-02 | 15.1  |          |
| 9  | 0  | 210.05   | 97   | 218   | 1.01 | 420.66  | 416  | 8  | 1.35E-02 | 28.4  |          |
| 10 | 3  | 239.00*  | 987  | 176   | 1.32 | 478.53  | 472  | 19 | 1.37E-01 | 4.1   | 9.00E-01 |
| 11 | 3  | 242.08   | 199  | 224   | 1.71 | 484.69  | 472  | 19 | 2.76E-02 | 17.1  |          |
| 12 | 0  | 270.39   | 111  | 184   | 1.19 | 541.27  | 536  | 11 | 1.55E-02 | 25.7  |          |
| 13 | 0  | 295.57*  | 284  | 177   | 1.49 | 591.61  | 587  | 10 | 3.95E-02 | 10.8  |          |
| 14 | 0  | 300.94   | 136  | 179   | 2.93 | 602.35  | 597  | 13 | 1.88E-02 | 22.3  |          |
| 15 | 0  | 328.15   | 44   | 104   | 1.24 | 656.74  | 654  | 7  | 6.06E-03 | 41.8  |          |
| 16 | 0  | 338.89*  | 160  | 225   | 1.29 | 678.20  | 672  | 11 | 2.22E-02 | 20.2  |          |
| 17 | 0  | 352.18*  | 533  | 203   | 1.45 | 704.75  | 700  | 13 | 7.41E-02 | 7.0   |          |
| 18 | 0  | 511.29*  | 100  | 102   | 1.57 | 1022.79 | 1016 | 14 | 1.38E-02 | 28.0  |          |
| 19 | 0  | 583.55*  | 265  | 84    | 1.59 | 1167.22 | 1161 | 12 | 3.68E-02 | 9.5   |          |
| 20 | 0  | 609.63*  | 365  | 115   | 1.57 | 1219.34 | 1211 | 17 | 5.07E-02 | 8.7   |          |
| 21 | 0  | 661.99   | 262  | 79    | 1.63 | 1323.99 | 1319 | 12 | 3.65E-02 | 9.1   |          |
| 22 | 0  | 727.57   | 57   | 60    | 1.28 | 1455.07 | 1450 | 9  | 7.98E-03 | 26.0  |          |
| 23 | 0  | 861.41   | 58   | 36    | 2.67 | 1722.58 | 1714 | 14 | 8.12E-03 | 25.2  |          |
| 24 | 0  | 911.57*  | 171  | 33    | 1.76 | 1822.84 | 1818 | 13 | 2.38E-02 | 10.8  |          |
| 25 | 1  | 964.69   | 41   | 36    | 1.92 | 1929.01 | 1924 | 24 | 5.66E-03 | 27.8  | 1.15E+00 |
| 26 | 1  | 969.17   | 151  | 27    | 1.91 | 1937.95 | 1924 | 24 | 2.09E-02 | 11.0  |          |
| 27 | 0  | 1120.40* | 86   | 49    | 1.50 | 2240.19 | 2233 | 14 | 1.19E-02 | 20.9  |          |
| 28 | 0  | 1239.26  | 43   | 76    | 1.93 | 2477.75 | 2467 | 19 | 5.96E-03 | 51.0  |          |
| 29 | 0  | 1378.39  | 18   | 13    | 1.49 | 2755.79 | 2752 | 7  | 2.52E-03 | 41.1  |          |
| 30 | 0  | 1461.08* | 859  | 25    | 2.07 | 2921.04 | 2910 | 21 | 1.19E-01 | 3.8   |          |
| 31 | 0  | 1589.85* | 43   | 8     | 5.42 | 3178.38 | 3171 | 16 | 5.93E-03 | 21.9  |          |
| 32 | 0  | 1631.00  | 25   | 4     | 2.46 | 3260.61 | 3252 | 14 | 3.48E-03 | 25.6  |          |
| 33 | 0  | 1765.21* | 60   | 4     | 2.94 | 3528.81 | 3522 | 14 | 8.37E-03 | 15.7  |          |

Flag: "\*" = Peak area was modified by background subtraction

## VMS Nuclide Identification Report V3.1 Generated 23-JAN-2010 16:05:56

Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630013.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8  
 Sample title : MXR1  
 Sample date : 8-JAN-2010 12:00:00 Acquisition date : 23-JAN-2010 14:05:28  
 Sample ID : G244630013 Sample quantity : 100.83 GRAM  
 Sample type : SOLID Sample geometry :  
 Detector name : GAMMA1 Detector geometry: CAN  
 Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:01.08 0.0%  
 Peak Width (FWHM): 3.00 Confidence level : 5.00 %  
 Energy tolerance : 1.50 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 0.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 75.00 WTM error limit : 3.00

## Full Combined Activity-MDA Report

## ---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| K-40    | +         | 1460.81      | *   | 3.172E+01           | 3.692E+00 | 6.568E-01      | 5.838E-02 | 48.291  |
| CD-109  | +         | 88.03        | *   | 4.634E+00           | 1.553E+00 | 1.647E+00      | 1.559E-01 | 2.813   |
| SN-126  | +         | 64.28        |     | 5.467E-01           | 1.167E+00 | 1.126E+00      | 1.657E-01 | 0.485   |
|         | +         | 86.94        |     | 1.894E+00           | 9.947E-01 | 6.816E-01      | 2.830E-01 | 2.779   |
|         | +         | 87.57        | *   | 4.555E-01           | 1.526E-01 | 1.628E-01      | 1.533E-02 | 2.799   |
| BA-137M | +         | 661.65       | *   | 5.652E-01           | 1.124E-01 | 8.781E-02      | 7.192E-03 | 6.437   |
| CS-137  | +         | 661.65       | *   | 5.975E-01           | 1.189E-01 | 9.282E-02      | 7.619E-03 | 6.437   |
| TL-208  | +         | 277.35       |     | 1.532E-01           | 5.215E-01 | 8.731E-01      | 1.110E-01 | 0.175   |
|         | +         | 510.84       |     | 7.172E-01           | 4.107E-01 | 2.766E-01      | 3.287E-02 | 2.593   |
|         | +         | 583.14       | *   | 5.463E-01           | 1.151E-01 | 7.369E-02      | 6.692E-03 | 7.414   |
|         | +         | 860.37       |     | 1.148E+00           | 5.886E-01 | 5.814E-01      | 5.571E-02 | 1.975   |
| BI-211  | +         | 72.87        |     | 5.741E+00           | 4.713E+00 | 7.156E+00      | 5.869E-01 | 0.802   |
|         | +         | 351.07       | *   | 4.758E+00           | 7.952E-01 | 4.543E-01      | 4.132E-02 | 10.473  |
| PB-212  | +         | 74.81        |     | 2.713E+00           | 7.217E-01 | 7.396E-01      | 9.257E-02 | 3.668   |
|         | +         | 77.11        |     | 2.395E+00           | 4.336E-01 | 4.173E-01      | 3.542E-02 | 5.739   |
|         | +         | 87.30        |     | 2.107E+00           | 7.368E-01 | 7.551E-01      | 1.036E-01 | 2.790   |
|         | +         | 238.63       | *   | 1.895E+00           | 2.463E-01 | 1.189E-01      | 1.203E-02 | 15.944  |
|         | +         | 300.09       |     | 4.055E+00           | 1.865E+00 | 1.562E+00      | 1.689E-01 | 2.596   |
| PO-212  | +         | 74.81        |     | 2.713E+00           | 7.217E-01 | 7.396E-01      | 9.257E-02 | 3.668   |
|         | +         | 77.11        |     | 2.395E+00           | 4.336E-01 | 4.173E-01      | 3.542E-02 | 5.739   |
|         | +         | 87.30        |     | 2.107E+00           | 7.368E-01 | 7.551E-01      | 1.036E-01 | 2.790   |
|         | +         | 115.19       |     | -2.370E-01          | 4.951E+00 | 7.852E+00      | 6.823E-01 | -0.030  |
|         | +         | 238.63       | *   | 1.895E+00           | 2.463E-01 | 1.189E-01      | 1.203E-02 | 15.944  |
|         | +         | 300.09       |     | 4.055E+00           | 1.865E+00 | 1.562E+00      | 1.689E-01 | 2.596   |
| BI-214  | +         | 609.31       | *   | 1.423E+00           | 2.844E-01 | 1.649E-01      | 1.626E-02 | 8.631   |
|         | +         | 1120.29      |     | 1.771E+00           | 7.630E-01 | 6.177E-01      | 6.609E-02 | 2.868   |
|         | +         | 1764.49      |     | 1.721E+00           | 5.600E-01 | 4.325E-01      | 3.627E-02 | 3.978   |
| PB-214  | +         | 74.81        |     | 4.675E+00           | 1.215E+00 | 1.274E+00      | 1.420E-01 | 3.668   |
|         | +         | 77.11        |     | 4.106E+00           | 8.065E-01 | 7.154E-01      | 8.159E-02 | 5.739   |
|         | +         | 87.30        |     | 3.609E+00           | 1.241E+00 | 1.294E+00      | 1.572E-01 | 2.790   |
|         | +         | 241.98       |     | 2.293E+00           | 8.225E-01 | 7.160E-01      | 7.649E-02 | 3.203   |
|         | +         | 295.21       |     | 1.490E+00           | 3.604E-01 | 3.062E-01      | 3.381E-02 | 4.868   |
|         | +         | 351.92       | *   | 1.655E+00           | 2.898E-01 | 1.638E-01      | 1.717E-02 | 10.102  |
| PO-214  | +         | 74.81        |     | 4.675E+00           | 1.215E+00 | 1.274E+00      | 1.420E-01 | 3.668   |

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PO-216  | +         | 77.11        |     | 4.106E+00           | 8.065E-01 | 7.154E-01      | 8.159E-02 | 5.739   |
|         | +         | 87.30        |     | 3.609E+00           | 1.241E+00 | 1.294E+00      | 1.572E-01 | 2.790   |
|         | +         | 241.98       |     | 2.293E+00           | 8.225E-01 | 7.160E-01      | 7.649E-02 | 3.203   |
|         | +         | 295.21       |     | 1.490E+00           | 3.604E-01 | 3.062E-01      | 3.381E-02 | 4.868   |
|         | +         | 351.92       | *   | 1.655E+00           | 2.898E-01 | 1.638E-01      | 1.717E-02 | 10.102  |
|         | +         | 74.81        |     | 2.713E+00           | 7.217E-01 | 7.396E-01      | 9.257E-02 | 3.668   |
|         | +         | 77.11        |     | 2.395E+00           | 4.336E-01 | 4.173E-01      | 3.542E-02 | 5.739   |
|         | +         | 87.30        |     | 2.107E+00           | 7.368E-01 | 7.551E-01      | 1.036E-01 | 2.790   |
| PO-218  | +         | 238.63       | *   | 1.895E+00           | 2.463E-01 | 1.189E-01      | 1.203E-02 | 15.944  |
|         | +         | 300.09       |     | 4.055E+00           | 1.865E+00 | 1.562E+00      | 1.689E-01 | 2.596   |
|         | +         | 74.81        |     | 4.675E+00           | 1.215E+00 | 1.274E+00      | 1.420E-01 | 3.668   |
|         | +         | 77.11        |     | 4.106E+00           | 8.065E-01 | 7.154E-01      | 8.159E-02 | 5.739   |
|         | +         | 87.30        |     | 3.609E+00           | 1.241E+00 | 1.294E+00      | 1.572E-01 | 2.790   |
|         | +         | 241.98       |     | 2.293E+00           | 8.225E-01 | 7.160E-01      | 7.649E-02 | 3.203   |
|         | +         | 295.21       |     | 1.490E+00           | 3.604E-01 | 3.062E-01      | 3.381E-02 | 4.868   |
|         | +         | 351.92       | *   | 1.655E+00           | 2.898E-01 | 1.638E-01      | 1.717E-02 | 10.102  |
| RA-224  | +         | 240.98       | *   | 4.348E+00           | 1.540E+00 | 1.353E+00      | 1.230E-01 | 3.214   |
| RA-226  | +         | 609.31       | *   | 1.423E+00           | 2.844E-01 | 1.649E-01      | 1.626E-02 | 8.631   |
| AC-228  | +         | 1120.29      |     | 1.771E+00           | 7.630E-01 | 6.177E-01      | 6.609E-02 | 2.868   |
|         | +         | 1764.49      |     | 1.721E+00           | 5.600E-01 | 4.325E-01      | 3.627E-02 | 3.978   |
|         | +         | 338.32       |     | 1.571E+00           | 9.070E-01 | 5.711E-01      | 2.359E-01 | 2.751   |
|         | +         | 911.07       | *   | 1.595E+00           | 3.914E-01 | 3.052E-01      | 3.533E-02 | 5.226   |
|         | +         | 969.11       |     | 2.476E+00           | 7.949E-01 | 5.473E-01      | 1.284E-01 | 4.525   |
|         | +         | 338.32       |     | 1.571E+00           | 9.070E-01 | 5.711E-01      | 2.359E-01 | 2.751   |
|         | +         | 911.07       | *   | 1.595E+00           | 3.914E-01 | 3.052E-01      | 3.533E-02 | 5.226   |
|         | +         | 969.11       |     | 2.476E+00           | 7.949E-01 | 5.473E-01      | 1.284E-01 | 4.525   |
| TH-228  | +         | 74.81        |     | 2.754E+00           | 6.867E-01 | 7.508E-01      | 6.307E-02 | 3.668   |
|         | +         | 77.11        |     | 2.431E+00           | 4.402E-01 | 4.237E-01      | 3.595E-02 | 5.739   |
|         | +         | 87.30        |     | 2.139E+00           | 7.167E-01 | 7.665E-01      | 7.198E-02 | 2.790   |
|         | +         | 238.63       | *   | 1.924E+00           | 2.500E-01 | 1.207E-01      | 1.222E-02 | 15.944  |
|         | +         | 300.09       |     | 4.117E+00           | 3.059E+00 | 1.586E+00      | 9.411E-01 | 2.596   |
|         | +         | 609.31       | *   | 1.423E+00           | 2.844E-01 | 1.649E-01      | 1.626E-02 | 8.631   |
|         | +         | 1120.29      |     | 1.771E+00           | 7.630E-01 | 6.177E-01      | 6.609E-02 | 2.868   |
|         | +         | 1764.49      |     | 1.721E+00           | 5.600E-01 | 4.325E-01      | 3.627E-02 | 3.978   |
| TH-232  | +         | 338.32       |     | 1.571E+00           | 6.487E-01 | 5.711E-01      | 5.027E-02 | 2.751   |
|         | +         | 911.07       | *   | 1.595E+00           | 3.914E-01 | 3.052E-01      | 3.533E-02 | 5.226   |
|         | +         | 969.11       |     | 2.476E+00           | 7.949E-01 | 5.473E-01      | 1.284E-01 | 4.525   |
|         | +         | 63.29        | *   | 1.381E+00           | 2.952E+00 | 2.975E+00      | 5.229E-01 | 0.464   |
|         | +         | 92.38        |     | 3.736E+00           | 1.228E+00 | 1.062E+00      | 1.947E-01 | 3.518   |
|         | +         | 609.31       | *   | 1.423E+00           | 2.844E-01 | 1.649E-01      | 1.626E-02 | 8.631   |
|         | +         | 1120.29      |     | 1.771E+00           | 7.630E-01 | 6.177E-01      | 6.609E-02 | 2.868   |
|         | +         | 1764.49      |     | 1.721E+00           | 5.600E-01 | 4.325E-01      | 3.627E-02 | 3.978   |
| NP-237  | +         | 86.50        | *   | 1.338E+00           | 5.264E-01 | 4.840E-01      | 1.096E-01 | 2.764   |
|         | +         | 95.87        |     | -6.616E-02          | 1.366E+00 | 1.938E+00      | 4.797E-01 | -0.034  |
|         | +         | 63.29        | *   | 1.381E+00           | 2.952E+00 | 2.975E+00      | 5.229E-01 | 0.464   |
|         | +         | 92.38        |     | 3.736E+00           | 1.075E+00 | 1.062E+00      | 9.698E-02 | 3.518   |
|         | +         | 74.67        | *   | 4.399E-01           | 1.096E-01 | 1.203E-01      | 1.000E-02 | 3.656   |
|         | +         | 86.72        |     | 5.016E+01           | 1.681E+01 | 1.810E+01      | 1.689E+00 | 2.771   |
|         | +         | 117.66       |     | -1.057E+00          | 5.237E+00 | 8.234E+00      | 7.179E-01 | -0.128  |

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| ANH-511 | +         | 142.18       | *   | -7.774E-01          | 2.238E+01 | 3.788E+01      | 3.240E+00 | -0.021  |
|         |           | 511.00       | *   | 1.549E-01           | 8.777E-02 | 5.976E-02      | 5.065E-03 | 2.592   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| BE-7    |           | 477.59       | *   | 2.809E-01           | 4.746E-01 | 7.953E-01           | 7.235E-02 | 0.353   |
| NA-22   |           | 1274.54      | *   | 2.880E-03           | 6.384E-02 | 1.071E-01           | 8.991E-03 | 0.027   |
| NA-24   |           | 1368.53      | *   | 2.845E-03           | 6.384E-02 | Half-Life too short |           |         |
| AL-26   |           | 1129.67      |     | -7.258E-01          | 2.325E+00 | 3.597E+00           | 3.004E-01 | -0.202  |
|         |           | 1808.65      | *   | -6.140E-03          | 4.305E-02 | 6.780E-02           | 5.618E-03 | -0.091  |
| TI-44   |           | 67.85        |     | 9.596E-03           | 6.920E-02 | 1.006E-01           | 7.975E-03 | 0.095   |
|         | +         | 78.38        | *   | 4.420E-01           | 8.002E-02 | 1.070E-01           | 9.185E-03 | 4.130   |
| SC-46   |           | 889.25       | *   | -5.048E-02          | 5.561E-02 | 8.144E-02           | 7.362E-03 | -0.620  |
|         | +         | 1120.51      |     | 3.031E-01           | 1.290E-01 | 1.875E-01           | 1.576E-02 | 1.617   |
| V-48    |           | 944.10       |     | -1.499E+00          | 1.290E+00 | 1.808E+00           | 1.628E-01 | -0.829  |
|         |           | 983.50       | *   | 3.825E-02           | 1.078E-01 | 1.812E-01           | 1.618E-02 | 0.211   |
|         |           | 1312.09      |     | -2.509E-02          | 1.177E-01 | 1.912E-01           | 1.621E-02 | -0.131  |
| CR-51   |           | 320.08       | *   | -3.597E-01          | 5.290E-01 | 8.281E-01           | 7.789E-02 | -0.434  |
| MN-52   |           | 744.21       |     | 5.852E-01           | 3.318E-01 | 6.255E-01           | 5.366E-02 | 0.936   |
|         |           | 848.13       |     | 6.341E-01           | 9.626E+00 | 1.589E+01           | 1.420E+00 | 0.040   |
|         |           | 935.52       |     | 1.882E-01           | 3.633E-01 | 6.223E-01           | 5.613E-02 | 0.302   |
|         |           | 1246.25      |     | 2.668E+00           | 1.154E+01 | 1.720E+01           | 1.430E+00 | 0.155   |
|         |           | 1333.61      |     | -2.169E+00          | 7.976E+00 | 1.270E+01           | 1.083E+00 | -0.171  |
|         |           | 1434.06      | *   | -9.050E-03          | 3.030E-01 | 5.036E-01           | 4.348E-02 | -0.018  |
| MN-54   |           | 834.83       | *   | -4.525E-02          | 5.518E-02 | 8.338E-02           | 7.422E-03 | -0.543  |
| CO-56   |           | 846.75       | *   | 1.639E-03           | 5.731E-02 | 9.424E-02           | 8.420E-03 | 0.017   |
|         |           | 977.42       |     | 4.968E+00           | 4.934E+00 | 7.913E+00           | 7.076E-01 | 0.628   |
|         |           | 1037.82      |     | 7.529E-02           | 4.630E-01 | 7.621E-01           | 7.026E-02 | 0.099   |
|         |           | 1175.09      |     | -2.672E+00          | 3.155E+00 | 4.837E+00           | 3.918E-01 | -0.552  |
|         | +         | 1238.25      |     | 2.504E-01           | 2.563E-01 | 2.391E-01           | 2.044E-02 | 1.047   |
|         |           | 1360.21      |     | 3.798E-02           | 1.358E+00 | 2.265E+00           | 1.939E-01 | 0.017   |
|         |           | 1771.40      |     | -1.619E-01          | 2.959E-01 | 3.096E-01           | 2.592E-02 | -0.523  |
| CO-57   |           | 122.06       | *   | 1.510E-02           | 3.511E-02 | 5.680E-02           | 5.000E-03 | 0.266   |
|         |           | 136.48       |     | -4.604E-03          | 2.687E-01 | 4.558E-01           | 4.211E-02 | -0.010  |
| CO-58   |           | 810.76       | *   | -2.281E-02          | 5.710E-02 | 9.021E-02           | 7.981E-03 | -0.253  |
| FE-59   |           | 142.65       |     | -6.428E-01          | 3.697E+00 | 6.041E+00           | 5.166E-01 | -0.106  |
|         |           | 192.34       |     | -1.074E+00          | 1.282E+00 | 2.054E+00           | 2.775E-01 | -0.523  |
|         |           | 1099.22      | *   | 1.932E-02           | 1.258E-01 | 2.063E-01           | 1.901E-02 | 0.094   |
|         |           | 1291.56      |     | -5.787E-02          | 1.687E-01 | 2.698E-01           | 2.595E-02 | -0.215  |
| CO-60   |           | 1173.22      |     | -2.120E-02          | 6.520E-02 | 1.061E-01           | 8.585E-03 | -0.200  |
|         |           | 1332.49      | *   | 5.857E-03           | 6.064E-02 | 1.020E-01           | 8.697E-03 | 0.057   |
| ZN-65   |           | 1115.52      | *   | -1.889E-02          | 1.454E-01 | 1.974E-01           | 1.666E-02 | -0.096  |
| GE-68   |           | 1077.35      | *   | 1.254E+00           | 1.795E+00 | 3.113E+00           | 2.681E-01 | 0.403   |
| AS-73   |           | 53.44        | *   | -2.834E-01          | 1.285E+00 | 2.072E+00           | 1.677E-01 | -0.137  |
| AS-74   |           | 595.88       | *   | 3.390E-03           | 1.142E-01 | 1.918E-01           | 1.616E-02 | 0.018   |
|         |           | 634.78       |     | -1.132E-01          | 4.624E-01 | 7.545E-01           | 6.268E-02 | -0.150  |
| SE-75   |           | 66.05        |     | -4.080E+00          | 7.253E+00 | 1.012E+01           | 9.924E-01 | -0.403  |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Activity Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|---------------------|-----------|----------------|-----------|---------|
|         |           | 96.73        |              | -4.907E-01          | 1.158E+00 | 1.583E+00      | 2.186E-01 | -0.310  |
|         |           | 121.11       |              | -3.874E-02          | 1.922E-01 | 3.019E-01      | 3.424E-02 | -0.128  |
|         |           | 136.00       |              | 1.812E-02           | 5.057E-02 | 8.704E-02      | 7.533E-03 | 0.208   |
|         |           | 198.60       |              | -1.523E-01          | 2.511E+00 | 4.095E+00      | 3.984E-01 | -0.037  |
|         |           | 264.65       | *            | 2.488E-02           | 6.854E-02 | 1.022E-01      | 9.388E-03 | 0.243   |
|         |           | 279.53       |              | 2.291E-01           | 1.558E-01 | 2.739E-01      | 2.588E-02 | 0.836   |
|         |           | 303.91       |              | 1.813E+00           | 3.081E+00 | 4.654E+00      | 5.498E-01 | 0.390   |
|         |           | 400.65       |              | 7.764E-02           | 3.582E-01 | 5.890E-01      | 6.311E-02 | 0.132   |
| BR-77   | +         | 87.88        |              | 9.927E+02           | 3.326E+02 | 4.710E+02      | 4.452E+01 | 2.108   |
|         |           | 200.40       |              | -8.785E+01          | 2.282E+02 | 3.664E+02      | 3.232E+01 | -0.240  |
|         | +         | 239.00       |              | 3.017E+02           | 3.680E+01 | 4.945E+01      | 4.489E+00 | 6.102   |
|         |           | 249.79       |              | 7.947E+01           | 8.712E+01 | 1.509E+02      | 1.376E+01 | 0.526   |
|         |           | 281.68       |              | -6.755E+01          | 1.298E+02 | 2.077E+02      | 1.898E+01 | -0.325  |
|         |           | 297.23       |              | 4.190E+02           | 1.253E+02 | 1.730E+02      | 1.574E+01 | 2.422   |
|         |           | 303.76       |              | 1.531E+02           | 2.600E+02 | 3.931E+02      | 3.564E+01 | 0.390   |
|         |           | 439.47       |              | -1.066E+02          | 2.102E+02 | 3.253E+02      | 2.697E+01 | -0.328  |
|         |           | 484.57       |              | -8.233E+01          | 3.001E+02 | 4.687E+02      | 3.952E+01 | -0.176  |
|         |           | 520.65       | *            | 9.808E+00           | 1.440E+01 | 2.432E+01      | 2.064E+00 | 0.403   |
|         |           | 574.64       |              | -1.698E+02          | 2.843E+02 | 4.541E+02      | 3.844E+01 | -0.374  |
|         |           | 578.91       |              | -2.116E+01          | 1.270E+02 | 1.819E+02      | 1.539E+01 | -0.116  |
|         |           | 585.48       |              | 1.998E+03           | 3.666E+02 | 6.820E+02      | 5.761E+01 | 2.930   |
|         |           | 755.35       |              | 1.872E+01           | 2.278E+02 | 3.791E+02      | 3.270E+01 | 0.049   |
|         |           | 817.79       |              | -1.687E+02          | 1.839E+02 | 2.717E+02      | 2.404E+01 | -0.621  |
| SR-82   |           | 698.33       |              | -2.757E+01          | 4.561E+01 | 7.151E+01      | 5.989E+00 | -0.385  |
|         |           | 776.49       | *            | -4.650E-01          | 5.539E-01 | 8.392E-01      | 7.306E-02 | -0.554  |
|         |           | 1395.20      |              | -5.619E-01          | 1.153E+01 | 1.895E+01      | 1.630E+00 | -0.030  |
| RB-83   |           | 520.41       | *            | 6.911E-02           | 9.634E-02 | 1.631E-01      | 1.384E-02 | 0.424   |
|         |           | 529.64       |              | -9.244E-02          | 1.375E-01 | 2.189E-01      | 1.858E-02 | -0.422  |
|         |           | 552.65       |              | 2.367E-01           | 2.737E-01 | 4.886E-01      | 4.146E-02 | 0.484   |
| RB-84   |           | 881.50       | *            | -3.356E-02          | 9.986E-02 | 1.575E-01      | 1.421E-02 | -0.213  |
| KR-85   |           | 513.99       | *            | 1.924E+01           | 1.139E+01 | 1.850E+01      | 1.569E+00 | 1.040   |
| SR-85   |           | 513.99       | *            | 9.861E-02           | 5.836E-02 | 9.483E-02      | 8.041E-03 | 1.040   |
| RB-86   |           | 1076.63      | *            | 2.121E-01           | 1.186E+00 | 1.950E+00      | 1.680E-01 | 0.109   |
| Y-88    |           | 898.02       |              | 2.396E-02           | 5.804E-02 | 9.882E-02      | 8.991E-03 | 0.242   |
|         |           | 1836.01      | *            | 2.326E-03           | 5.235E-02 | 8.588E-02      | 7.063E-03 | 0.027   |
| ZR-88   |           | 392.90       | *            | -4.722E-03          | 4.503E-02 | 7.248E-02      | 5.836E-03 | -0.065  |
| Y-91    |           | 1204.90      | *            | -3.189E+00          | 2.670E+01 | 4.425E+01      | 3.626E+00 | -0.072  |
| NB-94   |           | 702.63       | *            | 2.301E-02           | 4.732E-02 | 8.154E-02      | 6.845E-03 | 0.282   |
|         |           | 871.10       |              | -1.383E-02          | 4.387E-02 | 6.913E-02      | 6.221E-03 | -0.200  |
| NB-95   |           | 765.79       | *            | 5.759E-02           | 6.283E-02 | 1.108E-01      | 9.606E-03 | 0.520   |
| NB-95M  |           | 235.69       | *            | 1.458E-03           | 1.767E-01 | 2.584E-01      | 2.650E-02 | 0.006   |
| ZR-95   |           | 724.18       |              | 3.082E-02           | 1.476E-01 | 2.174E-01      | 2.011E-02 | 0.142   |
|         |           | 756.15       | *            | -3.952E-02          | 1.016E-01 | 1.617E-01      | 1.536E-02 | -0.244  |
| NB-97   |           | 657.90       | *            | 1.655E-02           | 1.016E-01 | Half-Life      | too short |         |
|         |           | 1024.50      |              | -9.901E+00          | 1.016E-01 | Half-Life      | too short |         |
| ZR-97   |           | 254.15       |              | -2.591E+00          | 1.016E-01 | Half-Life      | too short |         |
|         |           | 355.39       |              | 5.872E+00           | 1.016E-01 | Half-Life      | too short |         |
|         |           | 507.63       | *            | 5.572E-01           | 1.016E-01 | Half-Life      | too short |         |
|         |           | 602.52       |              | 4.136E-01           | 1.016E-01 | Half-Life      | too short |         |

## ---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         | 1021.30   |              |     | -1.903E+00          | 1.016E-01 | Half-Life      | too short |         |
|         | 1147.95   |              |     | 3.905E+00           | 1.016E-01 | Half-Life      | too short |         |
|         | 1362.66   |              |     | -5.652E+00          | 1.016E-01 | Half-Life      | too short |         |
|         | 1750.46   |              |     | -2.223E+00          | 1.016E-01 | Half-Life      | too short |         |
| MO-99   | 140.51    |              |     | -7.357E+00          | 3.491E+01 | 5.672E+01      | 1.570E+01 | -0.130  |
|         | 181.06    |              |     | -1.947E+01          | 2.438E+01 | 3.600E+01      | 6.588E+00 | -0.541  |
|         | 366.43    |              |     | -1.250E+02          | 1.146E+02 | 1.705E+02      | 1.442E+01 | -0.733  |
|         | 739.58    | *            |     | -1.843E+01          | 1.611E+01 | 2.324E+01      | 3.521E+00 | -0.793  |
|         | 778.00    |              |     | -2.418E+01          | 4.610E+01 | 7.198E+01      | 6.272E+00 | -0.336  |
| TC-99M  | 140.51    | *            |     | -9.922E+09          | 4.610E+01 | Half-Life      | too short |         |
| RH-101  | 127.23    |              |     | 1.708E-02           | 4.555E-02 | 7.334E-02      | 6.379E-03 | 0.233   |
|         | 198.01    | *            |     | 3.595E-03           | 4.627E-02 | 7.596E-02      | 6.684E-03 | 0.047   |
|         | 325.23    |              |     | 5.616E-03           | 3.618E-01 | 5.197E-01      | 4.637E-02 | 0.011   |
| RH-102  | 418.52    |              |     | 2.938E-01           | 4.120E-01 | 6.987E-01      | 5.726E-02 | 0.421   |
|         | 475.06    | *            |     | -4.858E-02          | 4.502E-02 | 6.569E-02      | 5.524E-03 | -0.740  |
|         | 631.29    |              |     | -3.710E-02          | 7.240E-02 | 1.152E-01      | 9.589E-03 | -0.322  |
|         | 697.49    |              |     | -1.049E-01          | 1.050E-01 | 1.581E-01      | 1.324E-02 | -0.663  |
|         | 766.84    |              |     | 1.980E-01           | 1.589E-01 | 2.861E-01      | 2.481E-02 | 0.692   |
|         | 1046.59   |              |     | 6.899E-02           | 1.523E-01 | 2.592E-01      | 2.264E-02 | 0.266   |
|         | 1112.84   |              |     | 2.942E-01           | 3.208E-01 | 5.141E-01      | 4.340E-02 | 0.572   |
| RU-103  | 497.08    | *            |     | 4.265E-02           | 5.507E-02 | 9.357E-02      | 1.316E-02 | 0.456   |
| +       | 610.33    |              |     | 1.536E+01           | 3.688E+00 | 4.083E+00      | 6.764E-01 | 3.761   |
| RH-106  | 511.85    | +            |     | 7.737E-01           | 4.384E-01 | 6.285E-01      | 5.327E-02 | 1.231   |
|         | 621.84    | *            |     | -6.937E-02          | 4.246E-01 | 6.994E-01      | 9.222E-02 | -0.099  |
|         | 1050.47   |              |     | -8.455E-01          | 3.113E+00 | 4.864E+00      | 4.242E-01 | -0.174  |
| RU-106  | 511.85    | +            |     | 7.737E-01           | 4.384E-01 | 6.285E-01      | 5.327E-02 | 1.231   |
|         | 621.84    | *            |     | -6.937E-02          | 4.245E-01 | 6.994E-01      | 5.842E-02 | -0.099  |
|         | 1050.47   |              |     | -8.455E-01          | 3.113E+00 | 4.864E+00      | 4.242E-01 | -0.174  |
| AG-108M | 433.93    | *            |     | -8.998E-03          | 4.818E-02 | 7.658E-02      | 6.604E-03 | -0.117  |
|         | 614.37    |              |     | 6.332E-02           | 5.764E-02 | 9.385E-02      | 8.188E-03 | 0.675   |
|         | 722.95    |              |     | -2.326E-02          | 6.707E-02 | 9.213E-02      | 8.135E-03 | -0.253  |
| AG-110M | 657.75    | *            |     | 3.964E-03           | 5.117E-02 | 7.480E-02      | 6.342E-03 | 0.053   |
|         | 677.61    |              |     | -4.918E-02          | 4.208E-01 | 6.923E-01      | 5.902E-02 | -0.071  |
|         | 706.67    |              |     | 5.309E-02           | 2.979E-01 | 5.012E-01      | 4.339E-02 | 0.106   |
|         | 763.93    |              |     | -1.425E-01          | 2.440E-01 | 3.821E-01      | 3.401E-02 | -0.373  |
|         | 884.67    |              |     | 3.555E-02           | 6.939E-02 | 1.194E-01      | 1.109E-02 | 0.298   |
|         | 937.48    |              |     | 1.219E-02           | 1.533E-01 | 2.519E-01      | 2.347E-02 | 0.048   |
|         | 1384.27   |              |     | -8.157E-02          | 2.495E-01 | 3.624E-01      | 3.201E-02 | -0.225  |
| IN-111  | 171.28    |              |     | 1.054E+00           | 1.309E+00 | 2.273E+00      | 1.946E-01 | 0.464   |
|         | 245.39    | *            |     | -6.890E-01          | 1.630E+00 | 2.302E+00      | 2.096E-01 | -0.299  |
| IN-113M | 391.69    | *            |     | -3.109E-02          | 6.471E-02 | 1.013E-01      | 8.437E-03 | -0.307  |
| SN-113  | 391.69    | *            |     | -3.109E-02          | 6.471E-02 | 1.013E-01      | 8.437E-03 | -0.307  |
| IN-114M | 190.27    | *            |     | -3.273E-02          | 2.737E-01 | 4.014E-01      | 3.505E-02 | -0.082  |
| CD-115  | 260.90    |              |     | -2.670E+01          | 1.802E+02 | 2.958E+02      | 2.704E+01 | -0.090  |
|         | 492.35    |              |     | -4.104E+00          | 5.181E+01 | 8.238E+01      | 6.959E+00 | -0.050  |
|         | 527.90    | *            |     | -7.552E-01          | 1.401E+01 | 2.352E+01      | 1.996E+00 | -0.032  |
| SN-117M | 156.02    |              |     | -1.454E+00          | 2.981E+00 | 4.932E+00      | 4.199E-01 | -0.295  |
|         | 158.56    | *            |     | 1.287E-02           | 7.076E-02 | 1.204E-01      | 1.025E-02 | 0.107   |
| SB-122  | 563.90    | *            |     | 2.751E+00           | 2.737E+00 | 4.929E+00      | 4.179E-01 | 0.558   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| I-123   | 692.80    |              |     | 2.965E+01           | 5.949E+01 | 1.028E+02      | 8.582E+00 | 0.288   |
|         | 159.00    | *            |     | 8.241E-01           | 5.949E+01 | Half-Life      | too short |         |
|         | 528.96    |              |     | -4.202E+02          | 5.949E+01 | Half-Life      | too short |         |
| TE-123M | 159.00    | *            |     | 4.227E-03           | 3.637E-02 | 6.170E-02      | 5.286E-03 | 0.069   |
| I-124   | 602.71    | *            |     | -1.045E-01          | 9.614E-01 | 1.382E+00      | 1.162E-01 | -0.076  |
|         | 722.78    |              |     | -2.432E+00          | 6.970E+00 | 9.571E+00      | 8.123E-01 | -0.254  |
|         | 1325.50   |              |     | -2.421E+01          | 4.584E+01 | 7.071E+01      | 6.017E+00 | -0.342  |
|         | 1376.25   |              |     | 5.539E+01           | 5.390E+01 | 8.948E+01      | 7.678E+00 | 0.619   |
|         | 1509.49   |              |     | 6.803E+00           | 1.726E+01 | 3.056E+01      | 2.646E+00 | 0.223   |
|         | 1691.02   |              |     | -3.866E+00          | 5.206E+00 | 7.049E+00      | 6.006E-01 | -0.548  |
| SB-124  | 602.71    |              |     | -6.100E-03          | 5.613E-02 | 8.067E-02      | 6.785E-03 | -0.076  |
|         | 645.85    |              |     | 2.113E-01           | 6.564E-01 | 1.125E+00      | 9.902E-02 | 0.188   |
|         | 709.31    |              |     | -3.242E+00          | 4.072E+00 | 6.280E+00      | 5.291E-01 | -0.516  |
|         | 713.82    |              |     | 9.172E-01           | 2.435E+00 | 4.156E+00      | 4.951E-01 | 0.221   |
|         | 722.78    |              |     | -2.059E-01          | 5.900E-01 | 8.101E-01      | 7.028E-02 | -0.254  |
|         | + 968.20  |              |     | 2.548E+01           | 6.031E+00 | 1.078E+01      | 9.664E-01 | 2.363   |
|         | 1045.16   |              |     | 9.349E-02           | 3.440E+00 | 5.580E+00      | 4.877E-01 | 0.017   |
|         | 1325.50   |              |     | -2.188E+00          | 4.144E+00 | 6.393E+00      | 5.439E-01 | -0.342  |
|         | 1368.21   |              |     | 1.726E-01           | 2.248E+00 | 3.777E+00      | 5.079E-01 | 0.046   |
|         | 1436.60   |              |     | -8.055E-01          | 4.891E+00 | 7.878E+00      | 6.803E-01 | -0.102  |
|         | 1691.02   | *            |     | -7.718E-02          | 1.039E-01 | 1.407E-01      | 1.248E-02 | -0.548  |
| SB-125  | 427.89    | *            |     | 1.155E-01           | 1.371E-01 | 2.338E-01      | 1.968E-02 | 0.494   |
|         | 463.38    |              |     | 6.216E-01           | 4.415E-01 | 7.703E-01      | 6.987E-02 | 0.807   |
|         | 600.56    |              |     | -1.856E-01          | 2.555E-01 | 3.636E-01      | 3.296E-02 | -0.510  |
|         | 635.90    |              |     | -2.242E-02          | 3.560E-01 | 5.908E-01      | 5.331E-02 | -0.038  |
| TE-125M | 109.28    | *            |     | -5.197E-02          | 1.243E+01 | 1.978E+01      | 2.051E+00 | -0.003  |
| I-126   | 388.63    |              |     | 1.752E-02           | 2.907E-01 | 4.736E-01      | 3.836E-02 | 0.037   |
|         | 666.33    | *            |     | 9.180E-02           | 2.898E-01 | 4.343E-01      | 3.568E-02 | 0.211   |
|         | 753.82    |              |     | 1.766E+00           | 2.030E+00 | 3.604E+00      | 3.106E-01 | 0.490   |
| SB-126  | 223.80    |              |     | -2.803E+00          | 5.360E+00 | 8.689E+00      | 7.817E-01 | -0.323  |
|         | 278.60    |              |     | 4.686E+00           | 3.510E+00 | 6.141E+00      | 5.617E-01 | 0.763   |
|         | + 296.50  |              |     | 1.481E+01           | 3.460E+00 | 4.978E+00      | 4.529E-01 | 2.976   |
|         | 414.70    |              |     | -9.518E-02          | 1.075E-01 | 1.616E-01      | 1.321E-02 | -0.589  |
|         | 415.30    |              |     | -3.735E+00          | 8.817E+00 | 1.379E+01      | 1.128E+00 | -0.271  |
|         | 555.20    |              |     | -2.279E+00          | 5.507E+00 | 8.958E+00      | 7.601E-01 | -0.254  |
|         | 573.80    |              |     | 3.461E-01           | 1.418E+00 | 2.424E+00      | 2.052E-01 | 0.143   |
|         | 593.00    |              |     | 3.267E-01           | 1.107E+00 | 1.903E+00      | 1.605E-01 | 0.172   |
|         | 656.30    |              |     | -6.860E-01          | 5.101E+00 | 7.256E+00      | 5.962E-01 | -0.095  |
|         | 666.33    |              |     | 3.836E-02           | 1.211E-01 | 1.815E-01      | 1.491E-02 | 0.211   |
|         | 675.00    |              |     | 1.628E+00           | 2.714E+00 | 4.738E+00      | 3.913E-01 | 0.344   |
|         | 695.00    |              |     | 1.038E-01           | 1.039E-01 | 1.864E-01      | 1.558E-02 | 0.557   |
|         | 697.00    |              |     | -2.311E-01          | 3.594E-01 | 5.613E-01      | 4.697E-02 | -0.412  |
|         | 720.50    | *            |     | -8.872E-02          | 2.201E-01 | 3.298E-01      | 2.795E-02 | -0.269  |
|         | 856.80    |              |     | -1.740E-01          | 6.566E-01 | 8.888E-01      | 7.965E-02 | -0.196  |
|         | 989.30    |              |     | -5.495E-02          | 1.697E+00 | 2.744E+00      | 2.446E-01 | -0.020  |
|         | 1034.80   |              |     | 8.133E+00           | 1.291E+01 | 2.243E+01      | 1.969E+00 | 0.363   |
|         | 1213.00   |              |     | -3.743E+00          | 6.521E+00 | 1.031E+01      | 8.473E-01 | -0.363  |
| SB-127  | 61.10     |              |     | 4.198E+01           | 9.192E+01 | 1.362E+02      | 1.416E+01 | 0.308   |
|         | 252.40    |              |     | -8.621E+00          | 6.759E+00 | 8.622E+00      | 3.633E+00 | -1.000  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|------------|-----------|----------------|-----------|---------|
|         |           | 290.80       |              | 6.474E+00  | 3.430E+01 | 5.023E+01      | 5.798E+00 | 0.129   |
|         |           | 411.60       |              | 1.432E+01  | 1.713E+01 | 2.911E+01      | 4.504E+00 | 0.492   |
|         |           | 444.90       |              | -4.467E+00 | 1.397E+01 | 2.190E+01      | 2.697E+00 | -0.204  |
|         |           | 473.00       |              | 5.596E-01  | 2.491E+00 | 4.065E+00      | 5.168E-01 | 0.138   |
|         |           | 543.00       |              | 1.335E+01  | 2.104E+01 | 3.708E+01      | 5.306E+00 | 0.360   |
|         |           | 603.60       |              | 8.760E+00  | 1.605E+01 | 2.484E+01      | 3.069E+00 | 0.353   |
|         | *         | 685.20       |              | -1.023E+00 | 1.711E+00 | 2.670E+00      | 2.975E-01 | -0.383  |
|         |           | 698.50       |              | -1.353E+01 | 2.034E+01 | 3.157E+01      | 4.950E+00 | -0.429  |
|         |           | 722.20       |              | -7.385E+00 | 4.738E+01 | 6.675E+01      | 7.373E+00 | -0.111  |
|         |           | 783.80       |              | 2.238E+00  | 5.070E+00 | 8.672E+00      | 1.083E+00 | 0.258   |
| XE-127  |           | 57.60        |              | -2.894E+00 | 8.848E+00 | 1.416E+01      | 1.088E+00 | -0.204  |
|         |           | 145.22       |              | 9.789E-01  | 9.557E-01 | 1.628E+00      | 1.390E-01 | 0.601   |
|         |           | 172.10       |              | 9.388E-02  | 1.549E-01 | 2.672E-01      | 2.289E-02 | 0.351   |
|         | *         | 202.84       |              | -2.322E-02 | 6.402E-02 | 1.053E-01      | 9.310E-03 | -0.220  |
|         |           | 374.96       |              | 5.417E-02  | 2.989E-01 | 4.915E-01      | 4.093E-02 | 0.110   |
| I-131   |           | 80.18        |              | -4.331E+00 | 9.115E+00 | 9.857E+00      | 8.655E-01 | -0.439  |
|         |           | 284.30       |              | -1.717E+00 | 2.129E+00 | 3.337E+00      | 3.190E-01 | -0.515  |
|         | *         | 364.48       |              | 1.002E-01  | 1.561E-01 | 2.651E-01      | 2.375E-02 | 0.378   |
|         |           | 636.97       |              | -5.366E-02 | 1.986E+00 | 3.305E+00      | 2.908E-01 | -0.016  |
|         |           | 722.89       |              | -3.960E+00 | 1.126E+01 | 1.546E+01      | 1.321E+00 | -0.256  |
| TE-132  |           | 49.72        |              | -1.684E+01 | 3.161E+01 | 5.027E+01      | 5.398E+00 | -0.335  |
|         |           | 111.76       |              | -1.632E+01 | 4.132E+01 | 6.356E+01      | 6.918E+00 | -0.257  |
|         |           | 116.30       |              | 1.358E+01  | 3.728E+01 | 6.023E+01      | 6.572E+00 | 0.225   |
|         | *         | 228.16       |              | -1.987E-01 | 9.149E-01 | 1.505E+00      | 2.399E-01 | -0.132  |
| BA-133  |           | 53.15        |              | -3.309E-01 | 5.570E+00 | 9.048E+00      | 7.352E-01 | -0.037  |
|         |           | 79.62        |              | -6.844E-01 | 2.586E+00 | 2.849E+00      | 4.348E-01 | -0.240  |
|         |           | 81.00        |              | -4.429E-02 | 1.870E-01 | 2.062E-01      | 3.294E-02 | -0.215  |
|         |           | 276.40       |              | 4.153E-01  | 5.425E-01 | 8.658E-01      | 1.279E-01 | 0.480   |
|         |           | 302.84       |              | 2.221E-01  | 2.188E-01 | 3.385E-01      | 4.599E-02 | 0.656   |
|         | *         | 356.01       |              | 1.266E-02  | 6.998E-02 | 1.014E-01      | 1.338E-02 | 0.125   |
|         |           | 383.85       |              | -1.008E-01 | 4.241E-01 | 6.764E-01      | 8.326E-02 | -0.149  |
| I-133   | +         | 510.53       |              | 1.539E+00  | 4.241E-01 | Half-Life      | too short |         |
|         | *         | 529.87       |              | -4.862E-03 | 4.241E-01 | Half-Life      | too short |         |
|         |           | 706.58       |              | 1.291E-01  | 4.241E-01 | Half-Life      | too short |         |
|         |           | 856.28       |              | -1.231E-01 | 4.241E-01 | Half-Life      | too short |         |
|         |           | 875.33       |              | 4.005E-02  | 4.241E-01 | Half-Life      | too short |         |
|         |           | 1236.41      |              | 9.524E-01  | 4.241E-01 | Half-Life      | too short |         |
|         |           | 1298.22      |              | -8.762E-02 | 4.241E-01 | Half-Life      | too short |         |
| CS-134  |           | 475.35       |              | -2.549E+00 | 2.949E+00 | 4.396E+00      | 3.697E-01 | -0.580  |
|         |           | 563.23       |              | 4.525E-01  | 4.838E-01 | 8.671E-01      | 7.424E-02 | 0.522   |
|         |           | 569.32       |              | 5.663E-02  | 2.618E-01 | 4.470E-01      | 3.840E-02 | 0.127   |
|         |           | 604.70       |              | 4.816E-02  | 4.612E-02 | 7.518E-02      | 6.335E-03 | 0.641   |
|         | *         | 795.84       |              | 5.439E-02  | 6.901E-02 | 1.209E-01      | 1.068E-02 | 0.450   |
|         |           | 801.93       |              | -1.673E-01 | 5.816E-01 | 9.313E-01      | 8.237E-02 | -0.180  |
|         |           | 1038.57      |              | -4.830E-01 | 5.824E+00 | 9.336E+00      | 8.182E-01 | -0.052  |
|         |           | 1167.94      |              | 1.338E+00  | 3.788E+00 | 6.554E+00      | 5.326E-01 | 0.204   |
|         |           | 1365.15      |              | -4.909E-03 | 1.557E+00 | 2.586E+00      | 2.318E-01 | -0.002  |
| CS-135  | *         | 268.24       |              | 2.525E-01  | 2.480E-01 | 3.840E-01      | 4.004E-02 | 0.658   |
| I-135   |           | 288.45       |              | -1.422E+09 | 2.480E-01 | Half-Life      | too short |         |



---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 417.63       |     | 1.115E+10           | 2.480E-01 | Half-Life      | too short |         |
|         |           | 546.56       |     | -1.331E+10          | 2.480E-01 | Half-Life      | too short |         |
|         |           | 836.80       |     | 1.449E+10           | 2.480E-01 | Half-Life      | too short |         |
|         |           | 1038.76      |     | -5.974E+09          | 2.480E-01 | Half-Life      | too short |         |
|         |           | 1124.00      |     | 4.998E+10           | 2.480E-01 | Half-Life      | too short |         |
|         |           | 1131.51      |     | -1.003E+09          | 2.480E-01 | Half-Life      | too short |         |
|         |           | 1260.41      | *   | -3.052E+08          | 2.480E-01 | Half-Life      | too short |         |
|         |           | 1457.56      |     | 3.461E+11           | 2.480E-01 | Half-Life      | too short |         |
|         |           | 1678.03      |     | 6.446E+09           | 2.480E-01 | Half-Life      | too short |         |
|         |           | 1706.46      |     | 1.873E+10           | 2.480E-01 | Half-Life      | too short |         |
|         |           | 1791.20      |     | -1.907E+10          | 2.480E-01 | Half-Life      | too short |         |
| CS-136  |           | 66.91        |     | -1.262E-01          | 1.172E+00 | 1.681E+00      | 2.528E-01 | -0.075  |
|         | +         | 86.29        |     | 5.935E+00           | 2.068E+00 | 2.827E+00      | 3.762E-01 | 2.100   |
|         |           | 153.22       |     | 6.660E-01           | 8.480E-01 | 1.475E+00      | 1.408E-01 | 0.452   |
|         |           | 163.89       |     | -1.583E-01          | 1.403E+00 | 2.275E+00      | 2.175E-01 | -0.070  |
|         |           | 176.55       |     | -4.523E-01          | 4.757E-01 | 7.627E-01      | 6.944E-02 | -0.593  |
|         |           | 273.65       |     | -8.310E-01          | 6.892E-01 | 8.952E-01      | 8.671E-02 | -0.928  |
|         |           | 340.57       |     | 9.094E-01           | 2.465E-01 | 4.164E-01      | 3.758E-02 | 2.184   |
|         |           | 818.51       |     | -3.268E-02          | 1.019E-01 | 1.618E-01      | 1.434E-02 | -0.202  |
|         |           | 1048.07      | *   | -2.450E-02          | 1.452E-01 | 2.298E-01      | 2.089E-02 | -0.107  |
|         |           | 1235.34      |     | 7.521E-01           | 8.569E-01 | 1.377E+00      | 1.598E-01 | 0.546   |
| CE-139  |           | 165.85       | *   | -1.214E-02          | 3.777E-02 | 6.275E-02      | 5.344E-03 | -0.194  |
| BA-140  |           | 162.64       |     | 1.390E-01           | 9.824E-01 | 1.611E+00      | 1.453E-01 | 0.086   |
|         |           | 304.84       |     | -3.443E-01          | 1.887E+00 | 2.670E+00      | 7.519E-01 | -0.129  |
|         |           | 423.70       |     | -2.322E+00          | 2.913E+00 | 4.266E+00      | 1.378E+00 | -0.544  |
|         |           | 537.32       | *   | -1.392E-01          | 3.564E-01 | 5.774E-01      | 1.912E-01 | -0.241  |
| LA-140  | +         | 328.77       |     | 5.272E-01           | 4.432E-01 | 7.376E-01      | 6.907E-02 | 0.715   |
|         |           | 432.53       |     | -3.118E+00          | 3.118E+00 | 4.628E+00      | 4.025E-01 | -0.674  |
|         |           | 487.03       |     | 8.858E-02           | 1.798E-01 | 3.004E-01      | 2.698E-02 | 0.295   |
|         |           | 751.79       |     | 2.307E-01           | 2.352E+00 | 3.920E+00      | 3.737E-01 | 0.059   |
|         |           | 815.85       |     | -9.301E-02          | 4.592E-01 | 7.395E-01      | 7.256E-02 | -0.126  |
|         |           | 867.82       |     | 3.677E-01           | 1.987E+00 | 3.028E+00      | 2.855E-01 | 0.121   |
|         |           | 919.63       |     | 2.009E-01           | 3.880E+00 | 6.003E+00      | 6.597E-01 | 0.033   |
|         |           | 925.24       |     | -1.674E-01          | 1.517E+00 | 2.442E+00      | 2.332E-01 | -0.069  |
|         |           | 1596.49      | *   | -1.004E-01          | 1.218E-01 | 1.248E-01      | 1.077E-02 | -0.805  |
| CE-141  |           | 145.44       | *   | 6.887E-02           | 8.576E-02 | 1.451E-01      | 1.262E-02 | 0.475   |
| CE-143  |           | 57.37        |     | -2.795E-04          | 8.576E-02 | Half-Life      | too short |         |
|         |           | 231.56       |     | 2.100E-03           | 8.576E-02 | Half-Life      | too short |         |
|         |           | 293.26       | *   | 3.861E-04           | 8.576E-02 | Half-Life      | too short |         |
|         |           | 350.59       |     | 2.676E-02           | 8.576E-02 | Half-Life      | too short |         |
|         |           | 490.36       |     | 7.687E-04           | 8.576E-02 | Half-Life      | too short |         |
|         |           | 664.57       |     | 8.270E-03           | 8.576E-02 | Half-Life      | too short |         |
|         |           | 721.93       |     | -2.051E-04          | 8.576E-02 | Half-Life      | too short |         |
| CE-144  |           | 80.11        |     | -2.021E+00          | 4.207E+00 | 4.548E+00      | 3.966E-01 | -0.444  |
|         |           | 133.54       | *   | -1.484E-01          | 2.867E-01 | 4.401E-01      | 6.850E-02 | -0.337  |
| PM-144  |           | 476.78       |     | 4.333E-02           | 9.946E-02 | 1.649E-01      | 1.523E-02 | 0.263   |
|         |           | 618.01       |     | -1.079E-02          | 4.364E-02 | 6.713E-02      | 5.780E-03 | -0.161  |
|         |           | 696.49       | *   | 1.945E-03           | 4.548E-02 | 7.577E-02      | 6.340E-03 | 0.026   |
|         |           | 778.57       |     | -2.028E+00          | 3.092E+00 | 4.752E+00      | 4.142E-01 | -0.427  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-------------------------|-----------|----------------|-----------|---------|
| PR-144  |           | 696.49 *     | 1.318E-01               | 3.082E+00 | 5.134E+00      | 4.295E-01 | 0.026   |
|         |           | 1489.15      | 2.602E+00               | 1.442E+01 | 2.461E+01      | 2.130E+00 | 0.106   |
| PM-146  |           | 453.90 *     | -5.372E-02              | 6.493E-02 | 9.723E-02      | 1.021E-02 | -0.552  |
|         |           | 633.02       | -4.078E-02              | 1.806E+00 | 3.009E+00      | 1.122E+00 | -0.014  |
|         |           | 735.90       | -5.050E-02              | 2.044E-01 | 3.295E-01      | 9.417E-02 | -0.153  |
|         |           | 747.13       | -1.172E-01              | 1.302E-01 | 1.951E-01      | 2.735E-02 | -0.601  |
| ND-147  | +         | 91.11        | 7.892E-01               | 4.325E-01 | 7.239E-01      | 7.155E-02 | 1.090   |
|         |           | 319.41       | -1.582E+00              | 4.592E+00 | 7.357E+00      | 6.600E-01 | -0.215  |
|         |           | 439.89       | -3.780E+00              | 8.613E+00 | 1.340E+01      | 1.112E+00 | -0.282  |
|         |           | 531.02 *     | -2.167E-01              | 7.431E-01 | 1.223E+00      | 1.819E-01 | -0.177  |
| PM-149  |           | 285.90 *     | 8.621E+01               | 1.268E+02 | 2.157E+02      | 3.415E+01 | 0.400   |
| EU-152  |           | 121.78       | 4.745E-02               | 1.021E-01 | 1.654E-01      | 1.666E-02 | 0.287   |
|         |           | 244.69       | 3.511E-01               | 5.063E-01 | 7.724E-01      | 7.030E-02 | 0.455   |
|         |           | 344.27 *     | -9.979E-02              | 1.563E-01 | 2.239E-01      | 2.070E-02 | -0.446  |
|         |           | 443.98       | 1.980E-01               | 1.362E+00 | 2.218E+00      | 1.843E-01 | 0.089   |
|         |           | 778.89       | -1.225E-01              | 3.504E-01 | 5.570E-01      | 4.854E-02 | -0.220  |
|         |           | 867.32       | 9.356E-01               | 1.178E+00 | 1.877E+00      | 1.687E-01 | 0.498   |
|         | +         | 964.01       | 7.706E-01               | 4.345E-01 | 7.902E-01      | 7.089E-02 | 0.975   |
|         |           | 1085.78      | -1.395E-01              | 5.223E-01 | 8.133E-01      | 6.973E-02 | -0.172  |
|         |           | 1112.02      | 3.462E-01               | 4.238E-01 | 7.146E-01      | 6.035E-02 | 0.484   |
|         |           | 1407.95      | 2.386E-01               | 2.495E-01 | 4.657E-01      | 4.011E-02 | 0.512   |
| GD-153  |           | 69.67        | -6.539E-01              | 2.332E+00 | 3.541E+00      | 2.840E-01 | -0.185  |
|         | +         | 83.37        | 3.349E+01               | 2.557E+01 | 3.413E+01      | 3.073E+00 | 0.981   |
|         |           | 97.43 *      | -7.945E-02              | 1.224E-01 | 1.649E-01      | 1.465E-02 | -0.482  |
|         |           | 103.18       | -9.276E-02              | 1.524E-01 | 2.362E-01      | 2.060E-02 | -0.393  |
| EU-154  |           | 123.07       | 6.724E-03               | 7.232E-02 | 1.152E-01      | 1.322E-02 | 0.058   |
|         |           | 247.94       | 2.593E-01               | 5.179E-01 | 8.207E-01      | 9.726E-02 | 0.316   |
|         |           | 591.81       | -1.661E-01              | 7.521E-01 | 1.235E+00      | 1.424E-01 | -0.135  |
|         |           | 723.30       | -3.611E-02              | 2.746E-01 | 3.880E-01      | 3.651E-02 | -0.093  |
|         |           | 756.87       | -4.794E-01              | 1.075E+00 | 1.698E+00      | 2.035E-01 | -0.282  |
|         |           | 873.19       | -1.212E-01              | 3.986E-01 | 6.296E-01      | 7.880E-02 | -0.193  |
|         |           | 996.32       | 1.514E-01               | 5.118E-01 | 8.563E-01      | 1.533E-01 | 0.177   |
|         |           | 1004.76      | -1.439E-01              | 3.019E-01 | 4.621E-01      | 5.465E-02 | -0.311  |
|         |           | 1274.45 *    | -2.279E-02              | 1.809E-01 | 2.980E-01      | 3.319E-02 | -0.076  |
| EU-155  |           | 48.70        | -2.399E+00              | 4.050E+00 | 6.428E+00      | 5.501E-01 | -0.373  |
|         |           | 60.01        | 2.541E+00               | 7.993E+00 | 1.178E+01      | 8.905E-01 | 0.216   |
|         | +         | 86.54        | 5.486E-01               | 1.840E-01 | 2.592E-01      | 2.435E-02 | 2.116   |
|         |           | 105.31 *     | 1.529E-01               | 1.492E-01 | 2.480E-01      | 2.181E-02 | 0.617   |
| TB-160  | +         | 86.79        | 1.465E+00               | 4.909E-01 | 6.896E-01      | 6.440E-02 | 2.124   |
|         |           | 197.04       | 1.556E-01               | 7.631E-01 | 1.289E+00      | 1.133E-01 | 0.121   |
|         |           | 215.65       | 7.777E-01               | 1.033E+00 | 1.778E+00      | 1.589E-01 | 0.437   |
|         |           | 298.57       | 2.991E-01               | 2.384E-01 | 2.882E-01      | 2.620E-02 | 1.038   |
|         |           | 879.36 *     | 8.124E-04               | 1.971E-01 | 3.226E-01      | 2.909E-02 | 0.003   |
|         |           | 962.29       | 1.297E+00               | 8.105E-01 | 1.374E+00      | 1.233E-01 | 0.944   |
|         | +         | 966.15       | 5.290E-01               | 2.983E-01 | 6.547E-01      | 5.870E-02 | 0.808   |
|         |           | 1177.93      | 4.847E-02               | 5.025E-01 | 8.511E-01      | 6.901E-02 | 0.057   |
|         |           | 1271.85      | -6.667E-01              | 1.144E+00 | 1.799E+00      | 1.507E-01 | -0.371  |
| HO-166M |           | 80.57        | -6.222E-02              | 5.191E-01 | 5.787E-01      | 5.068E-02 | -0.108  |
|         |           | 184.41       | 1.493E-01               | 5.556E-02 | 9.091E-02      | 7.889E-03 | 1.642   |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| TM-171  |           | 280.46       |     | 2.213E-03           | 1.215E-01 | 2.005E-01      | 1.834E-02 | 0.011   |
|         |           | 410.95       |     | 3.789E-01           | 3.536E-01 | 6.113E-01      | 4.986E-02 | 0.620   |
|         |           | 711.68       | *   | 1.648E-02           | 9.003E-02 | 1.514E-01      | 1.278E-02 | 0.109   |
|         |           | 752.31       |     | 5.187E-02           | 3.784E-01 | 6.330E-01      | 5.451E-02 | 0.082   |
|         |           | 810.29       |     | -3.624E-02          | 8.423E-02 | 1.325E-01      | 1.169E-02 | -0.273  |
|         |           | 51.35        |     | 1.293E+01           | 4.801E+01 | 7.920E+01      | 6.591E+00 | 0.163   |
|         |           | 52.39        |     | -6.769E+00          | 2.478E+01 | 3.987E+01      | 3.273E+00 | -0.170  |
|         |           | 59.40        |     | 1.507E+01           | 4.168E+01 | 6.165E+01      | 4.646E+00 | 0.244   |
|         |           | 66.72        | *   | -8.892E+00          | 4.259E+01 | 6.073E+01      | 4.783E+00 | -0.146  |
|         |           | 88.36        |     | 1.080E+00           | 3.621E-01 | 5.136E-01      | 4.844E-02 | 2.104   |
| LU-176  | +         | 201.83       |     | -2.506E-02          | 3.946E-02 | 6.407E-02      | 5.659E-03 | -0.391  |
|         |           | 306.84       | *   | 1.176E-02           | 3.719E-02 | 5.501E-02      | 4.979E-03 | 0.214   |
|         |           | 401.10       |     | 2.199E+00           | 9.515E+00 | 1.566E+01      | 1.269E+00 | 0.140   |
|         |           | 112.95       |     | 3.775E-02           | 2.256E+00 | 3.542E+00      | 3.071E-01 | 0.011   |
| LU-177  |           | 208.36       | *   | 1.489E+00           | 1.802E+00 | 2.764E+00      | 2.456E-01 | 0.539   |
|         |           | 52.97        |     | 2.702E-02           | 2.534E+00 | 4.130E+00      | 3.364E-01 | 0.007   |
| LU-177M |           | 54.07        |     | 8.217E-01           | 1.287E+00 | 2.153E+00      | 1.728E-01 | 0.382   |
|         |           | 61.30        |     | 1.455E+00           | 2.395E+00 | 3.576E+00      | 2.728E-01 | 0.407   |
| HF-181  |           | 121.62       |     | 1.456E-01           | 5.281E-01 | 8.486E-01      | 7.454E-02 | 0.172   |
|         |           | 147.16       |     | -4.691E-01          | 8.525E-01 | 1.410E+00      | 1.203E-01 | -0.333  |
|         |           | 171.86       |     | 3.928E-01           | 6.253E-01 | 1.080E+00      | 9.246E-02 | 0.364   |
|         |           | 218.09       |     | 2.426E-01           | 1.167E+00 | 1.964E+00      | 1.760E-01 | 0.123   |
|         |           | 268.79       |     | 1.844E+00           | 1.301E+00 | 2.053E+00      | 1.879E-01 | 0.898   |
|         |           | 319.02       |     | -1.794E-01          | 3.609E-01 | 5.722E-01      | 5.135E-02 | -0.313  |
|         |           | 367.43       |     | -5.299E-01          | 1.241E+00 | 1.955E+00      | 1.650E-01 | -0.271  |
|         |           | 413.65       | *   | -4.012E-01          | 2.605E-01 | 3.691E-01      | 3.016E-02 | -1.087  |
|         |           | 56.28        |     | 1.760E-01           | 1.399E+00 | 2.288E+00      | 1.784E-01 | 0.077   |
|         |           | 57.53        |     | -2.416E-01          | 7.452E-01 | 1.193E+00      | 9.171E-02 | -0.202  |
|         |           | 65.20        |     | -1.793E+00          | 1.544E+00 | 2.115E+00      | 1.651E-01 | -0.848  |
|         |           | 133.02       |     | -5.043E-02          | 9.101E-02 | 1.397E-01      | 1.205E-02 | -0.361  |
|         |           | 136.25       |     | 9.497E-02           | 5.933E-01 | 1.013E+00      | 8.708E-02 | 0.094   |
|         |           | 345.85       |     | -1.561E-01          | 2.882E-01 | 4.364E-01      | 3.806E-02 | -0.358  |
|         |           | 482.03       | *   | -6.600E-02          | 6.106E-02 | 8.822E-02      | 7.433E-03 | -0.748  |
| W-181   |           | 56.28        |     | 6.985E-02           | 5.477E-01 | 8.958E-01      | 6.987E-02 | 0.078   |
|         |           | 57.53        |     | -9.465E-02          | 2.920E-01 | 4.676E-01      | 3.594E-02 | -0.202  |
|         |           | 65.20        | *   | -6.972E-01          | 6.002E-01 | 8.224E-01      | 6.420E-02 | -0.848  |
| TA-182  |           | 67.75        |     | 4.834E-02           | 1.645E-01 | 2.411E-01      | 1.911E-02 | 0.201   |
|         |           | 100.10       |     | 1.672E-01           | 2.423E-01 | 3.986E-01      | 3.505E-02 | 0.420   |
|         |           | 152.43       |     | 1.029E-01           | 4.340E-01 | 7.408E-01      | 6.311E-02 | 0.139   |
|         |           | 222.10       |     | -1.648E-01          | 4.617E-01 | 7.555E-01      | 6.789E-02 | -0.218  |
| RE-183  |           | 1001.68      |     | 1.050E+00           | 3.115E+00 | 5.240E+00      | 4.653E-01 | 0.200   |
|         | +         | 1121.28      |     | 8.373E-01           | 3.564E-01 | 5.111E-01      | 4.293E-02 | 1.638   |
|         |           | 1189.05      |     | -1.046E-01          | 4.305E-01 | 7.050E-01      | 5.742E-02 | -0.148  |
|         |           | 1221.42      | *   | -1.377E-01          | 2.816E-01 | 4.498E-01      | 3.707E-02 | -0.306  |
|         |           | 1230.97      |     | -2.850E-01          | 7.188E-01 | 9.634E-01      | 7.968E-02 | -0.296  |
|         |           | 57.98        |     | -2.599E-01          | 2.966E-01 | 4.622E-01      | 3.535E-02 | -0.562  |
|         |           | 59.32        |     | 5.268E-02           | 1.712E-01 | 2.524E-01      | 1.904E-02 | 0.209   |
|         |           | 67.20        |     | 2.354E-02           | 3.019E-01 | 4.375E-01      | 3.455E-02 | 0.054   |
|         |           | 162.32       | *   | 2.676E-02           | 1.378E-01 | 2.345E-01      | 1.996E-02 | 0.114   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-------------------------|-----------|----------------|-----------|---------|
| RE-184  | +         | 208.81       | 2.977E+00               | 1.709E+00 | 2.538E+00      | 2.256E-01 | 1.173   |
|         |           | 291.72       | 2.908E-01               | 1.491E+00 | 2.185E+00      | 1.992E-01 | 0.133   |
|         |           | 57.98        | -9.578E-01              | 1.093E+00 | 1.703E+00      | 1.303E-01 | -0.562  |
|         |           | 59.32        | 1.940E-01               | 6.303E-01 | 9.296E-01      | 7.012E-02 | 0.209   |
|         |           | 67.20        | 8.671E-02               | 1.112E+00 | 1.612E+00      | 1.273E-01 | 0.054   |
|         |           | 161.27       | -3.332E-01              | 4.494E-01 | 7.323E-01      | 6.234E-02 | -0.455  |
|         |           | 216.55       | 8.564E-02               | 3.674E-01 | 6.191E-01      | 5.539E-02 | 0.138   |
|         | *         | 252.85       | -4.712E-01              | 3.095E-01 | 4.627E-01      | 4.223E-02 | -1.018  |
|         |           | 318.01       | -1.630E-01              | 6.346E-01 | 1.023E+00      | 9.189E-02 | -0.159  |
|         |           | 792.07       | -1.688E+00              | 1.479E+00 | 2.170E+00      | 1.901E-01 | -0.778  |
| OS-185  |           | 903.28       | 4.123E-01               | 1.406E+00 | 2.365E+00      | 2.141E-01 | 0.174   |
|         |           | 920.93       | -2.065E-01              | 6.044E-01 | 9.461E-01      | 8.550E-02 | -0.218  |
|         |           | 59.72        | 2.735E-01               | 4.644E-01 | 6.949E-01      | 5.241E-02 | 0.394   |
|         |           | 61.14        | 1.281E-01               | 2.629E-01 | 3.903E-01      | 2.974E-02 | 0.328   |
|         |           | 69.30        | -1.407E-01              | 4.208E-01 | 6.373E-01      | 5.099E-02 | -0.221  |
|         |           | 592.07       | -7.319E-01              | 3.090E+00 | 5.065E+00      | 4.272E-01 | -0.144  |
|         | *         | 646.12       | 1.660E-02               | 5.664E-02 | 9.682E-02      | 7.999E-03 | 0.171   |
|         |           | 717.42       | 3.381E-01               | 1.327E+00 | 2.244E+00      | 1.899E-01 | 0.151   |
|         |           | 874.81       | 2.270E-02               | 7.729E-01 | 1.269E+00      | 1.143E-01 | 0.018   |
|         |           | 880.27       | -3.553E-01              | 1.111E+00 | 1.755E+00      | 1.583E-01 | -0.202  |
| RE-188  | *         | 155.03       | 9.117E-02               | 2.221E-01 | 3.814E-01      | 3.248E-02 | 0.239   |
|         |           | 477.96       | 2.796E+00               | 4.473E+00 | 7.518E+00      | 6.328E-01 | 0.372   |
|         |           | 633.10       | 3.377E-01               | 3.600E+00 | 6.059E+00      | 5.038E-01 | 0.056   |
| W-188   | +         | 63.58        | 5.549E+01               | 1.183E+02 | 1.383E+02      | 1.070E+01 | 0.401   |
|         |           | 227.08       | 3.536E+00               | 1.712E+01 | 2.878E+01      | 2.595E+00 | 0.123   |
| IR-192  | *         | 290.67       | 1.951E+00               | 1.192E+01 | 1.743E+01      | 1.590E+00 | 0.112   |
|         | +         | 295.96       | 1.136E+00               | 2.656E-01 | 3.856E-01      | 3.533E-02 | 2.946   |
|         |           | 308.46       | 7.288E-02               | 1.336E-01 | 2.194E-01      | 1.993E-02 | 0.332   |
|         | *         | 316.51       | 1.993E-02               | 4.853E-02 | 8.148E-02      | 7.341E-03 | 0.245   |
|         |           | 468.07       | -1.102E-01              | 1.015E-01 | 1.483E-01      | 1.338E-02 | -0.743  |
|         |           | 604.41       | 5.324E-01               | 6.468E-01 | 1.026E+00      | 1.321E-01 | 0.519   |
|         |           | 612.46       | 3.569E+00               | 1.293E+00 | 2.262E+00      | 2.193E-01 | 1.578   |
| AU-195  |           | 65.12        | -2.923E-01              | 2.790E-01 | 3.852E-01      | 3.006E-02 | -0.759  |
|         |           | 66.83        | -2.186E-02              | 1.409E-01 | 2.016E-01      | 1.589E-02 | -0.108  |
|         | +         | 75.70        | 1.423E+00               | 3.545E-01 | 6.310E-01      | 5.291E-02 | 2.256   |
|         | *         | 98.88        | -1.483E-01              | 3.194E-01 | 4.909E-01      | 4.334E-02 | -0.302  |
|         |           | 129.76       | 4.620E+00               | 4.087E+00 | 6.764E+00      | 5.859E-01 | 0.683   |
| TL-200  | *         | 367.94       | -1.533E-04              | 4.087E+00 | Half-Life      | too short |         |
|         |           | 579.30       | -5.183E-04              | 4.087E+00 | Half-Life      | too short |         |
|         |           | 828.27       | -1.382E-03              | 4.087E+00 | Half-Life      | too short |         |
|         |           | 1205.75      | -1.454E-03              | 4.087E+00 | Half-Life      | too short |         |
| TL-201  |           | 68.90        | -2.854E+00              | 6.775E+00 | 1.022E+01      | 8.156E-01 | -0.279  |
|         |           | 70.82        | -1.108E+00              | 4.075E+00 | 5.782E+00      | 4.673E-01 | -0.192  |
|         |           | 80.30        | -4.679E+00              | 9.886E+00 | 1.069E+01      | 9.341E-01 | -0.438  |
|         |           | 135.34       | 1.485E+01               | 3.408E+01 | 5.496E+01      | 4.727E+00 | 0.270   |
| TL-202  | *         | 167.43       | -2.079E+00              | 8.936E+00 | 1.490E+01      | 1.271E+00 | -0.139  |
|         |           | 68.90        | -2.580E-01              | 6.125E-01 | 9.238E-01      | 7.373E-02 | -0.279  |
|         |           | 70.82        | -9.988E-02              | 3.674E-01 | 5.212E-01      | 4.213E-02 | -0.192  |
|         |           | 80.30        | -4.220E-01              | 8.915E-01 | 9.642E-01      | 8.423E-02 | -0.438  |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| HG-203  |           | 439.56       | *   | -5.261E-02          | 1.024E-01 | 1.584E-01      | 1.313E-02 | -0.332  |
|         |           | 70.83        |     | -4.207E-01          | 1.595E+00 | 2.263E+00      | 3.003E-01 | -0.186  |
|         |           | 72.87        |     | 1.141E+00           | 9.439E-01 | 1.423E+00      | 1.840E-01 | 0.802   |
|         |           | 82.60        |     | 1.293E+00           | 1.471E+00 | 2.430E+00      | 3.389E-01 | 0.532   |
| BI-207  |           | 279.20       | *   | 1.020E-01           | 5.801E-02 | 1.030E-01      | 9.660E-03 | 0.990   |
|         |           | 72.80        |     | 2.453E-01           | 2.718E-01 | 4.078E-01      | 3.343E-02 | 0.601   |
|         | +         | 74.97        |     | 7.896E-01           | 1.966E-01 | 3.103E-01      | 2.586E-02 | 2.545   |
|         | +         | 84.90        |     | 4.331E-01           | 3.307E-01 | 4.509E-01      | 4.126E-02 | 0.961   |
| TL-207  |           | 569.67       |     | 1.216E-02           | 4.164E-02 | 7.144E-02      | 6.052E-03 | 0.170   |
|         |           | 1063.62      | *   | 5.115E-02           | 7.103E-02 | 1.240E-01      | 1.075E-02 | 0.412   |
|         |           | 1770.23      |     | 2.242E-01           | 5.633E-01 | 9.072E-01      | 7.596E-02 | 0.247   |
|         |           | 81.07        |     | -2.720E-01          | 4.271E-01 | 4.547E-01      | 4.001E-02 | -0.598  |
|         | +         | 83.78        |     | 2.856E-01           | 2.181E-01 | 2.965E-01      | 2.682E-02 | 0.963   |
|         |           | 94.90        |     | 9.907E-01           | 3.559E-01 | 5.660E-01      | 5.089E-02 | 1.750   |
|         |           | 122.32       |     | 2.823E-01           | 2.459E+00 | 3.920E+00      | 3.689E-01 | 0.072   |
|         |           | 144.24       |     | 2.692E-01           | 9.162E-01 | 1.523E+00      | 1.458E-01 | 0.177   |
|         |           | 154.21       |     | 3.912E-01           | 5.184E-01 | 9.004E-01      | 8.450E-02 | 0.434   |
|         | +         | 269.46       |     | 7.696E-01           | 4.015E-01 | 4.986E-01      | 4.646E-02 | 1.544   |
|         |           | 323.87       | *   | 7.254E-01           | 1.038E+00 | 1.567E+00      | 2.798E-01 | 0.463   |
|         | +         | 338.28       |     | 6.560E+00           | 2.769E+00 | 3.515E+00      | 4.373E-01 | 1.866   |
| PO-209  |           | 445.03       |     | -1.440E+00          | 3.283E+00 | 5.096E+00      | 6.049E-01 | -0.283  |
|         |           | 260.50       |     | -8.199E-01          | 1.349E+01 | 2.225E+01      | 2.034E+00 | -0.037  |
|         |           | 262.80       |     | -1.631E+01          | 3.778E+01 | 6.100E+01      | 5.579E+00 | -0.267  |
|         |           | 896.60       | *   | -7.273E-01          | 1.037E+01 | 1.682E+01      | 1.523E+00 | -0.043  |
| BI-210  |           | 46.50        | *   | 5.142E+00           | 5.967E+00 | 1.008E+01      | 9.516E-01 | 0.510   |
| PB-210  |           | 46.50        | *   | 5.142E+00           | 5.967E+00 | 1.008E+01      | 9.516E-01 | 0.510   |
| PO-210  |           | 46.50        | *   | 5.142E+00           | 5.963E+00 | 1.008E+01      | 8.642E-01 | 0.510   |
| PB-211  |           | 404.84       | *   | 6.158E-01           | 1.392E+00 | 2.235E+00      | 1.399E+00 | 0.276   |
| BI-212  |           | 427.08       |     | 8.890E-01           | 3.153E+00 | 5.112E+00      | 3.174E+00 | 0.174   |
|         |           | 831.96       |     | 4.558E-01           | 1.664E+00 | 2.765E+00      | 1.733E+00 | 0.165   |
|         | +         | 727.18       | *   | 1.024E+00           | 5.422E-01 | 9.149E-01      | 9.066E-02 | 1.119   |
|         |           | 785.46       |     | 1.492E+00           | 2.544E+00 | 4.401E+00      | 3.846E-01 | 0.339   |
| PO-215  |           | 1620.62      |     | 4.066E-01           | 1.832E+00 | 3.058E+00      | 2.632E-01 | 0.133   |
|         |           | 81.07        |     | -2.720E-01          | 4.271E-01 | 4.547E-01      | 4.001E-02 | -0.598  |
|         | +         | 83.78        |     | 2.856E-01           | 2.181E-01 | 2.965E-01      | 2.682E-02 | 0.963   |
|         |           | 94.90        |     | 9.907E-01           | 3.559E-01 | 5.660E-01      | 5.089E-02 | 1.750   |
|         |           | 122.32       |     | 2.823E-01           | 2.459E+00 | 3.920E+00      | 3.689E-01 | 0.072   |
|         |           | 144.24       |     | 2.692E-01           | 9.162E-01 | 1.523E+00      | 1.458E-01 | 0.177   |
|         |           | 154.21       |     | 3.912E-01           | 5.184E-01 | 9.004E-01      | 8.450E-02 | 0.434   |
|         | +         | 269.46       |     | 7.696E-01           | 4.015E-01 | 4.986E-01      | 4.646E-02 | 1.544   |
|         |           | 323.87       | *   | 7.254E-01           | 1.038E+00 | 1.567E+00      | 2.798E-01 | 0.463   |
|         | +         | 338.28       |     | 6.560E+00           | 2.769E+00 | 3.515E+00      | 4.373E-01 | 1.866   |
|         |           | 445.03       |     | -1.440E+00          | 3.283E+00 | 5.096E+00      | 6.049E-01 | -0.283  |
|         | +         | 271.23       |     | 9.875E-01           | 5.178E-01 | 6.092E-01      | 6.554E-02 | 1.621   |
| RN-219  |           | 401.81       | *   | -1.625E-01          | 5.929E-01 | 9.406E-01      | 1.386E-01 | -0.173  |
| RN-220  |           | 549.76       | *   | 2.136E+01           | 3.530E+01 | 6.203E+01      | 5.265E+00 | 0.344   |
| RA-223  |           | 81.07        |     | -2.720E-01          | 4.271E-01 | 4.547E-01      | 4.001E-02 | -0.598  |
|         | +         | 83.78        |     | 2.856E-01           | 2.181E-01 | 2.965E-01      | 2.682E-02 | 0.963   |
|         |           | 94.90        |     | 9.907E-01           | 3.559E-01 | 5.660E-01      | 5.089E-02 | 1.750   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| AC-227  |           | 122.32       |     | 2.823E-01           | 2.459E+00 | 3.920E+00      | 3.689E-01 | 0.072   |
|         |           | 144.24       |     | 2.692E-01           | 9.162E-01 | 1.523E+00      | 1.458E-01 | 0.177   |
|         |           | 154.21       |     | 3.912E-01           | 5.184E-01 | 9.004E-01      | 8.450E-02 | 0.434   |
|         | +         | 269.46       |     | 7.696E-01           | 4.015E-01 | 4.986E-01      | 4.646E-02 | 1.544   |
|         |           | 323.87       | *   | 7.254E-01           | 1.038E+00 | 1.567E+00      | 2.798E-01 | 0.463   |
|         | +         | 338.28       |     | 6.560E+00           | 2.769E+00 | 3.515E+00      | 4.373E-01 | 1.866   |
|         |           | 445.03       |     | -1.440E+00          | 3.283E+00 | 5.096E+00      | 6.049E-01 | -0.283  |
|         |           | 79.80        |     | -1.135E+00          | 3.278E+00 | 3.579E+00      | 7.707E-01 | -0.317  |
|         |           | 236.00       |     | 1.355E-01           | 3.329E-01 | 4.990E-01      | 6.268E-02 | 0.272   |
|         |           | 256.20       | *   | 7.292E-02           | 5.120E-01 | 8.540E-01      | 1.336E-01 | 0.085   |
|         |           | 286.10       |     | 9.882E-01           | 2.166E+00 | 3.652E+00      | 4.945E-01 | 0.271   |
|         | +         | 299.80       |     | 7.515E+00           | 3.613E+00 | 3.836E+00      | 6.799E-01 | 1.959   |
| TH-227  |           | 304.40       |     | 3.417E-01           | 2.740E+00 | 3.989E+00      | 7.439E-01 | 0.086   |
|         |           | 334.20       |     | -1.336E+00          | 3.670E+00 | 5.075E+00      | 9.901E-01 | -0.263  |
|         |           | 79.80        |     | -1.135E+00          | 3.278E+00 | 3.579E+00      | 7.805E-01 | -0.317  |
|         | +         | 94.00        |     | 1.444E+01           | 5.059E+00 | 5.718E+00      | 1.255E+00 | 2.524   |
|         |           | 236.00       |     | 1.355E-01           | 3.328E-01 | 4.990E-01      | 5.702E-02 | 0.272   |
|         |           | 256.20       | *   | 7.292E-02           | 5.120E-01 | 8.540E-01      | 1.564E-01 | 0.085   |
|         |           | 286.10       |     | 9.882E-01           | 2.379E+00 | 3.652E+00      | 3.667E+00 | 0.271   |
|         | +         | 299.80       |     | 7.515E+00           | 3.613E+00 | 3.836E+00      | 6.799E-01 | 1.959   |
|         |           | 304.40       |     | 3.417E-01           | 2.740E+00 | 3.989E+00      | 7.439E-01 | 0.086   |
|         |           | 334.20       |     | -1.336E+00          | 3.670E+00 | 5.075E+00      | 9.901E-01 | -0.263  |
|         | +         | 85.43        |     | 4.275E-01           | 3.264E-01 | 4.615E-01      | 4.247E-02 | 0.926   |
|         | +         | 88.47        |     | 6.219E-01           | 2.084E-01 | 2.954E-01      | 2.783E-02 | 2.105   |
| TH-229  |           | 100.00       |     | 1.811E-01           | 2.504E-01 | 4.125E-01      | 3.628E-02 | 0.439   |
|         |           | 193.63       | *   | -2.009E-02          | 6.822E-01 | 1.142E+00      | 1.000E-01 | -0.018  |
|         | +         | 210.97       |     | 2.332E+00           | 1.338E+00 | 1.898E+00      | 1.691E-01 | 1.228   |
|         |           | 283.67       | *   | -2.223E+00          | 2.228E+00 | 3.421E+00      | 5.297E-01 | -0.650  |
|         | +         | 301.29       |     | 3.006E+00           | 1.396E+00 | 1.567E+00      | 1.970E-01 | 1.918   |
|         | TH-231    | 81.07        |     | -2.720E-01          | 4.271E-01 | 4.547E-01      | 4.001E-02 | -0.598  |
|         | +         | 83.78        |     | 2.856E-01           | 2.181E-01 | 2.965E-01      | 2.682E-02 | 0.963   |
|         |           | 94.90        |     | 9.907E-01           | 3.559E-01 | 5.660E-01      | 5.089E-02 | 1.750   |
|         |           | 122.32       |     | 2.823E-01           | 2.459E+00 | 3.920E+00      | 3.689E-01 | 0.072   |
|         |           | 144.24       |     | 2.692E-01           | 9.162E-01 | 1.523E+00      | 1.458E-01 | 0.177   |
|         |           | 154.21       |     | 3.912E-01           | 5.184E-01 | 9.004E-01      | 8.450E-02 | 0.434   |
|         | +         | 269.46       |     | 7.696E-01           | 4.015E-01 | 4.986E-01      | 4.646E-02 | 1.544   |
| U-231   |           | 323.87       | *   | 7.254E-01           | 1.038E+00 | 1.567E+00      | 2.798E-01 | 0.463   |
|         | +         | 338.28       |     | 6.560E+00           | 2.769E+00 | 3.515E+00      | 4.373E-01 | 1.866   |
|         |           | 445.03       |     | -1.440E+00          | 3.283E+00 | 5.096E+00      | 6.049E-01 | -0.283  |
|         | +         | 84.21        |     | 1.224E+01           | 9.343E+00 | 1.266E+01      | 1.150E+00 | 0.966   |
|         | +         | 92.29        |     | 1.419E+01           | 4.082E+00 | 6.056E+00      | 5.533E-01 | 2.343   |
|         |           | 95.87        | *   | -7.460E-02          | 1.540E+00 | 2.185E+00      | 1.955E-01 | -0.034  |
|         |           | 108.00       |     | -2.638E+00          | 2.823E+00 | 4.283E+00      | 3.713E-01 | -0.616  |
|         | PA-233    | 75.28        |     | 2.304E+01           | 6.441E+00 | 9.464E+00      | 1.439E+00 | 2.435   |
|         | +         | 86.59        |     | 8.918E+00           | 3.750E+00 | 4.211E+00      | 1.139E+00 | 2.118   |
|         | +         | 300.12       |     | 2.095E+00           | 9.888E-01 | 1.077E+00      | 1.632E-01 | 1.945   |
|         |           | 311.98       | *   | -4.636E-02          | 9.122E-02 | 1.448E-01      | 1.340E-02 | -0.320  |
|         |           | 340.50       |     | 4.609E+00           | 1.583E+00 | 2.048E+00      | 4.893E-01 | 2.251   |
|         |           | 398.62       |     | -2.633E+00          | 3.127E+00 | 4.632E+00      | 1.226E+00 | -0.568  |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Activity Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|---------------------|-----------|----------------|-----------|---------|
| PA-234  | +         | 415.76       |              | 4.762E-01           | 2.291E+00 | 3.757E+00      | 8.034E-01 | 0.127   |
|         |           | 63.00        |              | 1.610E+00           | 3.438E+00 | 4.175E+00      | 6.268E-01 | 0.386   |
|         |           | 94.67        |              | 9.799E-01           | 2.823E-01 | 4.320E-01      | 5.473E-02 | 2.269   |
|         |           | 98.44        |              | -1.134E-01          | 1.493E-01 | 1.936E-01      | 1.081E-01 | -0.586  |
|         |           | 99.86        |              | 4.253E-01           | 6.326E-01 | 1.040E+00      | 9.152E-02 | 0.409   |
|         |           | 111.00       |              | 4.594E-02           | 2.470E-01 | 3.966E-01      | 4.807E-02 | 0.116   |
|         |           | 131.20       |              | -9.954E-02          | 1.523E-01 | 2.332E-01      | 2.015E-02 | -0.427  |
|         |           | 152.70       |              | 1.248E-01           | 4.167E-01 | 7.123E-01      | 1.211E-01 | 0.175   |
|         |           | 186.00       |              | 8.135E+00           | 3.537E+00 | 3.841E+00      | 1.200E+00 | 2.118   |
|         |           | 226.40       |              | 3.807E-01           | 5.284E-01 | 9.065E-01      | 1.220E-01 | 0.420   |
|         |           | 227.20       |              | 1.090E-01           | 5.780E-01 | 9.708E-01      | 8.754E-02 | 0.112   |
|         |           | 248.90       |              | 1.014E+00           | 1.143E+00 | 1.889E+00      | 4.271E-01 | 0.537   |
|         |           | 293.70       |              | 4.076E+00           | 1.403E+00 | 2.095E+00      | 3.677E-01 | 1.945   |
|         |           | 369.80       |              | -7.724E-01          | 1.213E+00 | 1.865E+00      | 4.047E-01 | -0.414  |
|         |           | 568.70       |              | -1.825E-01          | 1.346E+00 | 2.236E+00      | 1.894E-01 | -0.082  |
|         |           | 569.50       |              | 6.056E-02           | 3.654E-01 | 6.213E-01      | 5.264E-02 | 0.097   |
|         |           | 574.00       |              | -2.152E-01          | 2.068E+00 | 3.443E+00      | 2.915E-01 | -0.063  |
|         |           | 699.00       |              | -9.518E-01          | 9.911E-01 | 1.476E+00      | 2.801E-01 | -0.645  |
|         |           | 706.10       |              | 9.187E-01           | 1.557E+00 | 2.613E+00      | 1.164E+00 | 0.352   |
|         |           | 733.00       |              | 2.015E-01           | 5.938E-01 | 9.239E-01      | 2.047E-01 | 0.218   |
|         |           | 742.81       |              | 1.863E+00           | 2.278E+00 | 3.417E+00      | 2.297E+00 | 0.545   |
|         |           | 796.30       |              | 1.559E+00           | 1.407E+00 | 2.422E+00      | 6.563E-01 | 0.644   |
|         |           | 805.60       |              | 6.076E-01           | 1.542E+00 | 2.519E+00      | 7.735E-01 | 0.241   |
|         |           | 819.60       |              | -9.926E-01          | 1.815E+00 | 2.752E+00      | 1.048E+00 | -0.361  |
|         |           | 826.30       |              | -5.562E-01          | 1.269E+00 | 1.957E+00      | 8.764E-01 | -0.284  |
|         |           | 831.60       |              | 3.846E-01           | 8.539E-01 | 1.451E+00      | 4.342E-01 | 0.265   |
|         |           | 876.40       |              | 2.333E-01           | 1.151E+00 | 1.884E+00      | 1.938E+00 | 0.124   |
|         |           | 880.51       |              | -1.564E-01          | 4.032E-01 | 6.322E-01      | 5.702E-02 | -0.247  |
|         |           | 883.24       |              | 2.384E-01           | 4.354E-01 | 7.018E-01      | 4.721E-01 | 0.340   |
|         |           | 899.00       |              | 5.606E-01           | 1.191E+00 | 1.999E+00      | 8.756E-01 | 0.280   |
|         |           | 925.00       |              | -1.742E-01          | 1.579E+00 | 2.541E+00      | 2.295E-01 | -0.069  |
|         |           | 926.50       |              | 8.965E-02           | 2.276E-01 | 3.860E-01      | 9.813E-02 | 0.232   |
|         |           | 946.00       | *            | -2.684E-01          | 4.389E-01 | 6.617E-01      | 1.253E-01 | -0.406  |
|         |           | 949.00       |              | 6.341E-01           | 6.585E-01 | 1.170E+00      | 1.053E-01 | 0.542   |
|         |           | 980.50       |              | -4.700E-01          | 1.145E+00 | 1.780E+00      | 1.591E-01 | -0.264  |
|         |           | 1394.10      |              | -2.871E-01          | 1.389E+00 | 2.201E+00      | 1.432E+00 | -0.130  |
| PA-234M |           | 766.42       |              | 2.015E+01           | 1.936E+01 | 2.975E+01      | 1.510E+01 | 0.677   |
|         |           | 1001.03      | *            | 1.178E+00           | 7.091E+00 | 1.174E+01      | 1.196E+00 | 0.100   |
| U-235   | +         | 89.95        |              | 3.149E+00           | 1.959E+00 | 2.557E+00      | 7.941E-01 | 1.232   |
|         |           | 93.35        |              | 4.491E+00           | 1.762E+00 | 1.892E+00      | 5.329E-01 | 2.374   |
|         |           | 105.00       |              | 1.084E+00           | 1.522E+00 | 2.449E+00      | 7.313E-01 | 0.443   |
|         |           | 143.76       | *            | 1.847E-02           | 2.846E-01 | 4.691E-01      | 8.196E-02 | 0.039   |
|         |           | 163.35       |              | -6.999E-02          | 6.147E-01 | 9.958E-01      | 1.895E-01 | -0.070  |
| NP-236  | +         | 185.71       |              | 3.013E-01           | 9.480E-02 | 1.406E-01      | 1.222E-02 | 2.142   |
|         |           | 205.31       |              | 4.984E-01           | 8.069E-01 | 1.207E+00      | 2.315E-01 | 0.413   |
|         |           | 94.67        |              | 7.473E-01           | 2.039E-01 | 3.281E-01      | 2.953E-02 | 2.278   |
|         |           | 98.44        |              | -8.578E-02          | 1.025E-01 | 1.463E-01      | 1.294E-02 | -0.586  |
|         |           | 111.00       |              | 3.475E-02           | 1.868E-01 | 3.000E-01      | 2.599E-02 | 0.116   |
|         |           | 160.31       | *            | -3.521E-02          | 1.024E-01 | 1.702E-01      | 1.449E-02 | -0.207  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| NP-239  |           | 99.55        |     | 4.171E-02           | 2.152E-01 | 3.469E-01      | 3.056E-02 | 0.120   |
|         |           | 117.00       | *   | 8.391E-02           | 2.626E-01 | 4.233E-01      | 3.687E-02 | 0.198   |
|         | +         | 209.75       |     | 2.349E+00           | 1.348E+00 | 1.939E+00      | 1.725E-01 | 1.211   |
|         |           | 228.18       |     | -7.003E-02          | 3.008E-01 | 4.948E-01      | 4.464E-02 | -0.142  |
|         |           | 277.60       |     | 1.004E-01           | 2.524E-01 | 4.248E-01      | 3.886E-02 | 0.236   |
| AM-241  |           | 334.30       |     | -8.117E-01          | 2.073E+00 | 2.864E+00      | 2.533E-01 | -0.283  |
|         |           | 59.54        | *   | 1.019E-01           | 2.437E-01 | 3.614E-01      | 2.978E-02 | 0.282   |
|         | CM-243    | 99.55        |     | 4.292E-02           | 2.215E-01 | 3.570E-01      | 3.144E-02 | 0.120   |
|         |           | 103.76       | *   | 3.803E-02           | 1.358E-01 | 2.193E-01      | 1.911E-02 | 0.173   |
|         |           | 117.00       |     | 8.633E-02           | 2.701E-01 | 4.355E-01      | 3.793E-02 | 0.198   |
|         |           | 209.75       | +   | 2.316E+00           | 1.329E+00 | 1.912E+00      | 1.701E-01 | 1.211   |
| AM-246  |           | 228.18       |     | -7.076E-02          | 3.040E-01 | 4.999E-01      | 4.511E-02 | -0.142  |
|         |           | 277.60       |     | 1.012E-01           | 2.545E-01 | 4.283E-01      | 3.917E-02 | 0.236   |
|         |           | 798.80       |     | -3.552E-02          | 2.096E-01 | 3.398E-01      | 2.985E-02 | -0.105  |
|         |           | 1036.00      |     | 5.412E-04           | 4.548E-01 | 7.359E-01      | 6.456E-02 | 0.001   |
|         |           | 1062.04      |     | 9.726E-02           | 3.043E-01 | 5.102E-01      | 4.426E-02 | 0.191   |
| CM-247  |           | 1078.86      | *   | 1.015E-01           | 2.057E-01 | 3.497E-01      | 3.009E-02 | 0.290   |
|         |           | 278.00       |     | 8.138E-01           | 1.062E+00 | 1.817E+00      | 1.662E-01 | 0.448   |
|         |           | 287.40       |     | 7.311E-01           | 1.723E+00 | 2.903E+00      | 2.651E-01 | 0.252   |
| CF-249  |           | 402.60       | *   | -4.289E-03          | 5.383E-02 | 8.666E-02      | 7.028E-03 | -0.049  |
|         |           | 252.85       |     | -1.768E+00          | 1.161E+00 | 1.736E+00      | 1.585E-01 | -1.018  |
|         |           | 333.44       |     | -3.328E-01          | 3.471E-01 | 3.660E-01      | 3.240E-02 | -0.909  |
| CF-251  |           | 387.95       | *   | 1.214E-03           | 5.672E-02 | 9.216E-02      | 7.476E-03 | 0.013   |
|         |           | 176.60       | *   | -1.519E-01          | 1.644E-01 | 2.641E-01      | 2.273E-02 | -0.575  |
|         |           | 227.00       |     | 3.033E-01           | 5.060E-01 | 8.655E-01      | 7.804E-02 | 0.350   |
|         |           | 285.00       |     | -1.655E+00          | 2.450E+00 | 3.871E+00      | 3.536E-01 | -0.427  |



# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630013      *
* Acquisition date   : 23-JAN-2010 14:05:28 Detector SN#                   *
* Detector ID        : GAM01 Sensitivity : 5.000                          *
* Geometry           : CAN Energy tolerance: 1.500                        *
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000             *
* Elapsed real time  : 0 02:00:01.08 Half life ratio : 8.000              *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date       : 8-JAN-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID         : G244630013 Analyst initials: MXR1                  *
* Batch Number      : 941639 Sample Quantity : 1.0083E+02 GRAM           *
* Recovery          : 1.00000 Carrier Weight : 0.00000                  *
*****
*
*                                     QC DATA                               *
*
* Standard Weight   : 0.00000                                             *
* CALIB. DATE/TIME : 12-JAN-2010 15:15:52 MS Isotope :                   *
* MSD DPM           : 0.000 MSD Isotope :                               *
* LCS DPM           : 0.000 LCS Isotope :                               *
* LCSD DPM          : 0.000 LCSD Isotope :                               *
*****

```

## Combined Activity-MDA Report

### ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act error | MDA<br>(pCi/GRAM ) |           |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 3.172E+01               | 3.618E+00 | 6.512E-01          | 0.000E+00 |
| CD-109  | 4.634E+00               | 1.522E+00 | 1.647E+00          | 0.000E+00 |
| SN-126  | 4.555E-01               | 1.496E-01 | 1.627E-01          | 0.000E+00 |
| BA-137M | 5.652E-01               | 1.102E-01 | 8.728E-02          | 0.000E+00 |
| CS-137  | 5.975E-01               | 1.165E-01 | 9.226E-02          | 0.000E+00 |
| TL-208  | 5.463E-01               | 1.128E-01 | 7.327E-02          | 0.000E+00 |
| BI-211  | 4.758E+00               | 7.792E-01 | 4.524E-01          | 0.000E+00 |
| PB-212  | 1.895E+00               | 2.413E-01 | 1.185E-01          | 0.000E+00 |
| PO-212  | 1.895E+00               | 2.413E-01 | 1.185E-01          | 0.000E+00 |
| BI-214  | 1.423E+00               | 2.787E-01 | 1.639E-01          | 0.000E+00 |
| PB-214  | 1.655E+00               | 2.840E-01 | 1.631E-01          | 0.000E+00 |
| PO-214  | 1.655E+00               | 2.840E-01 | 1.631E-01          | 0.000E+00 |
| PO-216  | 1.895E+00               | 2.413E-01 | 1.185E-01          | 0.000E+00 |
| PO-218  | 1.655E+00               | 2.840E-01 | 1.631E-01          | 0.000E+00 |
| RA-224  | 4.348E+00               | 1.510E+00 | 1.349E+00          | 0.000E+00 |
| RA-226  | 1.423E+00               | 2.787E-01 | 1.639E-01          | 0.000E+00 |
| AC-228  | 1.595E+00               | 3.836E-01 | 3.031E-01          | 0.000E+00 |
| RA-228  | 1.595E+00               | 3.836E-01 | 3.031E-01          | 0.000E+00 |
| TH-228  | 1.924E+00               | 2.450E-01 | 1.203E-01          | 0.000E+00 |
| TH-230  | 1.423E+00               | 2.787E-01 | 1.639E-01          | 0.000E+00 |
| TH-232  | 1.595E+00               | 3.836E-01 | 3.031E-01          | 0.000E+00 |
| TH-234  | 1.381E+00               | 2.893E+00 | 2.978E+00          | 0.000E+00 |
| U-234   | 1.423E+00               | 2.787E-01 | 1.639E-01          | 0.000E+00 |
| NP-237  | 1.338E+00               | 5.159E-01 | 4.840E-01          | 0.000E+00 |
| U-238   | 1.381E+00               | 2.893E+00 | 2.978E+00          | 0.000E+00 |
| AM-243  | 4.399E-01               | 1.074E-01 | 1.204E-01          | 0.000E+00 |
| ANH-511 | 1.549E-01               | 8.601E-02 | 5.944E-02          | 0.000E+00 |

### ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L. Act error<br>) Ided | MDA<br>(pCi/GRAM ) |
|---------|-------------------------------------|--------------------------|--------------------|
|---------|-------------------------------------|--------------------------|--------------------|

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| BE-7    | 2.809E-01  | 4.651E-01 | 7.912E-01 | 0.000E+00 | NOT IDENT. |
| NA-22   | 2.880E-03  | 6.256E-02 | 1.062E-01 | 0.000E+00 | NOT IDENT. |
| NA-24   | 0.000E+00  | 8.885E+05 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| AL-26   | -6.140E-03 | 4.219E-02 | 6.719E-02 | 0.000E+00 | NOT IDENT. |
| TI-44   | 0.000E+00  | 7.842E-02 | 1.071E-01 | 0.000E+00 | FAIL ABUN  |
| SC-46   | -5.048E-02 | 5.450E-02 | 8.087E-02 | 0.000E+00 | FAIL ABUN  |
| V-48    | 3.825E-02  | 1.056E-01 | 1.799E-01 | 0.000E+00 | NOT IDENT. |
| CR-51   | -3.597E-01 | 5.184E-01 | 8.249E-01 | 0.000E+00 | NOT IDENT. |
| MN-52   | -9.050E-03 | 2.969E-01 | 4.994E-01 | 0.000E+00 | NOT IDENT. |
| MN-54   | -4.525E-02 | 5.408E-02 | 8.282E-02 | 0.000E+00 | NOT IDENT. |
| CO-56   | 1.639E-03  | 5.617E-02 | 9.360E-02 | 0.000E+00 | FAIL ABUN  |
| CO-57   | 1.510E-02  | 3.440E-02 | 5.674E-02 | 0.000E+00 | NOT IDENT. |
| CO-58   | -2.281E-02 | 5.595E-02 | 8.961E-02 | 0.000E+00 | NOT IDENT. |
| FE-59   | 1.932E-02  | 1.233E-01 | 2.047E-01 | 0.000E+00 | NOT IDENT. |
| CO-60   | 5.857E-03  | 5.942E-02 | 1.012E-01 | 0.000E+00 | NOT IDENT. |
| ZN-65   | -1.889E-02 | 1.425E-01 | 1.959E-01 | 0.000E+00 | NOT IDENT. |
| GE-68   | 1.254E+00  | 1.759E+00 | 3.090E+00 | 0.000E+00 | NOT IDENT. |
| AS-73   | -2.834E-01 | 1.260E+00 | 2.075E+00 | 0.000E+00 | NOT IDENT. |
| AS-74   | 3.390E-03  | 1.119E-01 | 1.907E-01 | 0.000E+00 | NOT IDENT. |
| SE-75   | 2.488E-02  | 6.717E-02 | 1.019E-01 | 0.000E+00 | NOT IDENT. |
| BR-77   | 9.808E+00  | 1.411E+01 | 2.419E+01 | 0.000E+00 | FAIL ABUN  |
| SR-82   | -4.650E-01 | 5.428E-01 | 8.337E-01 | 0.000E+00 | NOT IDENT. |
| RB-83   | 6.911E-02  | 9.441E-02 | 1.622E-01 | 0.000E+00 | NOT IDENT. |
| RB-84   | -3.356E-02 | 9.787E-02 | 1.564E-01 | 0.000E+00 | NOT IDENT. |
| KR-85   | 0.000E+00  | 1.116E+01 | 1.840E+01 | 0.000E+00 | NOT IDENT. |
| SR-85   | 0.000E+00  | 5.720E-02 | 9.433E-02 | 0.000E+00 | NOT IDENT. |
| RB-86   | 2.121E-01  | 1.162E+00 | 1.936E+00 | 0.000E+00 | NOT IDENT. |
| Y-88    | 2.326E-03  | 5.131E-02 | 8.509E-02 | 0.000E+00 | NOT IDENT. |
| ZR-88   | -4.722E-03 | 4.413E-02 | 7.215E-02 | 0.000E+00 | NOT IDENT. |
| Y-91    | -3.189E+00 | 2.617E+01 | 4.391E+01 | 0.000E+00 | NOT IDENT. |
| NB-94   | 2.301E-02  | 4.637E-02 | 8.103E-02 | 0.000E+00 | NOT IDENT. |
| NB-95   | 5.759E-02  | 6.157E-02 | 1.101E-01 | 0.000E+00 | NOT IDENT. |
| NB-95M  | 1.458E-03  | 1.732E-01 | 2.576E-01 | 0.000E+00 | NOT IDENT. |
| ZR-95   | -3.952E-02 | 9.955E-02 | 1.607E-01 | 0.000E+00 | NOT IDENT. |
| NB-97   | 0.000E+00  | 1.363E+05 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| ZR-97   | 0.000E+00  | 2.631E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| MO-99   | -1.843E+01 | 1.579E+01 | 2.309E+01 | 0.000E+00 | NOT IDENT. |
| TC-99M  | 0.000E+00  | 4.615E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | 3.595E-03  | 4.535E-02 | 7.577E-02 | 0.000E+00 | NOT IDENT. |
| RH-102  | -4.858E-02 | 4.412E-02 | 6.535E-02 | 0.000E+00 | NOT IDENT. |
| RU-103  | 4.265E-02  | 5.397E-02 | 9.309E-02 | 0.000E+00 | FAIL ABUN  |
| RH-106  | -6.937E-02 | 4.161E-01 | 6.953E-01 | 0.000E+00 | FAIL ABUN  |
| RU-106  | -6.937E-02 | 4.160E-01 | 6.953E-01 | 0.000E+00 | FAIL ABUN  |
| AG-108M | -8.998E-03 | 4.721E-02 | 7.621E-02 | 0.000E+00 | NOT IDENT. |
| AG-110M | 3.964E-03  | 5.015E-02 | 7.435E-02 | 0.000E+00 | NOT IDENT. |
| IN-111  | -6.890E-01 | 1.597E+00 | 2.295E+00 | 0.000E+00 | NOT IDENT. |
| IN-113M | -3.109E-02 | 6.341E-02 | 1.008E-01 | 0.000E+00 | NOT IDENT. |
| SN-113  | -3.109E-02 | 6.341E-02 | 1.008E-01 | 0.000E+00 | NOT IDENT. |
| IN-114M | -3.273E-02 | 2.683E-01 | 4.005E-01 | 0.000E+00 | NOT IDENT. |
| CD-115  | -7.552E-01 | 1.373E+01 | 2.339E+01 | 0.000E+00 | NOT IDENT. |
| SN-117M | 1.287E-02  | 6.935E-02 | 1.202E-01 | 0.000E+00 | NOT IDENT. |
| SB-122  | 2.751E+00  | 2.682E+00 | 4.902E+00 | 0.000E+00 | NOT IDENT. |
| I-123   | 0.000E+00  | 6.949E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TE-123M | 4.227E-03  | 3.564E-02 | 6.159E-02 | 0.000E+00 | NOT IDENT. |
| I-124   | -1.045E-01 | 9.422E-01 | 1.374E+00 | 0.000E+00 | NOT IDENT. |
| SB-124  | -7.718E-02 | 1.019E-01 | 1.395E-01 | 0.000E+00 | FAIL ABUN  |
| SB-125  | 1.155E-01  | 1.343E-01 | 2.327E-01 | 0.000E+00 | NOT IDENT. |
| TE-125M | -5.197E-02 | 1.218E+01 | 1.977E+01 | 0.000E+00 | NOT IDENT. |
| I-126   | 9.180E-02  | 2.840E-01 | 4.317E-01 | 0.000E+00 | NOT IDENT. |
| SB-126  | -8.872E-02 | 2.157E-01 | 3.277E-01 | 0.000E+00 | FAIL ABUN  |
| SB-127  | -1.023E+00 | 1.677E+00 | 2.653E+00 | 0.000E+00 | NOT IDENT. |
| XE-127  | -2.322E-02 | 6.274E-02 | 1.050E-01 | 0.000E+00 | NOT IDENT. |
| I-131   | 1.002E-01  | 1.530E-01 | 2.640E-01 | 0.000E+00 | NOT IDENT. |
| TE-132  | -1.987E-01 | 8.966E-01 | 1.501E+00 | 0.000E+00 | NOT IDENT. |
| BA-133  | 1.266E-02  | 6.858E-02 | 1.010E-01 | 0.000E+00 | NOT IDENT. |
| I-133   | 0.000E+00  | 7.582E+03 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-134  | 5.439E-02  | 6.763E-02 | 1.201E-01 | 0.000E+00 | NOT IDENT. |
| CS-135  | 2.525E-01  | 2.430E-01 | 3.827E-01 | 0.000E+00 | NOT IDENT. |
| I-135   | 0.000E+00  | 7.251E+15 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-136  | -2.450E-02 | 1.423E-01 | 2.281E-01 | 0.000E+00 | FAIL ABUN  |
| CE-139  | -1.214E-02 | 3.701E-02 | 6.262E-02 | 0.000E+00 | NOT IDENT. |
| BA-140  | -1.392E-01 | 3.493E-01 | 5.743E-01 | 0.000E+00 | NOT IDENT. |
| LA-140  | -1.004E-01 | 1.193E-01 | 1.237E-01 | 0.000E+00 | FAIL ABUN  |
| CE-141  | 6.887E-02  | 8.404E-02 | 1.448E-01 | 0.000E+00 | NOT IDENT. |
| CE-143  | 0.000E+00  | 2.347E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CE-144  | -1.484E-01 | 2.810E-01 | 4.395E-01 | 0.000E+00 | NOT IDENT. |
| PM-144  | 1.945E-03  | 4.457E-02 | 7.530E-02 | 0.000E+00 | NOT IDENT. |
| PR-144  | 1.318E-01  | 3.020E+00 | 5.102E+00 | 0.000E+00 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PM-146  | -5.372E-02 | 6.363E-02 | 9.675E-02 | 0.000E+00 | NOT IDENT. |
| ND-147  | -2.167E-01 | 7.282E-01 | 1.216E+00 | 0.000E+00 | FAIL ABUN  |
| PM-149  | 8.621E+01  | 1.243E+02 | 2.149E+02 | 0.000E+00 | NOT IDENT. |
| EU-152  | -9.979E-02 | 1.532E-01 | 2.230E-01 | 0.000E+00 | FAIL ABUN  |
| GD-153  | -7.945E-02 | 1.199E-01 | 1.649E-01 | 0.000E+00 | FAIL ABUN  |
| EU-154  | -2.279E-02 | 1.773E-01 | 2.957E-01 | 0.000E+00 | NOT IDENT. |
| EU-155  | 1.529E-01  | 1.462E-01 | 2.478E-01 | 0.000E+00 | FAIL ABUN  |
| TB-160  | 8.124E-04  | 1.932E-01 | 3.204E-01 | 0.000E+00 | FAIL ABUN  |
| HO-166M | 1.648E-02  | 8.823E-02 | 1.505E-01 | 0.000E+00 | NOT IDENT. |
| TM-171  | -8.892E+00 | 4.174E+01 | 6.078E+01 | 0.000E+00 | NOT IDENT. |
| LU-176  | 1.176E-02  | 3.644E-02 | 5.480E-02 | 0.000E+00 | FAIL ABUN  |
| LU-177  | 1.489E+00  | 1.766E+00 | 2.757E+00 | 0.000E+00 | NOT IDENT. |
| LU-177M | -4.012E-01 | 2.553E-01 | 3.674E-01 | 0.000E+00 | NOT IDENT. |
| HF-181  | -6.600E-02 | 5.984E-02 | 8.777E-02 | 0.000E+00 | NOT IDENT. |
| W-181   | -6.972E-01 | 5.882E-01 | 8.230E-01 | 0.000E+00 | NOT IDENT. |
| TA-182  | -1.377E-01 | 2.759E-01 | 4.463E-01 | 0.000E+00 | FAIL ABUN  |
| RE-183  | 2.676E-02  | 1.351E-01 | 2.340E-01 | 0.000E+00 | FAIL ABUN  |
| RE-184  | -4.712E-01 | 3.033E-01 | 4.612E-01 | 0.000E+00 | NOT IDENT. |
| OS-185  | 1.660E-02  | 5.551E-02 | 9.624E-02 | 0.000E+00 | NOT IDENT. |
| RE-188  | 9.117E-02  | 2.177E-01 | 3.807E-01 | 0.000E+00 | NOT IDENT. |
| W-188   | 1.951E+00  | 1.168E+01 | 1.737E+01 | 0.000E+00 | FAIL ABUN  |
| IR-192  | 1.993E-02  | 4.756E-02 | 8.117E-02 | 0.000E+00 | FAIL ABUN  |
| AU-195  | -1.483E-01 | 3.130E-01 | 4.907E-01 | 0.000E+00 | FAIL ABUN  |
| TL-200  | 0.000E+00  | 5.988E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TL-201  | -2.079E+00 | 8.757E+00 | 1.487E+01 | 0.000E+00 | NOT IDENT. |
| TL-202  | -5.261E-02 | 1.004E-01 | 1.576E-01 | 0.000E+00 | NOT IDENT. |
| HG-203  | 1.020E-01  | 5.685E-02 | 1.027E-01 | 0.000E+00 | NOT IDENT. |
| BI-207  | 5.115E-02  | 6.961E-02 | 1.231E-01 | 0.000E+00 | FAIL ABUN  |
| TL-207  | 7.254E-01  | 1.017E+00 | 1.560E+00 | 0.000E+00 | FAIL ABUN  |
| PO-209  | -7.273E-01 | 1.017E+01 | 1.670E+01 | 0.000E+00 | NOT IDENT. |
| BI-210  | 5.142E+00  | 5.848E+00 | 1.010E+01 | 0.000E+00 | NOT IDENT. |
| PB-210  | 5.142E+00  | 5.848E+00 | 1.010E+01 | 0.000E+00 | NOT IDENT. |
| PO-210  | 5.142E+00  | 5.844E+00 | 1.010E+01 | 0.000E+00 | NOT IDENT. |
| PB-211  | 6.158E-01  | 1.365E+00 | 2.225E+00 | 0.000E+00 | NOT IDENT. |
| BI-212  | 0.000E+00  | 5.314E-01 | 9.091E-01 | 0.000E+00 | FAIL ABUN  |
| PO-215  | 7.254E-01  | 1.017E+00 | 1.560E+00 | 0.000E+00 | FAIL ABUN  |
| RN-219  | -1.625E-01 | 5.811E-01 | 9.363E-01 | 0.000E+00 | FAIL ABUN  |
| RN-220  | 2.136E+01  | 3.459E+01 | 6.169E+01 | 0.000E+00 | NOT IDENT. |
| RA-223  | 7.254E-01  | 1.017E+00 | 1.560E+00 | 0.000E+00 | FAIL ABUN  |
| AC-227  | 7.292E-02  | 5.017E-01 | 8.513E-01 | 0.000E+00 | FAIL ABUN  |
| TH-227  | 7.292E-02  | 5.018E-01 | 8.513E-01 | 0.000E+00 | FAIL ABUN  |
| TH-229  | -2.009E-02 | 6.685E-01 | 1.139E+00 | 0.000E+00 | FAIL ABUN  |
| PA-231  | -2.223E+00 | 2.183E+00 | 3.409E+00 | 0.000E+00 | FAIL ABUN  |
| TH-231  | 7.254E-01  | 1.017E+00 | 1.560E+00 | 0.000E+00 | FAIL ABUN  |
| U-231   | -7.460E-02 | 1.509E+00 | 2.185E+00 | 0.000E+00 | FAIL ABUN  |
| PA-233  | -4.636E-02 | 8.939E-02 | 1.443E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234  | -2.684E-01 | 4.301E-01 | 6.570E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234M | 1.178E+00  | 6.949E+00 | 1.165E+01 | 0.000E+00 | NOT IDENT. |
| U-235   | 1.847E-02  | 2.789E-01 | 4.684E-01 | 0.000E+00 | FAIL ABUN  |
| NP-236  | -3.521E-02 | 1.003E-01 | 1.698E-01 | 0.000E+00 | NOT IDENT. |
| NP-239  | 8.391E-02  | 2.573E-01 | 4.229E-01 | 0.000E+00 | FAIL ABUN  |
| AM-241  | 1.019E-01  | 2.388E-01 | 3.618E-01 | 0.000E+00 | NOT IDENT. |
| CM-243  | 3.803E-02  | 1.331E-01 | 2.192E-01 | 0.000E+00 | FAIL ABUN  |
| AM-246  | 1.015E-01  | 2.016E-01 | 3.470E-01 | 0.000E+00 | NOT IDENT. |
| CM-247  | -4.289E-03 | 5.275E-02 | 8.626E-02 | 0.000E+00 | NOT IDENT. |
| CF-249  | 1.214E-03  | 5.559E-02 | 9.175E-02 | 0.000E+00 | NOT IDENT. |
| CF-251  | -1.519E-01 | 1.611E-01 | 2.636E-01 | 0.000E+00 | NOT IDENT. |

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630013.CNF;1
Sample date       : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 14:05:28
Sample ID        : G244630013          Sample quantity  : 1.00830E+02 GRAM
Detector name    : GAM01              Detector geometry: CAN
Elapsed live time: 0 02:00:00.00      Elapsed real time: 0 02:00:01.08  0.0%
Energy tolerance : 1.50000 keV        Analyst Initials  : MXR1
Abundance limit  : 75.00000           Sensitivity      : 5.00000
Batch ID        : 941639              Detector SN#     :
Matrix Spike ID  :                    LCS ID           : 1032-A
*****

```

## Nuclide Line Activity Report

## Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| K-40    | 1460.81 | 859   | 10.67* | 9.455E-01 | 3.172E+01               | 3.172E+01              | 11.64             |
| CD-109  | 88.03   | 235   | 3.72*  | 5.195E+00 | 4.531E+00               | 4.634E+00              | 33.51             |
| SN-126  | 64.28   | 39    | 9.60   | 2.744E+00 | 5.467E-01               | 5.467E-01              | 213.53            |
|         | 86.94   | 235   | 8.90   | 5.195E+00 | 1.894E+00               | 1.894E+00              | 52.53             |
|         | 87.57   | 235   | 37.00* | 5.195E+00 | 4.555E-01               | 4.555E-01              | 33.51             |
| BA-137M | 661.65  | 262   | 89.98* | 1.923E+00 | 5.647E-01               | 5.652E-01              | 19.89             |
| CS-137  | 661.65  | 262   | 85.12* | 1.923E+00 | 5.969E-01               | 5.975E-01              | 19.90             |
| TL-208  | 277.35  | ----- | 6.80   | 3.885E+00 | -----                   | Line Not Found         | -----             |
|         | 510.84  | 100   | 21.60  | 2.392E+00 | 7.172E-01               | 7.172E-01              | 57.27             |
|         | 583.14  | 265   | 84.20* | 2.142E+00 | 5.463E-01               | 5.463E-01              | 21.07             |
|         | 860.37  | 58    | 12.46  | 1.521E+00 | 1.148E+00               | 1.148E+00              | 51.25             |
| BI-211  | 72.87   | ----- | 1.27   | 3.944E+00 | -----                   | Line Not Found         | -----             |
|         | 351.07  | 533   | 12.94* | 3.226E+00 | 4.758E+00               | 4.758E+00              | 16.71             |
| PB-212  | 74.81   | 324   | 10.70  | 4.153E+00 | 2.713E+00               | 2.713E+00              | 26.60             |
|         | 77.11   | 508   | 18.00  | 4.384E+00 | 2.395E+00               | 2.395E+00              | 18.10             |
|         | 87.30   | 235   | 8.00   | 5.195E+00 | 2.107E+00               | 2.107E+00              | 34.97             |
|         | 238.63  | 987   | 44.60* | 4.345E+00 | 1.895E+00               | 1.895E+00              | 12.99             |
|         | 300.09  | 136   | 3.41   | 3.648E+00 | 4.055E+00               | 4.055E+00              | 45.99             |
| PO-212  | 74.81   | 324   | 10.70  | 4.153E+00 | 2.713E+00               | 2.713E+00              | 26.60             |
|         | 77.11   | 508   | 18.00  | 4.384E+00 | 2.395E+00               | 2.395E+00              | 18.10             |
|         | 87.30   | 235   | 8.00   | 5.195E+00 | 2.107E+00               | 2.107E+00              | 34.97             |
|         | 115.19  | ----- | 0.60   | 6.043E+00 | -----                   | Line Not Found         | -----             |
|         | 238.63  | 987   | 44.60* | 4.345E+00 | 1.895E+00               | 1.895E+00              | 12.99             |
|         | 300.09  | 136   | 3.41   | 3.648E+00 | 4.055E+00               | 4.055E+00              | 45.99             |
| BI-214  | 609.31  | 365   | 46.30* | 2.064E+00 | 1.423E+00               | 1.423E+00              | 19.99             |
|         | 1120.29 | 86    | 15.10  | 1.193E+00 | 1.771E+00               | 1.771E+00              | 43.08             |
|         | 1764.49 | 60    | 15.80  | 8.255E-01 | 1.721E+00               | 1.721E+00              | 32.55             |
| PB-214  | 74.81   | 324   | 6.21   | 4.153E+00 | 4.675E+00               | 4.675E+00              | 25.98             |
|         | 77.11   | 508   | 10.50  | 4.384E+00 | 4.106E+00               | 4.106E+00              | 19.64             |
|         | 87.30   | 235   | 4.67   | 5.195E+00 | 3.609E+00               | 3.609E+00              | 34.39             |
|         | 241.98  | 199   | 7.49   | 4.305E+00 | 2.293E+00               | 2.293E+00              | 35.87             |
|         | 295.21  | 284   | 19.20  | 3.699E+00 | 1.490E+00               | 1.490E+00              | 24.18             |

Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| PO-214  | 351.92  | 533   | 37.20* | 3.226E+00 | 1.655E+00               | 1.655E+00              | 17.51             |
|         | 74.81   | 324   | 6.21   | 4.153E+00 | 4.675E+00               | 4.675E+00              | 25.98             |
|         | 77.11   | 508   | 10.50  | 4.384E+00 | 4.106E+00               | 4.106E+00              | 19.64             |
|         | 87.30   | 235   | 4.67   | 5.195E+00 | 3.609E+00               | 3.609E+00              | 34.39             |
|         | 241.98  | 199   | 7.49   | 4.305E+00 | 2.293E+00               | 2.293E+00              | 35.87             |
| PO-216  | 295.21  | 284   | 19.20  | 3.699E+00 | 1.490E+00               | 1.490E+00              | 24.18             |
|         | 351.92  | 533   | 37.20* | 3.226E+00 | 1.655E+00               | 1.655E+00              | 17.51             |
|         | 74.81   | 324   | 10.70  | 4.153E+00 | 2.713E+00               | 2.713E+00              | 26.60             |
|         | 77.11   | 508   | 18.00  | 4.384E+00 | 2.395E+00               | 2.395E+00              | 18.10             |
|         | 87.30   | 235   | 8.00   | 5.195E+00 | 2.107E+00               | 2.107E+00              | 34.97             |
| PO-218  | 238.63  | 987   | 44.60* | 4.345E+00 | 1.895E+00               | 1.895E+00              | 12.99             |
|         | 300.09  | 136   | 3.41   | 3.648E+00 | 4.055E+00               | 4.055E+00              | 45.99             |
|         | 74.81   | 324   | 6.21   | 4.153E+00 | 4.675E+00               | 4.675E+00              | 25.98             |
|         | 77.11   | 508   | 10.50  | 4.384E+00 | 4.106E+00               | 4.106E+00              | 19.64             |
|         | 87.30   | 235   | 4.67   | 5.195E+00 | 3.609E+00               | 3.609E+00              | 34.39             |
| RA-224  | 241.98  | 199   | 7.49   | 4.305E+00 | 2.293E+00               | 2.293E+00              | 35.87             |
|         | 295.21  | 284   | 19.20  | 3.699E+00 | 1.490E+00               | 1.490E+00              | 24.18             |
|         | 351.92  | 533   | 37.20* | 3.226E+00 | 1.655E+00               | 1.655E+00              | 17.51             |
|         | 240.98  | 199   | 3.95*  | 4.305E+00 | 4.348E+00               | 4.348E+00              | 35.43             |
|         | 609.31  | 365   | 46.30* | 2.064E+00 | 1.423E+00               | 1.423E+00              | 19.99             |
| AC-228  | 1120.29 | 86    | 15.10  | 1.193E+00 | 1.771E+00               | 1.771E+00              | 43.08             |
|         | 1764.49 | 60    | 15.80  | 8.255E-01 | 1.721E+00               | 1.721E+00              | 32.55             |
|         | 338.32  | 160   | 11.40  | 3.325E+00 | 1.571E+00               | 1.571E+00              | 57.73             |
|         | 911.07  | 171   | 27.70* | 1.444E+00 | 1.595E+00               | 1.595E+00              | 24.54             |
|         | 969.11  | 151   | 16.60  | 1.364E+00 | 2.476E+00               | 2.476E+00              | 32.10             |
| RA-228  | 338.32  | 160   | 11.40  | 3.325E+00 | 1.571E+00               | 1.571E+00              | 57.73             |
|         | 911.07  | 171   | 27.70* | 1.444E+00 | 1.595E+00               | 1.595E+00              | 24.54             |
|         | 969.11  | 151   | 16.60  | 1.364E+00 | 2.476E+00               | 2.476E+00              | 32.10             |
|         | 74.81   | 324   | 10.70  | 4.153E+00 | 2.713E+00               | 2.754E+00              | 24.93             |
|         | 77.11   | 508   | 18.00  | 4.384E+00 | 2.395E+00               | 2.431E+00              | 18.10             |
| TH-228  | 87.30   | 235   | 8.00   | 5.195E+00 | 2.107E+00               | 2.139E+00              | 33.51             |
|         | 238.63  | 987   | 44.60* | 4.345E+00 | 1.895E+00               | 1.924E+00              | 12.99             |
|         | 300.09  | 136   | 3.41   | 3.648E+00 | 4.055E+00               | 4.117E+00              | 74.30             |
|         | 609.31  | 365   | 46.30* | 2.064E+00 | 1.423E+00               | 1.423E+00              | 19.99             |
|         | 1120.29 | 86    | 15.10  | 1.193E+00 | 1.771E+00               | 1.771E+00              | 43.08             |
| TH-230  | 1764.49 | 60    | 15.80  | 8.255E-01 | 1.721E+00               | 1.721E+00              | 32.55             |
|         | 338.32  | 160   | 11.40  | 3.325E+00 | 1.571E+00               | 1.571E+00              | 41.29             |
|         | 911.07  | 171   | 27.70* | 1.444E+00 | 1.595E+00               | 1.595E+00              | 24.54             |
|         | 969.11  | 151   | 16.60  | 1.364E+00 | 2.476E+00               | 2.476E+00              | 32.10             |
|         | 63.29   | 39    | 3.80*  | 2.744E+00 | 1.381E+00               | 1.381E+00              | 213.74            |
| TH-232  | 92.38   | 299   | 5.41   | 5.502E+00 | 3.736E+00               | 3.736E+00              | 32.87             |
|         | 609.31  | 365   | 46.30* | 2.064E+00 | 1.423E+00               | 1.423E+00              | 19.99             |
|         | 1120.29 | 86    | 15.10  | 1.193E+00 | 1.771E+00               | 1.771E+00              | 43.08             |
|         | 1764.49 | 60    | 15.80  | 8.255E-01 | 1.721E+00               | 1.721E+00              | 32.55             |
|         | 86.50   | 235   | 12.60* | 5.195E+00 | 1.338E+00               | 1.338E+00              | 39.35             |
| NP-237  | 95.87   | ----- | 2.60   | 5.636E+00 | -----                   | Line Not Found         | -----             |
|         | 63.29   | 39    | 3.80*  | 2.744E+00 | 1.381E+00               | 1.381E+00              | 213.74            |
|         | 92.38   | 299   | 5.41   | 5.502E+00 | 3.736E+00               | 3.736E+00              | 28.77             |
|         | 74.67   | 324   | 66.00* | 4.153E+00 | 4.399E-01               | 4.399E-01              | 24.91             |
|         |         |       |        |           |                         |                        |                   |

Nuclide Type:

| Nuclide | Energy | Area  | %Abn    | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|--------|-------|---------|-----------|-------------------------|------------------------|-------------------|
|         | 86.72  | 235   | 0.34    | 5.195E+00 | 5.016E+01               | 5.016E+01              | 33.51             |
|         | 117.66 | ----- | 0.55    | 6.054E+00 | -----                   | Line Not Found         | -----             |
|         | 142.18 | ----- | 0.13    | 5.887E+00 | -----                   | Line Not Found         | -----             |
| ANH-511 | 511.00 | 100   | 100.00* | 2.392E+00 | 1.549E-01               | 1.549E-01              | 56.66             |

Flag: "\*" = Keyline

Summary of Nuclide Activity  
Sample ID : G244630013

Page : 4  
Acquisition date : 23-JAN-2010 14:05:28

Total number of lines in spectrum 33  
Number of unidentified lines 3  
Number of lines tentatively identified by NID 30 90.91%

Nuclide Type :

| Nuclide          | Hlife     | Decay | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | Decay Corr<br>2-Sigma Error | 2-Sigma<br>%Error | Flags |
|------------------|-----------|-------|-------------------------|------------------------|-----------------------------|-------------------|-------|
| K-40             | 1.28E+09Y | 1.00  | 3.172E+01               | 3.172E+01              | 0.369E+01                   | 11.64             |       |
| CD-109           | 464.00D   | 1.02  | 4.531E+00               | 4.634E+00              | 1.553E+00                   | 33.51             |       |
| SN-126           | 1.00E+05Y | 1.00  | 4.555E-01               | 4.555E-01              | 1.526E-01                   | 33.51             |       |
| BA-137M          | 30.17Y    | 1.00  | 5.647E-01               | 5.652E-01              | 1.124E-01                   | 19.89             |       |
| CS-137           | 30.17Y    | 1.00  | 5.969E-01               | 5.975E-01              | 1.189E-01                   | 19.90             |       |
| TL-208           | 1.41E+10Y | 1.00  | 5.463E-01               | 5.463E-01              | 1.151E-01                   | 21.07             |       |
| BI-211           | 7.04E+08Y | 1.00  | 4.758E+00               | 4.758E+00              | 0.795E+00                   | 16.71             |       |
| PB-212           | 1.41E+10Y | 1.00  | 1.895E+00               | 1.895E+00              | 0.246E+00                   | 12.99             |       |
| PO-212           | 1.41E+10Y | 1.00  | 1.895E+00               | 1.895E+00              | 0.246E+00                   | 12.99             |       |
| BI-214           | 1600.00Y  | 1.00  | 1.423E+00               | 1.423E+00              | 0.284E+00                   | 19.99             |       |
| PB-214           | 1600.00Y  | 1.00  | 1.655E+00               | 1.655E+00              | 0.290E+00                   | 17.51             |       |
| PO-214           | 1600.00Y  | 1.00  | 1.655E+00               | 1.655E+00              | 0.290E+00                   | 17.51             |       |
| PO-216           | 1.41E+10Y | 1.00  | 1.895E+00               | 1.895E+00              | 0.246E+00                   | 12.99             |       |
| PO-218           | 1600.00Y  | 1.00  | 1.655E+00               | 1.655E+00              | 0.290E+00                   | 17.51             |       |
| RA-224           | 1.41E+10Y | 1.00  | 4.348E+00               | 4.348E+00              | 1.540E+00                   | 35.43             |       |
| RA-226           | 1600.00Y  | 1.00  | 1.423E+00               | 1.423E+00              | 0.284E+00                   | 19.99             |       |
| AC-228           | 1.41E+10Y | 1.00  | 1.595E+00               | 1.595E+00              | 0.391E+00                   | 24.54             |       |
| RA-228           | 1.41E+10Y | 1.00  | 1.595E+00               | 1.595E+00              | 0.391E+00                   | 24.54             |       |
| TH-228           | 1.91Y     | 1.02  | 1.895E+00               | 1.924E+00              | 0.250E+00                   | 12.99             |       |
| TH-230           | 4.47E+09Y | 1.00  | 1.423E+00               | 1.423E+00              | 0.284E+00                   | 19.99             |       |
| TH-232           | 1.41E+10Y | 1.00  | 1.595E+00               | 1.595E+00              | 0.391E+00                   | 24.54             |       |
| TH-234           | 4.47E+09Y | 1.00  | 1.381E+00               | 1.381E+00              | 2.952E+00                   | 213.74            |       |
| U-234            | 4.47E+09Y | 1.00  | 1.423E+00               | 1.423E+00              | 0.284E+00                   | 19.99             |       |
| NP-237           | 2.14E+06Y | 1.00  | 1.338E+00               | 1.338E+00              | 0.526E+00                   | 39.35             |       |
| U-238            | 4.47E+09Y | 1.00  | 1.381E+00               | 1.381E+00              | 2.952E+00                   | 213.74            |       |
| AM-243           | 7380.00Y  | 1.00  | 4.399E-01               | 4.399E-01              | 1.096E-01                   | 24.91             |       |
| ANH-511          | 1.00E+09Y | 1.00  | 1.549E-01               | 1.549E-01              | 0.878E-01                   | 56.66             |       |
| Total Activity : |           |       | 7.523E+01               | 7.537E+01              |                             |                   |       |

Grand Total Activity : 7.523E+01 7.537E+01

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

Unidentified Energy Lines  
Sample ID : G244630013

Page : 5  
Acquisition date : 23-JAN-2010 14:05:28

| It | Energy  | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | %Eff     | Flags |
|----|---------|------|-------|------|---------|------|----|----------|------|----------|-------|
| 2  | 84.34   | 95   | 440   | 1.32 | 169.38  | 162  | 30 | 1.31E-02 | 75.8 | 4.99E+00 | T     |
| 2  | 89.92   | 122  | 331   | 1.23 | 180.54  | 162  | 30 | 1.70E-02 | 53.9 | 5.35E+00 | T     |
| 0  | 186.18  | 225  | 247   | 1.33 | 372.95  | 369  | 9  | 3.13E-02 | 30.2 | 5.16E+00 | T     |
| 0  | 210.05  | 97   | 218   | 1.01 | 420.66  | 416  | 8  | 1.35E-02 | 56.7 | 4.77E+00 | T     |
| 0  | 270.39  | 111  | 184   | 1.19 | 541.27  | 536  | 11 | 1.55E-02 | 51.3 | 3.96E+00 | T     |
| 0  | 328.15  | 44   | 104   | 1.24 | 656.74  | 654  | 7  | 6.06E-03 | 83.5 | 3.41E+00 | T     |
| 0  | 727.57  | 57   | 60    | 1.28 | 1455.07 | 1450 | 9  | 7.98E-03 | 52.0 | 1.77E+00 | T     |
| 1  | 964.69  | 41   | 36    | 1.92 | 1929.01 | 1924 | 24 | 5.66E-03 | 55.7 | 1.37E+00 | T     |
| 0  | 1239.26 | 43   | 76    | 1.93 | 2477.75 | 2467 | 19 | 5.96E-03 | **** | 1.09E+00 | T     |
| 0  | 1378.39 | 18   | 13    | 1.49 | 2755.79 | 2752 | 7  | 2.52E-03 | 82.2 | 9.92E-01 |       |
| 0  | 1589.85 | 43   | 8     | 5.42 | 3178.38 | 3171 | 16 | 5.93E-03 | 43.7 | 8.86E-01 |       |
| 0  | 1631.00 | 25   | 4     | 2.46 | 3260.61 | 3252 | 14 | 3.48E-03 | 51.3 | 8.70E-01 |       |

Flags: "T" = Tentatively associated



```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
*                               DETECTOR DATA                               *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630013.CNF;1
* Acquisition date   : 23-JAN-2010 14:05:28   Detector SN#      :
* Detector ID        : GAM01                  Sensitivity       : 5.00000
* Geometry           : CAN                    Energy tolerance: 1.50000
* Elapsed live time  : 0 02:00:00.00          Abundance limit  : 75.00000
* Elapsed real time  : 0 02:00:01.08          Half life ratio  : 8.00000
*****
*                               SAMPLE DATA                               *
*
* Sample date        : 8-JAN-2010 12:00:00.   Nuclide Library : SOLID
* Sample ID          : G244630013             Analyst initials: MXR1
* Batch Number       : 941639                 Sample Quantity : 1.00830E+02 GRAM
*****
*                               QC DATA                               *
*
* CALIB. DATE/TIME   : 12-JAN-2010 15:15:52.7MS Isotope      :
* MSD ID              :                      MSD Isotope      :
* LCS ID              : 1032-A                LCS Isotope      :
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| K-40    | 3.172E+01              | 3.692E+00 | 6.568E-01         | 5.838E-02 | 48.291  |
| CD-109  | 4.634E+00              | 1.553E+00 | 1.647E+00         | 1.559E-01 | 2.813   |
| SN-126  | 4.555E-01              | 1.526E-01 | 1.628E-01         | 1.533E-02 | 2.799   |
| BA-137M | 5.652E-01              | 1.124E-01 | 8.781E-02         | 7.192E-03 | 6.437   |
| CS-137  | 5.975E-01              | 1.189E-01 | 9.282E-02         | 7.619E-03 | 6.437   |
| TL-208  | 5.463E-01              | 1.151E-01 | 7.369E-02         | 6.692E-03 | 7.414   |
| BI-211  | 4.758E+00              | 7.952E-01 | 4.543E-01         | 4.132E-02 | 10.473  |
| PB-212  | 1.895E+00              | 2.463E-01 | 1.189E-01         | 1.203E-02 | 15.944  |
| PO-212  | 1.895E+00              | 2.463E-01 | 1.189E-01         | 1.203E-02 | 15.944  |
| BI-214  | 1.423E+00              | 2.844E-01 | 1.649E-01         | 1.626E-02 | 8.631   |
| PB-214  | 1.655E+00              | 2.898E-01 | 1.638E-01         | 1.717E-02 | 10.102  |
| PO-214  | 1.655E+00              | 2.898E-01 | 1.638E-01         | 1.717E-02 | 10.102  |
| PO-216  | 1.895E+00              | 2.463E-01 | 1.189E-01         | 1.203E-02 | 15.944  |
| PO-218  | 1.655E+00              | 2.898E-01 | 1.638E-01         | 1.717E-02 | 10.102  |
| RA-224  | 4.348E+00              | 1.540E+00 | 1.353E+00         | 1.230E-01 | 3.214   |
| RA-226  | 1.423E+00              | 2.844E-01 | 1.649E-01         | 1.626E-02 | 8.631   |
| AC-228  | 1.595E+00              | 3.914E-01 | 3.052E-01         | 3.533E-02 | 5.226   |
| RA-228  | 1.595E+00              | 3.914E-01 | 3.052E-01         | 3.533E-02 | 5.226   |

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| TH-228  | 1.924E+00              | 2.500E-01 | 1.207E-01         | 1.222E-02 | 15.944  |
| TH-230  | 1.423E+00              | 2.844E-01 | 1.649E-01         | 1.626E-02 | 8.631   |
| TH-232  | 1.595E+00              | 3.914E-01 | 3.052E-01         | 3.533E-02 | 5.226   |
| TH-234  | 1.381E+00              | 2.952E+00 | 2.975E+00         | 5.229E-01 | 0.464   |
| U-234   | 1.423E+00              | 2.844E-01 | 1.649E-01         | 1.626E-02 | 8.631   |
| NP-237  | 1.338E+00              | 5.264E-01 | 4.840E-01         | 1.096E-01 | 2.764   |
| U-238   | 1.381E+00              | 2.952E+00 | 2.975E+00         | 5.229E-01 | 0.464   |
| AM-243  | 4.399E-01              | 1.096E-01 | 1.203E-01         | 1.000E-02 | 3.656   |
| ANH-511 | 1.549E-01              | 8.777E-02 | 5.976E-02         | 5.065E-03 | 2.592   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| BE-7    | 2.809E-01                          |              | 4.746E-01 | 7.953E-01         | 7.235E-02 | 0.353   |
| NA-22   | 2.880E-03                          |              | 6.384E-02 | 1.071E-01         | 8.991E-03 | 0.027   |
| NA-24   | 2.845E-03                          |              | 4.533E-01 | Half-Life         | too short |         |
| AL-26   | -6.140E-03                         |              | 4.305E-02 | 6.780E-02         | 5.618E-03 | -0.091  |
| TI-44   | 4.420E-01                          | +            | 8.002E-02 | 1.070E-01         | 9.185E-03 | 4.130   |
| SC-46   | -5.048E-02                         |              | 5.561E-02 | 8.144E-02         | 7.362E-03 | -0.620  |
| V-48    | 3.825E-02                          |              | 1.078E-01 | 1.812E-01         | 1.618E-02 | 0.211   |
| CR-51   | -3.597E-01                         |              | 5.290E-01 | 8.281E-01         | 7.789E-02 | -0.434  |
| MN-52   | -9.050E-03                         |              | 3.030E-01 | 5.036E-01         | 4.348E-02 | -0.018  |
| MN-54   | -4.525E-02                         |              | 5.518E-02 | 8.338E-02         | 7.422E-03 | -0.543  |
| CO-56   | 1.639E-03                          |              | 5.731E-02 | 9.424E-02         | 8.420E-03 | 0.017   |
| CO-57   | 1.510E-02                          |              | 3.511E-02 | 5.680E-02         | 5.000E-03 | 0.266   |
| CO-58   | -2.281E-02                         |              | 5.710E-02 | 9.021E-02         | 7.981E-03 | -0.253  |
| FE-59   | 1.932E-02                          |              | 1.258E-01 | 2.063E-01         | 1.901E-02 | 0.094   |
| CO-60   | 5.857E-03                          |              | 6.064E-02 | 1.020E-01         | 8.697E-03 | 0.057   |
| ZN-65   | -1.889E-02                         |              | 1.454E-01 | 1.974E-01         | 1.666E-02 | -0.096  |
| GE-68   | 1.254E+00                          |              | 1.795E+00 | 3.113E+00         | 2.681E-01 | 0.403   |
| AS-73   | -2.834E-01                         |              | 1.285E+00 | 2.072E+00         | 1.677E-01 | -0.137  |
| AS-74   | 3.390E-03                          |              | 1.142E-01 | 1.918E-01         | 1.616E-02 | 0.018   |
| SE-75   | 2.488E-02                          |              | 6.854E-02 | 1.022E-01         | 9.388E-03 | 0.243   |
| BR-77   | 9.808E+00                          |              | 1.440E+01 | 2.432E+01         | 2.064E+00 | 0.403   |
| SR-82   | -4.650E-01                         |              | 5.539E-01 | 8.392E-01         | 7.306E-02 | -0.554  |
| RB-83   | 6.911E-02                          |              | 9.634E-02 | 1.631E-01         | 1.384E-02 | 0.424   |
| RB-84   | -3.356E-02                         |              | 9.986E-02 | 1.575E-01         | 1.421E-02 | -0.213  |
| KR-85   | 1.924E+01                          |              | 1.139E+01 | 1.850E+01         | 1.569E+00 | 1.040   |
| SR-85   | 9.861E-02                          |              | 5.836E-02 | 9.483E-02         | 8.041E-03 | 1.040   |
| RB-86   | 2.121E-01                          |              | 1.186E+00 | 1.950E+00         | 1.680E-01 | 0.109   |
| Y-88    | 2.326E-03                          |              | 5.235E-02 | 8.588E-02         | 7.063E-03 | 0.027   |
| ZR-88   | -4.722E-03                         |              | 4.503E-02 | 7.248E-02         | 5.836E-03 | -0.065  |
| Y-91    | -3.189E+00                         |              | 2.670E+01 | 4.425E+01         | 3.626E+00 | -0.072  |
| NB-94   | 2.301E-02                          |              | 4.732E-02 | 8.154E-02         | 6.845E-03 | 0.282   |
| NB-95   | 5.759E-02                          |              | 6.283E-02 | 1.108E-01         | 9.606E-03 | 0.520   |
| NB-95M  | 1.458E-03                          |              | 1.767E-01 | 2.584E-01         | 2.650E-02 | 0.006   |
| ZR-95   | -3.952E-02                         |              | 1.016E-01 | 1.617E-01         | 1.536E-02 | -0.244  |

----- Non-Identified Nuclides -----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| NB-97   | 1.655E-02                          |              | 6.953E-02 | Half-Life too short |           |         |
| ZR-97   | 5.572E-01                          |              | 1.342E+00 | Half-Life too short |           |         |
| MO-99   | -1.843E+01                         |              | 1.611E+01 | 2.324E+01           | 3.521E+00 | -0.793  |
| TC-99M  | -9.922E+09                         |              | 2.355E+10 | Half-Life too short |           |         |
| RH-101  | 3.595E-03                          |              | 4.627E-02 | 7.596E-02           | 6.684E-03 | 0.047   |
| RH-102  | -4.858E-02                         |              | 4.502E-02 | 6.569E-02           | 5.524E-03 | -0.740  |
| RU-103  | 4.265E-02                          |              | 5.507E-02 | 9.357E-02           | 1.316E-02 | 0.456   |
| RH-106  | -6.937E-02                         |              | 4.246E-01 | 6.994E-01           | 9.222E-02 | -0.099  |
| RU-106  | -6.937E-02                         |              | 4.245E-01 | 6.994E-01           | 5.842E-02 | -0.099  |
| AG-108M | -8.998E-03                         |              | 4.818E-02 | 7.658E-02           | 6.604E-03 | -0.117  |
| AG-110M | 3.964E-03                          |              | 5.117E-02 | 7.480E-02           | 6.342E-03 | 0.053   |
| IN-111  | -6.890E-01                         |              | 1.630E+00 | 2.302E+00           | 2.096E-01 | -0.299  |
| IN-113M | -3.109E-02                         |              | 6.471E-02 | 1.013E-01           | 8.437E-03 | -0.307  |
| SN-113  | -3.109E-02                         |              | 6.471E-02 | 1.013E-01           | 8.437E-03 | -0.307  |
| IN-114M | -3.273E-02                         |              | 2.737E-01 | 4.014E-01           | 3.505E-02 | -0.082  |
| CD-115  | -7.552E-01                         |              | 1.401E+01 | 2.352E+01           | 1.996E+00 | -0.032  |
| SN-117M | 1.287E-02                          |              | 7.076E-02 | 1.204E-01           | 1.025E-02 | 0.107   |
| SB-122  | 2.751E+00                          |              | 2.737E+00 | 4.929E+00           | 4.179E-01 | 0.558   |
| I-123   | 8.241E-01                          |              | 3.545E+00 | Half-Life too short |           |         |
| TE-123M | 4.227E-03                          |              | 3.637E-02 | 6.170E-02           | 5.286E-03 | 0.069   |
| I-124   | -1.045E-01                         |              | 9.614E-01 | 1.382E+00           | 1.162E-01 | -0.076  |
| SB-124  | -7.718E-02                         |              | 1.039E-01 | 1.407E-01           | 1.248E-02 | -0.548  |
| SB-125  | 1.155E-01                          |              | 1.371E-01 | 2.338E-01           | 1.968E-02 | 0.494   |
| TE-125M | -5.197E-02                         |              | 1.243E+01 | 1.978E+01           | 2.051E+00 | -0.003  |
| I-126   | 9.180E-02                          |              | 2.898E-01 | 4.343E-01           | 3.568E-02 | 0.211   |
| SB-126  | -8.872E-02                         |              | 2.201E-01 | 3.298E-01           | 2.795E-02 | -0.269  |
| SB-127  | -1.023E+00                         |              | 1.711E+00 | 2.670E+00           | 2.975E-01 | -0.383  |
| XE-127  | -2.322E-02                         |              | 6.402E-02 | 1.053E-01           | 9.310E-03 | -0.220  |
| I-131   | 1.002E-01                          |              | 1.561E-01 | 2.651E-01           | 2.375E-02 | 0.378   |
| TE-132  | -1.987E-01                         |              | 9.149E-01 | 1.505E+00           | 2.399E-01 | -0.132  |
| BA-133  | 1.266E-02                          |              | 6.998E-02 | 1.014E-01           | 1.338E-02 | 0.125   |
| I-133   | -4.862E-03                         |              | 3.868E-03 | Half-Life too short |           |         |
| CS-134  | 5.439E-02                          |              | 6.901E-02 | 1.209E-01           | 1.068E-02 | 0.450   |
| CS-135  | 2.525E-01                          |              | 2.480E-01 | 3.840E-01           | 4.004E-02 | 0.658   |
| I-135   | -3.052E+08                         |              | 3.699E+09 | Half-Life too short |           |         |
| CS-136  | -2.450E-02                         |              | 1.452E-01 | 2.298E-01           | 2.089E-02 | -0.107  |
| CE-139  | -1.214E-02                         |              | 3.777E-02 | 6.275E-02           | 5.344E-03 | -0.194  |
| BA-140  | -1.392E-01                         |              | 3.564E-01 | 5.774E-01           | 1.912E-01 | -0.241  |
| LA-140  | -1.004E-01                         |              | 1.218E-01 | 1.248E-01           | 1.077E-02 | -0.805  |
| CE-141  | 6.887E-02                          |              | 8.576E-02 | 1.451E-01           | 1.262E-02 | 0.475   |
| CE-143  | 3.861E-04                          |              | 1.197E-04 | Half-Life too short |           |         |
| CE-144  | -1.484E-01                         |              | 2.867E-01 | 4.401E-01           | 6.850E-02 | -0.337  |
| PM-144  | 1.945E-03                          |              | 4.548E-02 | 7.577E-02           | 6.340E-03 | 0.026   |
| PR-144  | 1.318E-01                          |              | 3.082E+00 | 5.134E+00           | 4.295E-01 | 0.026   |
| PM-146  | -5.372E-02                         |              | 6.493E-02 | 9.723E-02           | 1.021E-02 | -0.552  |
| ND-147  | -2.167E-01                         |              | 7.431E-01 | 1.223E+00           | 1.819E-01 | -0.177  |
| PM-149  | 8.621E+01                          |              | 1.268E+02 | 2.157E+02           | 3.415E+01 | 0.400   |
| EU-152  | -9.979E-02                         |              | 1.563E-01 | 2.239E-01           | 2.070E-02 | -0.446  |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| GD-153  | -7.945E-02                         |              | 1.224E-01 | 1.649E-01           | 1.465E-02 | -0.482  |
| EU-154  | -2.279E-02                         |              | 1.809E-01 | 2.980E-01           | 3.319E-02 | -0.076  |
| EU-155  | 1.529E-01                          |              | 1.492E-01 | 2.480E-01           | 2.181E-02 | 0.617   |
| TB-160  | 8.124E-04                          |              | 1.971E-01 | 3.226E-01           | 2.909E-02 | 0.003   |
| HO-166M | 1.648E-02                          |              | 9.003E-02 | 1.514E-01           | 1.278E-02 | 0.109   |
| TM-171  | -8.892E+00                         |              | 4.259E+01 | 6.073E+01           | 4.783E+00 | -0.146  |
| LU-176  | 1.176E-02                          |              | 3.719E-02 | 5.501E-02           | 4.979E-03 | 0.214   |
| LU-177  | 1.489E+00                          |              | 1.802E+00 | 2.764E+00           | 2.456E-01 | 0.539   |
| LU-177M | -4.012E-01                         |              | 2.605E-01 | 3.691E-01           | 3.016E-02 | -1.087  |
| HF-181  | -6.600E-02                         |              | 6.106E-02 | 8.822E-02           | 7.433E-03 | -0.748  |
| W-181   | -6.972E-01                         |              | 6.002E-01 | 8.224E-01           | 6.420E-02 | -0.848  |
| TA-182  | -1.377E-01                         |              | 2.816E-01 | 4.498E-01           | 3.707E-02 | -0.306  |
| RE-183  | 2.676E-02                          |              | 1.378E-01 | 2.345E-01           | 1.996E-02 | 0.114   |
| RE-184  | -4.712E-01                         |              | 3.095E-01 | 4.627E-01           | 4.223E-02 | -1.018  |
| OS-185  | 1.660E-02                          |              | 5.664E-02 | 9.682E-02           | 7.999E-03 | 0.171   |
| RE-188  | 9.117E-02                          |              | 2.221E-01 | 3.814E-01           | 3.248E-02 | 0.239   |
| W-188   | 1.951E+00                          |              | 1.192E+01 | 1.743E+01           | 1.590E+00 | 0.112   |
| IR-192  | 1.993E-02                          |              | 4.853E-02 | 8.148E-02           | 7.341E-03 | 0.245   |
| AU-195  | -1.483E-01                         |              | 3.194E-01 | 4.909E-01           | 4.334E-02 | -0.302  |
| TL-200  | -1.533E-04                         |              | 3.055E-04 | Half-Life too short |           |         |
| TL-201  | -2.079E+00                         |              | 8.936E+00 | 1.490E+01           | 1.271E+00 | -0.139  |
| TL-202  | -5.261E-02                         |              | 1.024E-01 | 1.584E-01           | 1.313E-02 | -0.332  |
| HG-203  | 1.020E-01                          |              | 5.801E-02 | 1.030E-01           | 9.660E-03 | 0.990   |
| BI-207  | 5.115E-02                          |              | 7.103E-02 | 1.240E-01           | 1.075E-02 | 0.412   |
| TL-207  | 7.254E-01                          |              | 1.038E+00 | 1.567E+00           | 2.798E-01 | 0.463   |
| PO-209  | -7.273E-01                         |              | 1.037E+01 | 1.682E+01           | 1.523E+00 | -0.043  |
| BI-210  | 5.142E+00                          |              | 5.967E+00 | 1.008E+01           | 9.516E-01 | 0.510   |
| PB-210  | 5.142E+00                          |              | 5.967E+00 | 1.008E+01           | 9.516E-01 | 0.510   |
| PO-210  | 5.142E+00                          |              | 5.963E+00 | 1.008E+01           | 8.642E-01 | 0.510   |
| PB-211  | 6.158E-01                          |              | 1.392E+00 | 2.235E+00           | 1.399E+00 | 0.276   |
| BI-212  | 1.024E+00                          | +            | 5.422E-01 | 9.149E-01           | 9.066E-02 | 1.119   |
| PO-215  | 7.254E-01                          |              | 1.038E+00 | 1.567E+00           | 2.798E-01 | 0.463   |
| RN-219  | -1.625E-01                         |              | 5.929E-01 | 9.406E-01           | 1.386E-01 | -0.173  |
| RN-220  | 2.136E+01                          |              | 3.530E+01 | 6.203E+01           | 5.265E+00 | 0.344   |
| RA-223  | 7.254E-01                          |              | 1.038E+00 | 1.567E+00           | 2.798E-01 | 0.463   |
| AC-227  | 7.292E-02                          |              | 5.120E-01 | 8.540E-01           | 1.336E-01 | 0.085   |
| TH-227  | 7.292E-02                          |              | 5.120E-01 | 8.540E-01           | 1.564E-01 | 0.085   |
| TH-229  | -2.009E-02                         |              | 6.822E-01 | 1.142E+00           | 1.000E-01 | -0.018  |
| PA-231  | -2.223E+00                         |              | 2.228E+00 | 3.421E+00           | 5.297E-01 | -0.650  |
| TH-231  | 7.254E-01                          |              | 1.038E+00 | 1.567E+00           | 2.798E-01 | 0.463   |
| U-231   | -7.460E-02                         |              | 1.540E+00 | 2.185E+00           | 1.955E-01 | -0.034  |
| PA-233  | -4.636E-02                         |              | 9.122E-02 | 1.448E-01           | 1.340E-02 | -0.320  |
| PA-234  | -2.684E-01                         |              | 4.389E-01 | 6.617E-01           | 1.253E-01 | -0.406  |
| PA-234M | 1.178E+00                          |              | 7.091E+00 | 1.174E+01           | 1.196E+00 | 0.100   |
| U-235   | 1.847E-02                          |              | 2.846E-01 | 4.691E-01           | 8.196E-02 | 0.039   |
| NP-236  | -3.521E-02                         |              | 1.024E-01 | 1.702E-01           | 1.449E-02 | -0.207  |
| NP-239  | 8.391E-02                          |              | 2.626E-01 | 4.233E-01           | 3.687E-02 | 0.198   |
| AM-241  | 1.019E-01                          |              | 2.437E-01 | 3.614E-01           | 2.978E-02 | 0.282   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| CM-243  | 3.803E-02                          |              | 1.358E-01 | 2.193E-01         | 1.911E-02 | 0.173   |
| AM-246  | 1.015E-01                          |              | 2.057E-01 | 3.497E-01         | 3.009E-02 | 0.290   |
| CM-247  | -4.289E-03                         |              | 5.383E-02 | 8.666E-02         | 7.028E-03 | -0.049  |
| CF-249  | 1.214E-03                          |              | 5.672E-02 | 9.216E-02         | 7.476E-03 | 0.013   |
| CF-251  | -1.519E-01                         |              | 1.644E-01 | 2.641E-01         | 2.273E-02 | -0.575  |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC
*                                     2040 Savage Road
*                                     Charleston, SC 29414
*****
*
*                               DETECTOR DATA
*
* Configuration      : SYS$SYSROOT:[ALPHA.ARCHIVE.GAMMA]G244630013
* Acquisition date   : 23-JAN-2010 14:05:28 Detector SN#      :
* Detector ID        : GAM01 Sensitivity      : 5.000
* Geometry           : CAN Energy tolerance   : 1.500
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 02:00:01.08 Half life ratio : 8.000
*****
*
*                               SAMPLE DATA
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID
* Sample ID          : G244630013 Analyst initials: MXR1
* Batch Number       : 941639 Sample Quantity : 1.0083E+02 GRAM
* Recovery           : 1.00000 Carrier Weight  : 0.00000
*****
*
*                               QC DATA
*
* CALIB. DATE/TIME   : 12-JAN-2010 15:15:52 MS Isotope      :
* MSD DPM             : 0.000 MSD Isotope                  :
* LCS DPM             : 0.000 LCS Isotope                  :
* LCSD DPM            : 0.000 LCSD Isotope                 :
*****

```

## Combined Activity,MDA Report

### ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act Error | DLC<br>(pCi/GRAM ) | TPU       |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 3.172E+01               | 3.618E+00 | 3.258E-01          | 1.846E+00 |
| CD-109  | 4.634E+00               | 1.522E+00 | 8.241E-01          | 7.765E-01 |
| SN-126  | 4.555E-01               | 1.496E-01 | 8.142E-02          | 7.632E-02 |
| BA-137M | 5.652E-01               | 1.102E-01 | 4.366E-02          | 5.622E-02 |
| CS-137  | 5.975E-01               | 1.165E-01 | 4.616E-02          | 5.945E-02 |
| TL-208  | 5.463E-01               | 1.128E-01 | 3.666E-02          | 5.754E-02 |
| BI-211  | 4.758E+00               | 7.792E-01 | 2.263E-01          | 3.976E-01 |
| PB-212  | 1.895E+00               | 2.413E-01 | 5.929E-02          | 1.231E-01 |
| PO-212  | 1.895E+00               | 2.413E-01 | 5.929E-02          | 1.231E-01 |
| BI-214  | 1.423E+00               | 2.787E-01 | 8.200E-02          | 1.422E-01 |
| PB-214  | 1.655E+00               | 2.840E-01 | 8.162E-02          | 1.449E-01 |
| PO-214  | 1.655E+00               | 2.840E-01 | 8.162E-02          | 1.449E-01 |
| PO-216  | 1.895E+00               | 2.413E-01 | 5.929E-02          | 1.231E-01 |
| PO-218  | 1.655E+00               | 2.840E-01 | 8.162E-02          | 1.449E-01 |
| RA-224  | 4.348E+00               | 1.510E+00 | 6.749E-01          | 7.702E-01 |
| RA-226  | 1.423E+00               | 2.787E-01 | 8.200E-02          | 1.422E-01 |
| AC-228  | 1.595E+00               | 3.836E-01 | 1.516E-01          | 1.957E-01 |
| RA-228  | 1.595E+00               | 3.836E-01 | 1.516E-01          | 1.957E-01 |
| TH-228  | 1.924E+00               | 2.450E-01 | 6.019E-02          | 1.250E-01 |
| TH-230  | 1.423E+00               | 2.787E-01 | 8.200E-02          | 1.422E-01 |
| TH-232  | 1.595E+00               | 3.836E-01 | 1.516E-01          | 1.957E-01 |
| TH-234  | 1.381E+00               | 2.893E+00 | 1.490E+00          | 1.476E+00 |
| U-234   | 1.423E+00               | 2.787E-01 | 8.200E-02          | 1.422E-01 |
| NP-237  | 1.338E+00               | 5.159E-01 | 2.421E-01          | 2.632E-01 |
| U-238   | 1.381E+00               | 2.893E+00 | 1.490E+00          | 1.476E+00 |
| AM-243  | 4.399E-01               | 1.074E-01 | 6.022E-02          | 5.478E-02 |
| ANH-511 | 1.549E-01               | 8.601E-02 | 2.974E-02          | 4.388E-02 |

### ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L Act error | DLC<br>(pCi/GRAM ) | TPU |
|---------|-------------------------------------|---------------|--------------------|-----|
|---------|-------------------------------------|---------------|--------------------|-----|

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| BE-7    | 2.809E-01  | 4.651E-01 | 3.958E-01 | 2.373E-01 | NOT IDENT. |
| NA-22   | 2.880E-03  | 6.256E-02 | 5.314E-02 | 3.192E-02 | NOT IDENT. |
| NA-24   | 2.845E+03  | 8.885E+05 | 0.000E+00 | 4.533E+05 | SHORT HLIF |
| AL-26   | -6.140E-03 | 4.219E-02 | 3.361E-02 | 2.152E-02 | NOT IDENT. |
| TI-44   | 4.420E-01  | 7.842E-02 | 5.356E-02 | 4.001E-02 | FAIL ABUN  |
| SC-46   | -5.048E-02 | 5.450E-02 | 4.046E-02 | 2.781E-02 | FAIL ABUN  |
| V-48    | 3.825E-02  | 1.056E-01 | 9.001E-02 | 5.388E-02 | NOT IDENT. |
| CR-51   | -3.597E-01 | 5.184E-01 | 4.127E-01 | 2.645E-01 | NOT IDENT. |
| MN-52   | -9.050E-03 | 2.969E-01 | 2.499E-01 | 1.515E-01 | NOT IDENT. |
| MN-54   | -4.525E-02 | 5.408E-02 | 4.143E-02 | 2.759E-02 | NOT IDENT. |
| CO-56   | 1.639E-03  | 5.617E-02 | 4.683E-02 | 2.866E-02 | FAIL ABUN  |
| CO-57   | 1.510E-02  | 3.440E-02 | 2.839E-02 | 1.755E-02 | NOT IDENT. |
| CO-58   | -2.281E-02 | 5.595E-02 | 4.483E-02 | 2.855E-02 | NOT IDENT. |
| FE-59   | 1.932E-02  | 1.233E-01 | 1.024E-01 | 6.289E-02 | NOT IDENT. |
| CO-60   | 5.857E-03  | 5.942E-02 | 5.063E-02 | 3.032E-02 | NOT IDENT. |
| ZN-65   | -1.889E-02 | 1.425E-01 | 9.802E-02 | 7.271E-02 | NOT IDENT. |
| GE-68   | 1.254E+00  | 1.759E+00 | 1.546E+00 | 8.976E-01 | NOT IDENT. |
| AS-73   | -2.834E-01 | 1.260E+00 | 1.038E+00 | 6.427E-01 | NOT IDENT. |
| AS-74   | 3.390E-03  | 1.119E-01 | 9.542E-02 | 5.712E-02 | NOT IDENT. |
| SE-75   | 2.488E-02  | 6.717E-02 | 5.096E-02 | 3.427E-02 | NOT IDENT. |
| BR-77   | 9.808E+00  | 1.411E+01 | 1.210E+01 | 7.201E+00 | FAIL ABUN  |
| SR-82   | -4.650E-01 | 5.428E-01 | 4.171E-01 | 2.769E-01 | NOT IDENT. |
| RB-83   | 6.911E-02  | 9.441E-02 | 8.117E-02 | 4.817E-02 | NOT IDENT. |
| RB-84   | -3.356E-02 | 9.787E-02 | 7.823E-02 | 4.993E-02 | NOT IDENT. |
| KR-85   | 1.924E+01  | 1.116E+01 | 9.207E+00 | 5.693E+00 | NOT IDENT. |
| SR-85   | 9.861E-02  | 5.720E-02 | 4.719E-02 | 2.918E-02 | NOT IDENT. |
| RB-86   | 2.121E-01  | 1.162E+00 | 9.685E-01 | 5.930E-01 | NOT IDENT. |
| Y-88    | 2.326E-03  | 5.131E-02 | 4.257E-02 | 2.618E-02 | NOT IDENT. |
| ZR-88   | -4.722E-03 | 4.413E-02 | 3.610E-02 | 2.252E-02 | NOT IDENT. |
| Y-91    | -3.189E+00 | 2.617E+01 | 2.197E+01 | 1.335E+01 | NOT IDENT. |
| NB-94   | 2.301E-02  | 4.637E-02 | 4.054E-02 | 2.366E-02 | NOT IDENT. |
| NB-95   | 5.759E-02  | 6.157E-02 | 5.510E-02 | 3.141E-02 | NOT IDENT. |
| NB-95M  | 1.458E-03  | 1.732E-01 | 1.289E-01 | 8.836E-02 | NOT IDENT. |
| ZR-95   | -3.952E-02 | 9.955E-02 | 8.037E-02 | 5.079E-02 | NOT IDENT. |
| NB-97   | 1.655E+04  | 1.363E+05 | 0.000E+00 | 6.953E+04 | SHORT HLIF |
| ZR-97   | 5.572E+05  | 2.631E+06 | 0.000E+00 | 1.342E+06 | SHORT HLIF |
| MO-99   | -1.843E+01 | 1.579E+01 | 1.155E+01 | 8.055E+00 | NOT IDENT. |
| TC-99M  | -9.922E+15 | 4.615E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | 3.595E-03  | 4.535E-02 | 3.791E-02 | 2.314E-02 | NOT IDENT. |
| RH-102  | -4.858E-02 | 4.412E-02 | 3.270E-02 | 2.251E-02 | NOT IDENT. |
| RU-103  | 4.265E-02  | 5.397E-02 | 4.657E-02 | 2.754E-02 | FAIL ABUN  |
| RH-106  | -6.937E-02 | 4.161E-01 | 3.478E-01 | 2.123E-01 | FAIL ABUN  |
| RU-106  | -6.937E-02 | 4.160E-01 | 3.478E-01 | 2.123E-01 | FAIL ABUN  |
| AG-108M | -8.998E-03 | 4.721E-02 | 3.813E-02 | 2.409E-02 | NOT IDENT. |
| AG-110M | 3.964E-03  | 5.015E-02 | 3.720E-02 | 2.559E-02 | NOT IDENT. |
| IN-111  | -6.890E-01 | 1.597E+00 | 1.148E+00 | 8.150E-01 | NOT IDENT. |
| IN-113M | -3.109E-02 | 6.341E-02 | 5.045E-02 | 3.235E-02 | NOT IDENT. |
| SN-113  | -3.109E-02 | 6.341E-02 | 5.045E-02 | 3.235E-02 | NOT IDENT. |
| IN-114M | -3.273E-02 | 2.683E-01 | 2.004E-01 | 1.369E-01 | NOT IDENT. |
| CD-115  | -7.552E-01 | 1.373E+01 | 1.170E+01 | 7.003E+00 | NOT IDENT. |
| SN-117M | 1.287E-02  | 6.935E-02 | 6.011E-02 | 3.538E-02 | NOT IDENT. |
| SB-122  | 2.751E+00  | 2.682E+00 | 2.452E+00 | 1.369E+00 | NOT IDENT. |
| I-123   | 8.241E+05  | 6.949E+06 | 0.000E+00 | 3.545E+06 | SHORT HLIF |
| TE-123M | 4.227E-03  | 3.564E-02 | 3.081E-02 | 1.818E-02 | NOT IDENT. |
| I-124   | -1.045E-01 | 9.422E-01 | 6.872E-01 | 4.807E-01 | NOT IDENT. |
| SB-124  | -7.718E-02 | 1.019E-01 | 6.978E-02 | 5.197E-02 | FAIL ABUN  |
| SB-125  | 1.155E-01  | 1.343E-01 | 1.164E-01 | 6.853E-02 | NOT IDENT. |
| TE-125M | -5.197E-02 | 1.218E+01 | 9.891E+00 | 6.213E+00 | NOT IDENT. |
| I-126   | 9.180E-02  | 2.840E-01 | 2.160E-01 | 1.449E-01 | NOT IDENT. |
| SB-126  | -8.872E-02 | 2.157E-01 | 1.639E-01 | 1.101E-01 | FAIL ABUN  |
| SB-127  | -1.023E+00 | 1.677E+00 | 1.327E+00 | 8.557E-01 | NOT IDENT. |
| XE-127  | -2.322E-02 | 6.274E-02 | 5.255E-02 | 3.201E-02 | NOT IDENT. |
| I-131   | 1.002E-01  | 1.530E-01 | 1.321E-01 | 7.804E-02 | NOT IDENT. |
| TE-132  | -1.987E-01 | 8.966E-01 | 7.510E-01 | 4.575E-01 | NOT IDENT. |
| BA-133  | 1.266E-02  | 6.858E-02 | 5.054E-02 | 3.499E-02 | NOT IDENT. |
| I-133   | -4.862E+03 | 7.582E+03 | 0.000E+00 | 3.868E+03 | SHORT HLIF |
| CS-134  | 5.439E-02  | 6.763E-02 | 6.007E-02 | 3.451E-02 | NOT IDENT. |
| CS-135  | 2.525E-01  | 2.430E-01 | 1.915E-01 | 1.240E-01 | NOT IDENT. |
| I-135   | -3.052E+14 | 7.251E+15 | 0.000E+00 | 3.699E+15 | SHORT HLIF |
| CS-136  | -2.450E-02 | 1.423E-01 | 1.141E-01 | 7.258E-02 | FAIL ABUN  |
| CE-139  | -1.214E-02 | 3.701E-02 | 3.133E-02 | 1.888E-02 | NOT IDENT. |
| BA-140  | -1.392E-01 | 3.493E-01 | 2.873E-01 | 1.782E-01 | NOT IDENT. |
| LA-140  | -1.004E-01 | 1.193E-01 | 6.189E-02 | 6.089E-02 | FAIL ABUN  |
| CE-141  | 6.887E-02  | 8.404E-02 | 7.246E-02 | 4.288E-02 | NOT IDENT. |
| CE-143  | 3.861E+02  | 2.347E+02 | 0.000E+00 | 1.197E+02 | SHORT HLIF |
| CE-144  | -1.484E-01 | 2.810E-01 | 2.199E-01 | 1.433E-01 | NOT IDENT. |
| PM-144  | 1.945E-03  | 4.457E-02 | 3.767E-02 | 2.274E-02 | NOT IDENT. |
| PR-144  | 1.318E-01  | 3.020E+00 | 2.553E+00 | 1.541E+00 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PM-146  | -5.372E-02 | 6.363E-02 | 4.840E-02 | 3.247E-02 | NOT IDENT. |
| ND-147  | -2.167E-01 | 7.282E-01 | 6.084E-01 | 3.715E-01 | FAIL ABUN  |
| PM-149  | 8.621E+01  | 1.243E+02 | 1.075E+02 | 6.342E+01 | NOT IDENT. |
| EU-152  | -9.979E-02 | 1.532E-01 | 1.116E-01 | 7.814E-02 | FAIL ABUN  |
| GD-153  | -7.945E-02 | 1.199E-01 | 8.249E-02 | 6.119E-02 | FAIL ABUN  |
| EU-154  | -2.279E-02 | 1.773E-01 | 1.479E-01 | 9.045E-02 | NOT IDENT. |
| EU-155  | 1.529E-01  | 1.462E-01 | 1.240E-01 | 7.459E-02 | FAIL ABUN  |
| TB-160  | 8.124E-04  | 1.932E-01 | 1.603E-01 | 9.857E-02 | FAIL ABUN  |
| HO-166M | 1.648E-02  | 8.823E-02 | 7.529E-02 | 4.501E-02 | NOT IDENT. |
| TM-171  | -8.892E+00 | 4.174E+01 | 3.041E+01 | 2.129E+01 | NOT IDENT. |
| LU-176  | 1.176E-02  | 3.644E-02 | 2.742E-02 | 1.859E-02 | FAIL ABUN  |
| LU-177  | 1.489E+00  | 1.766E+00 | 1.379E+00 | 9.012E-01 | NOT IDENT. |
| LU-177M | -4.012E-01 | 2.553E-01 | 1.838E-01 | 1.302E-01 | NOT IDENT. |
| HF-181  | -6.600E-02 | 5.984E-02 | 4.391E-02 | 3.053E-02 | NOT IDENT. |
| W-181   | -6.972E-01 | 5.882E-01 | 4.118E-01 | 3.001E-01 | NOT IDENT. |
| TA-182  | -1.377E-01 | 2.759E-01 | 2.233E-01 | 1.408E-01 | FAIL ABUN  |
| RE-183  | 2.676E-02  | 1.351E-01 | 1.171E-01 | 6.892E-02 | FAIL ABUN  |
| RE-184  | -4.712E-01 | 3.033E-01 | 2.307E-01 | 1.547E-01 | NOT IDENT. |
| OS-185  | 1.660E-02  | 5.551E-02 | 4.815E-02 | 2.832E-02 | NOT IDENT. |
| RE-188  | 9.117E-02  | 2.177E-01 | 1.905E-01 | 1.111E-01 | NOT IDENT. |
| W-188   | 1.951E+00  | 1.168E+01 | 8.689E+00 | 5.960E+00 | FAIL ABUN  |
| IR-192  | 1.993E-02  | 4.756E-02 | 4.061E-02 | 2.426E-02 | FAIL ABUN  |
| AU-195  | -1.483E-01 | 3.130E-01 | 2.455E-01 | 1.597E-01 | FAIL ABUN  |
| TL-200  | -1.533E+02 | 5.988E+02 | 0.000E+00 | 3.055E+02 | SHORT HLIF |
| TL-201  | -2.079E+00 | 8.757E+00 | 7.441E+00 | 4.468E+00 | NOT IDENT. |
| TL-202  | -5.261E-02 | 1.004E-01 | 7.887E-02 | 5.121E-02 | NOT IDENT. |
| HG-203  | 1.020E-01  | 5.685E-02 | 5.137E-02 | 2.901E-02 | NOT IDENT. |
| BI-207  | 5.115E-02  | 6.961E-02 | 6.159E-02 | 3.552E-02 | FAIL ABUN  |
| TL-207  | 7.254E-01  | 1.017E+00 | 7.807E-01 | 5.190E-01 | FAIL ABUN  |
| PO-209  | -7.273E-01 | 1.017E+01 | 8.357E+00 | 5.187E+00 | NOT IDENT. |
| BI-210  | 5.142E+00  | 5.848E+00 | 5.053E+00 | 2.983E+00 | NOT IDENT. |
| PB-210  | 5.142E+00  | 5.848E+00 | 5.053E+00 | 2.983E+00 | NOT IDENT. |
| PO-210  | 5.142E+00  | 5.844E+00 | 5.053E+00 | 2.982E+00 | NOT IDENT. |
| PB-211  | 6.158E-01  | 1.365E+00 | 1.113E+00 | 6.962E-01 | NOT IDENT. |
| BI-212  | 1.024E+00  | 5.314E-01 | 4.548E-01 | 2.711E-01 | FAIL ABUN  |
| PO-215  | 7.254E-01  | 1.017E+00 | 7.807E-01 | 5.190E-01 | FAIL ABUN  |
| RN-219  | -1.625E-01 | 5.811E-01 | 4.684E-01 | 2.965E-01 | FAIL ABUN  |
| RN-220  | 2.136E+01  | 3.459E+01 | 3.086E+01 | 1.765E+01 | NOT IDENT. |
| RA-223  | 7.254E-01  | 1.017E+00 | 7.807E-01 | 5.190E-01 | FAIL ABUN  |
| AC-227  | 7.292E-02  | 5.017E-01 | 4.259E-01 | 2.560E-01 | FAIL ABUN  |
| TH-227  | 7.292E-02  | 5.018E-01 | 4.259E-01 | 2.560E-01 | FAIL ABUN  |
| TH-229  | -2.009E-02 | 6.685E-01 | 5.697E-01 | 3.411E-01 | FAIL ABUN  |
| PA-231  | -2.223E+00 | 2.183E+00 | 1.705E+00 | 1.114E+00 | FAIL ABUN  |
| TH-231  | 7.254E-01  | 1.017E+00 | 7.807E-01 | 5.190E-01 | FAIL ABUN  |
| U-231   | -7.460E-02 | 1.509E+00 | 1.093E+00 | 7.699E-01 | FAIL ABUN  |
| PA-233  | -4.636E-02 | 8.939E-02 | 7.218E-02 | 4.561E-02 | FAIL ABUN  |
| PA-234  | -2.684E-01 | 4.301E-01 | 3.287E-01 | 2.194E-01 | FAIL ABUN  |
| PA-234M | 1.178E+00  | 6.949E+00 | 5.830E+00 | 3.545E+00 | NOT IDENT. |
| U-235   | 1.847E-02  | 2.789E-01 | 2.344E-01 | 1.423E-01 | FAIL ABUN  |
| NP-236  | -3.521E-02 | 1.003E-01 | 8.497E-02 | 5.118E-02 | NOT IDENT. |
| NP-239  | 8.391E-02  | 2.573E-01 | 2.116E-01 | 1.313E-01 | FAIL ABUN  |
| AM-241  | 1.019E-01  | 2.388E-01 | 1.810E-01 | 1.218E-01 | NOT IDENT. |
| CM-243  | 3.803E-02  | 1.331E-01 | 1.097E-01 | 6.790E-02 | FAIL ABUN  |
| AM-246  | 1.015E-01  | 2.016E-01 | 1.736E-01 | 1.028E-01 | NOT IDENT. |
| CM-247  | -4.289E-03 | 5.275E-02 | 4.316E-02 | 2.691E-02 | NOT IDENT. |
| CF-249  | 1.214E-03  | 5.559E-02 | 4.590E-02 | 2.836E-02 | NOT IDENT. |
| CF-251  | -1.519E-01 | 1.611E-01 | 1.319E-01 | 8.220E-02 | NOT IDENT. |



```

*****
*                               GEL Laboratories LLC                               *
*                               2040 SAVAGE ROAD                               *
*                               CHARLESTON ,SC 29417                          *
*                               GAMMA SPECTROSCOPY BACKGROUND REPORT            *
*****

```

| ENERGY | MDA COUNTS |
|--------|------------|
|--------|------------|

|       |          |
|-------|----------|
| 46.50 | 249.7653 |
| 46.50 | 249.7653 |
| 46.50 | 249.7653 |
| 48.70 | 282.7972 |
| 49.72 | 280.2973 |
| 51.35 | 248.1366 |
| 52.39 | 269.3707 |
| 52.97 | 264.4927 |
| 53.15 | 264.5854 |
| 53.44 | 268.8886 |
| 54.07 | 240.1133 |
| 56.28 | 263.0511 |
| 56.28 | 263.0524 |
| 57.37 | 0.0000   |
| 57.53 | 279.3659 |
| 57.53 | 279.3669 |
| 57.60 | 279.4022 |
| 57.98 | 307.8740 |
| 57.98 | 307.8740 |
| 59.32 | 266.1203 |
| 59.32 | 266.1203 |
| 59.40 | 266.1590 |
| 59.54 | 269.3780 |
| 59.72 | 269.4667 |
| 60.01 | 291.6821 |
| 61.10 | 306.4760 |
| 61.14 | 306.4978 |
| 61.30 | 306.5862 |
| 63.00 | 328.6504 |
| 63.29 | 328.8185 |
| 63.29 | 328.8185 |
| 63.58 | 328.9866 |
| 64.28 | 329.3899 |
| 65.12 | 332.5225 |
| 65.20 | 332.5688 |
| 65.20 | 332.5688 |
| 66.05 | 325.0876 |
| 66.72 | 320.6735 |
| 66.83 | 320.7348 |
| 66.91 | 320.7777 |
| 67.20 | 320.9357 |
| 67.20 | 320.9357 |
| 67.75 | 306.8511 |
| 67.85 | 313.2976 |
| 68.90 | 347.1576 |
| 68.90 | 347.1576 |
| 69.30 | 343.5435 |
| 69.67 | 339.9081 |
| 70.82 | 355.0109 |
| 70.82 | 355.0109 |
| 70.83 | 355.0160 |
| 72.80 | 351.3228 |
| 72.87 | 351.3627 |
| 72.87 | 351.3627 |
| 74.67 | 359.9205 |
| 74.81 | 360.0020 |
| 74.81 | 360.0020 |
| 74.81 | 360.0020 |
| 74.81 | 360.0020 |
| 74.81 | 360.0020 |
| 74.81 | 360.0020 |
| 74.97 | 360.0921 |
| 75.28 | 360.2704 |
| 75.70 | 360.5083 |
| 77.11 | 361.3067 |
| 77.11 | 361.3067 |

|        |          |
|--------|----------|
| 77.11  | 361.3067 |
| 77.11  | 361.3067 |
| 77.11  | 361.3067 |
| 77.11  | 361.3067 |
| 77.11  | 361.3067 |
| 78.38  | 357.6846 |
| 79.62  | 394.2027 |
| 79.80  | 394.3116 |
| 79.80  | 394.3116 |
| 80.11  | 394.4981 |
| 80.18  | 394.5387 |
| 80.30  | 394.6107 |
| 80.30  | 394.6107 |
| 80.57  | 362.1473 |
| 81.00  | 362.3828 |
| 81.07  | 395.0723 |
| 81.07  | 395.0723 |
| 81.07  | 395.0723 |
| 81.07  | 395.0723 |
| 82.60  | 326.1667 |
| 83.37  | 326.5400 |
| 83.78  | 326.7393 |
| 83.78  | 326.7393 |
| 83.78  | 326.7393 |
| 83.78  | 326.7393 |
| 84.21  | 326.9476 |
| 84.90  | 327.2791 |
| 85.43  | 327.5346 |
| 86.29  | 327.9453 |
| 86.50  | 328.0456 |
| 86.54  | 328.0639 |
| 86.59  | 328.0882 |
| 86.72  | 328.1505 |
| 86.79  | 328.1825 |
| 86.94  | 328.2540 |
| 87.30  | 328.4258 |
| 87.30  | 328.4258 |
| 87.30  | 328.4258 |
| 87.30  | 328.4258 |
| 87.30  | 328.4258 |
| 87.30  | 328.4258 |
| 87.57  | 328.5536 |
| 87.88  | 328.6996 |
| 88.03  | 328.7710 |
| 88.36  | 328.9261 |
| 88.47  | 328.9778 |
| 89.95  | 329.6729 |
| 91.11  | 330.2127 |
| 92.29  | 330.7572 |
| 92.38  | 330.7998 |
| 92.38  | 330.7998 |
| 93.35  | 331.2454 |
| 94.00  | 247.8248 |
| 94.67  | 248.0522 |
| 94.67  | 248.0533 |
| 94.90  | 253.1277 |
| 94.90  | 253.1277 |
| 94.90  | 253.1277 |
| 94.90  | 253.1277 |
| 95.87  | 271.8055 |
| 95.87  | 271.8055 |
| 96.73  | 278.8018 |
| 97.43  | 294.1036 |
| 98.44  | 302.5343 |
| 98.44  | 302.5357 |
| 98.88  | 298.0256 |
| 99.55  | 279.2994 |
| 99.55  | 279.2994 |
| 99.86  | 257.0607 |
| 100.00 | 257.1087 |
| 100.10 | 260.4979 |
| 103.18 | 321.0445 |
| 103.76 | 279.7223 |
| 105.00 | 272.2931 |
| 105.31 | 254.3914 |
| 108.00 | 299.3138 |
| 109.28 | 261.3307 |

|        |          |
|--------|----------|
| 111.00 | 255.0900 |
| 111.00 | 255.0900 |
| 111.76 | 280.2946 |
| 112.95 | 265.9315 |
| 115.19 | 274.6357 |
| 116.30 | 249.9005 |
| 117.00 | 254.6781 |
| 117.00 | 254.6781 |
| 117.66 | 264.0237 |
| 121.11 | 270.8416 |
| 121.62 | 256.0755 |
| 121.78 | 246.9354 |
| 122.06 | 247.0157 |
| 122.32 | 260.8824 |
| 122.32 | 260.8824 |
| 122.32 | 260.8824 |
| 122.32 | 260.8824 |
| 123.07 | 259.9596 |
| 127.23 | 278.5417 |
| 129.76 | 266.5879 |
| 131.20 | 305.3298 |
| 133.02 | 274.5363 |
| 133.54 | 275.8587 |
| 135.34 | 236.7507 |
| 136.00 | 248.5910 |
| 136.25 | 256.5393 |
| 136.48 | 256.6030 |
| 140.51 | 269.1531 |
| 140.51 | 0.0000   |
| 142.18 | 260.8179 |
| 142.65 | 270.6463 |
| 143.76 | 258.6060 |
| 144.24 | 248.1389 |
| 144.24 | 248.1389 |
| 144.24 | 248.1389 |
| 144.24 | 248.1389 |
| 145.22 | 239.5544 |
| 145.44 | 239.6082 |
| 147.16 | 279.8945 |
| 152.43 | 247.5662 |
| 152.70 | 244.0710 |
| 153.22 | 234.3949 |
| 154.21 | 240.8746 |
| 154.21 | 240.8746 |
| 154.21 | 240.8746 |
| 154.21 | 240.8746 |
| 155.03 | 243.7509 |
| 156.02 | 270.8026 |
| 158.56 | 237.4370 |
| 159.00 | 0.0000   |
| 159.00 | 233.9545 |
| 160.31 | 245.9231 |
| 161.27 | 246.1531 |
| 162.32 | 223.0225 |
| 162.64 | 223.0925 |
| 163.35 | 225.9464 |
| 163.89 | 229.6658 |
| 165.85 | 234.6114 |
| 167.43 | 236.7719 |
| 171.28 | 214.9585 |
| 171.86 | 213.2592 |
| 172.10 | 213.3076 |
| 176.55 | 245.1768 |
| 176.60 | 245.1871 |
| 181.06 | 261.1325 |
| 184.41 | 224.7113 |
| 185.71 | 224.9709 |
| 186.00 | 239.0012 |
| 190.27 | 236.2090 |
| 192.34 | 253.2731 |
| 193.63 | 233.1969 |
| 197.04 | 237.5918 |
| 198.01 | 233.1447 |
| 198.60 | 233.2616 |
| 200.40 | 239.2022 |
| 201.83 | 255.3302 |
| 202.84 | 245.2884 |
| 205.31 | 215.3268 |

|        |          |
|--------|----------|
| 208.36 | 266.8370 |
| 208.81 | 266.9370 |
| 209.75 | 243.8789 |
| 209.75 | 243.8789 |
| 210.97 | 196.8006 |
| 215.65 | 206.4052 |
| 216.55 | 216.9305 |
| 218.09 | 210.5869 |
| 222.10 | 206.5205 |
| 223.80 | 206.7950 |
| 226.40 | 173.9458 |
| 227.00 | 178.7816 |
| 227.08 | 193.0585 |
| 227.20 | 193.0771 |
| 228.16 | 197.9786 |
| 228.18 | 197.9818 |
| 228.18 | 197.9818 |
| 231.56 | 0.0000   |
| 235.69 | 192.9944 |
| 236.00 | 193.0406 |
| 236.00 | 193.0406 |
| 238.63 | 177.4954 |
| 238.63 | 177.4954 |
| 238.63 | 177.4954 |
| 238.63 | 177.4954 |
| 239.00 | 177.5448 |
| 240.98 | 177.8073 |
| 241.98 | 177.9400 |
| 241.98 | 177.9400 |
| 241.98 | 177.9400 |
| 244.69 | 172.7072 |
| 245.39 | 189.7671 |
| 247.94 | 154.5715 |
| 248.90 | 144.7353 |
| 249.79 | 143.1706 |
| 252.40 | 184.1480 |
| 252.85 | 184.2075 |
| 252.85 | 184.2075 |
| 254.15 | 0.0000   |
| 256.20 | 159.3830 |
| 256.20 | 159.3830 |
| 260.50 | 173.5185 |
| 260.90 | 172.5923 |
| 262.80 | 180.6330 |
| 264.65 | 154.8615 |
| 268.24 | 156.8164 |
| 268.79 | 163.1525 |
| 269.46 | 169.5067 |
| 269.46 | 169.5067 |
| 269.46 | 169.5067 |
| 269.46 | 169.5067 |
| 271.23 | 139.8556 |
| 273.65 | 184.1607 |
| 276.40 | 149.8105 |
| 277.35 | 166.6740 |
| 277.60 | 165.7159 |
| 277.60 | 165.7159 |
| 278.00 | 162.7995 |
| 278.60 | 150.0355 |
| 279.20 | 136.2712 |
| 279.53 | 144.2022 |
| 280.46 | 170.9779 |
| 281.68 | 182.9873 |
| 283.67 | 182.2396 |
| 284.30 | 174.3887 |
| 285.00 | 165.5475 |
| 285.90 | 139.8576 |
| 286.10 | 147.8132 |
| 286.10 | 147.8132 |
| 287.40 | 145.9525 |
| 288.45 | 0.0000   |
| 290.67 | 160.7937 |
| 290.80 | 160.8085 |
| 291.72 | 157.7184 |
| 293.26 | 0.0000   |
| 293.70 | 161.1142 |
| 295.21 | 158.0785 |
| 295.21 | 158.0785 |

|        |          |
|--------|----------|
| 295.21 | 158.0785 |
| 295.96 | 158.1535 |
| 296.50 | 135.8361 |
| 297.23 | 135.9004 |
| 298.57 | 136.0187 |
| 299.80 | 136.1245 |
| 299.80 | 136.1245 |
| 300.09 | 126.5408 |
| 300.09 | 126.5408 |
| 300.09 | 126.5408 |
| 300.09 | 126.5408 |
| 300.12 | 126.5427 |
| 301.29 | 126.6372 |
| 302.84 | 120.3442 |
| 303.76 | 117.2028 |
| 303.91 | 117.2153 |
| 304.40 | 122.0694 |
| 304.40 | 122.0694 |
| 304.84 | 128.5293 |
| 306.84 | 119.0414 |
| 308.46 | 118.4723 |
| 311.98 | 148.2718 |
| 316.51 | 127.4496 |
| 318.01 | 139.7162 |
| 319.02 | 139.8025 |
| 319.41 | 135.7830 |
| 320.08 | 148.0028 |
| 323.87 | 120.3024 |
| 323.87 | 120.3024 |
| 323.87 | 120.3024 |
| 323.87 | 120.3024 |
| 325.23 | 144.8075 |
| 328.77 | 139.6131 |
| 333.44 | 160.7832 |
| 334.20 | 142.3181 |
| 334.20 | 142.3181 |
| 334.30 | 142.3266 |
| 338.28 | 156.8054 |
| 338.28 | 156.8054 |
| 338.28 | 156.8054 |
| 338.28 | 156.8054 |
| 338.32 | 156.8077 |
| 338.32 | 156.8077 |
| 338.32 | 156.8077 |
| 340.50 | 126.4278 |
| 340.57 | 126.4334 |
| 344.27 | 149.4714 |
| 345.85 | 141.1774 |
| 350.59 | 0.0000   |
| 351.07 | 120.5979 |
| 351.92 | 129.1275 |
| 351.92 | 129.1275 |
| 351.92 | 129.1275 |
| 355.39 | 0.0000   |
| 356.01 | 119.2816 |
| 364.48 | 93.6351  |
| 366.43 | 118.7349 |
| 367.43 | 110.4641 |
| 367.94 | 0.0000   |
| 369.80 | 120.0011 |
| 374.96 | 123.4808 |
| 383.85 | 111.4621 |
| 387.95 | 109.5986 |
| 388.63 | 109.6399 |
| 391.69 | 120.3770 |
| 391.69 | 120.3770 |
| 392.90 | 116.2288 |
| 398.62 | 125.0581 |
| 400.65 | 100.7896 |
| 401.10 | 103.9979 |
| 401.81 | 113.5895 |
| 402.60 | 113.6369 |
| 404.84 | 103.1365 |
| 410.95 | 94.9292  |
| 411.60 | 91.7608  |
| 413.65 | 133.5125 |
| 414.70 | 115.4174 |
| 415.30 | 105.8310 |

|        |          |
|--------|----------|
| 415.76 | 93.0256  |
| 417.63 | 0.0000   |
| 418.52 | 91.0142  |
| 423.70 | 118.0919 |
| 427.08 | 104.3117 |
| 427.89 | 92.5206  |
| 432.53 | 119.6922 |
| 433.93 | 102.5089 |
| 439.47 | 107.1181 |
| 439.56 | 107.1226 |
| 439.89 | 106.0570 |
| 443.98 | 88.9193  |
| 444.90 | 96.5534  |
| 445.03 | 98.7287  |
| 445.03 | 98.7287  |
| 445.03 | 98.7287  |
| 445.03 | 98.7287  |
| 453.90 | 108.9584 |
| 463.38 | 95.2213  |
| 468.07 | 116.2723 |
| 473.00 | 90.1542  |
| 475.06 | 113.3509 |
| 475.35 | 111.1638 |
| 476.78 | 84.8050  |
| 477.59 | 82.6332  |
| 477.96 | 79.3411  |
| 482.03 | 97.1537  |
| 484.57 | 74.0562  |
| 487.03 | 63.0735  |
| 490.36 | 0.0000   |
| 492.35 | 83.1917  |
| 497.08 | 62.2489  |
| 507.63 | 0.0000   |
| 510.53 | 0.0000   |
| 510.84 | 68.2224  |
| 511.00 | 68.2271  |
| 511.85 | 68.2522  |
| 511.85 | 68.2522  |
| 513.99 | 68.0920  |
| 513.99 | 68.0920  |
| 520.41 | 64.0154  |
| 520.65 | 64.0224  |
| 527.90 | 70.3066  |
| 528.96 | 0.0000   |
| 529.64 | 77.5764  |
| 529.87 | 0.0000   |
| 531.02 | 74.9128  |
| 537.32 | 80.5454  |
| 543.00 | 57.1522  |
| 546.56 | 0.0000   |
| 549.76 | 64.5916  |
| 552.65 | 63.7588  |
| 555.20 | 80.2377  |
| 563.23 | 61.2929  |
| 563.90 | 59.4791  |
| 568.70 | 75.1813  |
| 569.32 | 68.7817  |
| 569.50 | 70.6216  |
| 569.67 | 70.6253  |
| 573.80 | 70.7438  |
| 574.00 | 77.1812  |
| 574.64 | 81.7970  |
| 578.91 | 70.5835  |
| 579.30 | 0.0000   |
| 583.14 | 59.0203  |
| 585.48 | 38.4613  |
| 591.81 | 57.3742  |
| 592.07 | 58.3058  |
| 593.00 | 49.9935  |
| 595.88 | 59.3188  |
| 600.56 | 68.0947  |
| 602.52 | 0.0000   |
| 602.71 | 66.6031  |
| 602.71 | 66.6031  |
| 603.60 | 55.7798  |
| 604.41 | 55.7974  |
| 604.70 | 49.6042  |
| 609.31 | 82.9247  |

|        |         |
|--------|---------|
| 609.31 | 82.9247 |
| 609.31 | 82.9247 |
| 609.31 | 82.9247 |
| 610.33 | 82.9573 |
| 612.46 | 63.7455 |
| 614.37 | 54.4568 |
| 618.01 | 63.1033 |
| 621.84 | 64.5991 |
| 621.84 | 64.5991 |
| 631.29 | 65.7703 |
| 633.02 | 58.2915 |
| 633.10 | 55.4724 |
| 634.78 | 60.2109 |
| 635.90 | 59.2963 |
| 636.97 | 56.4946 |
| 645.85 | 53.8480 |
| 646.12 | 55.7432 |
| 656.30 | 61.6421 |
| 657.75 | 55.3483 |
| 657.90 | 0.0000  |
| 661.65 | 76.9658 |
| 661.65 | 76.9658 |
| 664.57 | 0.0000  |
| 666.33 | 65.0401 |
| 666.33 | 65.0401 |
| 675.00 | 54.4228 |
| 677.61 | 62.1182 |
| 685.20 | 57.4951 |
| 692.80 | 58.6097 |
| 695.00 | 50.0018 |
| 696.49 | 59.6478 |
| 696.49 | 59.6478 |
| 697.00 | 69.2807 |
| 697.49 | 76.0298 |
| 698.33 | 69.3141 |
| 698.50 | 70.2803 |
| 699.00 | 76.0703 |
| 702.63 | 62.6688 |
| 706.10 | 62.7434 |
| 706.58 | 0.0000  |
| 706.67 | 66.6180 |
| 709.31 | 80.2077 |
| 711.68 | 68.6686 |
| 713.82 | 65.8152 |
| 717.42 | 65.8966 |
| 720.50 | 71.5443 |
| 721.93 | 0.0000  |
| 722.20 | 66.3280 |
| 722.78 | 69.5776 |
| 722.78 | 69.5776 |
| 722.89 | 69.5793 |
| 722.95 | 69.5811 |
| 723.30 | 64.7347 |
| 724.18 | 63.1354 |
| 727.18 | 70.0049 |
| 733.00 | 59.8449 |
| 735.90 | 58.5103 |
| 739.58 | 68.3457 |
| 742.81 | 46.9160 |
| 744.21 | 37.1595 |
| 747.13 | 68.5183 |
| 751.79 | 54.8994 |
| 752.31 | 54.9090 |
| 753.82 | 47.0883 |
| 755.35 | 55.9452 |
| 756.15 | 64.7947 |
| 756.87 | 61.8649 |
| 763.93 | 77.7560 |
| 765.79 | 62.0464 |
| 766.42 | 57.1334 |
| 766.84 | 58.1257 |
| 776.49 | 70.1680 |
| 778.00 | 58.3374 |
| 778.57 | 58.3475 |
| 778.89 | 53.4081 |
| 783.80 | 54.4830 |
| 785.46 | 55.5037 |
| 792.07 | 79.4570 |

|         |         |
|---------|---------|
| 795.84  | 56.6813 |
| 796.30  | 52.7115 |
| 798.80  | 66.6876 |
| 801.93  | 62.7693 |
| 805.60  | 48.8768 |
| 810.29  | 57.9391 |
| 810.76  | 59.9458 |
| 815.85  | 54.0369 |
| 817.79  | 58.0736 |
| 818.51  | 51.0772 |
| 819.60  | 58.1062 |
| 826.30  | 63.2461 |
| 828.27  | 0.0000  |
| 831.60  | 45.2499 |
| 831.96  | 47.2662 |
| 834.83  | 71.4645 |
| 836.80  | 0.0000  |
| 846.75  | 53.5409 |
| 848.13  | 50.5310 |
| 856.28  | 0.0000  |
| 856.80  | 40.5303 |
| 860.37  | 40.5742 |
| 867.32  | 30.4937 |
| 867.82  | 39.2118 |
| 871.10  | 41.7207 |
| 873.19  | 44.8014 |
| 874.81  | 40.7480 |
| 875.33  | 0.0000  |
| 876.40  | 40.7676 |
| 879.36  | 46.9231 |
| 880.27  | 51.0168 |
| 880.51  | 52.0409 |
| 881.50  | 51.0352 |
| 883.24  | 40.8496 |
| 884.67  | 40.8662 |
| 889.25  | 55.2432 |
| 896.60  | 46.1349 |
| 898.02  | 42.0510 |
| 899.00  | 41.0371 |
| 903.28  | 45.1967 |
| 911.07  | 49.7588 |
| 911.07  | 49.7588 |
| 911.07  | 49.7588 |
| 919.63  | 38.7003 |
| 920.93  | 43.3597 |
| 925.00  | 41.3428 |
| 925.24  | 41.3457 |
| 926.50  | 34.1223 |
| 935.52  | 43.5391 |
| 937.48  | 43.5627 |
| 944.10  | 57.1525 |
| 946.00  | 53.0233 |
| 949.00  | 39.5410 |
| 962.29  | 34.8120 |
| 964.01  | 43.5354 |
| 966.15  | 51.2275 |
| 968.20  | 51.2562 |
| 969.11  | 51.2694 |
| 969.11  | 51.2694 |
| 969.11  | 51.2694 |
| 977.42  | 36.7039 |
| 980.50  | 56.6763 |
| 983.50  | 46.2183 |
| 989.30  | 38.9259 |
| 996.32  | 40.0531 |
| 1001.03 | 40.1032 |
| 1001.68 | 37.9995 |
| 1004.76 | 48.5942 |
| 1021.30 | 0.0000  |
| 1024.50 | 0.0000  |
| 1034.80 | 36.2014 |
| 1036.00 | 47.9290 |
| 1037.82 | 44.7542 |
| 1038.57 | 47.9619 |
| 1038.76 | 0.0000  |
| 1045.16 | 40.5698 |
| 1046.59 | 33.1085 |
| 1048.07 | 39.5311 |



|         |         |
|---------|---------|
| 1050.47 | 40.6255 |
| 1050.47 | 40.6255 |
| 1062.04 | 34.3109 |
| 1063.62 | 32.1797 |
| 1076.63 | 45.2013 |
| 1077.35 | 36.5981 |
| 1078.86 | 38.7650 |
| 1085.78 | 37.7532 |
| 1099.22 | 38.9619 |
| 1112.02 | 28.4995 |
| 1112.84 | 27.1484 |
| 1115.52 | 47.0869 |
| 1120.29 | 41.3398 |
| 1120.29 | 41.3398 |
| 1120.29 | 41.3398 |
| 1120.29 | 41.3398 |
| 1120.51 | 41.3436 |
| 1121.28 | 39.9001 |
| 1124.00 | 0.0000  |
| 1129.67 | 43.6152 |
| 1131.51 | 0.0000  |
| 1147.95 | 0.0000  |
| 1167.94 | 52.2709 |
| 1173.22 | 55.0903 |
| 1175.09 | 56.9519 |
| 1177.93 | 46.8787 |
| 1189.05 | 51.6090 |
| 1204.90 | 53.6481 |
| 1205.75 | 0.0000  |
| 1213.00 | 57.4565 |
| 1221.42 | 60.3503 |
| 1230.97 | 47.8544 |
| 1235.34 | 39.9187 |
| 1236.41 | 0.0000  |
| 1238.25 | 54.0588 |
| 1246.25 | 43.2177 |
| 1260.41 | 0.0000  |
| 1271.85 | 56.3428 |
| 1274.45 | 44.1619 |
| 1274.54 | 41.3431 |
| 1291.56 | 36.7831 |
| 1298.22 | 0.0000  |
| 1312.09 | 36.9465 |
| 1325.50 | 30.4023 |
| 1325.50 | 30.4023 |
| 1332.49 | 34.2539 |
| 1333.61 | 35.2144 |
| 1360.21 | 23.9278 |
| 1362.66 | 0.0000  |
| 1365.15 | 20.1199 |
| 1368.21 | 20.1327 |
| 1368.53 | 0.0000  |
| 1376.25 | 26.3404 |
| 1384.27 | 28.2161 |
| 1394.10 | 17.3496 |
| 1395.20 | 13.4970 |
| 1407.95 | 16.4321 |
| 1434.06 | 16.5199 |
| 1436.60 | 19.4450 |
| 1457.56 | 0.0000  |
| 1460.81 | 14.6539 |
| 1489.15 | 12.7715 |
| 1509.49 | 10.8492 |
| 1596.49 | 17.1882 |
| 1620.62 | 15.3815 |
| 1678.03 | 0.0000  |
| 1691.02 | 15.2991 |
| 1691.02 | 15.2991 |
| 1706.46 | 0.0000  |
| 1750.46 | 0.0000  |
| 1764.49 | 10.6251 |
| 1764.49 | 10.6251 |
| 1764.49 | 10.6251 |
| 1764.49 | 10.6251 |
| 1770.23 | 5.3178  |
| 1771.40 | 8.8647  |
| 1791.20 | 0.0000  |
| 1808.65 | 11.4485 |

1836.01

12.5459

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G244630013

|                             |            |      |
|-----------------------------|------------|------|
| Total Uranium Activity      | 4.1171E+00 | ug/g |
| Total Uranium Counting Unc. | 8.6072E+00 | ug/g |
| Total Uranium Tpu           | 4.3914E-06 | ug/g |
| Total Uranium Mda           | 4.4338E+00 | ug/g |

```

*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON ,SC 29417               *
*               GROSS GAMMA REPORT                 *
*
*****
*
*  BATCH ID      : 941639                      SAMPLE ID   : G244630013
*  ANALYST       : MXR1                        DETECTOR    : GAM01
*  SAMPLE DATE   : 8-JAN-2010 12:00:00.00    COUNT TIME   : 0 02:00:00.00
*  ANALYSIS DATE : 23-JAN-2010 14:05:28.37    SAMPLE ALQT  : 100.830 GRAM
*
*****

```

```

GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.136E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.893E+00
GROSS GAMMA MDA     (pCi/GRAM ) : 5.074E+00
GROSS GAMMA DLC     (pCi/GRAM ) : 2.454E+00

```

## VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 16:06:54.05

```

*****
*                               GEL Laboratories LLC                      *
*                               2040 Savage Road                        *
*                               Charleston, SC 29414                    *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630014.CNF;1
Sample date        : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 14:05:59
Sample ID          : G244630014      Sample quantity   : 1.29360E+02 GRAM
Detector name      : GAM02           Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00   Elapsed real time: 0 02:00:03.08 0.0%
Energy tolerance   : 1.50000 keV     Analyst Initials : MXR1
Abundance limit    : 75.00000        Sensitivity      : 5.00000
Batch ID           : 941639          Detector SN#     :
Matrix Spike ID    :                 LCS ID            : 1032-A
*****

```

| Pk | It | Energy   | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | Fit      |
|----|----|----------|------|-------|------|---------|------|----|----------|------|----------|
| 1  | 0  | 63.01*   | 57   | 426   | 1.18 | 125.22  | 122  | 6  | 7.90E-03 | 62.8 |          |
| 2  | 2  | 74.58    | 533  | 475   | 1.08 | 148.38  | 141  | 18 | 7.40E-02 | 8.2  | 4.03E+00 |
| 3  | 2  | 76.86*   | 918  | 389   | 1.08 | 152.93  | 141  | 18 | 1.27E-01 | 4.9  |          |
| 4  | 6  | 84.11*   | 165  | 608   | 1.55 | 167.43  | 163  | 28 | 2.30E-02 | 27.7 | 8.56E-01 |
| 5  | 6  | 87.08    | 381  | 514   | 1.36 | 173.39  | 163  | 28 | 5.29E-02 | 11.5 |          |
| 6  | 6  | 89.74    | 230  | 425   | 1.22 | 178.69  | 163  | 28 | 3.19E-02 | 16.7 |          |
| 7  | 6  | 92.51*   | 350  | 508   | 1.43 | 184.24  | 163  | 28 | 4.86E-02 | 14.2 |          |
| 8  | 0  | 128.97   | 107  | 604   | 1.13 | 257.21  | 253  | 11 | 1.49E-02 | 45.3 |          |
| 9  | 0  | 185.71*  | 295  | 434   | 1.11 | 370.73  | 365  | 11 | 4.10E-02 | 15.7 |          |
| 10 | 0  | 208.95   | 174  | 440   | 1.31 | 417.24  | 412  | 11 | 2.41E-02 | 24.6 |          |
| 11 | 4  | 238.37*  | 1677 | 214   | 1.11 | 476.12  | 469  | 18 | 2.33E-01 | 2.9  | 2.87E+00 |
| 12 | 4  | 241.36*  | 393  | 275   | 1.72 | 482.09  | 469  | 18 | 5.46E-02 | 11.5 |          |
| 13 | 0  | 270.01   | 181  | 309   | 1.61 | 539.44  | 533  | 13 | 2.52E-02 | 21.3 |          |
| 14 | 1  | 294.91*  | 517  | 173   | 1.37 | 589.25  | 582  | 22 | 7.19E-02 | 6.3  | 2.46E+00 |
| 15 | 1  | 299.66   | 107  | 169   | 1.37 | 598.75  | 582  | 22 | 1.49E-02 | 23.1 |          |
| 16 | 0  | 327.41   | 117  | 211   | 0.75 | 654.30  | 648  | 11 | 1.62E-02 | 25.8 |          |
| 17 | 0  | 338.02   | 313  | 157   | 1.24 | 675.53  | 672  | 8  | 4.34E-02 | 8.9  |          |
| 18 | 0  | 351.62*  | 895  | 215   | 1.27 | 702.74  | 697  | 13 | 1.24E-01 | 4.8  |          |
| 19 | 0  | 462.55   | 103  | 157   | 1.47 | 924.72  | 919  | 13 | 1.43E-02 | 27.0 |          |
| 20 | 0  | 510.48*  | 113  | 177   | 1.65 | 1020.65 | 1015 | 14 | 1.58E-02 | 30.3 |          |
| 21 | 0  | 582.98*  | 447  | 134   | 1.52 | 1165.72 | 1160 | 11 | 6.20E-02 | 7.0  |          |
| 22 | 0  | 608.96*  | 633  | 161   | 1.56 | 1217.72 | 1210 | 17 | 8.79E-02 | 6.1  |          |
| 23 | 1  | 661.41*  | 76   | 51    | 1.75 | 1322.68 | 1316 | 21 | 1.06E-02 | 23.1 | 2.16E+00 |
| 24 | 1  | 664.99   | 47   | 66    | 1.75 | 1329.85 | 1316 | 21 | 6.48E-03 | 37.2 |          |
| 25 | 0  | 727.33   | 90   | 138   | 1.30 | 1454.61 | 1449 | 13 | 1.26E-02 | 29.1 |          |
| 26 | 0  | 794.62   | 77   | 66    | 2.20 | 1589.27 | 1583 | 12 | 1.07E-02 | 23.9 |          |
| 27 | 0  | 860.40   | 57   | 59    | 1.46 | 1720.92 | 1716 | 11 | 7.95E-03 | 29.4 |          |
| 28 | 0  | 910.76*  | 320  | 83    | 1.75 | 1821.70 | 1814 | 15 | 4.44E-02 | 8.5  |          |
| 29 | 4  | 964.15   | 55   | 64    | 1.96 | 1928.57 | 1924 | 18 | 7.67E-03 | 30.4 | 2.62E+00 |
| 30 | 4  | 968.35*  | 206  | 68    | 1.85 | 1936.96 | 1924 | 18 | 2.86E-02 | 10.6 |          |
| 31 | 0  | 1000.30* | 34   | 68    | 1.22 | 2000.91 | 1994 | 13 | 4.70E-03 | 55.3 |          |
| 32 | 0  | 1119.96* | 154  | 95    | 1.77 | 2240.40 | 2230 | 19 | 2.14E-02 | 17.4 |          |
| 33 | 0  | 1238.44  | 62   | 67    | 1.64 | 2477.54 | 2472 | 12 | 8.65E-03 | 29.8 |          |
| 34 | 0  | 1460.27* | 1348 | 45    | 2.27 | 2921.54 | 2912 | 21 | 1.87E-01 | 3.0  |          |
| 35 | 0  | 1729.52  | 25   | 23    | 1.59 | 3460.50 | 3452 | 18 | 3.45E-03 | 49.2 |          |
| 36 | 0  | 1763.74* | 108  | 16    | 2.91 | 3529.00 | 3522 | 15 | 1.50E-02 | 12.8 |          |
| 37 | 0  | 1847.47  | 20   | 5     | 1.18 | 3696.61 | 3693 | 8  | 2.81E-03 | 30.1 |          |

Flag: "\*" = Peak area was modified by background subtraction

VMS Nuclide Identification Report V3.1 Generated 23-JAN-2010 16:06:57

Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630014.CNF;1  
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8  
Sample title : MXR1  
Sample date : 8-JAN-2010 12:00:00 Acquisition date : 23-JAN-2010 14:05:59  
Sample ID : G244630014 Sample quantity : 129.36 GRAM  
Sample type : SOLID Sample geometry :  
Detector name : GAMMA2 Detector geometry: CAN  
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:03.08 0.0%  
Peak Width (FWHM): 3.00 Confidence level : 5.00 %  
Energy tolerance : 1.50 keV Half life ratio : 8.00  
Errors propagated: Yes Systematic Error : 0.00 %  
Efficiency type : Empirical Efficiencies at : Peak Energy  
Abundance limit : 75.00 WTM error limit : 3.00

Full Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| K-40    | +         | 1460.81      | *   | 3.566E+01           | 4.019E+00 | 6.045E-01      | 5.747E-02 | 58.986  |
| CD-109  | +         | 88.03        | *   | 5.809E+00           | 1.452E+00 | 1.332E+00      | 1.337E-01 | 4.362   |
| SN-126  | +         | 64.28        |     | 6.775E-01           | 8.570E-01 | 1.070E+00      | 1.587E-01 | 0.633   |
|         | +         | 86.94        |     | 2.374E+00           | 1.129E+00 | 5.516E-01      | 2.297E-01 | 4.304   |
|         | +         | 87.57        | *   | 5.710E-01           | 1.428E-01 | 1.316E-01      | 1.316E-02 | 4.338   |
| BA-137M | +         | 661.65       | *   | 1.188E-01           | 5.590E-02 | 6.906E-02      | 5.950E-03 | 1.720   |
| CS-137  | +         | 661.65       | *   | 1.256E-01           | 5.909E-02 | 7.301E-02      | 6.302E-03 | 1.720   |
| TL-208  |           | 277.35       |     | 6.247E-01           | 4.601E-01 | 8.004E-01      | 1.217E-01 | 0.780   |
|         | +         | 510.84       |     | 6.001E-01           | 3.723E-01 | 2.679E-01      | 3.470E-02 | 2.240   |
|         | +         | 583.14       | *   | 6.715E-01           | 1.160E-01 | 7.384E-02      | 7.397E-03 | 9.095   |
|         | +         | 860.37       |     | 8.071E-01           | 4.815E-01 | 5.438E-01      | 5.732E-02 | 1.484   |
| BI-211  |           | 72.87        |     | 8.812E+00           | 3.681E+00 | 6.512E+00      | 5.605E-01 | 1.353   |
|         | +         | 351.07       | *   | 5.990E+00           | 8.990E-01 | 4.000E-01      | 4.614E-02 | 14.976  |
| PB-212  | +         | 74.81        |     | 3.567E+00           | 7.397E-01 | 6.261E-01      | 8.018E-02 | 5.697   |
|         | +         | 77.11        |     | 3.435E+00           | 4.539E-01 | 3.512E-01      | 3.141E-02 | 9.780   |
|         | +         | 87.30        |     | 2.641E+00           | 7.111E-01 | 6.108E-01      | 8.622E-02 | 4.323   |
|         | +         | 238.63       | *   | 2.447E+00           | 3.387E-01 | 1.047E-01      | 1.318E-02 | 23.376  |
|         | +         | 300.09       |     | 2.420E+00           | 1.165E+00 | 1.391E+00      | 1.880E-01 | 1.740   |
| PO-212  | +         | 74.81        |     | 3.567E+00           | 7.397E-01 | 6.261E-01      | 8.018E-02 | 5.697   |
|         | +         | 77.11        |     | 3.435E+00           | 4.539E-01 | 3.512E-01      | 3.141E-02 | 9.780   |
|         | +         | 87.30        |     | 2.641E+00           | 7.111E-01 | 6.108E-01      | 8.622E-02 | 4.323   |
|         | +         | 115.19       |     | 1.182E+00           | 3.909E+00 | 6.530E+00      | 5.491E-01 | 0.181   |
|         | +         | 238.63       | *   | 2.447E+00           | 3.387E-01 | 1.047E-01      | 1.318E-02 | 23.376  |
|         | +         | 300.09       |     | 2.420E+00           | 1.165E+00 | 1.391E+00      | 1.880E-01 | 1.740   |
| BI-214  | +         | 609.31       | *   | 1.792E+00           | 2.904E-01 | 1.313E-01      | 1.388E-02 | 13.648  |
|         | +         | 1120.29      |     | 2.283E+00           | 8.313E-01 | 5.583E-01      | 6.079E-02 | 4.089   |
|         | +         | 1764.49      |     | 2.204E+00           | 5.949E-01 | 2.757E-01      | 2.336E-02 | 7.995   |
| PB-214  | +         | 74.81        |     | 6.146E+00           | 1.225E+00 | 1.079E+00      | 1.237E-01 | 5.697   |
|         | +         | 77.11        |     | 5.888E+00           | 8.982E-01 | 6.020E-01      | 7.073E-02 | 9.780   |
|         | +         | 87.30        |     | 4.524E+00           | 1.184E+00 | 1.046E+00      | 1.318E-01 | 4.323   |
|         | +         | 241.98       |     | 3.449E+00           | 9.095E-01 | 6.124E-01      | 8.012E-02 | 5.632   |
|         | +         | 295.21       |     | 2.050E+00           | 3.815E-01 | 2.435E-01      | 3.346E-02 | 8.418   |
|         | +         | 351.92       | *   | 2.084E+00           | 3.311E-01 | 1.394E-01      | 1.763E-02 | 14.945  |
| PO-214  | +         | 74.81        |     | 6.146E+00           | 1.225E+00 | 1.079E+00      | 1.237E-01 | 5.697   |

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PO-216  | +         | 77.11        |     | 5.888E+00           | 8.982E-01 | 6.020E-01      | 7.073E-02 | 9.780   |
|         | +         | 87.30        |     | 4.524E+00           | 1.184E+00 | 1.046E+00      | 1.318E-01 | 4.323   |
|         | +         | 241.98       |     | 3.449E+00           | 9.095E-01 | 6.124E-01      | 8.012E-02 | 5.632   |
|         | +         | 295.21       |     | 2.050E+00           | 3.815E-01 | 2.435E-01      | 3.346E-02 | 8.418   |
|         | +         | 351.92       | *   | 2.084E+00           | 3.311E-01 | 1.394E-01      | 1.763E-02 | 14.945  |
|         | +         | 74.81        |     | 3.567E+00           | 7.397E-01 | 6.261E-01      | 8.018E-02 | 5.697   |
|         | +         | 77.11        |     | 3.435E+00           | 4.539E-01 | 3.512E-01      | 3.141E-02 | 9.780   |
|         | +         | 87.30        |     | 2.641E+00           | 7.111E-01 | 6.108E-01      | 8.622E-02 | 4.323   |
| PO-218  | +         | 238.63       | *   | 2.447E+00           | 3.387E-01 | 1.047E-01      | 1.318E-02 | 23.376  |
|         | +         | 300.09       |     | 2.420E+00           | 1.165E+00 | 1.391E+00      | 1.880E-01 | 1.740   |
|         | +         | 74.81        |     | 6.146E+00           | 1.225E+00 | 1.079E+00      | 1.237E-01 | 5.697   |
|         | +         | 77.11        |     | 5.888E+00           | 8.982E-01 | 6.020E-01      | 7.073E-02 | 9.780   |
|         | +         | 87.30        |     | 4.524E+00           | 1.184E+00 | 1.046E+00      | 1.318E-01 | 4.323   |
|         | +         | 241.98       |     | 3.449E+00           | 9.095E-01 | 6.124E-01      | 8.012E-02 | 5.632   |
|         | +         | 295.21       |     | 2.050E+00           | 3.815E-01 | 2.435E-01      | 3.346E-02 | 8.418   |
|         | +         | 351.92       | *   | 2.084E+00           | 3.311E-01 | 1.394E-01      | 1.763E-02 | 14.945  |
| RA-224  | +         | 240.98       | *   | 6.540E+00           | 1.685E+00 | 1.192E+00      | 1.407E-01 | 5.486   |
| RA-226  | +         | 609.31       | *   | 1.792E+00           | 2.904E-01 | 1.313E-01      | 1.388E-02 | 13.648  |
| AC-228  | +         | 1120.29      |     | 2.283E+00           | 8.313E-01 | 5.583E-01      | 6.079E-02 | 4.089   |
|         | +         | 1764.49      |     | 2.204E+00           | 5.949E-01 | 2.757E-01      | 2.336E-02 | 7.995   |
|         | +         | 338.32       |     | 2.307E+00           | 1.052E+00 | 4.696E-01      | 1.970E-01 | 4.912   |
|         | +         | 911.07       | *   | 2.136E+00           | 4.504E-01 | 2.541E-01      | 3.169E-02 | 8.404   |
| RA-228  | +         | 969.11       |     | 2.422E+00           | 7.738E-01 | 3.972E-01      | 9.464E-02 | 6.098   |
|         | +         | 338.32       |     | 2.307E+00           | 1.052E+00 | 4.696E-01      | 1.970E-01 | 4.912   |
|         | +         | 911.07       | *   | 2.136E+00           | 4.504E-01 | 2.541E-01      | 3.169E-02 | 8.404   |
|         | +         | 969.11       |     | 2.422E+00           | 7.738E-01 | 3.972E-01      | 9.464E-02 | 6.098   |
| TH-228  | +         | 74.81        |     | 3.621E+00           | 6.715E-01 | 6.356E-01      | 5.610E-02 | 5.697   |
|         | +         | 77.11        |     | 3.487E+00           | 4.608E-01 | 3.565E-01      | 3.188E-02 | 9.780   |
|         | +         | 87.30        |     | 2.681E+00           | 6.702E-01 | 6.201E-01      | 6.178E-02 | 4.323   |
|         | +         | 238.63       | *   | 2.485E+00           | 3.438E-01 | 1.063E-01      | 1.338E-02 | 23.376  |
| TH-230  | +         | 300.09       |     | 2.457E+00           | 1.859E+00 | 1.412E+00      | 8.458E-01 | 1.740   |
|         | +         | 609.31       | *   | 1.792E+00           | 2.904E-01 | 1.313E-01      | 1.388E-02 | 13.648  |
|         | +         | 1120.29      |     | 2.283E+00           | 8.313E-01 | 5.583E-01      | 6.079E-02 | 4.089   |
|         | +         | 1764.49      |     | 2.204E+00           | 5.949E-01 | 2.757E-01      | 2.336E-02 | 7.995   |
| TH-232  | +         | 338.32       |     | 2.307E+00           | 4.906E-01 | 4.696E-01      | 5.399E-02 | 4.912   |
|         | +         | 911.07       | *   | 2.136E+00           | 4.504E-01 | 2.541E-01      | 3.169E-02 | 8.404   |
|         | +         | 969.11       |     | 2.422E+00           | 7.738E-01 | 3.972E-01      | 9.464E-02 | 6.098   |
|         | +         | 63.29        | *   | 1.712E+00           | 2.171E+00 | 2.790E+00      | 4.926E-01 | 0.613   |
| U-234   | +         | 92.38        |     | 3.361E+00           | 1.138E+00 | 8.555E-01      | 1.585E-01 | 3.929   |
|         | +         | 609.31       | *   | 1.792E+00           | 2.904E-01 | 1.313E-01      | 1.388E-02 | 13.648  |
|         | +         | 1120.29      |     | 2.283E+00           | 8.313E-01 | 5.583E-01      | 6.079E-02 | 4.089   |
|         | +         | 1764.49      |     | 2.204E+00           | 5.949E-01 | 2.757E-01      | 2.336E-02 | 7.995   |
| NP-237  | +         | 86.50        | *   | 1.677E+00           | 5.435E-01 | 3.918E-01      | 8.963E-02 | 4.279   |
| U-238   | +         | 95.87        |     | -1.596E+00          | 1.249E+00 | 1.624E+00      | 4.034E-01 | -0.983  |
|         | +         | 63.29        | *   | 1.712E+00           | 2.171E+00 | 2.790E+00      | 4.926E-01 | 0.613   |
|         | +         | 92.38        |     | 3.361E+00           | 1.005E+00 | 8.555E-01      | 8.145E-02 | 3.929   |
| AM-243  | +         | 74.67        | *   | 5.783E-01           | 1.070E-01 | 1.019E-01      | 8.910E-03 | 5.675   |
|         | +         | 86.72        |     | 6.288E+01           | 1.572E+01 | 1.465E+01      | 1.450E+00 | 4.291   |
|         | +         | 117.66       |     | -4.074E+00          | 4.308E+00 | 6.820E+00      | 5.714E-01 | -0.597  |

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| ANH-511 | +         | 142.18       | *   | 7.950E+00           | 2.161E+01 | 3.556E+01      | 3.218E+00 | 0.224   |
|         |           | 511.00       | *   | 1.296E-01           | 7.970E-02 | 5.789E-02      | 5.738E-03 | 2.239   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| BE-7    |           | 477.59       | *   | 1.037E-01           | 4.129E-01 | 6.772E-01           | 7.181E-02 | 0.153   |
| NA-22   |           | 1274.54      | *   | 3.479E-02           | 5.472E-02 | 9.503E-02           | 8.426E-03 | 0.366   |
| NA-24   |           | 1368.53      | *   | -9.620E-01          | 5.472E-02 | Half-Life too short |           |         |
| AL-26   |           | 1129.67      |     | 1.359E-01           | 2.165E+00 | 3.540E+00           | 3.025E-01 | 0.038   |
|         |           | 1808.65      | *   | -1.487E-02          | 3.595E-02 | 5.490E-02           | 4.545E-03 | -0.271  |
| TI-44   |           | 67.85        |     | 1.578E-02           | 5.756E-02 | 9.423E-02           | 7.774E-03 | 0.167   |
|         |           | 78.38        | *   | 2.053E-01           | 5.060E-02 | 8.234E-02           | 7.454E-03 | 2.493   |
| SC-46   |           | 889.25       | *   | 4.616E-03           | 4.228E-02 | 6.935E-02           | 7.050E-03 | 0.067   |
|         | +         | 1120.51      |     | 3.907E-01           | 1.399E-01 | 1.707E-01           | 1.475E-02 | 2.289   |
| V-48    |           | 944.10       |     | -8.624E-01          | 1.083E+00 | 1.605E+00           | 1.607E-01 | -0.537  |
|         |           | 983.50       | *   | 2.312E-03           | 8.749E-02 | 1.410E-01           | 1.379E-02 | 0.016   |
|         |           | 1312.09      |     | -7.016E-02          | 9.785E-02 | 1.475E-01           | 1.351E-02 | -0.476  |
| CR-51   |           | 320.08       | *   | 8.642E-02           | 4.589E-01 | 7.702E-01           | 9.396E-02 | 0.112   |
| MN-52   |           | 744.21       |     | 3.002E-02           | 2.999E-01 | 4.977E-01           | 4.585E-02 | 0.060   |
|         |           | 848.13       |     | -9.589E-01          | 8.508E+00 | 1.373E+01           | 1.360E+00 | -0.070  |
|         |           | 935.52       |     | 1.908E-01           | 3.237E-01 | 5.479E-01           | 5.508E-02 | 0.348   |
|         |           | 1246.25      |     | -1.501E+00          | 9.613E+00 | 1.443E+01           | 1.246E+00 | -0.104  |
|         |           | 1333.61      |     | 4.803E+00           | 5.871E+00 | 1.047E+01           | 9.753E-01 | 0.459   |
|         |           | 1434.06      | *   | 1.172E-01           | 2.373E-01 | 4.149E-01           | 3.860E-02 | 0.283   |
| MN-54   |           | 834.83       | *   | 6.165E-03           | 4.797E-02 | 7.900E-02           | 7.761E-03 | 0.078   |
| CO-56   |           | 846.75       | *   | -2.385E-03          | 5.030E-02 | 8.162E-02           | 8.081E-03 | -0.029  |
|         |           | 977.42       |     | -9.110E-01          | 3.335E+00 | 5.208E+00           | 5.114E-01 | -0.175  |
|         |           | 1037.82      |     | 7.700E-02           | 3.838E-01 | 6.532E-01           | 6.412E-02 | 0.118   |
|         |           | 1175.09      |     | 1.085E+00           | 2.743E+00 | 4.689E+00           | 3.783E-01 | 0.231   |
|         | +         | 1238.25      |     | 2.601E-01           | 1.569E-01 | 2.218E-01           | 1.957E-02 | 1.173   |
|         |           | 1360.21      |     | -9.701E-02          | 1.176E+00 | 1.904E+00           | 1.775E-01 | -0.051  |
|         |           | 1771.40      |     | -7.908E-02          | 3.093E-01 | 4.079E-01           | 3.445E-02 | -0.194  |
| CO-57   |           | 122.06       | *   | -5.987E-03          | 2.884E-02 | 4.709E-02           | 3.936E-03 | -0.127  |
|         |           | 136.48       |     | -7.266E-02          | 2.394E-01 | 3.868E-01           | 3.652E-02 | -0.188  |
| CO-58   |           | 810.76       | *   | -4.464E-02          | 4.855E-02 | 7.284E-02           | 7.054E-03 | -0.613  |
| FE-59   |           | 142.65       |     | 1.767E+00           | 3.358E+00 | 5.551E+00           | 5.034E-01 | 0.318   |
|         |           | 192.34       |     | 1.874E+00           | 1.197E+00 | 1.990E+00           | 2.971E-01 | 0.942   |
|         |           | 1099.22      | *   | -8.580E-02          | 1.163E-01 | 1.816E-01           | 1.731E-02 | -0.473  |
|         |           | 1291.56      |     | 1.503E-01           | 1.471E-01 | 2.644E-01           | 2.674E-02 | 0.568   |
| CO-60   |           | 1173.22      |     | -5.328E-02          | 5.479E-02 | 8.284E-02           | 6.671E-03 | -0.643  |
|         |           | 1332.49      | *   | 1.210E-02           | 4.463E-02 | 7.542E-02           | 7.027E-03 | 0.161   |
| ZN-65   |           | 1115.52      | *   | -4.131E-02          | 1.355E-01 | 1.874E-01           | 1.631E-02 | -0.220  |
| GE-68   |           | 1077.35      | *   | 2.333E-01           | 1.490E+00 | 2.521E+00           | 2.284E-01 | 0.093   |
| AS-73   |           | 53.44        | *   | -1.098E-01          | 1.212E+00 | 2.070E+00           | 1.713E-01 | -0.053  |
| AS-74   |           | 595.88       | *   | -7.629E-02          | 1.041E-01 | 1.650E-01           | 1.541E-02 | -0.462  |
|         |           | 634.78       |     | 1.562E-02           | 3.806E-01 | 6.371E-01           | 5.695E-02 | 0.025   |
| SE-75   |           | 66.05        |     | -8.065E-01          | 6.536E+00 | 9.939E+00           | 9.966E-01 | -0.081  |



## ---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|------------|-----------|----------------|-----------|---------|
|         |           | 96.73        |              | -3.337E-01 | 9.507E-01 | 1.396E+00      | 1.949E-01 | -0.239  |
|         |           | 121.11       |              | 4.656E-03  | 1.534E-01 | 2.530E-01      | 2.788E-02 | 0.018   |
|         |           | 136.00       |              | -8.864E-03 | 4.526E-02 | 7.347E-02      | 6.502E-03 | -0.121  |
|         |           | 198.60       |              | -4.096E-01 | 2.278E+00 | 3.579E+00      | 4.190E-01 | -0.114  |
|         |           | 264.65       | *            | 1.699E-02  | 5.772E-02 | 8.733E-02      | 1.067E-02 | 0.195   |
|         |           | 279.53       |              | -1.218E-01 | 1.282E-01 | 2.042E-01      | 2.577E-02 | -0.597  |
|         |           | 303.91       |              | -2.108E-01 | 2.714E+00 | 3.965E+00      | 5.668E-01 | -0.053  |
|         |           | 400.65       |              | 3.031E-01  | 3.088E-01 | 5.309E-01      | 6.498E-02 | 0.571   |
| BR-77   | +         | 87.88        |              | 1.244E+03  | 3.111E+02 | 3.999E+02      | 4.012E+01 | 3.112   |
|         |           | 200.40       |              | -1.047E+02 | 2.037E+02 | 3.174E+02      | 3.488E+01 | -0.330  |
|         | +         | 239.00       |              | 3.897E+02  | 5.101E+01 | 4.809E+01      | 5.658E+00 | 8.103   |
|         |           | 249.79       |              | 1.925E+01  | 7.684E+01 | 1.313E+02      | 1.569E+01 | 0.147   |
|         |           | 281.68       |              | -7.034E+01 | 1.012E+02 | 1.634E+02      | 2.022E+01 | -0.431  |
|         |           | 297.23       |              | 1.959E+02  | 6.980E+01 | 1.229E+02      | 1.502E+01 | 1.593   |
|         |           | 303.76       |              | -1.781E+01 | 2.273E+02 | 3.320E+02      | 4.026E+01 | -0.054  |
|         |           | 439.47       |              | -1.750E+02 | 1.775E+02 | 2.682E+02      | 2.702E+01 | -0.653  |
|         |           | 484.57       |              | -2.853E+02 | 2.874E+02 | 4.283E+02      | 4.287E+01 | -0.666  |
|         |           | 520.65       | *            | -7.483E+00 | 1.274E+01 | 1.948E+01      | 1.922E+00 | -0.384  |
|         |           | 574.64       |              | 1.062E+02  | 2.512E+02 | 4.331E+02      | 4.123E+01 | 0.245   |
|         |           | 578.91       |              | -1.108E+02 | 1.225E+02 | 1.639E+02      | 1.554E+01 | -0.676  |
|         |           | 585.48       |              | 1.193E+03  | 2.846E+02 | 5.002E+02      | 4.716E+01 | 2.385   |
|         |           | 755.35       |              | 1.466E+02  | 2.071E+02 | 3.576E+02      | 3.322E+01 | 0.410   |
|         |           | 817.79       |              | 7.771E+01  | 1.495E+02 | 2.554E+02      | 2.480E+01 | 0.304   |
| SR-82   |           | 698.33       |              | -1.427E+01 | 3.993E+01 | 6.434E+01      | 5.717E+00 | -0.222  |
|         |           | 776.49       | *            | -1.967E-01 | 4.415E-01 | 6.968E-01      | 6.575E-02 | -0.282  |
|         |           | 1395.20      |              | -1.681E+00 | 1.174E+01 | 1.876E+01      | 1.749E+00 | -0.090  |
| RB-83   |           | 520.41       | *            | -6.361E-02 | 8.630E-02 | 1.303E-01      | 1.286E-02 | -0.488  |
|         |           | 529.64       |              | 3.310E-02  | 1.253E-01 | 2.045E-01      | 2.008E-02 | 0.162   |
|         |           | 552.65       |              | 2.832E-02  | 2.231E-01 | 3.795E-01      | 3.674E-02 | 0.075   |
| RB-84   |           | 881.50       | *            | 2.630E-02  | 8.117E-02 | 1.357E-01      | 1.373E-02 | 0.194   |
| KR-85   |           | 513.99       | *            | 4.274E-01  | 9.668E+00 | 1.359E+01      | 1.345E+00 | 0.031   |
| SR-85   |           | 513.99       | *            | 2.191E-03  | 4.955E-02 | 6.964E-02      | 6.894E-03 | 0.031   |
| RB-86   |           | 1076.63      | *            | -6.077E-02 | 9.318E-01 | 1.547E+00      | 1.402E-01 | -0.039  |
| Y-88    |           | 898.02       |              | 5.127E-02  | 5.155E-02 | 9.021E-02      | 9.251E-03 | 0.568   |
|         |           | 1836.01      | *            | 7.227E-03  | 3.947E-02 | 6.734E-02      | 5.493E-03 | 0.107   |
| ZR-88   |           | 392.90       | *            | -1.588E-02 | 3.581E-02 | 5.698E-02      | 5.702E-03 | -0.279  |
| Y-91    |           | 1204.90      | *            | -6.551E+00 | 2.437E+01 | 3.944E+01      | 3.275E+00 | -0.166  |
| NB-94   |           | 702.63       | *            | 2.407E-02  | 4.061E-02 | 6.988E-02      | 6.230E-03 | 0.344   |
|         |           | 871.10       |              | 2.146E-03  | 3.946E-02 | 6.445E-02      | 6.481E-03 | 0.033   |
| NB-95   |           | 765.79       | *            | 3.625E-02  | 5.638E-02 | 9.567E-02      | 8.957E-03 | 0.379   |
| NB-95M  |           | 235.69       | *            | 1.783E-01  | 1.613E-01 | 2.535E-01      | 3.207E-02 | 0.703   |
| ZR-95   |           | 724.18       |              | 1.048E-01  | 1.411E-01 | 2.152E-01      | 2.105E-02 | 0.487   |
|         |           | 756.15       | *            | 2.797E-02  | 8.966E-02 | 1.508E-01      | 1.525E-02 | 0.185   |
| NB-97   |           | 657.90       | *            | 4.356E-02  | 8.966E-02 | Half-Life      | too short |         |
|         |           | 1024.50      |              | -2.671E+00 | 8.966E-02 | Half-Life      | too short |         |
| ZR-97   |           | 254.15       |              | -5.317E+00 | 8.966E-02 | Half-Life      | too short |         |
|         |           | 355.39       |              | 2.467E+00  | 8.966E-02 | Half-Life      | too short |         |
|         |           | 507.63       | *            | 3.987E+00  | 8.966E-02 | Half-Life      | too short |         |
|         |           | 602.52       |              | -2.254E+00 | 8.966E-02 | Half-Life      | too short |         |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         | 1021.30   |              |     | 5.895E-01           | 8.966E-02 | Half-Life      | too short |         |
|         | 1147.95   |              |     | -2.661E+00          | 8.966E-02 | Half-Life      | too short |         |
|         | 1362.66   |              |     | 5.979E+00           | 8.966E-02 | Half-Life      | too short |         |
|         | 1750.46   |              |     | -6.027E-01          | 8.966E-02 | Half-Life      | too short |         |
| MO-99   | 140.51    |              |     | -1.014E+01          | 3.188E+01 | 5.068E+01      | 1.409E+01 | -0.200  |
|         | 181.06    |              |     | -1.382E+01          | 2.245E+01 | 3.073E+01      | 5.927E+00 | -0.450  |
|         | 366.43    |              |     | 2.833E+01           | 9.704E+01 | 1.625E+02      | 1.753E+01 | 0.174   |
|         | 739.58    | *            |     | -5.368E-01          | 1.413E+01 | 2.321E+01      | 3.600E+00 | -0.023  |
|         | 778.00    |              |     | -6.219E+00          | 4.011E+01 | 6.499E+01      | 6.139E+00 | -0.096  |
| TC-99M  | 140.51    | *            |     | -1.368E+10          | 4.011E+01 | Half-Life      | too short |         |
| RH-101  | 127.23    |              |     | 5.776E-03           | 4.091E-02 | 6.052E-02      | 5.136E-03 | 0.095   |
|         | 198.01    | *            |     | 1.170E-03           | 4.174E-02 | 6.622E-02      | 7.243E-03 | 0.018   |
|         | 325.23    |              |     | 5.945E-02           | 3.034E-01 | 4.492E-01      | 5.286E-02 | 0.132   |
| RH-102  | 418.52    |              |     | 2.837E-01           | 3.516E-01 | 5.996E-01      | 6.033E-02 | 0.473   |
|         | 475.06    | *            |     | 6.628E-03           | 3.674E-02 | 6.003E-02      | 6.022E-03 | 0.110   |
|         | 631.29    |              |     | 2.820E-02           | 5.749E-02 | 9.955E-02      | 8.938E-03 | 0.283   |
|         | 697.49    |              |     | 1.545E-02           | 8.799E-02 | 1.476E-01      | 1.310E-02 | 0.105   |
|         | 766.84    |              |     | 1.977E-01           | 1.481E-01 | 2.599E-01      | 2.435E-02 | 0.761   |
|         | 1046.59   |              |     | -1.247E-01          | 1.382E-01 | 2.122E-01      | 1.978E-02 | -0.588  |
|         | 1112.84   |              |     | -1.067E-01          | 3.456E-01 | 4.779E-01      | 4.167E-02 | -0.223  |
| RU-103  | 497.08    | *            |     | 4.395E-02           | 5.063E-02 | 8.565E-02      | 1.286E-02 | 0.513   |
| +       | 610.33    |              |     | 1.934E+01           | 4.056E+00 | 3.667E+00      | 6.231E-01 | 5.275   |
| RH-106  | 511.85    | +            |     | 6.474E-01           | 3.981E-01 | 4.988E-01      | 4.943E-02 | 1.298   |
|         | 621.84    | *            |     | 9.627E-02           | 3.708E-01 | 6.305E-01      | 8.613E-02 | 0.153   |
|         | 1050.47   |              |     | -6.389E-02          | 2.906E+00 | 4.853E+00      | 4.509E-01 | -0.013  |
| RU-106  | 511.85    | +            |     | 6.474E-01           | 3.981E-01 | 4.988E-01      | 4.943E-02 | 1.298   |
|         | 621.84    | *            |     | 9.627E-02           | 3.706E-01 | 6.305E-01      | 5.726E-02 | 0.153   |
|         | 1050.47   |              |     | -6.389E-02          | 2.906E+00 | 4.853E+00      | 4.509E-01 | -0.013  |
| AG-108M | 433.93    | *            |     | -2.247E-02          | 4.162E-02 | 6.526E-02      | 6.766E-03 | -0.344  |
|         | 614.37    |              |     | -3.148E-03          | 4.988E-02 | 7.213E-02      | 6.836E-03 | -0.044  |
|         | 722.95    |              |     | -3.664E-03          | 5.752E-02 | 8.178E-02      | 7.674E-03 | -0.045  |
| AG-110M | 657.75    | *            |     | 1.654E-02           | 4.535E-02 | 6.804E-02      | 6.070E-03 | 0.243   |
|         | 677.61    |              |     | 1.218E-01           | 4.000E-01 | 6.772E-01      | 6.076E-02 | 0.180   |
|         | 706.67    |              |     | -1.066E-01          | 2.495E-01 | 3.994E-01      | 3.664E-02 | -0.267  |
|         | 763.93    |              |     | -4.023E-01          | 2.202E-01 | 3.078E-01      | 2.947E-02 | -1.307  |
|         | 884.67    |              |     | -3.715E-02          | 5.621E-02 | 8.495E-02      | 8.813E-03 | -0.437  |
|         | 937.48    |              |     | -1.674E-01          | 1.435E-01 | 2.051E-01      | 2.115E-02 | -0.816  |
|         | 1384.27   |              |     | -2.173E-02          | 2.071E-01 | 3.339E-01      | 3.188E-02 | -0.065  |
| IN-111  | 171.28    |              |     | -1.001E+00          | 1.197E+00 | 1.854E+00      | 1.922E-01 | -0.540  |
|         | 245.39    | *            |     | 8.623E-01           | 1.304E+00 | 2.022E+00      | 2.402E-01 | 0.426   |
| IN-113M | 391.69    | *            |     | 4.594E-02           | 5.234E-02 | 8.995E-02      | 9.204E-03 | 0.511   |
| SN-113  | 391.69    | *            |     | 4.594E-02           | 5.234E-02 | 8.995E-02      | 9.204E-03 | 0.511   |
| IN-114M | 190.27    | *            |     | 3.993E-02           | 2.455E-01 | 3.534E-01      | 3.806E-02 | 0.113   |
| CD-115  | 260.90    |              |     | -1.590E+02          | 1.555E+02 | 2.481E+02      | 3.011E+01 | -0.641  |
|         | 492.35    |              |     | -7.324E+00          | 4.420E+01 | 7.031E+01      | 7.020E+00 | -0.104  |
|         | 527.90    | *            |     | 3.635E+00           | 1.285E+01 | 2.101E+01      | 2.065E+00 | 0.173   |
| SN-117M | 156.02    |              |     | -2.434E+00          | 2.677E+00 | 4.165E+00      | 4.047E-01 | -0.585  |
|         | 158.56    | *            |     | 2.633E-02           | 6.220E-02 | 1.025E-01      | 1.010E-02 | 0.257   |
| SB-122  | 563.90    | *            |     | 1.998E+00           | 2.470E+00 | 4.352E+00      | 4.179E-01 | 0.459   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| I-123   | 692.80    |              |     | -3.480E+01          | 5.011E+01 | 7.847E+01      | 6.941E+00 | -0.443  |
|         | 159.00    | *            |     | 2.469E+00           | 5.011E+01 | Half-Life      | too short |         |
|         | 528.96    |              |     | 3.634E+02           | 5.011E+01 | Half-Life      | too short |         |
| TE-123M | 159.00    | *            |     | 1.266E-02           | 3.262E-02 | 5.369E-02      | 5.326E-03 | 0.236   |
| I-124   | 602.71    | *            |     | -3.517E-01          | 9.091E-01 | 1.276E+00      | 1.184E-01 | -0.276  |
|         | 722.78    |              |     | -5.562E-01          | 5.967E+00 | 8.458E+00      | 7.664E-01 | -0.066  |
|         | 1325.50   |              |     | -1.168E+01          | 4.252E+01 | 6.755E+01      | 6.256E+00 | -0.173  |
|         | 1376.25   |              |     | 6.819E+01           | 4.210E+01 | 7.838E+01      | 7.308E+00 | 0.870   |
|         | 1509.49   |              |     | 1.790E+01           | 1.878E+01 | 3.408E+01      | 3.142E+00 | 0.525   |
|         | 1691.02   |              |     | -4.970E-01          | 3.795E+00 | 6.157E+00      | 5.393E-01 | -0.081  |
| SB-124  | 602.71    |              |     | -2.054E-02          | 5.308E-02 | 7.453E-02      | 6.913E-03 | -0.276  |
|         | 645.85    |              |     | 2.019E-01           | 6.119E-01 | 1.042E+00      | 9.712E-02 | 0.194   |
|         | 709.31    |              |     | -7.816E-01          | 3.261E+00 | 5.294E+00      | 4.746E-01 | -0.148  |
|         | 713.82    |              |     | 9.292E-01           | 2.013E+00 | 3.431E+00      | 4.224E-01 | 0.271   |
|         | 722.78    |              |     | -4.707E-02          | 5.051E-01 | 7.158E-01      | 6.613E-02 | -0.066  |
| +       | 968.20    |              |     | 2.493E+01           | 5.847E+00 | 9.144E+00      | 9.029E-01 | 2.726   |
|         | 1045.16   |              |     | -1.605E+00          | 3.019E+00 | 4.820E+00      | 4.499E-01 | -0.333  |
|         | 1325.50   |              |     | -1.056E+00          | 3.844E+00 | 6.106E+00      | 5.655E-01 | -0.173  |
|         | 1368.21   |              |     | -1.546E+00          | 2.205E+00 | 3.274E+00      | 4.563E-01 | -0.472  |
|         | 1436.60   |              |     | -4.152E+00          | 4.453E+00 | 6.224E+00      | 5.789E-01 | -0.667  |
|         | 1691.02   | *            |     | -9.922E-03          | 7.575E-02 | 1.229E-01      | 1.118E-02 | -0.081  |
| SB-125  | 427.89    | *            |     | -3.704E-02          | 1.109E-01 | 1.765E-01      | 1.803E-02 | -0.210  |
| +       | 463.38    |              |     | 1.063E+00           | 5.844E-01 | 6.869E-01      | 7.308E-02 | 1.548   |
|         | 600.56    |              |     | 2.085E-01           | 2.182E-01 | 3.689E-01      | 3.647E-02 | 0.565   |
|         | 635.90    |              |     | 9.942E-03           | 2.903E-01 | 4.857E-01      | 4.663E-02 | 0.020   |
| TE-125M | 109.28    | *            |     | -1.338E+00          | 1.014E+01 | 1.671E+01      | 1.714E+00 | -0.080  |
| I-126   | 388.63    |              |     | 2.616E-02           | 2.454E-01 | 4.050E-01      | 4.092E-02 | 0.065   |
| +       | 666.33    | *            |     | 3.679E-01           | 2.759E-01 | 3.979E-01      | 3.441E-02 | 0.925   |
|         | 753.82    |              |     | 8.775E-01           | 1.843E+00 | 3.136E+00      | 2.910E-01 | 0.280   |
| SB-126  | 223.80    |              |     | 3.304E+00           | 5.115E+00 | 8.324E+00      | 9.553E-01 | 0.397   |
|         | 278.60    |              |     | 2.198E+00           | 2.903E+00 | 5.016E+00      | 6.216E-01 | 0.438   |
|         | 296.50    |              |     | 1.455E+01           | 2.787E+00 | 4.304E+00      | 5.260E-01 | 3.380   |
|         | 414.70    |              |     | -1.573E-02          | 9.364E-02 | 1.512E-01      | 1.521E-02 | -0.104  |
|         | 415.30    |              |     | -5.119E-01          | 7.801E+00 | 1.268E+01      | 1.275E+00 | -0.040  |
|         | 555.20    |              |     | 1.799E+00           | 4.665E+00 | 8.054E+00      | 7.783E-01 | 0.223   |
|         | 573.80    |              |     | 8.221E-01           | 1.227E+00 | 2.147E+00      | 2.045E-01 | 0.383   |
|         | 593.00    |              |     | 1.390E-01           | 1.012E+00 | 1.714E+00      | 1.605E-01 | 0.081   |
|         | 656.30    |              |     | -7.094E-01          | 4.280E+00 | 6.073E+00      | 5.274E-01 | -0.117  |
| +       | 666.33    |              |     | 1.537E-01           | 1.153E-01 | 1.662E-01      | 1.438E-02 | 0.925   |
|         | 675.00    |              |     | 5.473E-01           | 2.540E+00 | 4.277E+00      | 3.727E-01 | 0.128   |
|         | 695.00    |              |     | 1.387E-02           | 8.715E-02 | 1.461E-01      | 1.294E-02 | 0.095   |
|         | 697.00    |              |     | 1.137E-01           | 3.072E-01 | 5.223E-01      | 4.636E-02 | 0.218   |
|         | 720.50    | *            |     | -4.657E-02          | 1.883E-01 | 2.755E-01      | 2.492E-02 | -0.169  |
|         | 856.80    |              |     | 1.085E-01           | 6.140E-01 | 8.828E-01      | 8.796E-02 | 0.123   |
|         | 989.30    |              |     | 1.225E-01           | 1.517E+00 | 2.456E+00      | 2.393E-01 | 0.050   |
|         | 1034.80   |              |     | -4.681E+00          | 1.041E+01 | 1.672E+01      | 1.575E+00 | -0.280  |
|         | 1213.00   |              |     | 3.947E-01           | 5.874E+00 | 9.755E+00      | 8.163E-01 | 0.040   |
| SB-127  | 61.10     |              |     | 5.089E+01           | 7.816E+01 | 1.232E+02      | 1.286E+01 | 0.413   |
|         | 252.40    |              |     | -1.276E+00          | 5.137E+00 | 8.537E+00      | 3.658E+00 | -0.149  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|---------------------|-----------|----------------|-----------|---------|
|         |           | 290.80       |              | -5.842E+00          | 2.737E+01 | 3.975E+01      | 5.637E+00 | -0.147  |
|         |           | 411.60       |              | -1.649E+01          | 1.599E+01 | 2.416E+01      | 3.998E+00 | -0.682  |
|         |           | 444.90       |              | -8.620E+00          | 1.212E+01 | 1.865E+01      | 2.530E+00 | -0.462  |
|         |           | 473.00       |              | -2.129E+00          | 2.170E+00 | 3.239E+00      | 4.485E-01 | -0.657  |
|         |           | 543.00       |              | -1.788E+01          | 2.127E+01 | 3.153E+01      | 4.756E+00 | -0.567  |
|         |           | 603.60       |              | -5.627E+00          | 1.571E+01 | 2.210E+01      | 2.863E+00 | -0.255  |
|         |           | 685.20       | *            | 6.098E-01           | 1.623E+00 | 2.762E+00      | 3.177E-01 | 0.221   |
|         |           | 698.50       |              | -8.773E+00          | 1.785E+01 | 2.840E+01      | 4.532E+00 | -0.309  |
|         |           | 722.20       |              | 1.134E+00           | 4.056E+01 | 5.824E+01      | 6.693E+00 | 0.019   |
|         |           | 783.80       |              | 6.741E+00           | 4.808E+00 | 8.508E+00      | 1.108E+00 | 0.792   |
| XE-127  |           | 57.60        |              | 2.106E+00           | 8.063E+00 | 1.389E+01      | 1.069E+00 | 0.152   |
|         |           | 145.22       |              | -4.990E-01          | 8.186E-01 | 1.300E+00      | 1.194E-01 | -0.384  |
|         |           | 172.10       |              | -1.230E-02          | 1.416E-01 | 2.275E-01      | 2.362E-02 | -0.054  |
|         |           | 202.84       | *            | 3.106E-02           | 5.902E-02 | 9.612E-02      | 1.061E-02 | 0.323   |
|         |           | 374.96       |              | 1.981E-01           | 2.347E-01 | 4.033E-01      | 4.250E-02 | 0.491   |
| I-131   |           | 80.18        |              | 2.546E+00           | 6.554E+00 | 8.109E+00      | 7.515E-01 | 0.314   |
|         |           | 284.30       |              | -3.615E-01          | 1.694E+00 | 2.809E+00      | 3.560E-01 | -0.129  |
|         |           | 364.48       | *            | 5.561E-02           | 1.357E-01 | 2.287E-01      | 2.565E-02 | 0.243   |
|         |           | 636.97       |              | 4.507E-01           | 1.635E+00 | 2.785E+00      | 2.613E-01 | 0.162   |
|         |           | 722.89       |              | -8.012E-01          | 9.650E+00 | 1.369E+01      | 1.248E+00 | -0.059  |
| TE-132  |           | 49.72        |              | 2.455E+00           | 3.446E+01 | 5.361E+01      | 5.884E+00 | 0.046   |
|         |           | 111.76       |              | -1.611E+01          | 3.304E+01 | 5.230E+01      | 5.611E+00 | -0.308  |
|         |           | 116.30       |              | -9.684E+00          | 3.079E+01 | 5.018E+01      | 5.354E+00 | -0.193  |
|         |           | 228.16       | *            | -1.680E-01          | 8.625E-01 | 1.351E+00      | 2.364E-01 | -0.124  |
| BA-133  |           | 53.15        |              | -2.500E+00          | 5.299E+00 | 8.918E+00      | 7.421E-01 | -0.280  |
|         |           | 79.62        |              | 1.138E+00           | 1.843E+00 | 2.310E+00      | 3.589E-01 | 0.493   |
|         |           | 81.00        |              | 8.057E-02           | 1.387E-01 | 1.731E-01      | 2.814E-02 | 0.465   |
|         |           | 276.40       |              | 5.716E-01           | 4.650E-01 | 7.829E-01      | 1.327E-01 | 0.730   |
|         |           | 302.84       |              | -1.208E-01          | 1.887E-01 | 2.632E-01      | 4.158E-02 | -0.459  |
|         |           | 356.01       | *            | 1.991E-02           | 5.720E-02 | 8.506E-02      | 1.269E-02 | 0.234   |
|         |           | 383.85       |              | 3.290E-02           | 3.521E-01 | 5.813E-01      | 8.009E-02 | 0.057   |
| I-133   | +         | 510.53       |              | 1.288E+00           | 3.521E-01 | Half-Life      | too short |         |
|         |           | 529.87       | *            | 4.909E-04           | 3.521E-01 | Half-Life      | too short |         |
|         |           | 706.58       |              | -1.994E-01          | 3.521E-01 | Half-Life      | too short |         |
|         |           | 856.28       |              | -1.146E-01          | 3.521E-01 | Half-Life      | too short |         |
|         |           | 875.33       |              | 4.531E-02           | 3.521E-01 | Half-Life      | too short |         |
|         |           | 1236.41      |              | 1.248E+00           | 3.521E-01 | Half-Life      | too short |         |
|         |           | 1298.22      |              | -7.626E-02          | 3.521E-01 | Half-Life      | too short |         |
| CS-134  |           | 475.35       |              | 4.298E-01           | 2.380E+00 | 3.889E+00      | 3.902E-01 | 0.111   |
|         |           | 563.23       |              | 3.332E-01           | 4.357E-01 | 7.659E-01      | 7.414E-02 | 0.435   |
|         |           | 569.32       |              | 3.664E-03           | 2.448E-01 | 3.987E-01      | 3.854E-02 | 0.009   |
|         |           | 604.70       |              | 1.882E-02           | 4.417E-02 | 6.687E-02      | 6.203E-03 | 0.281   |
|         | +         | 795.84       | *            | 1.669E-01           | 8.139E-02 | 1.144E-01      | 1.101E-02 | 1.459   |
|         |           | 801.93       |              | -5.392E-01          | 5.403E-01 | 7.801E-01      | 7.529E-02 | -0.691  |
|         |           | 1038.57      |              | 3.464E+00           | 4.748E+00 | 8.399E+00      | 7.885E-01 | 0.412   |
|         |           | 1167.94      |              | 1.342E+00           | 2.966E+00 | 5.099E+00      | 4.138E-01 | 0.263   |
|         |           | 1365.15      |              | 4.990E-01           | 1.510E+00 | 2.564E+00      | 2.484E-01 | 0.195   |
| CS-135  |           | 268.24       | *            | 2.290E-01           | 2.117E-01 | 3.312E-01      | 4.381E-02 | 0.692   |
| I-135   |           | 288.45       |              | -1.074E+09          | 2.117E-01 | Half-Life      | too short |         |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 417.63       |     | 1.266E+10           | 2.117E-01 | Half-Life      | too short |         |
|         |           | 546.56       |     | 1.169E+10           | 2.117E-01 | Half-Life      | too short |         |
|         |           | 836.80       |     | 2.373E+10           | 2.117E-01 | Half-Life      | too short |         |
|         |           | 1038.76      |     | 1.518E+10           | 2.117E-01 | Half-Life      | too short |         |
|         |           | 1124.00      |     | 1.486E+10           | 2.117E-01 | Half-Life      | too short |         |
|         |           | 1131.51      |     | 5.329E+05           | 2.117E-01 | Half-Life      | too short |         |
|         |           | 1260.41      | *   | -5.614E+09          | 2.117E-01 | Half-Life      | too short |         |
|         |           | 1457.56      |     | 1.039E+12           | 2.117E-01 | Half-Life      | too short |         |
|         |           | 1678.03      |     | 1.662E+09           | 2.117E-01 | Half-Life      | too short |         |
|         |           | 1706.46      |     | 3.929E+09           | 2.117E-01 | Half-Life      | too short |         |
|         |           | 1791.20      |     | -6.276E+09          | 2.117E-01 | Half-Life      | too short |         |
| CS-136  |           | 66.91        |     | 5.916E-02           | 9.741E-01 | 1.584E+00      | 2.407E-01 | 0.037   |
|         | +         | 86.29        |     | 7.440E+00           | 1.991E+00 | 2.426E+00      | 3.325E-01 | 3.066   |
|         |           | 153.22       |     | 4.973E-01           | 7.903E-01 | 1.312E+00      | 1.377E-01 | 0.379   |
|         |           | 163.89       |     | 4.490E-01           | 1.266E+00 | 2.076E+00      | 2.292E-01 | 0.216   |
|         |           | 176.55       |     | 6.059E-02           | 4.368E-01 | 7.073E-01      | 7.702E-02 | 0.086   |
|         |           | 273.65       |     | -7.642E-01          | 6.245E-01 | 8.437E-01      | 1.074E-01 | -0.906  |
|         |           | 340.57       |     | 3.402E-01           | 1.694E-01 | 2.734E-01      | 3.181E-02 | 1.245   |
|         |           | 818.51       |     | 5.785E-02           | 8.397E-02 | 1.453E-01      | 1.413E-02 | 0.398   |
|         |           | 1048.07      | *   | -6.207E-02          | 1.308E-01 | 2.097E-01      | 2.024E-02 | -0.296  |
|         |           | 1235.34      |     | 1.183E+00           | 9.090E-01 | 1.436E+00      | 1.694E-01 | 0.824   |
| CE-139  |           | 165.85       | *   | 8.929E-04           | 3.626E-02 | 5.867E-02      | 6.018E-03 | 0.015   |
| BA-140  |           | 162.64       |     | -3.179E-01          | 9.267E-01 | 1.444E+00      | 1.517E-01 | -0.220  |
|         |           | 304.84       |     | 1.218E+00           | 1.671E+00 | 2.525E+00      | 7.394E-01 | 0.482   |
|         |           | 423.70       |     | -9.548E-01          | 2.280E+00 | 3.577E+00      | 1.174E+00 | -0.267  |
|         |           | 537.32       | *   | -3.012E-02          | 3.178E-01 | 5.041E-01      | 1.687E-01 | -0.060  |
| LA-140  | +         | 328.77       |     | 1.063E+00           | 5.638E-01 | 6.578E-01      | 7.932E-02 | 1.615   |
|         |           | 432.53       |     | -4.613E-01          | 2.565E+00 | 4.124E+00      | 4.303E-01 | -0.112  |
|         |           | 487.03       |     | 2.381E-01           | 1.630E-01 | 2.865E-01      | 2.998E-02 | 0.831   |
|         |           | 751.79       |     | 7.598E-01           | 2.165E+00 | 3.652E+00      | 3.699E-01 | 0.208   |
|         |           | 815.85       |     | 9.211E-02           | 3.664E-01 | 6.121E-01      | 6.483E-02 | 0.150   |
|         |           | 867.82       |     | -5.803E-02          | 1.627E+00 | 2.563E+00      | 2.673E-01 | -0.023  |
|         |           | 919.63       |     | 1.373E+00           | 3.365E+00 | 5.639E+00      | 6.711E-01 | 0.243   |
|         |           | 925.24       |     | -2.171E-01          | 1.400E+00 | 2.230E+00      | 2.356E-01 | -0.097  |
|         |           | 1596.49      | *   | -9.351E-02          | 9.800E-02 | 1.404E-01      | 1.270E-02 | -0.666  |
| CE-141  |           | 145.44       | *   | -6.107E-02          | 7.382E-02 | 1.160E-01      | 1.084E-02 | -0.526  |
| CE-143  |           | 57.37        |     | 9.992E-04           | 7.382E-02 | Half-Life      | too short |         |
|         |           | 231.56       |     | -9.602E-04          | 7.382E-02 | Half-Life      | too short |         |
|         |           | 293.26       | *   | 1.163E-03           | 7.382E-02 | Half-Life      | too short |         |
|         | +         | 350.59       |     | 4.678E-02           | 7.382E-02 | Half-Life      | too short |         |
|         |           | 490.36       |     | -2.350E-03          | 7.382E-02 | Half-Life      | too short |         |
|         | +         | 664.57       |     | 2.594E-03           | 7.382E-02 | Half-Life      | too short |         |
|         |           | 721.93       |     | -1.325E-05          | 7.382E-02 | Half-Life      | too short |         |
| CE-144  |           | 80.11        |     | 1.232E+00           | 3.028E+00 | 3.750E+00      | 3.454E-01 | 0.329   |
|         |           | 133.54       | *   | 1.063E-01           | 2.648E-01 | 3.949E-01      | 6.165E-02 | 0.269   |
| PM-144  |           | 476.78       |     | 5.625E-02           | 8.699E-02 | 1.459E-01      | 1.566E-02 | 0.385   |
|         |           | 618.01       |     | -6.393E-03          | 3.948E-02 | 6.232E-02      | 5.825E-03 | -0.103  |
|         |           | 696.49       | *   | 1.931E-02           | 3.947E-02 | 6.764E-02      | 6.003E-03 | 0.285   |
|         |           | 778.57       |     | -1.063E+00          | 2.725E+00 | 4.325E+00      | 4.088E-01 | -0.246  |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PR-144  |           | 696.49       | *   | 1.309E+00           | 2.674E+00 | 4.584E+00      | 4.066E-01 | 0.285   |
|         |           | 1489.15      |     | -1.478E+00          | 1.412E+01 | 2.253E+01      | 2.083E+00 | -0.066  |
| PM-146  |           | 453.90       | *   | 5.727E-03           | 5.203E-02 | 8.495E-02      | 1.012E-02 | 0.067   |
|         |           | 633.02       |     | -8.438E-02          | 1.524E+00 | 2.532E+00      | 9.483E-01 | -0.033  |
|         |           | 735.90       |     | -1.294E-01          | 1.855E-01 | 2.829E-01      | 8.137E-02 | -0.457  |
|         |           | 747.13       |     | -8.726E-02          | 1.167E-01 | 1.800E-01      | 2.596E-02 | -0.485  |
| ND-147  | +         | 91.11        |     | 1.143E+00           | 3.999E-01 | 6.161E-01      | 6.344E-02 | 1.855   |
|         |           | 319.41       |     | -7.732E-01          | 4.070E+00 | 6.703E+00      | 7.961E-01 | -0.115  |
|         |           | 439.89       |     | -6.845E+00          | 7.269E+00 | 1.102E+01      | 1.110E+00 | -0.621  |
|         |           | 531.92       | *   | -3.269E-01          | 7.106E-01 | 1.066E+00      | 1.670E-01 | -0.307  |
| PM-149  |           | 285.90       | *   | 6.611E+00           | 1.053E+02 | 1.771E+02      | 3.165E+01 | 0.037   |
| EU-152  |           | 121.78       |     | -1.371E-02          | 8.383E-02 | 1.371E-01      | 1.330E-02 | -0.100  |
|         |           | 244.69       |     | 4.314E-03           | 4.066E-01 | 6.085E-01      | 7.221E-02 | 0.007   |
|         |           | 344.27       | *   | -7.496E-02          | 1.166E-01 | 1.855E-01      | 2.181E-02 | -0.404  |
|         |           | 443.98       |     | -3.821E-02          | 1.163E+00 | 1.883E+00      | 1.897E-01 | -0.020  |
|         |           | 778.89       |     | -2.382E-01          | 3.223E-01 | 4.956E-01      | 4.684E-02 | -0.481  |
|         |           | 867.32       |     | -3.676E-01          | 1.017E+00 | 1.493E+00      | 1.497E-01 | -0.246  |
|         | +         | 964.01       |     | 7.485E-01           | 4.606E-01 | 7.227E-01      | 7.153E-02 | 1.036   |
|         |           | 1085.78      |     | 7.285E-02           | 4.852E-01 | 8.196E-01      | 7.361E-02 | 0.089   |
|         |           | 1112.02      |     | 2.362E-01           | 4.666E-01 | 7.069E-01      | 6.169E-02 | 0.334   |
|         |           | 1407.95      |     | 1.550E-01           | 2.332E-01 | 4.080E-01      | 3.802E-02 | 0.380   |
| GD-153  |           | 69.67        |     | 7.040E-01           | 2.107E+00 | 3.256E+00      | 2.728E-01 | 0.216   |
|         | +         | 83.37        |     | 4.555E+01           | 2.557E+01 | 2.990E+01      | 2.850E+00 | 1.523   |
|         |           | 97.43        | *   | -3.420E-03          | 1.020E-01 | 1.513E-01      | 1.375E-02 | -0.023  |
|         |           | 103.18       |     | -1.051E-01          | 1.172E-01 | 1.876E-01      | 1.642E-02 | -0.560  |
| EU-154  |           | 123.07       |     | -4.122E-02          | 5.935E-02 | 9.470E-02      | 1.059E-02 | -0.435  |
|         |           | 247.94       |     | -2.090E-01          | 4.214E-01 | 6.958E-01      | 9.829E-02 | -0.300  |
|         |           | 591.81       |     | -3.798E-01          | 7.055E-01 | 1.136E+00      | 1.390E-01 | -0.334  |
|         |           | 723.30       |     | 1.167E-02           | 2.422E-01 | 3.484E-01      | 3.461E-02 | 0.034   |
|         |           | 756.87       |     | -9.762E-02          | 9.454E-01 | 1.542E+00      | 1.924E-01 | -0.063  |
|         |           | 873.19       |     | 7.647E-02           | 3.564E-01 | 5.900E-01      | 7.849E-02 | 0.130   |
|         |           | 996.32       |     | 2.626E-02           | 5.128E-01 | 7.139E-01      | 1.307E-01 | 0.037   |
|         |           | 1004.76      |     | 1.009E-01           | 2.746E-01 | 4.162E-01      | 5.167E-02 | 0.242   |
|         |           | 1274.45      | *   | 9.845E-02           | 1.531E-01 | 2.658E-01      | 3.055E-02 | 0.370   |
| EU-155  |           | 48.70        |     | -2.714E+00          | 4.549E+00 | 6.850E+00      | 6.064E-01 | -0.396  |
|         |           | 60.01        |     | 8.252E-01           | 6.969E+00 | 1.076E+01      | 8.122E-01 | 0.077   |
|         | +         | 86.54        |     | 6.877E-01           | 1.721E-01 | 2.258E-01      | 2.248E-02 | 3.045   |
|         |           | 105.31       | *   | 1.475E-01           | 1.256E-01 | 2.129E-01      | 1.867E-02 | 0.693   |
| TB-160  | +         | 86.79        |     | 1.836E+00           | 4.591E-01 | 6.068E-01      | 6.010E-02 | 3.027   |
|         |           | 197.04       |     | 2.613E-02           | 7.100E-01 | 1.127E+00      | 1.230E-01 | 0.023   |
|         |           | 215.65       |     | 3.135E-01           | 9.101E-01 | 1.468E+00      | 1.661E-01 | 0.214   |
|         | +         | 298.57       |     | 3.520E-01           | 1.683E-01 | 2.473E-01      | 3.017E-02 | 1.423   |
|         |           | 879.36       | *   | 6.260E-02           | 1.681E-01 | 2.818E-01      | 2.848E-02 | 0.222   |
|         |           | 962.29       |     | 1.428E+00           | 7.532E-01 | 1.245E+00      | 1.234E-01 | 1.147   |
|         |           | 966.15       |     | 1.764E+00           | 3.909E-01 | 7.088E-01      | 7.007E-02 | 2.489   |
|         |           | 1177.93      |     | 1.310E-01           | 4.491E-01 | 7.612E-01      | 6.158E-02 | 0.172   |
|         |           | 1271.85      |     | -4.048E-01          | 9.150E-01 | 1.443E+00      | 1.275E-01 | -0.281  |
| HO-166M |           | 80.57        |     | 1.879E-01           | 3.820E-01 | 4.758E-01      | 4.403E-02 | 0.395   |
|         | +         | 184.41       |     | 2.248E-01           | 7.470E-02 | 8.647E-02      | 9.204E-03 | 2.600   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| TM-171  |           | 280.46       |     | -1.168E-01          | 1.005E-01 | 1.575E-01      | 1.952E-02 | -0.741  |
|         |           | 410.95       |     | -4.178E-02          | 3.112E-01 | 5.043E-01      | 5.068E-02 | -0.083  |
|         |           | 711.68       | *   | -3.050E-02          | 7.559E-02 | 1.212E-01      | 1.089E-02 | -0.252  |
|         |           | 752.31       |     | 1.761E-01           | 3.549E-01 | 6.041E-01      | 5.599E-02 | 0.291   |
|         |           | 810.29       |     | -5.011E-02          | 7.288E-02 | 1.120E-01      | 1.082E-02 | -0.447  |
|         |           | 51.35        |     | 1.703E+01           | 4.803E+01 | 8.338E+01      | 7.158E+00 | 0.204   |
|         |           | 52.39        |     | 1.870E+00           | 2.376E+01 | 4.084E+01      | 3.445E+00 | 0.046   |
|         |           | 59.40        |     | -8.022E+00          | 3.803E+01 | 5.788E+01      | 4.332E+00 | -0.139  |
|         |           | 66.72        | *   | -7.007E+00          | 3.591E+01 | 5.786E+01      | 4.727E+00 | -0.121  |
|         |           | 88.36        |     | 1.354E+00           | 3.386E-01 | 4.220E-01      | 4.218E-02 | 3.209   |
| LU-176  | +         | 201.83       |     | -2.825E-02          | 3.726E-02 | 5.732E-02      | 6.317E-03 | -0.493  |
|         |           | 306.84       | *   | 2.662E-03           | 2.983E-02 | 4.997E-02      | 6.036E-03 | 0.053   |
|         |           | 401.10       |     | 1.263E+00           | 8.086E+00 | 1.335E+01      | 1.339E+00 | 0.095   |
| LU-177  |           | 112.95       |     | -3.640E-01          | 1.813E+00 | 2.904E+00      | 2.453E-01 | -0.125  |
|         | +         | 208.36       | *   | 4.467E+00           | 2.254E+00 | 2.486E+00      | 2.774E-01 | 1.797   |
| LU-177M |           | 52.97        |     | -1.355E+00          | 2.400E+00 | 4.025E+00      | 3.360E-01 | -0.337  |
|         |           | 54.07        |     | -5.726E-01          | 1.230E+00 | 2.070E+00      | 1.693E-01 | -0.277  |
|         |           | 61.30        |     | 1.914E+00           | 2.044E+00 | 3.258E+00      | 2.510E-01 | 0.587   |
|         |           | 121.62       |     | -9.387E-02          | 4.315E-01 | 7.044E-01      | 5.882E-02 | -0.133  |
|         |           | 147.16       |     | -6.223E-01          | 7.650E-01 | 1.202E+00      | 1.115E-01 | -0.518  |
|         |           | 171.86       |     | -1.522E-01          | 5.719E-01 | 9.114E-01      | 9.459E-02 | -0.167  |
|         |           | 218.09       |     | 1.373E-01           | 1.064E+00 | 1.699E+00      | 1.931E-01 | 0.081   |
|         | +         | 268.79       |     | 4.062E+00           | 1.801E+00 | 1.814E+00      | 2.223E-01 | 2.240   |
|         |           | 319.02       |     | -6.387E-02          | 3.143E-01 | 5.173E-01      | 6.147E-02 | -0.123  |
|         |           | 367.43       |     | -3.353E-01          | 1.059E+00 | 1.710E+00      | 1.840E-01 | -0.196  |
| HF-181  |           | 413.65       | *   | 4.944E-02           | 2.186E-01 | 3.615E-01      | 3.635E-02 | 0.137   |
|         |           | 56.28        |     | 1.250E-01           | 1.277E+00 | 2.191E+00      | 1.723E-01 | 0.057   |
|         |           | 57.53        |     | 1.907E-01           | 6.800E-01 | 1.172E+00      | 9.029E-02 | 0.163   |
|         |           | 65.20        |     | 1.363E-01           | 1.261E+00 | 1.938E+00      | 1.561E-01 | 0.070   |
|         |           | 133.02       |     | 3.195E-02           | 8.451E-02 | 1.261E-01      | 1.094E-02 | 0.253   |
|         |           | 136.25       |     | -1.312E-01          | 5.253E-01 | 8.506E-01      | 7.486E-02 | -0.154  |
|         |           | 345.85       |     | -5.803E-02          | 2.657E-01 | 3.795E-01      | 4.297E-02 | -0.153  |
|         |           | 482.03       | *   | 1.887E-03           | 5.300E-02 | 8.568E-02      | 8.581E-03 | 0.022   |
|         |           | 56.28        |     | 4.981E-02           | 5.001E-01 | 8.578E-01      | 6.747E-02 | 0.058   |
|         |           | 57.53        |     | 7.489E-02           | 2.665E-01 | 4.594E-01      | 3.539E-02 | 0.163   |
| W-181   |           | 65.20        | *   | 5.297E-02           | 4.902E-01 | 7.534E-01      | 6.070E-02 | 0.070   |
|         |           | 67.75        |     | 2.003E-02           | 1.318E-01 | 2.246E-01      | 1.851E-02 | 0.089   |
|         |           | 100.10       |     | -2.252E-02          | 2.038E-01 | 3.377E-01      | 3.011E-02 | -0.067  |
| TA-182  |           | 152.43       |     | 9.888E-02           | 4.084E-01 | 6.697E-01      | 6.384E-02 | 0.148   |
|         |           | 222.10       |     | -1.932E-01          | 4.501E-01 | 6.985E-01      | 7.992E-02 | -0.277  |
|         | +         | 1001.68      |     | 3.572E+00           | 3.969E+00 | 4.980E+00      | 4.811E-01 | 0.717   |
|         | +         | 1121.28      |     | 1.079E+00           | 3.864E-01 | 4.650E-01      | 4.013E-02 | 2.321   |
|         |           | 1189.05      |     | -6.802E-02          | 3.728E-01 | 6.075E-01      | 4.969E-02 | -0.112  |
|         |           | 1221.42      | *   | 2.285E-01           | 2.598E-01 | 4.550E-01      | 3.838E-02 | 0.502   |
|         |           | 1230.97      |     | -4.198E-01          | 6.787E-01 | 9.763E-01      | 8.310E-02 | -0.430  |
|         |           | 57.98        |     | -3.526E-03          | 2.629E-01 | 4.485E-01      | 3.430E-02 | -0.008  |
|         |           | 59.32        |     | -4.973E-02          | 1.569E-01 | 2.376E-01      | 1.780E-02 | -0.209  |
|         |           | 67.20        |     | 1.417E-02           | 2.381E-01 | 4.046E-01      | 3.319E-02 | 0.035   |
| RE-183  |           | 162.32       | *   | -7.576E-02          | 1.350E-01 | 2.081E-01      | 2.093E-02 | -0.364  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| RE-184  | +         | 208.81       |     | 4.027E+00           | 2.032E+00 | 2.236E+00      | 2.497E-01 | 1.801   |
|         |           | 291.72       |     | -9.177E-01          | 1.259E+00 | 1.758E+00      | 2.159E-01 | -0.522  |
|         |           | 57.98        |     | -1.300E-02          | 9.687E-01 | 1.653E+00      | 1.264E-01 | -0.008  |
|         |           | 59.32        |     | -1.831E-01          | 5.778E-01 | 8.750E-01      | 6.556E-02 | -0.209  |
|         |           | 67.20        |     | 5.220E-02           | 8.772E-01 | 1.491E+00      | 1.223E-01 | 0.035   |
|         |           | 161.27       |     | -6.545E-02          | 4.299E-01 | 6.751E-01      | 6.750E-02 | -0.097  |
|         |           | 216.55       |     | -3.522E-02          | 3.268E-01 | 5.163E-01      | 5.849E-02 | -0.068  |
|         |           | 252.85       | *   | -5.987E-02          | 2.782E-01 | 4.655E-01      | 5.589E-02 | -0.129  |
|         |           | 318.01       |     | -9.929E-02          | 5.529E-01 | 9.115E-01      | 1.085E-01 | -0.109  |
|         |           | 792.07       |     | 1.065E+00           | 1.435E+00 | 2.188E+00      | 2.087E-01 | 0.487   |
| OS-185  |           | 903.28       |     | 2.501E-01           | 1.430E+00 | 2.042E+00      | 2.083E-01 | 0.122   |
|         |           | 920.93       |     | 2.314E-01           | 5.486E-01 | 9.206E-01      | 9.318E-02 | 0.251   |
|         |           | 59.72        |     | 8.911E-03           | 4.158E-01 | 6.396E-01      | 4.800E-02 | 0.014   |
|         |           | 61.14        |     | 1.586E-01           | 2.236E-01 | 3.535E-01      | 2.717E-02 | 0.449   |
|         |           | 69.30        |     | 1.904E-01           | 3.809E-01 | 5.925E-01      | 4.948E-02 | 0.321   |
|         |           | 592.07       |     | -1.332E+00          | 2.892E+00 | 4.690E+00      | 4.396E-01 | -0.284  |
|         |           | 646.12       | *   | 3.009E-02           | 5.150E-02 | 8.917E-02      | 7.854E-03 | 0.337   |
|         |           | 717.42       |     | -7.117E-01          | 1.107E+00 | 1.739E+00      | 1.569E-01 | -0.409  |
|         |           | 874.81       |     | 1.156E-01           | 7.250E-01 | 1.194E+00      | 1.203E-01 | 0.097   |
|         |           | 880.27       |     | 2.416E-01           | 8.966E-01 | 1.492E+00      | 1.509E-01 | 0.162   |
| RE-188  |           | 155.03       | *   | -3.066E-03          | 2.021E-01 | 3.279E-01      | 3.169E-02 | -0.009  |
|         |           | 477.96       |     | 2.526E-01           | 3.977E+00 | 6.445E+00      | 6.461E-01 | 0.039   |
|         |           | 633.10       |     | -2.904E-01          | 3.069E+00 | 5.085E+00      | 4.555E-01 | -0.057  |
| W-188   | +         | 63.58        |     | 6.877E+01           | 8.657E+01 | 1.249E+02      | 9.896E+00 | 0.551   |
|         |           | 227.08       |     | 8.317E+00           | 1.586E+01 | 2.569E+01      | 2.965E+00 | 0.324   |
| IR-192  |           | 290.67       | *   | -1.237E+00          | 9.560E+00 | 1.397E+01      | 1.717E+00 | -0.089  |
|         | +         | 295.96       |     | 1.563E+00           | 2.744E-01 | 3.581E-01      | 4.395E-02 | 4.363   |
|         |           | 308.46       |     | -7.748E-02          | 1.157E-01 | 1.856E-01      | 2.244E-02 | -0.417  |
|         |           | 316.51       | *   | 1.055E-02           | 4.133E-02 | 6.966E-02      | 8.317E-03 | 0.151   |
|         |           | 468.07       |     | 9.789E-03           | 9.479E-02 | 1.351E-01      | 1.430E-02 | 0.072   |
| AU-195  |           | 604.41       |     | -1.894E-02          | 6.149E-01 | 8.936E-01      | 1.202E-01 | -0.021  |
|         |           | 612.46       |     | 3.357E-01           | 9.328E-01 | 1.402E+00      | 1.457E-01 | 0.239   |
|         |           | 65.12        |     | 1.801E-02           | 2.272E-01 | 3.487E-01      | 2.807E-02 | 0.052   |
|         |           | 66.83        |     | -2.767E-02          | 1.184E-01 | 1.905E-01      | 1.557E-02 | -0.145  |
|         | +         | 75.70        |     | 1.871E+00           | 3.464E-01 | 5.796E-01      | 5.115E-02 | 3.229   |
| TL-200  |           | 98.88        | *   | 4.036E-01           | 2.649E-01 | 4.530E-01      | 4.072E-02 | 0.891   |
|         | +         | 129.76       |     | 6.551E+00           | 5.968E+00 | 5.839E+00      | 5.002E-01 | 1.122   |
|         |           | 367.94       | *   | -2.789E-04          | 5.968E+00 | Half-Life      | too short |         |
|         |           | 579.30       |     | -2.832E-03          | 5.968E+00 | Half-Life      | too short |         |
|         |           | 828.27       |     | 4.542E-03           | 5.968E+00 | Half-Life      | too short |         |
| TL-201  |           | 1205.75      |     | 8.347E-04           | 5.968E+00 | Half-Life      | too short |         |
|         |           | 68.90        |     | 5.101E-01           | 6.196E+00 | 9.483E+00      | 7.893E-01 | 0.054   |
|         |           | 70.82        |     | -6.821E-01          | 3.404E+00 | 5.138E+00      | 4.346E-01 | -0.133  |
|         |           | 80.30        |     | 3.588E+00           | 7.029E+00 | 8.767E+00      | 8.091E-01 | 0.409   |
| TL-202  |           | 135.34       |     | 5.125E+00           | 2.916E+01 | 4.805E+01      | 4.212E+00 | 0.107   |
|         |           | 167.43       | *   | 1.701E+00           | 8.482E+00 | 1.381E+01      | 1.421E+00 | 0.123   |
|         |           | 68.90        |     | 4.611E-02           | 5.601E-01 | 8.571E-01      | 7.134E-02 | 0.054   |
|         |           | 70.82        |     | -6.149E-02          | 3.068E-01 | 4.631E-01      | 3.917E-02 | -0.133  |
|         |           | 80.30        |     | 3.235E-01           | 6.338E-01 | 7.906E-01      | 7.295E-02 | 0.409   |



---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| HG-203  |           | 439.56       | *   | -9.426E-02          | 8.746E-02 | 1.312E-01      | 1.321E-02 | -0.719  |
|         |           | 70.83        |     | -2.552E-01          | 1.332E+00 | 2.011E+00      | 2.715E-01 | -0.127  |
|         |           | 72.87        |     | 1.752E+00           | 7.525E-01 | 1.295E+00      | 1.708E-01 | 1.353   |
|         |           | 82.60        |     | 7.881E-01           | 1.366E+00 | 2.096E+00      | 2.993E-01 | 0.376   |
| BI-207  |           | 279.20       | *   | -3.893E-02          | 4.815E-02 | 7.738E-02      | 9.729E-03 | -0.503  |
|         |           | 72.80        |     | 4.274E-01           | 2.108E-01 | 3.718E-01      | 3.198E-02 | 1.150   |
|         | +         | 74.97        |     | 1.038E+00           | 1.921E-01 | 2.824E-01      | 2.476E-02 | 3.675   |
|         | +         | 84.90        |     | 5.892E-01           | 3.307E-01 | 3.807E-01      | 3.691E-02 | 1.547   |
|         |           | 569.67       |     | -1.530E-02          | 3.862E-02 | 6.121E-02      | 5.851E-03 | -0.250  |
|         |           | 1063.62      | *   | -8.116E-03          | 6.917E-02 | 1.145E-01      | 1.052E-02 | -0.071  |
| TL-207  |           | 1770.23      |     | -4.703E-01          | 6.642E-01 | 7.622E-01      | 6.441E-02 | -0.617  |
|         |           | 81.07        |     | 1.710E-01           | 3.059E-01 | 3.824E-01      | 3.557E-02 | 0.447   |
|         | +         | 83.78        |     | 3.885E-01           | 2.181E-01 | 2.565E-01      | 2.455E-02 | 1.515   |
|         |           | 94.90        |     | -4.574E-02          | 2.783E-01 | 4.060E-01      | 3.770E-02 | -0.113  |
|         |           | 122.32       |     | -1.752E+00          | 2.042E+00 | 3.239E+00      | 2.917E-01 | -0.541  |
|         |           | 144.24       |     | -8.184E-02          | 8.301E-01 | 1.342E+00      | 1.357E-01 | -0.061  |
|         |           | 154.21       |     | 4.241E-01           | 4.688E-01 | 7.849E-01      | 8.162E-02 | 0.540   |
|         | +         | 269.46       |     | 9.511E-01           | 4.220E-01 | 4.403E-01      | 5.457E-02 | 2.160   |
|         |           | 323.87       | *   | -2.594E-01          | 9.258E-01 | 1.324E+00      | 2.575E-01 | -0.196  |
|         | +         | 338.28       |     | 9.633E+00           | 2.217E+00 | 3.099E+00      | 4.486E-01 | 3.108   |
| PO-209  |           | 445.03       |     | -2.087E+00          | 2.835E+00 | 4.353E+00      | 5.730E-01 | -0.480  |
|         |           | 260.50       |     | -1.093E+01          | 1.155E+01 | 1.853E+01      | 2.248E+00 | -0.590  |
|         |           | 262.80       |     | 8.717E+00           | 3.171E+01 | 5.240E+01      | 6.375E+00 | 0.166   |
|         |           | 896.60       | *   | 7.898E+00           | 9.146E+00 | 1.588E+01      | 1.621E+00 | 0.497   |
| BI-210  |           | 46.50        | *   | -5.501E+00          | 6.962E+00 | 1.024E+01      | 9.816E-01 | -0.537  |
| PB-210  |           | 46.50        | *   | -5.501E+00          | 6.962E+00 | 1.024E+01      | 9.816E-01 | -0.537  |
| PO-210  |           | 46.50        | *   | -5.501E+00          | 6.958E+00 | 1.024E+01      | 8.942E-01 | -0.537  |
| PB-211  |           | 404.84       | *   | -1.463E+00          | 1.524E+00 | 1.848E+00      | 1.162E+00 | -0.792  |
| BI-212  |           | 427.08       |     | 3.782E-01           | 2.496E+00 | 4.085E+00      | 2.547E+00 | 0.093   |
|         |           | 831.96       |     | -8.890E-01          | 1.592E+00 | 2.311E+00      | 1.452E+00 | -0.385  |
|         | +         | 727.18       | *   | 1.163E+00           | 6.877E-01 | 8.383E-01      | 8.733E-02 | 1.388   |
|         |           | 785.46       |     | 3.230E+00           | 2.335E+00 | 4.158E+00      | 3.949E-01 | 0.777   |
| PO-215  |           | 1620.62      |     | 1.489E+00           | 1.569E+00 | 2.925E+00      | 2.627E-01 | 0.509   |
|         |           | 81.07        |     | 1.710E-01           | 3.059E-01 | 3.824E-01      | 3.557E-02 | 0.447   |
|         | +         | 83.78        |     | 3.885E-01           | 2.181E-01 | 2.565E-01      | 2.455E-02 | 1.515   |
|         |           | 94.90        |     | -4.574E-02          | 2.783E-01 | 4.060E-01      | 3.770E-02 | -0.113  |
|         |           | 122.32       |     | -1.752E+00          | 2.042E+00 | 3.239E+00      | 2.917E-01 | -0.541  |
|         |           | 144.24       |     | -8.184E-02          | 8.301E-01 | 1.342E+00      | 1.357E-01 | -0.061  |
|         |           | 154.21       |     | 4.241E-01           | 4.688E-01 | 7.849E-01      | 8.162E-02 | 0.540   |
|         | +         | 269.46       |     | 9.511E-01           | 4.220E-01 | 4.403E-01      | 5.457E-02 | 2.160   |
|         |           | 323.87       | *   | -2.594E-01          | 9.258E-01 | 1.324E+00      | 2.575E-01 | -0.196  |
|         | +         | 338.28       |     | 9.633E+00           | 2.217E+00 | 3.099E+00      | 4.486E-01 | 3.108   |
| RN-219  |           | 445.03       |     | -2.087E+00          | 2.835E+00 | 4.353E+00      | 5.730E-01 | -0.480  |
|         | +         | 271.23       |     | 1.220E+00           | 5.454E-01 | 5.570E-01      | 7.537E-02 | 2.191   |
|         |           | 401.81       | *   | -1.849E-01          | 5.051E-01 | 8.068E-01      | 1.281E-01 | -0.229  |
|         |           | 549.76       | *   | -2.128E+01          | 3.209E+01 | 4.840E+01      | 4.695E+00 | -0.440  |
| RN-220  |           | 81.07        |     | 1.710E-01           | 3.059E-01 | 3.824E-01      | 3.557E-02 | 0.447   |
| RA-223  |           | 83.78        |     | 3.885E-01           | 2.181E-01 | 2.565E-01      | 2.455E-02 | 1.515   |
|         | +         | 94.90        |     | -4.574E-02          | 2.783E-01 | 4.060E-01      | 3.770E-02 | -0.113  |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| AC-227  |           | 122.32       |     | -1.752E+00          | 2.042E+00 | 3.239E+00      | 2.917E-01 | -0.541  |
|         |           | 144.24       |     | -8.184E-02          | 8.301E-01 | 1.342E+00      | 1.357E-01 | -0.061  |
|         |           | 154.21       |     | 4.241E-01           | 4.688E-01 | 7.849E-01      | 8.162E-02 | 0.540   |
|         | +         | 269.46       |     | 9.511E-01           | 4.220E-01 | 4.403E-01      | 5.457E-02 | 2.160   |
|         |           | 323.87       | *   | -2.594E-01          | 9.258E-01 | 1.324E+00      | 2.575E-01 | -0.196  |
|         | +         | 338.28       |     | 9.633E+00           | 2.217E+00 | 3.099E+00      | 4.486E-01 | 3.108   |
|         |           | 445.03       |     | -2.087E+00          | 2.835E+00 | 4.353E+00      | 5.730E-01 | -0.480  |
|         |           | 79.80        |     | 1.177E+00           | 2.366E+00 | 2.935E+00      | 6.379E-01 | 0.401   |
|         |           | 236.00       |     | 1.133E+00           | 3.616E-01 | 5.595E-01      | 8.161E-02 | 2.024   |
|         |           | 256.20       | *   | 3.793E-01           | 4.667E-01 | 8.065E-01      | 1.412E-01 | 0.470   |
|         |           | 286.10       |     | 1.304E-01           | 1.783E+00 | 2.998E+00      | 4.762E-01 | 0.043   |
|         | +         | 299.80       |     | 4.485E+00           | 2.250E+00 | 3.155E+00      | 6.149E-01 | 1.422   |
| TH-227  |           | 304.40       |     | 5.464E-01           | 2.451E+00 | 3.654E+00      | 7.420E-01 | 0.150   |
|         |           | 334.20       |     | -2.378E-01          | 3.035E+00 | 4.395E+00      | 9.185E-01 | -0.054  |
|         |           | 79.80        |     | 1.177E+00           | 2.367E+00 | 2.935E+00      | 6.459E-01 | 0.401   |
|         | +         | 94.00        |     | 1.299E+01           | 4.672E+00 | 4.183E+00      | 9.238E-01 | 3.105   |
|         |           | 236.00       |     | 1.133E+00           | 3.567E-01 | 5.595E-01      | 7.621E-02 | 2.024   |
|         |           | 256.20       | *   | 3.793E-01           | 4.681E-01 | 8.065E-01      | 1.608E-01 | 0.470   |
|         |           | 286.10       |     | 1.304E-01           | 1.788E+00 | 2.998E+00      | 3.021E+00 | 0.043   |
|         | +         | 299.80       |     | 4.485E+00           | 2.250E+00 | 3.155E+00      | 6.149E-01 | 1.422   |
|         |           | 304.40       |     | 5.464E-01           | 2.451E+00 | 3.654E+00      | 7.420E-01 | 0.150   |
|         |           | 334.20       |     | -2.378E-01          | 3.035E+00 | 4.395E+00      | 9.185E-01 | -0.054  |
|         | +         | 85.43        |     | 5.815E-01           | 3.264E-01 | 3.858E-01      | 3.762E-02 | 1.507   |
|         | +         | 88.47        |     | 4.543E-01           | 1.581E-01 | 2.407E-01      | 2.403E-02 | 1.887   |
| TH-229  |           | 100.00       |     | 2.345E-02           | 2.117E-01 | 3.536E-01      | 3.155E-02 | 0.066   |
|         |           | 193.63       | *   | -7.081E-02          | 6.465E-01 | 1.030E+00      | 1.117E-01 | -0.069  |
|         |           | 210.97       |     | 1.194E+00           | 1.030E+00 | 1.544E+00      | 1.731E-01 | 0.773   |
|         | PA-231    | 283.67       | *   | -1.117E-01          | 1.730E+00 | 2.892E+00      | 5.083E-01 | -0.039  |
|         |           | 301.29       |     | 1.193E+00           | 7.575E-01 | 1.197E+00      | 1.789E-01 | 0.997   |
|         | TH-231    | 81.07        |     | 1.710E-01           | 3.059E-01 | 3.824E-01      | 3.557E-02 | 0.447   |
|         | +         | 83.78        |     | 3.885E-01           | 2.181E-01 | 2.565E-01      | 2.455E-02 | 1.515   |
|         |           | 94.90        |     | -4.574E-02          | 2.783E-01 | 4.060E-01      | 3.770E-02 | -0.113  |
|         |           | 122.32       |     | -1.752E+00          | 2.042E+00 | 3.239E+00      | 2.917E-01 | -0.541  |
|         |           | 144.24       |     | -8.184E-02          | 8.301E-01 | 1.342E+00      | 1.357E-01 | -0.061  |
|         |           | 154.21       |     | 4.241E-01           | 4.688E-01 | 7.849E-01      | 8.162E-02 | 0.540   |
|         | +         | 269.46       |     | 9.511E-01           | 4.220E-01 | 4.403E-01      | 5.457E-02 | 2.160   |
| U-231   |           | 323.87       | *   | -2.594E-01          | 9.258E-01 | 1.324E+00      | 2.575E-01 | -0.196  |
|         | +         | 338.28       |     | 9.633E+00           | 2.217E+00 | 3.099E+00      | 4.486E-01 | 3.108   |
|         |           | 445.03       |     | -2.087E+00          | 2.835E+00 | 4.353E+00      | 5.730E-01 | -0.480  |
|         | +         | 84.21        |     | 1.665E+01           | 9.345E+00 | 1.096E+01      | 1.054E+00 | 1.519   |
|         | +         | 92.29        |     | 1.276E+01           | 3.817E+00 | 5.082E+00      | 4.843E-01 | 2.512   |
|         |           | 95.87        | *   | -1.800E+00          | 1.346E+00 | 1.831E+00      | 1.685E-01 | -0.983  |
|         |           | 108.00       |     | -3.365E-02          | 2.283E+00 | 3.781E+00      | 3.240E-01 | -0.009  |
|         | PA-233    | 75.28        |     | 3.029E+01           | 6.800E+00 | 8.646E+00      | 1.335E+00 | 3.503   |
|         | +         | 86.59        |     | 1.118E+01           | 3.984E+00 | 3.677E+00      | 1.002E+00 | 3.040   |
|         | +         | 300.12       |     | 1.250E+00           | 6.166E-01 | 8.747E-01      | 1.503E-01 | 1.429   |
|         |           | 311.98       | *   | 1.318E-02           | 7.662E-02 | 1.287E-01      | 1.568E-02 | 0.102   |
|         |           | 340.50       |     | 1.974E+00           | 9.290E-01 | 1.341E+00      | 3.353E-01 | 1.472   |
|         |           | 398.62       |     | -4.174E-01          | 2.495E+00 | 4.037E+00      | 1.095E+00 | -0.103  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|------------|-----------|----------------|-----------|---------|
| PA-234  | +         | 415.76       |              | -6.314E-01 | 2.104E+00 | 3.363E+00      | 7.455E-01 | -0.188  |
|         |           | 63.00        |              | 1.995E+00  | 2.524E+00 | 3.729E+00      | 5.630E-01 | 0.535   |
|         |           | 94.67        |              | 2.484E-01  | 1.987E-01 | 3.054E-01      | 3.936E-02 | 0.813   |
|         |           | 98.44        |              | 1.883E-01  | 1.526E-01 | 1.855E-01      | 1.036E-01 | 1.015   |
|         |           | 99.86        |              | -1.589E-01 | 5.575E-01 | 9.040E-01      | 8.072E-02 | -0.176  |
|         |           | 111.00       |              | -1.344E-01 | 2.000E-01 | 3.211E-01      | 3.852E-02 | -0.419  |
|         |           | 131.20       |              | 3.834E-02  | 1.340E-01 | 1.993E-01      | 1.717E-02 | 0.192   |
|         |           | 152.70       |              | -7.799E-03 | 3.964E-01 | 6.437E-01      | 1.128E-01 | -0.012  |
|         |           | 186.00       |              | 8.093E+00  | 3.623E+00 | 3.301E+00      | 1.051E+00 | 2.451   |
|         |           | 226.40       |              | -8.166E-02 | 5.054E-01 | 7.936E-01      | 1.211E-01 | -0.103  |
|         |           | 227.20       |              | 3.103E-01  | 5.374E-01 | 8.722E-01      | 1.007E-01 | 0.356   |
|         |           | 248.90       |              | -5.918E-01 | 9.694E-01 | 1.578E+00      | 3.770E-01 | -0.375  |
|         |           | 293.70       |              | 9.839E+00  | 2.270E+00 | 2.203E+00      | 4.268E-01 | 4.466   |
|         |           | 369.80       |              | -2.947E-01 | 1.012E+00 | 1.633E+00      | 3.703E-01 | -0.180  |
|         |           | 568.70       |              | 2.953E-01  | 1.240E+00 | 2.048E+00      | 1.959E-01 | 0.144   |
|         |           | 569.50       |              | -1.527E-02 | 3.374E-01 | 5.471E-01      | 5.230E-02 | -0.028  |
|         |           | 574.00       |              | 1.283E+00  | 1.773E+00 | 3.110E+00      | 2.962E-01 | 0.412   |
|         |           | 699.00       |              | -5.668E-01 | 8.519E-01 | 1.330E+00      | 2.554E-01 | -0.426  |
|         |           | 706.10       |              | -4.169E-01 | 1.261E+00 | 2.012E+00      | 8.985E-01 | -0.207  |
|         |           | 733.00       |              | 2.536E-01  | 5.121E-01 | 7.671E-01      | 1.718E-01 | 0.331   |
|         |           | 742.81       |              | 1.106E+00  | 1.824E+00 | 2.880E+00      | 1.938E+00 | 0.384   |
|         |           | 796.30       |              | 2.840E+00  | 1.454E+00 | 2.158E+00      | 5.905E-01 | 1.316   |
|         |           | 805.60       |              | 1.700E+00  | 1.406E+00 | 2.336E+00      | 7.231E-01 | 0.728   |
|         |           | 819.60       |              | 3.784E-01  | 1.409E+00 | 2.346E+00      | 8.984E-01 | 0.161   |
|         |           | 826.30       |              | -2.405E-01 | 9.775E-01 | 1.551E+00      | 6.977E-01 | -0.155  |
|         |           | 831.60       |              | -7.212E-01 | 8.060E-01 | 1.167E+00      | 3.526E-01 | -0.618  |
|         |           | 876.40       |              | 1.137E-01  | 1.038E+00 | 1.692E+00      | 1.741E+00 | 0.067   |
|         |           | 880.51       |              | -3.321E-02 | 3.303E-01 | 5.312E-01      | 5.373E-02 | -0.063  |
|         |           | 883.24       |              | -6.890E-02 | 3.206E-01 | 5.036E-01      | 3.396E-01 | -0.137  |
|         |           | 899.00       |              | 5.753E-01  | 1.074E+00 | 1.772E+00      | 7.808E-01 | 0.325   |
|         |           | 925.00       |              | -3.161E-01 | 1.449E+00 | 2.294E+00      | 2.318E-01 | -0.138  |
|         |           | 926.50       |              | 3.978E-02  | 2.144E-01 | 3.521E-01      | 9.089E-02 | 0.113   |
|         |           | 946.00       | *            | 1.417E-01  | 3.736E-01 | 6.218E-01      | 1.209E-01 | 0.228   |
|         |           | 949.00       |              | 4.058E-01  | 5.548E-01 | 9.504E-01      | 9.487E-02 | 0.427   |
|         |           | 980.50       |              | 2.533E-01  | 8.520E-01 | 1.410E+00      | 1.382E-01 | 0.180   |
|         |           | 1394.10      |              | 6.772E-02  | 1.279E+00 | 2.100E+00      | 1.369E+00 | 0.032   |
| PA-234M |           | 766.42       |              | 1.878E+01  | 1.783E+01 | 2.653E+01      | 1.350E+01 | 0.708   |
| U-235   | +         | 1001.03      | *            | 8.111E+00  | 9.021E+00 | 1.138E+01      | 1.238E+00 | 0.713   |
|         |           | 89.95        |              | 4.560E+00  | 2.084E+00 | 2.216E+00      | 6.914E-01 | 2.058   |
|         |           | 93.35        |              | 4.040E+00  | 1.619E+00 | 1.520E+00      | 4.298E-01 | 2.659   |
|         |           | 105.00       |              | 1.245E+00  | 1.271E+00 | 2.062E+00      | 6.158E-01 | 0.604   |
| NP-236  | +         | 143.76       | *            | 2.100E-02  | 2.580E-01 | 4.201E-01      | 7.460E-02 | 0.050   |
|         |           | 163.35       |              | -4.142E-02 | 5.785E-01 | 9.116E-01      | 1.805E-01 | -0.045  |
|         |           | 185.71       |              | 2.997E-01  | 9.959E-02 | 1.226E-01      | 1.309E-02 | 2.444   |
|         |           | 205.31       |              | -6.587E-01 | 7.746E-01 | 1.026E+00      | 2.084E-01 | -0.642  |
|         |           | 94.67        |              | 1.905E-01  | 1.499E-01 | 2.319E-01      | 2.158E-02 | 0.822   |
|         |           | 98.44        |              | 1.424E-01  | 8.453E-02 | 1.402E-01      | 1.264E-02 | 1.015   |
| NP-236  |           | 111.00       |              | -1.017E-01 | 1.510E-01 | 2.429E-01      | 2.062E-02 | -0.419  |
|         |           | 160.31       | *            | -4.214E-02 | 9.294E-02 | 1.475E-01      | 1.467E-02 | -0.286  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| NP-239  |           | 99.55        |     | 1.318E-01           | 1.828E-01 | 3.064E-01      | 2.742E-02 | 0.430   |
|         |           | 117.00       | *   | -1.729E-01          | 2.146E-01 | 3.422E-01      | 2.869E-02 | -0.505  |
|         | +         | 209.75       |     | 3.178E+00           | 1.603E+00 | 1.776E+00      | 1.987E-01 | 1.789   |
|         |           | 228.18       |     | -5.647E-02          | 2.838E-01 | 4.445E-01      | 5.139E-02 | -0.127  |
|         |           | 277.60       |     | 2.497E-01           | 2.192E-01 | 3.822E-01      | 4.732E-02 | 0.653   |
| AM-241  |           | 334.30       |     | -1.595E-01          | 1.718E+00 | 2.486E+00      | 2.880E-01 | -0.064  |
|         |           | 59.54        | *   | -9.455E-03          | 2.195E-01 | 3.367E-01      | 2.758E-02 | -0.028  |
|         |           | 99.55        |     | 1.357E-01           | 1.881E-01 | 3.153E-01      | 2.821E-02 | 0.430   |
|         |           | 103.76       | *   | -1.980E-03          | 1.095E-01 | 1.789E-01      | 1.561E-02 | -0.011  |
|         |           | 117.00       |     | -1.779E-01          | 2.208E-01 | 3.520E-01      | 2.952E-02 | -0.505  |
| CM-243  | +         | 209.75       |     | 3.133E+00           | 1.581E+00 | 1.751E+00      | 1.959E-01 | 1.789   |
|         |           | 228.18       |     | -5.706E-02          | 2.867E-01 | 4.492E-01      | 5.193E-02 | -0.127  |
|         |           | 277.60       |     | 2.517E-01           | 2.210E-01 | 3.854E-01      | 4.771E-02 | 0.653   |
|         |           | 798.80       |     | -1.310E-01          | 1.899E-01 | 2.453E-01      | 2.352E-02 | -0.534  |
|         |           | 1036.00      |     | -2.409E-01          | 3.611E-01 | 5.687E-01      | 5.350E-02 | -0.424  |
| AM-246  |           | 1062.04      |     | 5.274E-02           | 2.983E-01 | 5.054E-01      | 4.646E-02 | 0.104   |
|         |           | 1078.86      | *   | 1.010E-02           | 1.701E-01 | 2.854E-01      | 2.581E-02 | 0.035   |
|         |           | 278.00       |     | 1.002E+00           | 9.008E-01 | 1.570E+00      | 1.945E-01 | 0.638   |
|         |           | 287.40       |     | 6.425E-01           | 1.483E+00 | 2.456E+00      | 3.027E-01 | 0.262   |
|         |           | 402.60       | *   | -2.219E-02          | 4.575E-02 | 7.258E-02      | 7.281E-03 | -0.306  |
| CF-249  |           | 252.85       |     | -2.247E-01          | 1.044E+00 | 1.747E+00      | 2.098E-01 | -0.129  |
|         |           | 333.44       |     | 9.412E-02           | 2.375E-01 | 3.331E-01      | 3.865E-02 | 0.283   |
|         |           | 387.95       | *   | -3.092E-02          | 4.867E-02 | 7.663E-02      | 7.761E-03 | -0.403  |
| CF-251  |           | 176.60       | *   | 1.792E-02           | 1.507E-01 | 2.439E-01      | 2.555E-02 | 0.073   |
|         |           | 227.00       |     | 2.316E-01           | 4.752E-01 | 7.686E-01      | 8.869E-02 | 0.301   |
|         |           | 285.00       |     | -1.518E+00          | 2.055E+00 | 3.307E+00      | 4.083E-01 | -0.459  |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630014      *
* Acquisition date   : 23-JAN-2010 14:05:59 Detector SN#                   *
* Detector ID        : GAM02 Sensitivity : 5.000                          *
* Geometry           : CAN Energy tolerance: 1.500                        *
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000             *
* Elapsed real time  : 0 02:00:03.08 Half life ratio : 8.000              *
*****
*                                     SAMPLE DATA                            *
*
* Sample date       : 8-JAN-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID         : G244630014 Analyst initials: MXR1                  *
* Batch Number      : 941639 Sample Quantity : 1.2936E+02 GRAM           *
* Recovery          : 1.00000 Carrier Weight : 0.00000                   *
*****
*                                     QC DATA                                *
*
* Standard Weight   : 0.00000                                              *
* CALIB. DATE/TIME  : 29-OCT-2009 10:28:07 MS Isotope :                   *
* MSD DPM           : 0.000 MSD Isotope :                               *
* LCS DPM           : 0.000 LCS Isotope :                               *
* LCSD DPM          : 0.000 LCSD Isotope :                               *
*****

```

## Combined Activity-MDA Report

### ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act error | MDA<br>(pCi/GRAM ) |           |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 3.566E+01               | 3.938E+00 | 6.048E-01          | 0.000E+00 |
| CD-109  | 5.809E+00               | 1.423E+00 | 1.392E+00          | 0.000E+00 |
| SN-126  | 5.710E-01               | 1.399E-01 | 1.376E-01          | 0.000E+00 |
| BA-137M | 1.188E-01               | 5.478E-02 | 6.999E-02          | 0.000E+00 |
| CS-137  | 1.256E-01               | 5.791E-02 | 7.398E-02          | 0.000E+00 |
| TL-208  | 6.715E-01               | 1.137E-01 | 7.498E-02          | 0.000E+00 |
| BI-211  | 5.990E+00               | 8.810E-01 | 4.094E-01          | 0.000E+00 |
| PB-212  | 2.447E+00               | 3.319E-01 | 1.078E-01          | 0.000E+00 |
| PO-212  | 2.447E+00               | 3.319E-01 | 1.078E-01          | 0.000E+00 |
| BI-214  | 1.792E+00               | 2.846E-01 | 1.333E-01          | 0.000E+00 |
| PB-214  | 2.084E+00               | 3.245E-01 | 1.427E-01          | 0.000E+00 |
| PO-214  | 2.084E+00               | 3.245E-01 | 1.427E-01          | 0.000E+00 |
| PO-216  | 2.447E+00               | 3.319E-01 | 1.078E-01          | 0.000E+00 |
| PO-218  | 2.084E+00               | 3.245E-01 | 1.427E-01          | 0.000E+00 |
| RA-224  | 6.540E+00               | 1.651E+00 | 1.227E+00          | 0.000E+00 |
| RA-226  | 1.792E+00               | 2.846E-01 | 1.333E-01          | 0.000E+00 |
| AC-228  | 2.136E+00               | 4.414E-01 | 2.562E-01          | 0.000E+00 |
| RA-228  | 2.136E+00               | 4.414E-01 | 2.562E-01          | 0.000E+00 |
| TH-228  | 2.485E+00               | 3.369E-01 | 1.095E-01          | 0.000E+00 |
| TH-230  | 1.792E+00               | 2.846E-01 | 1.333E-01          | 0.000E+00 |
| TH-232  | 2.136E+00               | 4.414E-01 | 2.562E-01          | 0.000E+00 |
| TH-234  | 1.712E+00               | 2.128E+00 | 2.932E+00          | 0.000E+00 |
| U-234   | 1.792E+00               | 2.846E-01 | 1.333E-01          | 0.000E+00 |
| NP-237  | 1.677E+00               | 5.327E-01 | 4.098E-01          | 0.000E+00 |
| U-238   | 1.712E+00               | 2.128E+00 | 2.932E+00          | 0.000E+00 |
| AM-243  | 5.783E-01               | 1.049E-01 | 1.068E-01          | 0.000E+00 |
| ANH-511 | 1.296E-01               | 7.810E-02 | 5.891E-02          | 0.000E+00 |

### ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L. Act error<br>) Ided | MDA<br>(pCi/GRAM ) |
|---------|-------------------------------------|--------------------------|--------------------|
|---------|-------------------------------------|--------------------------|--------------------|

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| BE-7    | 1.037E-01  | 4.046E-01 | 6.898E-01 | 0.000E+00 | NOT IDENT. |
| NA-22   | 3.479E-02  | 5.363E-02 | 9.529E-02 | 0.000E+00 | NOT IDENT. |
| NA-24   | 0.000E+00  | 9.094E+05 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| AL-26   | -1.487E-02 | 3.523E-02 | 5.474E-02 | 0.000E+00 | NOT IDENT. |
| TI-44   | 0.000E+00  | 4.959E-02 | 8.625E-02 | 0.000E+00 | NOT IDENT. |
| SC-46   | 4.616E-03  | 4.144E-02 | 6.994E-02 | 0.000E+00 | FAIL ABUN  |
| V-48    | 2.312E-03  | 8.574E-02 | 1.420E-01 | 0.000E+00 | NOT IDENT. |
| CR-51   | 8.642E-02  | 4.497E-01 | 7.895E-01 | 0.000E+00 | NOT IDENT. |
| MN-52   | 1.172E-01  | 2.325E-01 | 4.153E-01 | 0.000E+00 | NOT IDENT. |
| MN-54   | 6.165E-03  | 4.701E-02 | 7.976E-02 | 0.000E+00 | NOT IDENT. |
| CO-56   | -2.385E-03 | 4.929E-02 | 8.239E-02 | 0.000E+00 | FAIL ABUN  |
| CO-57   | -5.987E-03 | 2.827E-02 | 4.900E-02 | 0.000E+00 | NOT IDENT. |
| CO-58   | -4.464E-02 | 4.758E-02 | 7.357E-02 | 0.000E+00 | NOT IDENT. |
| FE-59   | -8.580E-02 | 1.140E-01 | 1.825E-01 | 0.000E+00 | NOT IDENT. |
| CO-60   | 1.210E-02  | 4.374E-02 | 7.557E-02 | 0.000E+00 | NOT IDENT. |
| ZN-65   | -4.131E-02 | 1.327E-01 | 1.884E-01 | 0.000E+00 | NOT IDENT. |
| GE-68   | 2.333E-01  | 1.461E+00 | 2.535E+00 | 0.000E+00 | NOT IDENT. |
| AS-73   | -1.098E-01 | 1.188E+00 | 2.181E+00 | 0.000E+00 | NOT IDENT. |
| AS-74   | -7.629E-02 | 1.020E-01 | 1.675E-01 | 0.000E+00 | NOT IDENT. |
| SE-75   | 1.699E-02  | 5.656E-02 | 8.979E-02 | 0.000E+00 | NOT IDENT. |
| BR-77   | -7.483E+00 | 1.249E+01 | 1.981E+01 | 0.000E+00 | FAIL ABUN  |
| SR-82   | -1.967E-01 | 4.327E-01 | 7.044E-01 | 0.000E+00 | NOT IDENT. |
| RB-83   | -6.361E-02 | 8.458E-02 | 1.325E-01 | 0.000E+00 | NOT IDENT. |
| RB-84   | 2.630E-02  | 7.954E-02 | 1.369E-01 | 0.000E+00 | NOT IDENT. |
| KR-85   | 4.274E-01  | 9.474E+00 | 1.382E+01 | 0.000E+00 | NOT IDENT. |
| SR-85   | 2.191E-03  | 4.856E-02 | 7.086E-02 | 0.000E+00 | NOT IDENT. |
| RB-86   | -6.077E-02 | 9.132E-01 | 1.555E+00 | 0.000E+00 | NOT IDENT. |
| Y-88    | 7.227E-03  | 3.868E-02 | 6.712E-02 | 0.000E+00 | NOT IDENT. |
| ZR-88   | -1.588E-02 | 3.509E-02 | 5.823E-02 | 0.000E+00 | NOT IDENT. |
| Y-91    | -6.551E+00 | 2.388E+01 | 3.958E+01 | 0.000E+00 | NOT IDENT. |
| NB-94   | 2.407E-02  | 3.980E-02 | 7.075E-02 | 0.000E+00 | NOT IDENT. |
| NB-95   | 3.625E-02  | 5.525E-02 | 9.673E-02 | 0.000E+00 | NOT IDENT. |
| NB-95M  | 1.783E-01  | 1.581E-01 | 2.611E-01 | 0.000E+00 | NOT IDENT. |
| ZR-95   | 2.797E-02  | 8.786E-02 | 1.525E-01 | 0.000E+00 | NOT IDENT. |
| NB-97   | 0.000E+00  | 1.203E+05 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| ZR-97   | 0.000E+00  | 2.398E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| MO-99   | -5.368E-01 | 1.385E+01 | 2.348E+01 | 0.000E+00 | NOT IDENT. |
| TC-99M  | 0.000E+00  | 4.219E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | 1.170E-03  | 4.091E-02 | 6.839E-02 | 0.000E+00 | NOT IDENT. |
| RH-102  | 6.628E-03  | 3.600E-02 | 6.115E-02 | 0.000E+00 | NOT IDENT. |
| RU-103  | 4.395E-02  | 4.962E-02 | 8.719E-02 | 0.000E+00 | FAIL ABUN  |
| RH-106  | 9.627E-02  | 3.633E-01 | 6.396E-01 | 0.000E+00 | FAIL ABUN  |
| RU-106  | 9.627E-02  | 3.632E-01 | 6.396E-01 | 0.000E+00 | FAIL ABUN  |
| AG-108M | -2.247E-02 | 4.079E-02 | 6.658E-02 | 0.000E+00 | NOT IDENT. |
| AG-110M | 1.654E-02  | 4.444E-02 | 6.896E-02 | 0.000E+00 | NOT IDENT. |
| IN-111  | 8.623E-01  | 1.277E+00 | 2.082E+00 | 0.000E+00 | NOT IDENT. |
| IN-113M | 4.594E-02  | 5.130E-02 | 9.192E-02 | 0.000E+00 | NOT IDENT. |
| SN-113  | 4.594E-02  | 5.130E-02 | 9.192E-02 | 0.000E+00 | NOT IDENT. |
| IN-114M | 3.993E-02  | 2.406E-01 | 3.652E-01 | 0.000E+00 | NOT IDENT. |
| CD-115  | 3.635E+00  | 1.259E+01 | 2.136E+01 | 0.000E+00 | NOT IDENT. |
| SN-117M | 2.633E-02  | 6.096E-02 | 1.063E-01 | 0.000E+00 | NOT IDENT. |
| SB-122  | 1.998E+00  | 2.421E+00 | 4.422E+00 | 0.000E+00 | NOT IDENT. |
| I-123   | 0.000E+00  | 6.235E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TE-123M | 1.266E-02  | 3.197E-02 | 5.564E-02 | 0.000E+00 | NOT IDENT. |
| I-124   | -3.517E-01 | 8.909E-01 | 1.296E+00 | 0.000E+00 | NOT IDENT. |
| SB-124  | -9.922E-03 | 7.424E-02 | 1.227E-01 | 0.000E+00 | FAIL ABUN  |
| SB-125  | -3.704E-02 | 1.087E-01 | 1.801E-01 | 0.000E+00 | FAIL ABUN  |
| TE-125M | -1.338E+00 | 9.938E+00 | 1.742E+01 | 0.000E+00 | NOT IDENT. |
| I-126   | 3.679E-01  | 2.704E-01 | 4.032E-01 | 0.000E+00 | FAIL ABUN  |
| SB-126  | -4.657E-02 | 1.845E-01 | 2.788E-01 | 0.000E+00 | FAIL ABUN  |
| SB-127  | 6.098E-01  | 1.590E+00 | 2.797E+00 | 0.000E+00 | NOT IDENT. |
| XE-127  | 3.106E-02  | 5.784E-02 | 9.924E-02 | 0.000E+00 | NOT IDENT. |
| I-131   | 5.561E-02  | 1.330E-01 | 2.339E-01 | 0.000E+00 | NOT IDENT. |
| TE-132  | -1.680E-01 | 8.453E-01 | 1.392E+00 | 0.000E+00 | NOT IDENT. |
| BA-133  | 1.991E-02  | 5.605E-02 | 8.705E-02 | 0.000E+00 | NOT IDENT. |
| I-133   | 0.000E+00  | 6.969E+03 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-134  | 0.000E+00  | 7.976E-02 | 1.156E-01 | 0.000E+00 | FAIL ABUN  |
| CS-135  | 2.290E-01  | 2.074E-01 | 3.405E-01 | 0.000E+00 | NOT IDENT. |
| I-135   | 0.000E+00  | 6.192E+15 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-136  | -6.207E-02 | 1.281E-01 | 2.109E-01 | 0.000E+00 | FAIL ABUN  |
| CE-139  | 8.929E-04  | 3.553E-02 | 6.076E-02 | 0.000E+00 | NOT IDENT. |
| BA-140  | -3.012E-02 | 3.115E-01 | 5.126E-01 | 0.000E+00 | NOT IDENT. |
| LA-140  | -9.351E-02 | 9.604E-02 | 1.402E-01 | 0.000E+00 | FAIL ABUN  |
| CE-141  | -6.107E-02 | 7.234E-02 | 1.204E-01 | 0.000E+00 | NOT IDENT. |
| CE-143  | 0.000E+00  | 3.347E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CE-144  | 1.063E-01  | 2.595E-01 | 4.103E-01 | 0.000E+00 | NOT IDENT. |
| PM-144  | 1.931E-02  | 3.868E-02 | 6.849E-02 | 0.000E+00 | NOT IDENT. |
| PR-144  | 1.309E+00  | 2.621E+00 | 4.641E+00 | 0.000E+00 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PM-146  | 5.727E-03  | 5.099E-02 | 8.660E-02 | 0.000E+00 | NOT IDENT. |
| ND-147  | -3.269E-01 | 6.964E-01 | 1.084E+00 | 0.000E+00 | FAIL ABUN  |
| PM-149  | 6.611E+00  | 1.032E+02 | 1.818E+02 | 0.000E+00 | NOT IDENT. |
| EU-152  | -7.496E-02 | 1.142E-01 | 1.899E-01 | 0.000E+00 | FAIL ABUN  |
| GD-153  | -3.420E-03 | 9.992E-02 | 1.580E-01 | 0.000E+00 | FAIL ABUN  |
| EU-154  | 9.845E-02  | 1.501E-01 | 2.665E-01 | 0.000E+00 | NOT IDENT. |
| EU-155  | 1.475E-01  | 1.231E-01 | 2.221E-01 | 0.000E+00 | FAIL ABUN  |
| TB-160  | 6.260E-02  | 1.647E-01 | 2.843E-01 | 0.000E+00 | FAIL ABUN  |
| HO-166M | -3.050E-02 | 7.408E-02 | 1.227E-01 | 0.000E+00 | FAIL ABUN  |
| TM-171  | -7.007E+00 | 3.519E+01 | 6.075E+01 | 0.000E+00 | NOT IDENT. |
| LU-176  | 2.662E-03  | 2.923E-02 | 5.126E-02 | 0.000E+00 | FAIL ABUN  |
| LU-177  | 0.000E+00  | 2.209E+00 | 2.565E+00 | 0.000E+00 | FAIL ABUN  |
| LU-177M | 4.944E-02  | 2.142E-01 | 3.691E-01 | 0.000E+00 | FAIL ABUN  |
| HF-181  | 1.887E-03  | 5.194E-02 | 8.727E-02 | 0.000E+00 | NOT IDENT. |
| W-181   | 5.297E-02  | 4.804E-01 | 7.913E-01 | 0.000E+00 | NOT IDENT. |
| TA-182  | 2.285E-01  | 2.546E-01 | 4.565E-01 | 0.000E+00 | FAIL ABUN  |
| RE-183  | -7.576E-02 | 1.323E-01 | 2.156E-01 | 0.000E+00 | FAIL ABUN  |
| RE-184  | -5.987E-02 | 2.726E-01 | 4.790E-01 | 0.000E+00 | NOT IDENT. |
| OS-185  | 3.009E-02  | 5.047E-02 | 9.040E-02 | 0.000E+00 | NOT IDENT. |
| RE-188  | -3.066E-03 | 1.981E-01 | 3.399E-01 | 0.000E+00 | NOT IDENT. |
| W-188   | -1.237E+00 | 9.369E+00 | 1.434E+01 | 0.000E+00 | FAIL ABUN  |
| IR-192  | 1.055E-02  | 4.051E-02 | 7.142E-02 | 0.000E+00 | FAIL ABUN  |
| AU-195  | 4.036E-01  | 2.596E-01 | 4.728E-01 | 0.000E+00 | FAIL ABUN  |
| TL-200  | 0.000E+00  | 5.187E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TL-201  | 1.701E+00  | 8.312E+00 | 1.430E+01 | 0.000E+00 | NOT IDENT. |
| TL-202  | -9.426E-02 | 8.571E-02 | 1.338E-01 | 0.000E+00 | NOT IDENT. |
| HG-203  | -3.893E-02 | 4.718E-02 | 7.949E-02 | 0.000E+00 | NOT IDENT. |
| BI-207  | -8.116E-03 | 6.779E-02 | 1.152E-01 | 0.000E+00 | FAIL ABUN  |
| TL-207  | -2.594E-01 | 9.073E-01 | 1.357E+00 | 0.000E+00 | FAIL ABUN  |
| PO-209  | 7.898E+00  | 8.963E+00 | 1.601E+01 | 0.000E+00 | NOT IDENT. |
| BI-210  | -5.501E+00 | 6.822E+00 | 1.081E+01 | 0.000E+00 | NOT IDENT. |
| PB-210  | -5.501E+00 | 6.822E+00 | 1.081E+01 | 0.000E+00 | NOT IDENT. |
| PO-210  | -5.501E+00 | 6.819E+00 | 1.081E+01 | 0.000E+00 | NOT IDENT. |
| PB-211  | -1.463E+00 | 1.493E+00 | 1.887E+00 | 0.000E+00 | NOT IDENT. |
| BI-212  | 0.000E+00  | 6.740E-01 | 8.483E-01 | 0.000E+00 | FAIL ABUN  |
| PO-215  | -2.594E-01 | 9.073E-01 | 1.357E+00 | 0.000E+00 | FAIL ABUN  |
| RN-219  | -1.849E-01 | 4.950E-01 | 8.241E-01 | 0.000E+00 | FAIL ABUN  |
| RN-220  | -2.128E+01 | 3.145E+01 | 4.920E+01 | 0.000E+00 | NOT IDENT. |
| RA-223  | -2.594E-01 | 9.073E-01 | 1.357E+00 | 0.000E+00 | FAIL ABUN  |
| AC-227  | 3.793E-01  | 4.574E-01 | 8.296E-01 | 0.000E+00 | FAIL ABUN  |
| TH-227  | 3.793E-01  | 4.588E-01 | 8.296E-01 | 0.000E+00 | FAIL ABUN  |
| TH-229  | -7.081E-02 | 6.336E-01 | 1.064E+00 | 0.000E+00 | FAIL ABUN  |
| PA-231  | -1.117E-01 | 1.695E+00 | 2.970E+00 | 0.000E+00 | NOT IDENT. |
| TH-231  | -2.594E-01 | 9.073E-01 | 1.357E+00 | 0.000E+00 | FAIL ABUN  |
| U-231   | -1.800E+00 | 1.319E+00 | 1.912E+00 | 0.000E+00 | FAIL ABUN  |
| PA-233  | 1.318E-02  | 7.509E-02 | 1.320E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234  | 1.417E-01  | 3.662E-01 | 6.265E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234M | 8.111E+00  | 8.841E+00 | 1.145E+01 | 0.000E+00 | FAIL ABUN  |
| U-235   | 2.100E-02  | 2.529E-01 | 4.360E-01 | 0.000E+00 | FAIL ABUN  |
| NP-236  | -4.214E-02 | 9.108E-02 | 1.529E-01 | 0.000E+00 | NOT IDENT. |
| NP-239  | -1.729E-01 | 2.103E-01 | 3.562E-01 | 0.000E+00 | FAIL ABUN  |
| AM-241  | -9.455E-03 | 2.151E-01 | 3.541E-01 | 0.000E+00 | NOT IDENT. |
| CM-243  | -1.980E-03 | 1.073E-01 | 1.866E-01 | 0.000E+00 | FAIL ABUN  |
| AM-246  | 1.010E-02  | 1.667E-01 | 2.869E-01 | 0.000E+00 | NOT IDENT. |
| CM-247  | -2.219E-02 | 4.484E-02 | 7.413E-02 | 0.000E+00 | NOT IDENT. |
| CF-249  | -3.092E-02 | 4.770E-02 | 7.832E-02 | 0.000E+00 | NOT IDENT. |
| CF-251  | 1.792E-02  | 1.477E-01 | 2.523E-01 | 0.000E+00 | NOT IDENT. |

VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 16:06:55.03

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630014.CNF;1
Sample date       : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 14:05:59
Sample ID        : G244630014          Sample quantity  : 1.29360E+02 GRAM
Detector name    : GAM02              Detector geometry: CAN
Elapsed live time: 0 02:00:00.00      Elapsed real time: 0 02:00:03.08  0.0%
Energy tolerance : 1.50000 keV        Analyst Initials : MXR1
Abundance limit  : 75.00000          Sensitivity      : 5.00000
Batch ID        : 941639             Detector SN#     :
Matrix Spike ID  :                    LCS ID           : 1032-A
*****

```

Nuclide Line Activity Report

Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| K-40    | 1460.81 | 1348  | 10.67* | 1.028E+00 | 3.566E+01               | 3.566E+01              | 11.27             |
| CD-109  | 88.03   | 381   | 3.72*  | 5.236E+00 | 5.679E+00               | 5.809E+00              | 25.00             |
| SN-126  | 64.28   | 57    | 9.60   | 2.539E+00 | 6.775E-01               | 6.775E-01              | 126.50            |
|         | 86.94   | 381   | 8.90   | 5.236E+00 | 2.374E+00               | 2.374E+00              | 47.55             |
|         | 87.57   | 381   | 37.00* | 5.236E+00 | 5.710E-01               | 5.710E-01              | 25.00             |
| BA-137M | 661.65  | 76    | 89.98* | 2.070E+00 | 1.187E-01               | 1.188E-01              | 47.05             |
| CS-137  | 661.65  | 76    | 85.12* | 2.070E+00 | 1.255E-01               | 1.256E-01              | 47.05             |
| TL-208  | 277.35  | ----- | 6.80   | 3.991E+00 | -----                   | Line Not Found         | -----             |
|         | 510.84  | 113   | 21.60  | 2.540E+00 | 6.001E-01               | 6.001E-01              | 62.05             |
|         | 583.14  | 447   | 84.20* | 2.292E+00 | 6.715E-01               | 6.715E-01              | 17.27             |
|         | 860.37  | 57    | 12.46  | 1.652E+00 | 8.071E-01               | 8.071E-01              | 59.65             |
| BI-211  | 72.87   | ----- | 1.27   | 3.848E+00 | -----                   | Line Not Found         | -----             |
|         | 351.07  | 895   | 12.94* | 3.352E+00 | 5.990E+00               | 5.990E+00              | 15.01             |
| PB-212  | 74.81   | 533   | 10.70  | 4.052E+00 | 3.567E+00               | 3.567E+00              | 20.74             |
|         | 77.11   | 918   | 18.00  | 4.307E+00 | 3.435E+00               | 3.435E+00              | 13.22             |
|         | 87.30   | 381   | 8.00   | 5.236E+00 | 2.641E+00               | 2.641E+00              | 26.93             |
|         | 238.63  | 1677  | 44.60* | 4.457E+00 | 2.447E+00               | 2.447E+00              | 13.84             |
|         | 300.09  | 107   | 3.41   | 3.770E+00 | 2.420E+00               | 2.420E+00              | 48.16             |
| PO-212  | 74.81   | 533   | 10.70  | 4.052E+00 | 3.567E+00               | 3.567E+00              | 20.74             |
|         | 77.11   | 918   | 18.00  | 4.307E+00 | 3.435E+00               | 3.435E+00              | 13.22             |
|         | 87.30   | 381   | 8.00   | 5.236E+00 | 2.641E+00               | 2.641E+00              | 26.93             |
|         | 115.19  | ----- | 0.60   | 6.220E+00 | -----                   | Line Not Found         | -----             |
|         | 238.63  | 1677  | 44.60* | 4.457E+00 | 2.447E+00               | 2.447E+00              | 13.84             |
|         | 300.09  | 107   | 3.41   | 3.770E+00 | 2.420E+00               | 2.420E+00              | 48.16             |
| BI-214  | 609.31  | 633   | 46.30* | 2.214E+00 | 1.792E+00               | 1.792E+00              | 16.20             |
|         | 1120.29 | 154   | 15.10  | 1.298E+00 | 2.283E+00               | 2.283E+00              | 36.41             |
|         | 1764.49 | 108   | 15.80  | 9.006E-01 | 2.204E+00               | 2.204E+00              | 26.99             |
| PB-214  | 74.81   | 533   | 6.21   | 4.052E+00 | 6.146E+00               | 6.146E+00              | 19.94             |
|         | 77.11   | 918   | 10.50  | 4.307E+00 | 5.888E+00               | 5.888E+00              | 15.25             |
|         | 87.30   | 381   | 4.67   | 5.236E+00 | 4.524E+00               | 4.524E+00              | 26.16             |
|         | 241.98  | 393   | 7.49   | 4.417E+00 | 3.449E+00               | 3.449E+00              | 26.37             |
|         | 295.21  | 517   | 19.20  | 3.815E+00 | 2.050E+00               | 2.050E+00              | 18.61             |



Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| PO-214  | 351.92  | 895   | 37.20* | 3.352E+00 | 2.084E+00               | 2.084E+00              | 15.89             |
|         | 74.81   | 533   | 6.21   | 4.052E+00 | 6.146E+00               | 6.146E+00              | 19.94             |
|         | 77.11   | 918   | 10.50  | 4.307E+00 | 5.888E+00               | 5.888E+00              | 15.25             |
|         | 87.30   | 381   | 4.67   | 5.236E+00 | 4.524E+00               | 4.524E+00              | 26.16             |
|         | 241.98  | 393   | 7.49   | 4.417E+00 | 3.449E+00               | 3.449E+00              | 26.37             |
| PO-216  | 295.21  | 517   | 19.20  | 3.815E+00 | 2.050E+00               | 2.050E+00              | 18.61             |
|         | 351.92  | 895   | 37.20* | 3.352E+00 | 2.084E+00               | 2.084E+00              | 15.89             |
|         | 74.81   | 533   | 10.70  | 4.052E+00 | 3.567E+00               | 3.567E+00              | 20.74             |
|         | 77.11   | 918   | 18.00  | 4.307E+00 | 3.435E+00               | 3.435E+00              | 13.22             |
|         | 87.30   | 381   | 8.00   | 5.236E+00 | 2.641E+00               | 2.641E+00              | 26.93             |
| PO-218  | 238.63  | 1677  | 44.60* | 4.457E+00 | 2.447E+00               | 2.447E+00              | 13.84             |
|         | 300.09  | 107   | 3.41   | 3.770E+00 | 2.420E+00               | 2.420E+00              | 48.16             |
|         | 74.81   | 533   | 6.21   | 4.052E+00 | 6.146E+00               | 6.146E+00              | 19.94             |
|         | 77.11   | 918   | 10.50  | 4.307E+00 | 5.888E+00               | 5.888E+00              | 15.25             |
|         | 87.30   | 381   | 4.67   | 5.236E+00 | 4.524E+00               | 4.524E+00              | 26.16             |
| RA-224  | 241.98  | 393   | 7.49   | 4.417E+00 | 3.449E+00               | 3.449E+00              | 26.37             |
|         | 295.21  | 517   | 19.20  | 3.815E+00 | 2.050E+00               | 2.050E+00              | 18.61             |
|         | 351.92  | 895   | 37.20* | 3.352E+00 | 2.084E+00               | 2.084E+00              | 15.89             |
|         | 240.98  | 393   | 3.95*  | 4.417E+00 | 6.540E+00               | 6.540E+00              | 25.77             |
|         | 609.31  | 633   | 46.30* | 2.214E+00 | 1.792E+00               | 1.792E+00              | 16.20             |
| RA-226  | 1120.29 | 154   | 15.10  | 1.298E+00 | 2.283E+00               | 2.283E+00              | 36.41             |
|         | 1764.49 | 108   | 15.80  | 9.006E-01 | 2.204E+00               | 2.204E+00              | 26.99             |
|         | 338.32  | 313   | 11.40  | 3.450E+00 | 2.307E+00               | 2.307E+00              | 45.61             |
|         | 911.07  | 320   | 27.70* | 1.569E+00 | 2.136E+00               | 2.136E+00              | 21.09             |
|         | 969.11  | 206   | 16.60  | 1.484E+00 | 2.422E+00               | 2.422E+00              | 31.95             |
| RA-228  | 338.32  | 313   | 11.40  | 3.450E+00 | 2.307E+00               | 2.307E+00              | 45.61             |
|         | 911.07  | 320   | 27.70* | 1.569E+00 | 2.136E+00               | 2.136E+00              | 21.09             |
|         | 969.11  | 206   | 16.60  | 1.484E+00 | 2.422E+00               | 2.422E+00              | 31.95             |
|         | 74.81   | 533   | 10.70  | 4.052E+00 | 3.567E+00               | 3.621E+00              | 18.55             |
|         | 77.11   | 918   | 18.00  | 4.307E+00 | 3.435E+00               | 3.487E+00              | 13.22             |
| TH-228  | 87.30   | 381   | 8.00   | 5.236E+00 | 2.641E+00               | 2.681E+00              | 25.00             |
|         | 238.63  | 1677  | 44.60* | 4.457E+00 | 2.447E+00               | 2.485E+00              | 13.84             |
|         | 300.09  | 107   | 3.41   | 3.770E+00 | 2.420E+00               | 2.457E+00              | 75.66             |
|         | 609.31  | 633   | 46.30* | 2.214E+00 | 1.792E+00               | 1.792E+00              | 16.20             |
|         | 1120.29 | 154   | 15.10  | 1.298E+00 | 2.283E+00               | 2.283E+00              | 36.41             |
| TH-230  | 1764.49 | 108   | 15.80  | 9.006E-01 | 2.204E+00               | 2.204E+00              | 26.99             |
|         | 338.32  | 313   | 11.40  | 3.450E+00 | 2.307E+00               | 2.307E+00              | 21.27             |
|         | 911.07  | 320   | 27.70* | 1.569E+00 | 2.136E+00               | 2.136E+00              | 21.09             |
|         | 969.11  | 206   | 16.60  | 1.484E+00 | 2.422E+00               | 2.422E+00              | 31.95             |
|         | 63.29   | 57    | 3.80*  | 2.539E+00 | 1.712E+00               | 1.712E+00              | 126.86            |
| TH-234  | 92.38   | 350   | 5.41   | 5.585E+00 | 3.361E+00               | 3.361E+00              | 33.87             |
|         | 609.31  | 633   | 46.30* | 2.214E+00 | 1.792E+00               | 1.792E+00              | 16.20             |
|         | 1120.29 | 154   | 15.10  | 1.298E+00 | 2.283E+00               | 2.283E+00              | 36.41             |
|         | 1764.49 | 108   | 15.80  | 9.006E-01 | 2.204E+00               | 2.204E+00              | 26.99             |
|         | 86.50   | 381   | 12.60* | 5.236E+00 | 1.677E+00               | 1.677E+00              | 32.42             |
| NP-237  | 95.87   | ----- | 2.60   | 5.755E+00 | -----                   | Line Not Found         | -----             |
|         | 63.29   | 57    | 3.80*  | 2.539E+00 | 1.712E+00               | 1.712E+00              | 126.86            |
|         | 92.38   | 350   | 5.41   | 5.585E+00 | 3.361E+00               | 3.361E+00              | 29.90             |
|         | 74.67   | 533   | 66.00* | 4.052E+00 | 5.783E-01               | 5.783E-01              | 18.51             |
|         |         |       |        |           |                         |                        |                   |

Nuclide Type:

| Nuclide | Energy | Area  | %Abn    | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|--------|-------|---------|-----------|-------------------------|------------------------|-------------------|
|         | 86.72  | 381   | 0.34    | 5.236E+00 | 6.287E+01               | 6.288E+01              | 25.00             |
|         | 117.66 | ----- | 0.55    | 6.232E+00 | -----                   | Line Not Found         | -----             |
|         | 142.18 | ----- | 0.13    | 6.053E+00 | -----                   | Line Not Found         | -----             |
| ANH-511 | 511.00 | 113   | 100.00* | 2.540E+00 | 1.296E-01               | 1.296E-01              | 61.48             |

Flag: "\*" = Keyline

Total number of lines in spectrum 37  
Number of unidentified lines 2  
Number of lines tentatively identified by NID 35 94.59%

Nuclide Type :

| Nuclide | Hlife     | Decay | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | Decay Corr<br>2-Sigma Error | 2-Sigma<br>%Error | Flags |
|---------|-----------|-------|-------------------------|------------------------|-----------------------------|-------------------|-------|
| K-40    | 1.28E+09Y | 1.00  | 3.566E+01               | 3.566E+01              | 0.402E+01                   | 11.27             |       |
| CD-109  | 464.00D   | 1.02  | 5.679E+00               | 5.809E+00              | 1.452E+00                   | 25.00             |       |
| SN-126  | 1.00E+05Y | 1.00  | 5.710E-01               | 5.710E-01              | 1.428E-01                   | 25.00             |       |
| BA-137M | 30.17Y    | 1.00  | 1.187E-01               | 1.188E-01              | 0.559E-01                   | 47.05             |       |
| CS-137  | 30.17Y    | 1.00  | 1.255E-01               | 1.256E-01              | 0.591E-01                   | 47.05             |       |
| TL-208  | 1.41E+10Y | 1.00  | 6.715E-01               | 6.715E-01              | 1.160E-01                   | 17.27             |       |
| BI-211  | 7.04E+08Y | 1.00  | 5.990E+00               | 5.990E+00              | 0.899E+00                   | 15.01             |       |
| PB-212  | 1.41E+10Y | 1.00  | 2.447E+00               | 2.447E+00              | 0.339E+00                   | 13.84             |       |
| PO-212  | 1.41E+10Y | 1.00  | 2.447E+00               | 2.447E+00              | 0.339E+00                   | 13.84             |       |
| BI-214  | 1600.00Y  | 1.00  | 1.792E+00               | 1.792E+00              | 0.290E+00                   | 16.20             |       |
| PB-214  | 1600.00Y  | 1.00  | 2.084E+00               | 2.084E+00              | 0.331E+00                   | 15.89             |       |
| PO-214  | 1600.00Y  | 1.00  | 2.084E+00               | 2.084E+00              | 0.331E+00                   | 15.89             |       |
| PO-216  | 1.41E+10Y | 1.00  | 2.447E+00               | 2.447E+00              | 0.339E+00                   | 13.84             |       |
| PO-218  | 1600.00Y  | 1.00  | 2.084E+00               | 2.084E+00              | 0.331E+00                   | 15.89             |       |
| RA-224  | 1.41E+10Y | 1.00  | 6.540E+00               | 6.540E+00              | 1.685E+00                   | 25.77             |       |
| RA-226  | 1600.00Y  | 1.00  | 1.792E+00               | 1.792E+00              | 0.290E+00                   | 16.20             |       |
| AC-228  | 1.41E+10Y | 1.00  | 2.136E+00               | 2.136E+00              | 0.450E+00                   | 21.09             |       |
| RA-228  | 1.41E+10Y | 1.00  | 2.136E+00               | 2.136E+00              | 0.450E+00                   | 21.09             |       |
| TH-228  | 1.91Y     | 1.02  | 2.447E+00               | 2.485E+00              | 0.344E+00                   | 13.84             |       |
| TH-230  | 4.47E+09Y | 1.00  | 1.792E+00               | 1.792E+00              | 0.290E+00                   | 16.20             |       |
| TH-232  | 1.41E+10Y | 1.00  | 2.136E+00               | 2.136E+00              | 0.450E+00                   | 21.09             |       |
| TH-234  | 4.47E+09Y | 1.00  | 1.712E+00               | 1.712E+00              | 2.171E+00                   | 126.86            |       |
| U-234   | 4.47E+09Y | 1.00  | 1.792E+00               | 1.792E+00              | 0.290E+00                   | 16.20             |       |
| NP-237  | 2.14E+06Y | 1.00  | 1.677E+00               | 1.677E+00              | 0.544E+00                   | 32.42             |       |
| U-238   | 4.47E+09Y | 1.00  | 1.712E+00               | 1.712E+00              | 2.171E+00                   | 126.86            |       |
| AM-243  | 7380.00Y  | 1.00  | 5.783E-01               | 5.783E-01              | 1.070E-01                   | 18.51             |       |
| ANH-511 | 1.00E+09Y | 1.00  | 1.296E-01               | 1.296E-01              | 0.797E-01                   | 61.48             |       |

Total Activity : 9.078E+01 9.095E+01

Grand Total Activity : 9.078E+01 9.095E+01

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

| It | Energy  | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | %Eff     | Flags |
|----|---------|------|-------|------|---------|------|----|----------|------|----------|-------|
| 6  | 84.11   | 165  | 608   | 1.55 | 167.43  | 163  | 28 | 2.30E-02 | 55.3 | 5.00E+00 | T     |
| 6  | 89.74   | 230  | 425   | 1.22 | 178.69  | 163  | 28 | 3.19E-02 | 33.4 | 5.42E+00 | T     |
| 0  | 128.97  | 107  | 604   | 1.13 | 257.21  | 253  | 11 | 1.49E-02 | 90.7 | 6.20E+00 | T     |
| 0  | 185.71  | 295  | 434   | 1.11 | 370.73  | 365  | 11 | 4.10E-02 | 31.5 | 5.29E+00 | T     |
| 0  | 208.95  | 174  | 440   | 1.31 | 417.24  | 412  | 11 | 2.41E-02 | 49.2 | 4.89E+00 | T     |
| 0  | 270.01  | 181  | 309   | 1.61 | 539.44  | 533  | 13 | 2.52E-02 | 42.6 | 4.07E+00 | T     |
| 0  | 327.41  | 117  | 211   | 0.75 | 654.30  | 648  | 11 | 1.62E-02 | 51.7 | 3.53E+00 | T     |
| 0  | 462.55  | 103  | 157   | 1.47 | 924.72  | 919  | 13 | 1.43E-02 | 53.9 | 2.74E+00 | T     |
| 1  | 664.99  | 47   | 66    | 1.75 | 1329.85 | 1316 | 21 | 6.48E-03 | 74.5 | 2.06E+00 | T     |
| 0  | 727.33  | 90   | 138   | 1.30 | 1454.61 | 1449 | 13 | 1.26E-02 | 58.2 | 1.91E+00 | T     |
| 0  | 794.62  | 77   | 66    | 2.20 | 1589.27 | 1583 | 12 | 1.07E-02 | 47.8 | 1.77E+00 | T     |
| 4  | 964.15  | 55   | 64    | 1.96 | 1928.57 | 1924 | 18 | 7.67E-03 | 60.7 | 1.49E+00 | T     |
| 0  | 1000.30 | 34   | 68    | 1.22 | 2000.91 | 1994 | 13 | 4.70E-03 | **** | 1.44E+00 | T     |
| 0  | 1238.44 | 62   | 67    | 1.64 | 2477.54 | 2472 | 12 | 8.65E-03 | 59.7 | 1.18E+00 | T     |
| 0  | 1729.52 | 25   | 23    | 1.59 | 3460.50 | 3452 | 18 | 3.45E-03 | 98.3 | 9.11E-01 |       |
| 0  | 1847.47 | 20   | 5     | 1.18 | 3696.61 | 3693 | 8  | 2.81E-03 | 60.2 | 8.79E-01 |       |

Flags: "T" = Tentatively associated

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
*                               DETECTOR DATA                               *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630014.CNF;1
* Acquisition date   : 23-JAN-2010 14:05:59   Detector SN#      :
* Detector ID        : GAM02                  Sensitivity       : 5.00000
* Geometry           : CAN                    Energy tolerance  : 1.50000
* Elapsed live time  : 0 02:00:00.00          Abundance limit      : 75.00000
* Elapsed real time  : 0 02:00:03.08          Half life ratio     : 8.00000
*****
*                               SAMPLE DATA                               *
*
* Sample date        : 8-JAN-2010 12:00:00.   Nuclide Library   : SOLID
* Sample ID          : G244630014             Analyst initials    : MXR1
* Batch Number       : 941639                 Sample Quantity    : 1.29360E+02 GRAM
*****
*                               QC DATA                               *
*
* CALIB. DATE/TIME   : 29-OCT-2009 10:28:07.3MS Isotope      :
* MSD ID             :                          MSD Isotope   :
* LCS ID             : 1032-A                   LCS Isotope     :
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| K-40    | 3.566E+01              | 4.019E+00 | 6.045E-01         | 5.747E-02 | 58.986  |
| CD-109  | 5.809E+00              | 1.452E+00 | 1.332E+00         | 1.337E-01 | 4.362   |
| SN-126  | 5.710E-01              | 1.428E-01 | 1.316E-01         | 1.316E-02 | 4.338   |
| BA-137M | 1.188E-01              | 5.590E-02 | 6.906E-02         | 5.950E-03 | 1.720   |
| CS-137  | 1.256E-01              | 5.909E-02 | 7.301E-02         | 6.302E-03 | 1.720   |
| TL-208  | 6.715E-01              | 1.160E-01 | 7.384E-02         | 7.397E-03 | 9.095   |
| BI-211  | 5.990E+00              | 8.990E-01 | 4.000E-01         | 4.614E-02 | 14.976  |
| PB-212  | 2.447E+00              | 3.387E-01 | 1.047E-01         | 1.318E-02 | 23.376  |
| PO-212  | 2.447E+00              | 3.387E-01 | 1.047E-01         | 1.318E-02 | 23.376  |
| BI-214  | 1.792E+00              | 2.904E-01 | 1.313E-01         | 1.388E-02 | 13.648  |
| PB-214  | 2.084E+00              | 3.311E-01 | 1.394E-01         | 1.763E-02 | 14.945  |
| PO-214  | 2.084E+00              | 3.311E-01 | 1.394E-01         | 1.763E-02 | 14.945  |
| PO-216  | 2.447E+00              | 3.387E-01 | 1.047E-01         | 1.318E-02 | 23.376  |
| PO-218  | 2.084E+00              | 3.311E-01 | 1.394E-01         | 1.763E-02 | 14.945  |
| RA-224  | 6.540E+00              | 1.685E+00 | 1.192E+00         | 1.407E-01 | 5.486   |
| RA-226  | 1.792E+00              | 2.904E-01 | 1.313E-01         | 1.388E-02 | 13.648  |
| AC-228  | 2.136E+00              | 4.504E-01 | 2.541E-01         | 3.169E-02 | 8.404   |
| RA-228  | 2.136E+00              | 4.504E-01 | 2.541E-01         | 3.169E-02 | 8.404   |

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| TH-228  | 2.485E+00              | 3.438E-01 | 1.063E-01         | 1.338E-02 | 23.376  |
| TH-230  | 1.792E+00              | 2.904E-01 | 1.313E-01         | 1.388E-02 | 13.648  |
| TH-232  | 2.136E+00              | 4.504E-01 | 2.541E-01         | 3.169E-02 | 8.404   |
| TH-234  | 1.712E+00              | 2.171E+00 | 2.790E+00         | 4.926E-01 | 0.613   |
| U-234   | 1.792E+00              | 2.904E-01 | 1.313E-01         | 1.388E-02 | 13.648  |
| NP-237  | 1.677E+00              | 5.435E-01 | 3.918E-01         | 8.963E-02 | 4.279   |
| U-238   | 1.712E+00              | 2.171E+00 | 2.790E+00         | 4.926E-01 | 0.613   |
| AM-243  | 5.783E-01              | 1.070E-01 | 1.019E-01         | 8.910E-03 | 5.675   |
| ANH-511 | 1.296E-01              | 7.970E-02 | 5.789E-02         | 5.738E-03 | 2.239   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| BE-7    | 1.037E-01                          |              | 4.129E-01 | 6.772E-01           | 7.181E-02 | 0.153   |
| NA-22   | 3.479E-02                          |              | 5.472E-02 | 9.503E-02           | 8.426E-03 | 0.366   |
| NA-24   | -9.620E-01                         |              | 4.640E-01 | Half-Life too short |           |         |
| AL-26   | -1.487E-02                         |              | 3.595E-02 | 5.490E-02           | 4.545E-03 | -0.271  |
| TI-44   | 2.053E-01                          |              | 5.060E-02 | 8.234E-02           | 7.454E-03 | 2.493   |
| SC-46   | 4.616E-03                          |              | 4.228E-02 | 6.935E-02           | 7.050E-03 | 0.067   |
| V-48    | 2.312E-03                          |              | 8.749E-02 | 1.410E-01           | 1.379E-02 | 0.016   |
| CR-51   | 8.642E-02                          |              | 4.589E-01 | 7.702E-01           | 9.396E-02 | 0.112   |
| MN-52   | 1.172E-01                          |              | 2.373E-01 | 4.149E-01           | 3.860E-02 | 0.283   |
| MN-54   | 6.165E-03                          |              | 4.797E-02 | 7.900E-02           | 7.761E-03 | 0.078   |
| CO-56   | -2.385E-03                         |              | 5.030E-02 | 8.162E-02           | 8.081E-03 | -0.029  |
| CO-57   | -5.987E-03                         |              | 2.884E-02 | 4.709E-02           | 3.936E-03 | -0.127  |
| CO-58   | -4.464E-02                         |              | 4.855E-02 | 7.284E-02           | 7.054E-03 | -0.613  |
| FE-59   | -8.580E-02                         |              | 1.163E-01 | 1.816E-01           | 1.731E-02 | -0.473  |
| CO-60   | 1.210E-02                          |              | 4.463E-02 | 7.542E-02           | 7.027E-03 | 0.161   |
| ZN-65   | -4.131E-02                         |              | 1.355E-01 | 1.874E-01           | 1.631E-02 | -0.220  |
| GE-68   | 2.333E-01                          |              | 1.490E+00 | 2.521E+00           | 2.284E-01 | 0.093   |
| AS-73   | -1.098E-01                         |              | 1.212E+00 | 2.070E+00           | 1.713E-01 | -0.053  |
| AS-74   | -7.629E-02                         |              | 1.041E-01 | 1.650E-01           | 1.541E-02 | -0.462  |
| SE-75   | 1.699E-02                          |              | 5.772E-02 | 8.733E-02           | 1.067E-02 | 0.195   |
| BR-77   | -7.483E+00                         |              | 1.274E+01 | 1.948E+01           | 1.922E+00 | -0.384  |
| SR-82   | -1.967E-01                         |              | 4.415E-01 | 6.968E-01           | 6.575E-02 | -0.282  |
| RB-83   | -6.361E-02                         |              | 8.630E-02 | 1.303E-01           | 1.286E-02 | -0.488  |
| RB-84   | 2.630E-02                          |              | 8.117E-02 | 1.357E-01           | 1.373E-02 | 0.194   |
| KR-85   | 4.274E-01                          |              | 9.668E+00 | 1.359E+01           | 1.345E+00 | 0.031   |
| SR-85   | 2.191E-03                          |              | 4.955E-02 | 6.964E-02           | 6.894E-03 | 0.031   |
| RB-86   | -6.077E-02                         |              | 9.318E-01 | 1.547E+00           | 1.402E-01 | -0.039  |
| Y-88    | 7.227E-03                          |              | 3.947E-02 | 6.734E-02           | 5.493E-03 | 0.107   |
| ZR-88   | -1.588E-02                         |              | 3.581E-02 | 5.698E-02           | 5.702E-03 | -0.279  |
| Y-91    | -6.551E+00                         |              | 2.437E+01 | 3.944E+01           | 3.275E+00 | -0.166  |
| NB-94   | 2.407E-02                          |              | 4.061E-02 | 6.988E-02           | 6.230E-03 | 0.344   |
| NB-95   | 3.625E-02                          |              | 5.638E-02 | 9.567E-02           | 8.957E-03 | 0.379   |
| NB-95M  | 1.783E-01                          |              | 1.613E-01 | 2.535E-01           | 3.207E-02 | 0.703   |
| ZR-95   | 2.797E-02                          |              | 8.966E-02 | 1.508E-01           | 1.525E-02 | 0.185   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| NB-97   | 4.356E-02                          |              | 6.138E-02 | Half-Life too short |           |         |
| ZR-97   | 3.987E+00                          |              | 1.223E+00 | Half-Life too short |           |         |
| MO-99   | -5.368E-01                         |              | 1.413E+01 | 2.321E+01           | 3.600E+00 | -0.023  |
| TC-99M  | -1.368E+10                         |              | 2.153E+10 | Half-Life too short |           |         |
| RH-101  | 1.170E-03                          |              | 4.174E-02 | 6.622E-02           | 7.243E-03 | 0.018   |
| RH-102  | 6.628E-03                          |              | 3.674E-02 | 6.003E-02           | 6.022E-03 | 0.110   |
| RU-103  | 4.395E-02                          |              | 5.063E-02 | 8.565E-02           | 1.286E-02 | 0.513   |
| RH-106  | 9.627E-02                          |              | 3.708E-01 | 6.305E-01           | 8.613E-02 | 0.153   |
| RU-106  | 9.627E-02                          |              | 3.706E-01 | 6.305E-01           | 5.726E-02 | 0.153   |
| AG-108M | -2.247E-02                         |              | 4.162E-02 | 6.526E-02           | 6.766E-03 | -0.344  |
| AG-110M | 1.654E-02                          |              | 4.535E-02 | 6.804E-02           | 6.070E-03 | 0.243   |
| IN-111  | 8.623E-01                          |              | 1.304E+00 | 2.022E+00           | 2.402E-01 | 0.426   |
| IN-113M | 4.594E-02                          |              | 5.234E-02 | 8.995E-02           | 9.204E-03 | 0.511   |
| SN-113  | 4.594E-02                          |              | 5.234E-02 | 8.995E-02           | 9.204E-03 | 0.511   |
| IN-114M | 3.993E-02                          |              | 2.455E-01 | 3.534E-01           | 3.806E-02 | 0.113   |
| CD-115  | 3.635E+00                          |              | 1.285E+01 | 2.101E+01           | 2.065E+00 | 0.173   |
| SN-117M | 2.633E-02                          |              | 6.220E-02 | 1.025E-01           | 1.010E-02 | 0.257   |
| SB-122  | 1.998E+00                          |              | 2.470E+00 | 4.352E+00           | 4.179E-01 | 0.459   |
| I-123   | 2.469E+00                          |              | 3.181E+00 | Half-Life too short |           |         |
| TE-123M | 1.266E-02                          |              | 3.262E-02 | 5.369E-02           | 5.326E-03 | 0.236   |
| I-124   | -3.517E-01                         |              | 9.091E-01 | 1.276E+00           | 1.184E-01 | -0.276  |
| SB-124  | -9.922E-03                         |              | 7.575E-02 | 1.229E-01           | 1.118E-02 | -0.081  |
| SB-125  | -3.704E-02                         |              | 1.109E-01 | 1.765E-01           | 1.803E-02 | -0.210  |
| TE-125M | -1.338E+00                         |              | 1.014E+01 | 1.671E+01           | 1.714E+00 | -0.080  |
| I-126   | 3.679E-01                          | +            | 2.759E-01 | 3.979E-01           | 3.441E-02 | 0.925   |
| SB-126  | -4.657E-02                         |              | 1.883E-01 | 2.755E-01           | 2.492E-02 | -0.169  |
| SB-127  | 6.098E-01                          |              | 1.623E+00 | 2.762E+00           | 3.177E-01 | 0.221   |
| XE-127  | 3.106E-02                          |              | 5.902E-02 | 9.612E-02           | 1.061E-02 | 0.323   |
| I-131   | 5.561E-02                          |              | 1.357E-01 | 2.287E-01           | 2.565E-02 | 0.243   |
| TE-132  | -1.680E-01                         |              | 8.625E-01 | 1.351E+00           | 2.364E-01 | -0.124  |
| BA-133  | 1.991E-02                          |              | 5.720E-02 | 8.506E-02           | 1.269E-02 | 0.234   |
| I-133   | 4.909E-04                          |              | 3.556E-03 | Half-Life too short |           |         |
| CS-134  | 1.669E-01                          | +            | 8.139E-02 | 1.144E-01           | 1.101E-02 | 1.459   |
| CS-135  | 2.290E-01                          |              | 2.117E-01 | 3.312E-01           | 4.381E-02 | 0.692   |
| I-135   | -5.614E+09                         |              | 3.159E+09 | Half-Life too short |           |         |
| CS-136  | -6.207E-02                         |              | 1.308E-01 | 2.097E-01           | 2.024E-02 | -0.296  |
| CE-139  | 8.929E-04                          |              | 3.626E-02 | 5.867E-02           | 6.018E-03 | 0.015   |
| BA-140  | -3.012E-02                         |              | 3.178E-01 | 5.041E-01           | 1.687E-01 | -0.060  |
| LA-140  | -9.351E-02                         |              | 9.800E-02 | 1.404E-01           | 1.270E-02 | -0.666  |
| CE-141  | -6.107E-02                         |              | 7.382E-02 | 1.160E-01           | 1.084E-02 | -0.526  |
| CE-143  | 1.163E-03                          |              | 1.707E-04 | Half-Life too short |           |         |
| CE-144  | 1.063E-01                          |              | 2.648E-01 | 3.949E-01           | 6.165E-02 | 0.269   |
| PM-144  | 1.931E-02                          |              | 3.947E-02 | 6.764E-02           | 6.003E-03 | 0.285   |
| PR-144  | 1.309E+00                          |              | 2.674E+00 | 4.584E+00           | 4.066E-01 | 0.285   |
| PM-146  | 5.727E-03                          |              | 5.203E-02 | 8.495E-02           | 1.012E-02 | 0.067   |
| ND-147  | -3.269E-01                         |              | 7.106E-01 | 1.066E+00           | 1.670E-01 | -0.307  |
| PM-149  | 6.611E+00                          |              | 1.053E+02 | 1.771E+02           | 3.165E+01 | 0.037   |
| EU-152  | -7.496E-02                         |              | 1.166E-01 | 1.855E-01           | 2.181E-02 | -0.404  |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| GD-153  | -3.420E-03                         |              | 1.020E-01 | 1.513E-01           | 1.375E-02 | -0.023  |
| EU-154  | 9.845E-02                          |              | 1.531E-01 | 2.658E-01           | 3.055E-02 | 0.370   |
| EU-155  | 1.475E-01                          |              | 1.256E-01 | 2.129E-01           | 1.867E-02 | 0.693   |
| TB-160  | 6.260E-02                          |              | 1.681E-01 | 2.818E-01           | 2.848E-02 | 0.222   |
| HO-166M | -3.050E-02                         |              | 7.559E-02 | 1.212E-01           | 1.089E-02 | -0.252  |
| TM-171  | -7.007E+00                         |              | 3.591E+01 | 5.786E+01           | 4.727E+00 | -0.121  |
| LU-176  | 2.662E-03                          |              | 2.983E-02 | 4.997E-02           | 6.036E-03 | 0.053   |
| LU-177  | 4.467E+00                          | +            | 2.254E+00 | 2.486E+00           | 2.774E-01 | 1.797   |
| LU-177M | 4.944E-02                          |              | 2.186E-01 | 3.615E-01           | 3.635E-02 | 0.137   |
| HF-181  | 1.887E-03                          |              | 5.300E-02 | 8.568E-02           | 8.581E-03 | 0.022   |
| W-181   | 5.297E-02                          |              | 4.902E-01 | 7.534E-01           | 6.070E-02 | 0.070   |
| TA-182  | 2.285E-01                          |              | 2.598E-01 | 4.550E-01           | 3.838E-02 | 0.502   |
| RE-183  | -7.576E-02                         |              | 1.350E-01 | 2.081E-01           | 2.093E-02 | -0.364  |
| RE-184  | -5.987E-02                         |              | 2.782E-01 | 4.655E-01           | 5.589E-02 | -0.129  |
| OS-185  | 3.009E-02                          |              | 5.150E-02 | 8.917E-02           | 7.854E-03 | 0.337   |
| RE-188  | -3.066E-03                         |              | 2.021E-01 | 3.279E-01           | 3.169E-02 | -0.009  |
| W-188   | -1.237E+00                         |              | 9.560E+00 | 1.397E+01           | 1.717E+00 | -0.089  |
| IR-192  | 1.055E-02                          |              | 4.133E-02 | 6.966E-02           | 8.317E-03 | 0.151   |
| AU-195  | 4.036E-01                          |              | 2.649E-01 | 4.530E-01           | 4.072E-02 | 0.891   |
| TL-200  | -2.789E-04                         |              | 2.646E-04 | Half-Life too short |           |         |
| TL-201  | 1.701E+00                          |              | 8.482E+00 | 1.381E+01           | 1.421E+00 | 0.123   |
| TL-202  | -9.426E-02                         |              | 8.746E-02 | 1.312E-01           | 1.321E-02 | -0.719  |
| HG-203  | -3.893E-02                         |              | 4.815E-02 | 7.738E-02           | 9.729E-03 | -0.503  |
| BI-207  | -8.116E-03                         |              | 6.917E-02 | 1.145E-01           | 1.052E-02 | -0.071  |
| TL-207  | -2.594E-01                         |              | 9.258E-01 | 1.324E+00           | 2.575E-01 | -0.196  |
| PO-209  | 7.898E+00                          |              | 9.146E+00 | 1.588E+01           | 1.621E+00 | 0.497   |
| BI-210  | -5.501E+00                         |              | 6.962E+00 | 1.024E+01           | 9.816E-01 | -0.537  |
| PB-210  | -5.501E+00                         |              | 6.962E+00 | 1.024E+01           | 9.816E-01 | -0.537  |
| PO-210  | -5.501E+00                         |              | 6.958E+00 | 1.024E+01           | 8.942E-01 | -0.537  |
| PB-211  | -1.463E+00                         |              | 1.524E+00 | 1.848E+00           | 1.162E+00 | -0.792  |
| BI-212  | 1.163E+00                          | +            | 6.877E-01 | 8.383E-01           | 8.733E-02 | 1.388   |
| PO-215  | -2.594E-01                         |              | 9.258E-01 | 1.324E+00           | 2.575E-01 | -0.196  |
| RN-219  | -1.849E-01                         |              | 5.051E-01 | 8.068E-01           | 1.281E-01 | -0.229  |
| RN-220  | -2.128E+01                         |              | 3.209E+01 | 4.840E+01           | 4.695E+00 | -0.440  |
| RA-223  | -2.594E-01                         |              | 9.258E-01 | 1.324E+00           | 2.575E-01 | -0.196  |
| AC-227  | 3.793E-01                          |              | 4.667E-01 | 8.065E-01           | 1.412E-01 | 0.470   |
| TH-227  | 3.793E-01                          |              | 4.681E-01 | 8.065E-01           | 1.608E-01 | 0.470   |
| TH-229  | -7.081E-02                         |              | 6.465E-01 | 1.030E+00           | 1.117E-01 | -0.069  |
| PA-231  | -1.117E-01                         |              | 1.730E+00 | 2.892E+00           | 5.083E-01 | -0.039  |
| TH-231  | -2.594E-01                         |              | 9.258E-01 | 1.324E+00           | 2.575E-01 | -0.196  |
| U-231   | -1.800E+00                         |              | 1.346E+00 | 1.831E+00           | 1.685E-01 | -0.983  |
| PA-233  | 1.318E-02                          |              | 7.662E-02 | 1.287E-01           | 1.568E-02 | 0.102   |
| PA-234  | 1.417E-01                          |              | 3.736E-01 | 6.218E-01           | 1.209E-01 | 0.228   |
| PA-234M | 8.111E+00                          | +            | 9.021E+00 | 1.138E+01           | 1.238E+00 | 0.713   |
| U-235   | 2.100E-02                          |              | 2.580E-01 | 4.201E-01           | 7.460E-02 | 0.050   |
| NP-236  | -4.214E-02                         |              | 9.294E-02 | 1.475E-01           | 1.467E-02 | -0.286  |
| NP-239  | -1.729E-01                         |              | 2.146E-01 | 3.422E-01           | 2.869E-02 | -0.505  |
| AM-241  | -9.455E-03                         |              | 2.195E-01 | 3.367E-01           | 2.758E-02 | -0.028  |



---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| CM-243  | -1.980E-03                         |              | 1.095E-01 | 1.789E-01         | 1.561E-02 | -0.011  |
| AM-246  | 1.010E-02                          |              | 1.701E-01 | 2.854E-01         | 2.581E-02 | 0.035   |
| CM-247  | -2.219E-02                         |              | 4.575E-02 | 7.258E-02         | 7.281E-03 | -0.306  |
| CF-249  | -3.092E-02                         |              | 4.867E-02 | 7.663E-02         | 7.761E-03 | -0.403  |
| CF-251  | 1.792E-02                          |              | 1.507E-01 | 2.439E-01         | 2.555E-02 | 0.073   |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : SYS$SYSROOT:[ALPHA.ARCHIVE.GAMMA]G244630014          *
* Acquisition date   : 23-JAN-2010 14:05:59 Detector SN#      :             *
* Detector ID        : GAM02                      Sensitivity   : 5.000        *
* Geometry           : CAN                        Energy tolerance: 1.500        *
* Elapsed live time  : 0 02:00:00.00             Abundance limit : 75.000        *
* Elapsed real time  : 0 02:00:03.08             Half life ratio : 8.000        *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID           *
* Sample ID          : G244630014             Analyst initials: MXR1          *
* Batch Number       : 941639                 Sample Quantity : 1.2936E+02 GRAM   *
* Recovery           : 1.00000                Carrier Weight  : 0.00000        *
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 29-OCT-2009 10:28:07 MS Isotope        :             *
* MSD DPM             : 0.000                  MSD Isotope     :             *
* LCS DPM             : 0.000                  LCS Isotope     :             *
* LCSD DPM            : 0.000                  LCSD Isotope    :             *
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act Error | DLC<br>(pCi/GRAM ) | TPU       |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 3.566E+01               | 3.938E+00 | 3.026E-01          | 2.009E+00 |
| CD-109  | 5.809E+00               | 1.423E+00 | 6.966E-01          | 7.262E-01 |
| SN-126  | 5.710E-01               | 1.399E-01 | 6.886E-02          | 7.138E-02 |
| BA-137M | 1.188E-01               | 5.478E-02 | 3.502E-02          | 2.795E-02 |
| CS-137  | 1.256E-01               | 5.791E-02 | 3.701E-02          | 2.955E-02 |
| TL-208  | 6.715E-01               | 1.137E-01 | 3.751E-02          | 5.799E-02 |
| BI-211  | 5.990E+00               | 8.810E-01 | 2.048E-01          | 4.495E-01 |
| PB-212  | 2.447E+00               | 3.319E-01 | 5.394E-02          | 1.693E-01 |
| PO-212  | 2.447E+00               | 3.319E-01 | 5.394E-02          | 1.693E-01 |
| BI-214  | 1.792E+00               | 2.846E-01 | 6.667E-02          | 1.452E-01 |
| PB-214  | 2.084E+00               | 3.245E-01 | 7.140E-02          | 1.655E-01 |
| PO-214  | 2.084E+00               | 3.245E-01 | 7.140E-02          | 1.655E-01 |
| PO-216  | 2.447E+00               | 3.319E-01 | 5.394E-02          | 1.693E-01 |
| PO-218  | 2.084E+00               | 3.245E-01 | 7.140E-02          | 1.655E-01 |
| RA-224  | 6.540E+00               | 1.651E+00 | 6.141E-01          | 8.426E-01 |
| RA-226  | 1.792E+00               | 2.846E-01 | 6.667E-02          | 1.452E-01 |
| AC-228  | 2.136E+00               | 4.414E-01 | 1.282E-01          | 2.252E-01 |
| RA-228  | 2.136E+00               | 4.414E-01 | 1.282E-01          | 2.252E-01 |
| TH-228  | 2.485E+00               | 3.369E-01 | 5.476E-02          | 1.719E-01 |
| TH-230  | 1.792E+00               | 2.846E-01 | 6.667E-02          | 1.452E-01 |
| TH-232  | 2.136E+00               | 4.414E-01 | 1.282E-01          | 2.252E-01 |
| TH-234  | 1.712E+00               | 2.128E+00 | 1.467E+00          | 1.086E+00 |
| U-234   | 1.792E+00               | 2.846E-01 | 6.667E-02          | 1.452E-01 |
| NP-237  | 1.677E+00               | 5.327E-01 | 2.050E-01          | 2.718E-01 |
| U-238   | 1.712E+00               | 2.128E+00 | 1.467E+00          | 1.086E+00 |
| AM-243  | 5.783E-01               | 1.049E-01 | 5.343E-02          | 5.352E-02 |
| ANH-511 | 1.296E-01               | 7.810E-02 | 2.947E-02          | 3.985E-02 |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L Act error | DLC<br>(pCi/GRAM ) | TPU |
|---------|-------------------------------------|---------------|--------------------|-----|
|---------|-------------------------------------|---------------|--------------------|-----|

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| BE-7    | 1.037E-01  | 4.046E-01 | 3.451E-01 | 2.065E-01 | NOT IDENT. |
| NA-22   | 3.479E-02  | 5.363E-02 | 4.767E-02 | 2.736E-02 | NOT IDENT. |
| NA-24   | -9.620E+05 | 9.094E+05 | 0.000E+00 | 4.640E+05 | SHORT HLIF |
| AL-26   | -1.487E-02 | 3.523E-02 | 2.738E-02 | 1.798E-02 | NOT IDENT. |
| TI-44   | 2.053E-01  | 4.959E-02 | 4.315E-02 | 2.530E-02 | NOT IDENT. |
| SC-46   | 4.616E-03  | 4.144E-02 | 3.499E-02 | 2.114E-02 | FAIL ABUN  |
| V-48    | 2.312E-03  | 8.574E-02 | 7.103E-02 | 4.374E-02 | NOT IDENT. |
| CR-51   | 8.642E-02  | 4.497E-01 | 3.950E-01 | 2.295E-01 | NOT IDENT. |
| MN-52   | 1.172E-01  | 2.325E-01 | 2.078E-01 | 1.186E-01 | NOT IDENT. |
| MN-54   | 6.165E-03  | 4.701E-02 | 3.991E-02 | 2.399E-02 | NOT IDENT. |
| CO-56   | -2.385E-03 | 4.929E-02 | 4.122E-02 | 2.515E-02 | FAIL ABUN  |
| CO-57   | -5.987E-03 | 2.827E-02 | 2.451E-02 | 1.442E-02 | NOT IDENT. |
| CO-58   | -4.464E-02 | 4.758E-02 | 3.681E-02 | 2.428E-02 | NOT IDENT. |
| FE-59   | -8.580E-02 | 1.140E-01 | 9.130E-02 | 5.817E-02 | NOT IDENT. |
| CO-60   | 1.210E-02  | 4.374E-02 | 3.781E-02 | 2.231E-02 | NOT IDENT. |
| ZN-65   | -4.131E-02 | 1.327E-01 | 9.424E-02 | 6.773E-02 | NOT IDENT. |
| GE-68   | 2.333E-01  | 1.461E+00 | 1.268E+00 | 7.452E-01 | NOT IDENT. |
| AS-73   | -1.098E-01 | 1.188E+00 | 1.091E+00 | 6.062E-01 | NOT IDENT. |
| AS-74   | -7.629E-02 | 1.020E-01 | 8.382E-02 | 5.204E-02 | NOT IDENT. |
| SE-75   | 1.699E-02  | 5.656E-02 | 4.492E-02 | 2.886E-02 | NOT IDENT. |
| BR-77   | -7.483E+00 | 1.249E+01 | 9.912E+00 | 6.370E+00 | FAIL ABUN  |
| SR-82   | -1.967E-01 | 4.327E-01 | 3.524E-01 | 2.208E-01 | NOT IDENT. |
| RB-83   | -6.361E-02 | 8.458E-02 | 6.631E-02 | 4.315E-02 | NOT IDENT. |
| RB-84   | 2.630E-02  | 7.954E-02 | 6.847E-02 | 4.058E-02 | NOT IDENT. |
| KR-85   | 4.274E-01  | 9.474E+00 | 6.916E+00 | 4.834E+00 | NOT IDENT. |
| SR-85   | 2.191E-03  | 4.856E-02 | 3.545E-02 | 2.478E-02 | NOT IDENT. |
| RB-86   | -6.077E-02 | 9.132E-01 | 7.781E-01 | 4.659E-01 | NOT IDENT. |
| Y-88    | 7.227E-03  | 3.868E-02 | 3.358E-02 | 1.974E-02 | NOT IDENT. |
| ZR-88   | -1.588E-02 | 3.509E-02 | 2.913E-02 | 1.790E-02 | NOT IDENT. |
| Y-91    | -6.551E+00 | 2.388E+01 | 1.980E+01 | 1.218E+01 | NOT IDENT. |
| NB-94   | 2.407E-02  | 3.980E-02 | 3.539E-02 | 2.030E-02 | NOT IDENT. |
| NB-95   | 3.625E-02  | 5.525E-02 | 4.839E-02 | 2.819E-02 | NOT IDENT. |
| NB-95M  | 1.783E-01  | 1.581E-01 | 1.306E-01 | 8.066E-02 | NOT IDENT. |
| ZR-95   | 2.797E-02  | 8.786E-02 | 7.629E-02 | 4.483E-02 | NOT IDENT. |
| NB-97   | 4.356E+04  | 1.203E+05 | 0.000E+00 | 6.138E+04 | SHORT HLIF |
| ZR-97   | 3.987E+06  | 2.398E+06 | 0.000E+00 | 1.223E+06 | SHORT HLIF |
| MO-99   | -5.368E-01 | 1.385E+01 | 1.175E+01 | 7.064E+00 | NOT IDENT. |
| TC-99M  | -1.368E+16 | 4.219E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | 1.170E-03  | 4.091E-02 | 3.421E-02 | 2.087E-02 | NOT IDENT. |
| RH-102  | 6.628E-03  | 3.600E-02 | 3.059E-02 | 1.837E-02 | NOT IDENT. |
| RU-103  | 4.395E-02  | 4.962E-02 | 4.362E-02 | 2.532E-02 | FAIL ABUN  |
| RH-106  | 9.627E-02  | 3.633E-01 | 3.200E-01 | 1.854E-01 | FAIL ABUN  |
| RU-106  | 9.627E-02  | 3.632E-01 | 3.200E-01 | 1.853E-01 | FAIL ABUN  |
| AG-108M | -2.247E-02 | 4.079E-02 | 3.331E-02 | 2.081E-02 | NOT IDENT. |
| AG-110M | 1.654E-02  | 4.444E-02 | 3.450E-02 | 2.267E-02 | NOT IDENT. |
| IN-111  | 8.623E-01  | 1.277E+00 | 1.041E+00 | 6.518E-01 | NOT IDENT. |
| IN-113M | 4.594E-02  | 5.130E-02 | 4.599E-02 | 2.617E-02 | NOT IDENT. |
| SN-113  | 4.594E-02  | 5.130E-02 | 4.599E-02 | 2.617E-02 | NOT IDENT. |
| IN-114M | 3.993E-02  | 2.406E-01 | 1.827E-01 | 1.228E-01 | NOT IDENT. |
| CD-115  | 3.635E+00  | 1.259E+01 | 1.069E+01 | 6.425E+00 | NOT IDENT. |
| SN-117M | 2.633E-02  | 6.096E-02 | 5.317E-02 | 3.110E-02 | NOT IDENT. |
| SB-122  | 1.998E+00  | 2.421E+00 | 2.212E+00 | 1.235E+00 | NOT IDENT. |
| I-123   | 2.469E+06  | 6.235E+06 | 0.000E+00 | 3.181E+06 | SHORT HLIF |
| TE-123M | 1.266E-02  | 3.197E-02 | 2.783E-02 | 1.631E-02 | NOT IDENT. |
| I-124   | -3.517E-01 | 8.909E-01 | 6.481E-01 | 4.545E-01 | NOT IDENT. |
| SB-124  | -9.922E-03 | 7.424E-02 | 6.138E-02 | 3.788E-02 | FAIL ABUN  |
| SB-125  | -3.704E-02 | 1.087E-01 | 9.012E-02 | 5.546E-02 | FAIL ABUN  |
| TE-125M | -1.338E+00 | 9.938E+00 | 8.714E+00 | 5.071E+00 | NOT IDENT. |
| I-126   | 3.679E-01  | 2.704E-01 | 2.017E-01 | 1.380E-01 | FAIL ABUN  |
| SB-126  | -4.657E-02 | 1.845E-01 | 1.395E-01 | 9.415E-02 | FAIL ABUN  |
| SB-127  | 6.098E-01  | 1.590E+00 | 1.399E+00 | 8.113E-01 | NOT IDENT. |
| XE-127  | 3.106E-02  | 5.784E-02 | 4.965E-02 | 2.951E-02 | NOT IDENT. |
| I-131   | 5.561E-02  | 1.330E-01 | 1.170E-01 | 6.783E-02 | NOT IDENT. |
| TE-132  | -1.680E-01 | 8.453E-01 | 6.966E-01 | 4.313E-01 | NOT IDENT. |
| BA-133  | 1.991E-02  | 5.605E-02 | 4.355E-02 | 2.860E-02 | NOT IDENT. |
| I-133   | 4.909E+02  | 6.969E+03 | 0.000E+00 | 3.556E+03 | SHORT HLIF |
| CS-134  | 1.669E-01  | 7.976E-02 | 5.782E-02 | 4.070E-02 | FAIL ABUN  |
| CS-135  | 2.290E-01  | 2.074E-01 | 1.703E-01 | 1.058E-01 | NOT IDENT. |
| I-135   | -5.614E+15 | 6.192E+15 | 0.000E+00 | 3.159E+15 | SHORT HLIF |
| CS-136  | -6.207E-02 | 1.281E-01 | 1.055E-01 | 6.538E-02 | FAIL ABUN  |
| CE-139  | 8.929E-04  | 3.553E-02 | 3.040E-02 | 1.813E-02 | NOT IDENT. |
| BA-140  | -3.012E-02 | 3.115E-01 | 2.564E-01 | 1.589E-01 | NOT IDENT. |
| LA-140  | -9.351E-02 | 9.604E-02 | 7.016E-02 | 4.900E-02 | FAIL ABUN  |
| CE-141  | -6.107E-02 | 7.234E-02 | 6.023E-02 | 3.691E-02 | NOT IDENT. |
| CE-143  | 1.163E+03  | 3.347E+02 | 0.000E+00 | 1.707E+02 | SHORT HLIF |
| CE-144  | 1.063E-01  | 2.595E-01 | 2.053E-01 | 1.324E-01 | NOT IDENT. |
| PM-144  | 1.931E-02  | 3.868E-02 | 3.427E-02 | 1.973E-02 | NOT IDENT. |
| PR-144  | 1.309E+00  | 2.621E+00 | 2.322E+00 | 1.337E+00 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PM-146  | 5.727E-03  | 5.099E-02 | 4.333E-02 | 2.602E-02 | NOT IDENT. |
| ND-147  | -3.269E-01 | 6.964E-01 | 5.422E-01 | 3.553E-01 | FAIL ABUN  |
| PM-149  | 6.611E+00  | 1.032E+02 | 9.098E+01 | 5.267E+01 | NOT IDENT. |
| EU-152  | -7.496E-02 | 1.142E-01 | 9.503E-02 | 5.829E-02 | FAIL ABUN  |
| GD-153  | -3.420E-03 | 9.992E-02 | 7.904E-02 | 5.098E-02 | FAIL ABUN  |
| EU-154  | 9.845E-02  | 1.501E-01 | 1.333E-01 | 7.657E-02 | NOT IDENT. |
| EU-155  | 1.475E-01  | 1.231E-01 | 1.111E-01 | 6.278E-02 | FAIL ABUN  |
| TB-160  | 6.260E-02  | 1.647E-01 | 1.422E-01 | 8.403E-02 | FAIL ABUN  |
| HO-166M | -3.050E-02 | 7.408E-02 | 6.139E-02 | 3.779E-02 | FAIL ABUN  |
| TM-171  | -7.007E+00 | 3.519E+01 | 3.039E+01 | 1.796E+01 | NOT IDENT. |
| LU-176  | 2.662E-03  | 2.923E-02 | 2.564E-02 | 1.491E-02 | FAIL ABUN  |
| LU-177  | 4.467E+00  | 2.209E+00 | 1.283E+00 | 1.127E+00 | FAIL ABUN  |
| LU-177M | 4.944E-02  | 2.142E-01 | 1.847E-01 | 1.093E-01 | FAIL ABUN  |
| HF-181  | 1.887E-03  | 5.194E-02 | 4.366E-02 | 2.650E-02 | NOT IDENT. |
| W-181   | 5.297E-02  | 4.804E-01 | 3.959E-01 | 2.451E-01 | NOT IDENT. |
| TA-182  | 2.285E-01  | 2.546E-01 | 2.284E-01 | 1.299E-01 | FAIL ABUN  |
| RE-183  | -7.576E-02 | 1.323E-01 | 1.079E-01 | 6.751E-02 | FAIL ABUN  |
| RE-184  | -5.987E-02 | 2.726E-01 | 2.396E-01 | 1.391E-01 | NOT IDENT. |
| OS-185  | 3.009E-02  | 5.047E-02 | 4.523E-02 | 2.575E-02 | NOT IDENT. |
| RE-188  | -3.066E-03 | 1.981E-01 | 1.701E-01 | 1.011E-01 | NOT IDENT. |
| W-188   | -1.237E+00 | 9.369E+00 | 7.176E+00 | 4.780E+00 | FAIL ABUN  |
| IR-192  | 1.055E-02  | 4.051E-02 | 3.573E-02 | 2.067E-02 | FAIL ABUN  |
| AU-195  | 4.036E-01  | 2.596E-01 | 2.366E-01 | 1.324E-01 | FAIL ABUN  |
| TL-200  | -2.789E+02 | 5.187E+02 | 0.000E+00 | 2.646E+02 | SHORT HLIF |
| TL-201  | 1.701E+00  | 8.312E+00 | 7.155E+00 | 4.241E+00 | NOT IDENT. |
| TL-202  | -9.426E-02 | 8.571E-02 | 6.694E-02 | 4.373E-02 | NOT IDENT. |
| HG-203  | -3.893E-02 | 4.718E-02 | 3.977E-02 | 2.407E-02 | NOT IDENT. |
| BI-207  | -8.116E-03 | 6.779E-02 | 5.763E-02 | 3.459E-02 | FAIL ABUN  |
| TL-207  | -2.594E-01 | 9.073E-01 | 6.789E-01 | 4.629E-01 | FAIL ABUN  |
| PO-209  | 7.898E+00  | 8.963E+00 | 8.011E+00 | 4.573E+00 | NOT IDENT. |
| BI-210  | -5.501E+00 | 6.822E+00 | 5.410E+00 | 3.481E+00 | NOT IDENT. |
| PB-210  | -5.501E+00 | 6.822E+00 | 5.410E+00 | 3.481E+00 | NOT IDENT. |
| PO-210  | -5.501E+00 | 6.819E+00 | 5.410E+00 | 3.479E+00 | NOT IDENT. |
| PB-211  | -1.463E+00 | 1.493E+00 | 9.441E-01 | 7.618E-01 | NOT IDENT. |
| BI-212  | 1.163E+00  | 6.740E-01 | 4.244E-01 | 3.439E-01 | FAIL ABUN  |
| PO-215  | -2.594E-01 | 9.073E-01 | 6.789E-01 | 4.629E-01 | FAIL ABUN  |
| RN-219  | -1.849E-01 | 4.950E-01 | 4.123E-01 | 2.526E-01 | FAIL ABUN  |
| RN-220  | -2.128E+01 | 3.145E+01 | 2.461E+01 | 1.605E+01 | NOT IDENT. |
| RA-223  | -2.594E-01 | 9.073E-01 | 6.789E-01 | 4.629E-01 | FAIL ABUN  |
| AC-227  | 3.793E-01  | 4.574E-01 | 4.151E-01 | 2.334E-01 | FAIL ABUN  |
| TH-227  | 3.793E-01  | 4.588E-01 | 4.151E-01 | 2.341E-01 | FAIL ABUN  |
| TH-229  | -7.081E-02 | 6.336E-01 | 5.322E-01 | 3.232E-01 | FAIL ABUN  |
| PA-231  | -1.117E-01 | 1.695E+00 | 1.486E+00 | 8.650E-01 | NOT IDENT. |
| TH-231  | -2.594E-01 | 9.073E-01 | 6.789E-01 | 4.629E-01 | FAIL ABUN  |
| U-231   | -1.800E+00 | 1.319E+00 | 9.566E-01 | 6.729E-01 | FAIL ABUN  |
| PA-233  | 1.318E-02  | 7.509E-02 | 6.605E-02 | 3.831E-02 | FAIL ABUN  |
| PA-234  | 1.417E-01  | 3.662E-01 | 3.135E-01 | 1.868E-01 | FAIL ABUN  |
| PA-234M | 8.111E+00  | 8.841E+00 | 5.729E+00 | 4.511E+00 | FAIL ABUN  |
| U-235   | 2.100E-02  | 2.529E-01 | 2.182E-01 | 1.290E-01 | FAIL ABUN  |
| NP-236  | -4.214E-02 | 9.108E-02 | 7.648E-02 | 4.647E-02 | NOT IDENT. |
| NP-239  | -1.729E-01 | 2.103E-01 | 1.782E-01 | 1.073E-01 | FAIL ABUN  |
| AM-241  | -9.455E-03 | 2.151E-01 | 1.772E-01 | 1.097E-01 | NOT IDENT. |
| CM-243  | -1.980E-03 | 1.073E-01 | 9.336E-02 | 5.475E-02 | FAIL ABUN  |
| AM-246  | 1.010E-02  | 1.667E-01 | 1.436E-01 | 8.506E-02 | NOT IDENT. |
| CM-247  | -2.219E-02 | 4.484E-02 | 3.709E-02 | 2.288E-02 | NOT IDENT. |
| CF-249  | -3.092E-02 | 4.770E-02 | 3.919E-02 | 2.434E-02 | NOT IDENT. |
| CF-251  | 1.792E-02  | 1.477E-01 | 1.262E-01 | 7.536E-02 | NOT IDENT. |

\*\*\*\*\*  
 \* GEL Laboratories LLC \*  
 \* 2040 SAVAGE ROAD \*  
 \* CHARLESTON, SC 29417 \*  
 \* GAMMA SPECTROSCOPY BACKGROUND REPORT \*  
 \*\*\*\*\*

| ENERGY | MDA COUNTS |
|--------|------------|
|--------|------------|

|       |          |
|-------|----------|
| 46.50 | 303.4920 |
| 46.50 | 303.4920 |
| 46.50 | 303.4920 |
| 48.70 | 325.7780 |
| 49.72 | 301.9821 |
| 51.35 | 302.8368 |
| 52.39 | 303.8991 |
| 52.97 | 318.7866 |
| 53.15 | 318.9764 |
| 53.44 | 307.4888 |
| 54.07 | 319.1000 |
| 56.28 | 305.2289 |
| 56.28 | 305.2316 |
| 57.37 | 0.0000   |
| 57.53 | 314.9763 |
| 57.53 | 314.9782 |
| 57.60 | 315.0458 |
| 57.98 | 325.6778 |
| 57.98 | 325.6778 |
| 59.32 | 351.4965 |
| 59.32 | 351.4965 |
| 59.40 | 347.7194 |
| 59.54 | 341.4267 |
| 59.72 | 341.6147 |
| 60.01 | 341.9170 |
| 61.10 | 336.5765 |
| 61.14 | 336.6172 |
| 61.30 | 336.7789 |
| 63.00 | 410.0910 |
| 63.29 | 410.4412 |
| 63.29 | 410.4412 |
| 63.58 | 421.2237 |
| 64.28 | 427.3133 |
| 65.12 | 396.9154 |
| 65.20 | 397.0073 |
| 65.20 | 397.0073 |
| 66.05 | 422.9321 |
| 66.72 | 426.3673 |
| 66.83 | 426.5033 |
| 66.91 | 410.7997 |
| 67.20 | 411.1377 |
| 67.20 | 411.1377 |
| 67.75 | 411.7733 |
| 67.85 | 406.6093 |
| 68.90 | 417.0688 |
| 68.90 | 417.0688 |
| 69.30 | 396.3224 |
| 69.67 | 398.0576 |
| 70.82 | 424.5992 |
| 70.82 | 424.5992 |
| 70.83 | 424.6113 |
| 72.80 | 407.6920 |
| 72.87 | 407.7664 |
| 72.87 | 407.7664 |
| 74.67 | 409.7143 |
| 74.81 | 409.8630 |
| 74.81 | 409.8630 |
| 74.81 | 409.8630 |
| 74.81 | 409.8630 |
| 74.81 | 409.8630 |
| 74.81 | 409.8630 |
| 74.81 | 409.8630 |
| 74.97 | 410.0350 |
| 75.28 | 410.3674 |
| 75.70 | 410.8160 |
| 77.11 | 412.3153 |
| 77.11 | 412.3153 |

|        |          |
|--------|----------|
| 77.11  | 412.3153 |
| 77.11  | 412.3153 |
| 77.11  | 412.3153 |
| 77.11  | 412.3153 |
| 77.11  | 412.3153 |
| 78.38  | 399.1695 |
| 79.62  | 354.1139 |
| 79.80  | 365.1733 |
| 79.80  | 365.1733 |
| 80.11  | 365.4575 |
| 80.18  | 365.5209 |
| 80.30  | 354.7169 |
| 80.30  | 354.7169 |
| 80.57  | 354.9550 |
| 81.00  | 355.3339 |
| 81.07  | 358.1292 |
| 81.07  | 358.1292 |
| 81.07  | 358.1292 |
| 81.07  | 358.1292 |
| 82.60  | 403.3864 |
| 83.37  | 358.3192 |
| 83.78  | 358.6792 |
| 83.78  | 358.6792 |
| 83.78  | 358.6792 |
| 83.78  | 358.6792 |
| 84.21  | 359.0511 |
| 84.90  | 359.6477 |
| 85.43  | 360.1051 |
| 86.29  | 360.8409 |
| 86.50  | 361.0219 |
| 86.54  | 361.0557 |
| 86.59  | 361.0975 |
| 86.72  | 361.2088 |
| 86.79  | 361.2665 |
| 86.94  | 361.3958 |
| 87.30  | 361.7040 |
| 87.30  | 361.7040 |
| 87.30  | 361.7040 |
| 87.30  | 361.7040 |
| 87.30  | 361.7040 |
| 87.30  | 361.7040 |
| 87.30  | 361.7040 |
| 87.57  | 361.9327 |
| 87.88  | 362.1953 |
| 88.03  | 362.3225 |
| 88.36  | 362.6010 |
| 88.47  | 362.6944 |
| 89.95  | 363.9394 |
| 91.11  | 364.9079 |
| 92.29  | 365.8883 |
| 92.38  | 365.9619 |
| 92.38  | 365.9619 |
| 93.35  | 366.7614 |
| 94.00  | 367.2963 |
| 94.67  | 324.5641 |
| 94.67  | 324.5676 |
| 94.90  | 371.3266 |
| 94.90  | 371.3266 |
| 94.90  | 371.3266 |
| 94.90  | 371.3266 |
| 95.87  | 397.5917 |
| 95.87  | 397.5917 |
| 96.73  | 371.4099 |
| 97.43  | 356.3573 |
| 98.44  | 293.6781 |
| 98.44  | 293.6781 |
| 98.88  | 300.0335 |
| 99.55  | 320.4335 |
| 99.55  | 320.4335 |
| 99.86  | 364.4138 |
| 100.00 | 364.5229 |
| 100.10 | 370.3165 |
| 103.18 | 363.1447 |
| 103.76 | 332.8876 |
| 105.00 | 318.3531 |
| 105.31 | 319.5193 |
| 108.00 | 344.5020 |
| 109.28 | 330.8380 |

|        |          |
|--------|----------|
| 111.00 | 334.8929 |
| 111.00 | 334.8929 |
| 111.76 | 332.4719 |
| 112.95 | 322.5006 |
| 115.19 | 313.1103 |
| 116.30 | 339.3532 |
| 117.00 | 348.6722 |
| 117.00 | 348.6722 |
| 117.66 | 353.0545 |
| 121.11 | 318.6261 |
| 121.62 | 334.8249 |
| 121.78 | 330.9489 |
| 122.06 | 331.1200 |
| 122.32 | 362.1190 |
| 122.32 | 362.1190 |
| 122.32 | 362.1190 |
| 122.32 | 362.1190 |
| 123.07 | 347.6776 |
| 127.23 | 344.7946 |
| 129.76 | 353.9136 |
| 131.20 | 330.5526 |
| 133.02 | 330.0826 |
| 133.54 | 328.8582 |
| 135.34 | 332.9343 |
| 136.00 | 338.4101 |
| 136.25 | 336.5141 |
| 136.48 | 336.6467 |
| 140.51 | 374.8914 |
| 140.51 | 0.0000   |
| 142.18 | 338.8562 |
| 142.65 | 342.2095 |
| 143.76 | 345.9356 |
| 144.24 | 344.1379 |
| 144.24 | 344.1379 |
| 144.24 | 344.1379 |
| 144.24 | 344.1379 |
| 145.22 | 371.6028 |
| 145.44 | 371.7379 |
| 147.16 | 365.5065 |
| 152.43 | 352.8792 |
| 152.70 | 365.6008 |
| 153.22 | 335.4948 |
| 154.21 | 313.9615 |
| 154.21 | 313.9615 |
| 154.21 | 313.9615 |
| 154.21 | 313.9615 |
| 155.03 | 336.4420 |
| 156.02 | 355.9136 |
| 158.56 | 287.5335 |
| 159.00 | 0.0000   |
| 159.00 | 294.0741 |
| 160.31 | 324.3375 |
| 161.27 | 307.8241 |
| 162.32 | 328.5105 |
| 162.64 | 326.5404 |
| 163.35 | 314.1097 |
| 163.89 | 312.2335 |
| 165.85 | 333.4487 |
| 167.43 | 326.7245 |
| 171.28 | 328.5582 |
| 171.86 | 308.3496 |
| 172.10 | 303.0617 |
| 176.55 | 298.4761 |
| 176.60 | 298.4957 |
| 181.06 | 316.1960 |
| 184.41 | 287.4820 |
| 185.71 | 287.9884 |
| 186.00 | 288.1030 |
| 190.27 | 298.6084 |
| 192.34 | 269.4867 |
| 193.63 | 331.0424 |
| 197.04 | 306.8573 |
| 198.01 | 307.2433 |
| 198.60 | 311.9479 |
| 200.40 | 328.3612 |
| 201.83 | 354.7832 |
| 202.84 | 302.4034 |
| 205.31 | 351.8411 |

|        |          |
|--------|----------|
| 208.36 | 299.9797 |
| 208.81 | 300.1495 |
| 209.75 | 300.4973 |
| 209.75 | 300.4973 |
| 210.97 | 264.0411 |
| 215.65 | 262.7017 |
| 216.55 | 276.7082 |
| 218.09 | 276.0772 |
| 222.10 | 305.0261 |
| 223.80 | 262.9640 |
| 226.40 | 274.1783 |
| 227.00 | 251.2175 |
| 227.08 | 251.2418 |
| 227.20 | 251.2749 |
| 228.16 | 272.4216 |
| 228.18 | 272.4287 |
| 228.18 | 272.4287 |
| 231.56 | 0.0000   |
| 235.69 | 262.3889 |
| 236.00 | 256.8679 |
| 236.00 | 256.8679 |
| 238.63 | 237.5684 |
| 238.63 | 237.5684 |
| 238.63 | 237.5684 |
| 238.63 | 237.5684 |
| 239.00 | 237.6652 |
| 240.98 | 238.1925 |
| 241.98 | 224.6787 |
| 241.98 | 224.6787 |
| 241.98 | 224.6787 |
| 244.69 | 216.8484 |
| 245.39 | 198.5771 |
| 247.94 | 236.4679 |
| 248.90 | 240.2751 |
| 249.79 | 219.1275 |
| 252.40 | 232.2508 |
| 252.85 | 236.8324 |
| 252.85 | 236.8324 |
| 254.15 | 0.0000   |
| 256.20 | 218.8464 |
| 256.20 | 218.8464 |
| 260.50 | 245.0681 |
| 260.90 | 246.0732 |
| 262.80 | 199.2096 |
| 264.65 | 201.2480 |
| 268.24 | 206.3541 |
| 268.79 | 207.1956 |
| 269.46 | 207.3382 |
| 269.46 | 207.3382 |
| 269.46 | 207.3382 |
| 269.46 | 207.3382 |
| 271.23 | 218.6426 |
| 273.65 | 267.4007 |
| 276.40 | 200.9464 |
| 277.35 | 200.7444 |
| 277.60 | 205.3789 |
| 277.60 | 205.3789 |
| 278.00 | 201.7920 |
| 278.60 | 200.9951 |
| 279.20 | 230.5021 |
| 279.53 | 230.5787 |
| 280.46 | 230.7893 |
| 281.68 | 202.5305 |
| 283.67 | 183.5564 |
| 284.30 | 187.3636 |
| 285.00 | 208.7334 |
| 285.90 | 189.5036 |
| 286.10 | 189.5412 |
| 286.10 | 189.5412 |
| 287.40 | 183.0372 |
| 288.45 | 0.0000   |
| 290.67 | 193.1687 |
| 290.80 | 193.1941 |
| 291.72 | 220.1355 |
| 293.26 | 0.0000   |
| 293.70 | 174.1711 |
| 295.21 | 174.4222 |
| 295.21 | 174.4222 |



|        |          |
|--------|----------|
| 295.21 | 174.4222 |
| 295.96 | 174.5478 |
| 296.50 | 174.6362 |
| 297.23 | 174.7561 |
| 298.57 | 174.9787 |
| 299.80 | 175.1812 |
| 299.80 | 175.1812 |
| 300.09 | 175.2298 |
| 300.09 | 175.2298 |
| 300.09 | 175.2298 |
| 300.09 | 175.2298 |
| 300.12 | 175.2326 |
| 301.29 | 163.6064 |
| 302.84 | 195.4094 |
| 303.76 | 176.0199 |
| 303.91 | 179.0520 |
| 304.40 | 176.1227 |
| 304.40 | 176.1227 |
| 304.84 | 159.6289 |
| 306.84 | 184.8207 |
| 308.46 | 196.4282 |
| 311.98 | 175.2695 |
| 316.51 | 171.2357 |
| 318.01 | 189.5656 |
| 319.02 | 184.9684 |
| 319.41 | 188.8487 |
| 320.08 | 183.2344 |
| 323.87 | 196.1125 |
| 323.87 | 196.1125 |
| 323.87 | 196.1125 |
| 323.87 | 196.1125 |
| 325.23 | 182.5412 |
| 328.77 | 181.5719 |
| 333.44 | 160.2932 |
| 334.20 | 173.1516 |
| 334.20 | 173.1516 |
| 334.30 | 173.1680 |
| 338.28 | 187.1425 |
| 338.28 | 187.1425 |
| 338.28 | 187.1425 |
| 338.28 | 187.1425 |
| 338.32 | 187.1484 |
| 338.32 | 187.1484 |
| 338.32 | 187.1484 |
| 340.50 | 130.5671 |
| 340.57 | 143.0110 |
| 344.27 | 176.4015 |
| 345.85 | 173.3183 |
| 350.59 | 0.0000   |
| 351.07 | 165.6451 |
| 351.92 | 165.7611 |
| 351.92 | 165.7611 |
| 351.92 | 165.7611 |
| 355.39 | 0.0000   |
| 356.01 | 143.2917 |
| 364.48 | 134.7694 |
| 366.43 | 131.0110 |
| 367.43 | 144.0287 |
| 367.94 | 0.0000   |
| 369.80 | 147.2864 |
| 374.96 | 126.9050 |
| 383.85 | 134.8322 |
| 387.95 | 158.4757 |
| 388.63 | 142.3996 |
| 391.69 | 120.4617 |
| 391.69 | 120.4617 |
| 392.90 | 139.8235 |
| 398.62 | 140.4279 |
| 400.65 | 123.3171 |
| 401.10 | 139.6695 |
| 401.81 | 151.9852 |
| 402.60 | 157.1770 |
| 404.84 | 188.1075 |
| 410.95 | 161.2295 |
| 411.60 | 182.8835 |
| 413.65 | 141.9966 |
| 414.70 | 147.2549 |
| 415.30 | 145.2578 |

|        |          |
|--------|----------|
| 415.76 | 153.5517 |
| 417.63 | 0.0000   |
| 418.52 | 121.8477 |
| 423.70 | 132.6660 |
| 427.08 | 125.7136 |
| 427.89 | 132.0229 |
| 432.53 | 135.5840 |
| 433.93 | 146.1566 |
| 439.47 | 146.7227 |
| 439.56 | 150.9247 |
| 439.89 | 145.7171 |
| 443.98 | 123.0021 |
| 444.90 | 138.8582 |
| 445.03 | 138.8703 |
| 445.03 | 138.8703 |
| 445.03 | 138.8703 |
| 445.03 | 138.8703 |
| 453.90 | 115.3684 |
| 463.38 | 122.4946 |
| 468.07 | 124.7986 |
| 473.00 | 144.7136 |
| 475.06 | 120.2202 |
| 475.35 | 118.0952 |
| 476.78 | 118.2060 |
| 477.59 | 123.6440 |
| 477.96 | 127.9755 |
| 482.03 | 117.5289 |
| 484.57 | 135.0021 |
| 487.03 | 82.2100  |
| 490.36 | 0.0000   |
| 492.35 | 113.9642 |
| 497.08 | 99.0647  |
| 507.63 | 0.0000   |
| 510.53 | 0.0000   |
| 510.84 | 118.5807 |
| 511.00 | 118.5914 |
| 511.85 | 118.6540 |
| 511.85 | 118.6540 |
| 513.99 | 119.6881 |
| 513.99 | 119.6881 |
| 520.41 | 119.2720 |
| 520.65 | 113.7690 |
| 527.90 | 94.2969  |
| 528.96 | 0.0000   |
| 529.64 | 93.2849  |
| 529.87 | 0.0000   |
| 531.02 | 107.8107 |
| 537.32 | 103.7509 |
| 543.00 | 122.0063 |
| 546.56 | 0.0000   |
| 549.76 | 109.0007 |
| 552.65 | 91.8498  |
| 555.20 | 95.5915  |
| 563.23 | 99.6526  |
| 563.90 | 97.8803  |
| 568.70 | 97.2352  |
| 569.32 | 100.9054 |
| 569.50 | 100.9162 |
| 569.67 | 110.0196 |
| 573.80 | 93.8693  |
| 574.00 | 93.8794  |
| 574.64 | 103.0297 |
| 578.91 | 132.5214 |
| 579.30 | 0.0000   |
| 583.14 | 111.4575 |
| 585.48 | 81.0247  |
| 591.81 | 98.4865  |
| 592.07 | 98.5022  |
| 593.00 | 81.9730  |
| 595.88 | 103.3184 |
| 600.56 | 87.8564  |
| 602.52 | 0.0000   |
| 602.71 | 115.7349 |
| 602.71 | 115.7349 |
| 603.60 | 115.7898 |
| 604.41 | 111.2080 |
| 604.70 | 98.8672  |
| 609.31 | 99.4191  |

|        |          |
|--------|----------|
| 609.31 | 99.4191  |
| 609.31 | 99.4191  |
| 609.31 | 99.4191  |
| 610.33 | 99.4739  |
| 612.46 | 100.8272 |
| 614.37 | 94.7168  |
| 618.01 | 91.2692  |
| 621.84 | 86.9832  |
| 621.84 | 86.9832  |
| 631.29 | 65.7942  |
| 633.02 | 79.0228  |
| 633.10 | 79.0269  |
| 634.78 | 73.4449  |
| 635.90 | 73.4868  |
| 636.97 | 68.8153  |
| 645.85 | 89.9601  |
| 646.12 | 84.2893  |
| 656.30 | 82.5005  |
| 657.75 | 79.3844  |
| 657.90 | 0.0000   |
| 661.65 | 90.6744  |
| 661.65 | 90.6744  |
| 664.57 | 0.0000   |
| 666.33 | 97.2634  |
| 666.33 | 97.2634  |
| 675.00 | 98.9590  |
| 677.61 | 100.0467 |
| 685.20 | 83.0375  |
| 692.80 | 95.9377  |
| 695.00 | 80.5177  |
| 696.49 | 79.6037  |
| 696.49 | 79.6037  |
| 697.00 | 81.5657  |
| 697.49 | 84.4979  |
| 698.33 | 96.1915  |
| 698.50 | 99.1138  |
| 699.00 | 102.0546 |
| 702.63 | 87.6248  |
| 706.10 | 96.5443  |
| 706.58 | 0.0000   |
| 706.67 | 97.5464  |
| 709.31 | 89.8550  |
| 711.68 | 100.7092 |
| 713.82 | 85.1500  |
| 717.42 | 99.9978  |
| 720.50 | 89.7634  |
| 721.93 | 0.0000   |
| 722.20 | 90.0665  |
| 722.78 | 93.3672  |
| 722.78 | 93.3672  |
| 722.89 | 93.3718  |
| 722.95 | 93.3741  |
| 723.30 | 93.3904  |
| 724.18 | 103.2620 |
| 727.18 | 88.6333  |
| 733.00 | 75.7027  |
| 735.90 | 93.9308  |
| 739.58 | 85.1728  |
| 742.81 | 75.3803  |
| 744.21 | 88.3286  |
| 747.13 | 100.3712 |
| 751.79 | 85.6431  |
| 752.31 | 87.6541  |
| 753.82 | 82.7305  |
| 755.35 | 79.7930  |
| 756.15 | 85.8089  |
| 756.87 | 85.8362  |
| 763.93 | 134.1636 |
| 765.79 | 93.1885  |
| 766.42 | 86.1995  |
| 766.84 | 90.2241  |
| 776.49 | 79.5323  |
| 778.00 | 78.5770  |
| 778.57 | 81.6190  |
| 778.89 | 89.6931  |
| 783.80 | 78.7750  |
| 785.46 | 78.8303  |
| 792.07 | 81.0820  |

|         |         |
|---------|---------|
| 795.84  | 55.8339 |
| 796.30  | 54.1523 |
| 798.80  | 83.0085 |
| 801.93  | 99.5156 |
| 805.60  | 71.3552 |
| 810.29  | 84.7731 |
| 810.76  | 87.8540 |
| 815.85  | 60.4015 |
| 817.79  | 56.3522 |
| 818.51  | 54.3185 |
| 819.60  | 59.4698 |
| 826.30  | 70.9457 |
| 828.27  | 0.0000  |
| 831.60  | 91.7095 |
| 831.96  | 86.5696 |
| 834.83  | 88.7358 |
| 836.80  | 0.0000  |
| 846.75  | 79.8349 |
| 848.13  | 77.8052 |
| 856.28  | 0.0000  |
| 856.80  | 62.4609 |
| 860.37  | 68.8053 |
| 867.32  | 65.3366 |
| 867.82  | 60.4114 |
| 871.10  | 59.6760 |
| 873.19  | 61.8204 |
| 874.81  | 67.1031 |
| 875.33  | 0.0000  |
| 876.40  | 67.1438 |
| 879.36  | 60.9198 |
| 880.27  | 56.7396 |
| 880.51  | 63.0498 |
| 881.50  | 56.7659 |
| 883.24  | 56.8055 |
| 884.67  | 64.2049 |
| 889.25  | 50.6109 |
| 896.60  | 57.0995 |
| 898.02  | 57.1311 |
| 899.00  | 63.5024 |
| 903.28  | 68.9070 |
| 911.07  | 66.9867 |
| 911.07  | 66.9867 |
| 911.07  | 66.9867 |
| 919.63  | 58.6698 |
| 920.93  | 58.6980 |
| 925.00  | 67.3389 |
| 925.24  | 67.3451 |
| 926.50  | 62.0300 |
| 935.52  | 66.5319 |
| 937.48  | 86.9840 |
| 944.10  | 71.0483 |
| 946.00  | 61.4030 |
| 949.00  | 58.2359 |
| 962.29  | 57.7969 |
| 964.01  | 70.4828 |
| 966.15  | 78.1348 |
| 968.20  | 65.1606 |
| 969.11  | 52.5070 |
| 969.11  | 52.5070 |
| 969.11  | 52.5070 |
| 977.42  | 55.5696 |
| 980.50  | 52.3582 |
| 983.50  | 62.2422 |
| 989.30  | 57.9933 |
| 996.32  | 60.3322 |
| 1001.03 | 67.7565 |
| 1001.68 | 64.1083 |
| 1004.76 | 53.4381 |
| 1021.30 | 0.0000  |
| 1024.50 | 0.0000  |
| 1034.80 | 64.8474 |
| 1036.00 | 70.4336 |
| 1037.82 | 63.9856 |
| 1038.57 | 56.5819 |
| 1038.76 | 0.0000  |
| 1045.16 | 71.5828 |
| 1046.59 | 73.4775 |
| 1048.07 | 69.7937 |

|         |         |
|---------|---------|
| 1050.47 | 69.8486 |
| 1050.47 | 69.8486 |
| 1062.04 | 71.9901 |
| 1063.62 | 77.6403 |
| 1076.63 | 61.0645 |
| 1077.35 | 60.1406 |
| 1078.86 | 61.1094 |
| 1085.78 | 62.1919 |
| 1099.22 | 80.4449 |
| 1112.02 | 68.4258 |
| 1112.84 | 84.7394 |
| 1115.52 | 86.4429 |
| 1120.29 | 65.7460 |
| 1120.29 | 65.7460 |
| 1120.29 | 65.7460 |
| 1120.29 | 65.7460 |
| 1120.51 | 65.7516 |
| 1121.28 | 65.3599 |
| 1124.00 | 0.0000  |
| 1129.67 | 69.8521 |
| 1131.51 | 0.0000  |
| 1147.95 | 0.0000  |
| 1167.94 | 59.9641 |
| 1173.22 | 80.4063 |
| 1175.09 | 64.9417 |
| 1177.93 | 68.8795 |
| 1189.05 | 72.0338 |
| 1204.90 | 86.0700 |
| 1205.75 | 0.0000  |
| 1213.00 | 78.4342 |
| 1221.42 | 76.6670 |
| 1230.97 | 99.8820 |
| 1235.34 | 82.9028 |
| 1236.41 | 0.0000  |
| 1238.25 | 87.9100 |
| 1246.25 | 69.9651 |
| 1260.41 | 0.0000  |
| 1271.85 | 65.8281 |
| 1274.45 | 50.9045 |
| 1274.54 | 50.9066 |
| 1291.56 | 38.1144 |
| 1298.22 | 0.0000  |
| 1312.09 | 52.4570 |
| 1325.50 | 45.5640 |
| 1325.50 | 45.5640 |
| 1332.49 | 33.4780 |
| 1333.61 | 30.4443 |
| 1360.21 | 34.7540 |
| 1362.66 | 0.0000  |
| 1365.15 | 32.7526 |
| 1368.21 | 43.0237 |
| 1368.53 | 0.0000  |
| 1376.25 | 34.9034 |
| 1384.27 | 40.1219 |
| 1394.10 | 25.7863 |
| 1395.20 | 26.8252 |
| 1407.95 | 32.0911 |
| 1434.06 | 17.7180 |
| 1436.60 | 35.4596 |
| 1457.56 | 0.0000  |
| 1460.81 | 24.1361 |
| 1489.15 | 25.3652 |
| 1509.49 | 21.2443 |
| 1596.49 | 30.6797 |
| 1620.62 | 18.6991 |
| 1678.03 | 0.0000  |
| 1691.02 | 13.3003 |
| 1691.02 | 13.3003 |
| 1706.46 | 0.0000  |
| 1750.46 | 0.0000  |
| 1764.49 | 8.4473  |
| 1764.49 | 8.4473  |
| 1764.49 | 8.4473  |
| 1764.49 | 8.4473  |
| 1770.23 | 21.9899 |
| 1771.40 | 16.9196 |
| 1791.20 | 0.0000  |
| 1808.65 | 17.5411 |

1836.01

13.7212

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G244630014

|                             |            |      |
|-----------------------------|------------|------|
| Total Uranium Activity      | 5.1016E+00 | ug/g |
| Total Uranium Counting Unc. | 6.3317E+00 | ug/g |
| Total Uranium Tpu           | 3.2305E-06 | ug/g |
| Total Uranium Mda           | 4.3652E+00 | ug/g |

```

*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON , SC 29417              *
*               GROSS GAMMA REPORT                 *
*
*****
*
*  BATCH ID      : 941639          SAMPLE ID   : G244630014
*  ANALYST       : MXR1            DETECTOR    : GAM02
*  SAMPLE DATE   : 8-JAN-2010 12:00:00.00  COUNT TIME : 0 02:00:00.00
*  ANALYSIS DATE: 23-JAN-2010 14:05:59.65  SAMPLE ALQT: 129.360 GRAM
*
*****

```

```

GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.322E+01
GROSS GAMMA ERROR (pCi/GRAM ) : 1.859E+00
GROSS GAMMA MDA (pCi/GRAM ) : 4.500E+00
GROSS GAMMA DLC (pCi/GRAM ) : 2.184E+00

```



## VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 16:07:54.03

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration   : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630015.CNF;1
Sample date     : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 14:06:29
Sample ID       : G244630015           Sample quantity  : 1.24030E+02 GRAM
Detector name   : GAM15               Detector geometry: CAN
Elapsed live time: 0 02:00:00.00      Elapsed real time: 0 02:00:01.34  0.0%
Energy tolerance : 1.50000 keV        Analyst Initials  : MXR1
Abundance limit  : 75.00000           Sensitivity      : 5.00000
Batch ID        : 941639              Detector SN#     :
Matrix Spike ID :                      LCS ID           : 1032-A
*****

```

| Pk | It | Energy   | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err  | Fit      |
|----|----|----------|------|-------|------|---------|------|----|----------|-------|----------|
| 1  | 0  | 62.12*   | 94   | 421   | 1.61 | 124.73  | 121  | 9  | 1.30E-02 | 41.7  |          |
| 2  | 2  | 74.03    | 307  | 490   | 1.58 | 148.55  | 143  | 16 | 4.26E-02 | 14.6  | 3.96E+00 |
| 3  | 2  | 76.50*   | 535  | 495   | 1.42 | 153.48  | 143  | 16 | 7.43E-02 | 9.0   |          |
| 4  | 2  | 86.76*   | 150  | 555   | 1.33 | 174.00  | 168  | 23 | 2.09E-02 | 27.1  | 1.72E+00 |
| 5  | 2  | 92.21*   | 354  | 509   | 1.62 | 184.88  | 168  | 23 | 4.92E-02 | 14.5  |          |
| 6  | 0  | 128.30   | 147  | 527   | 1.61 | 257.04  | 250  | 13 | 2.04E-02 | 33.3  |          |
| 7  | 0  | 185.23*  | 235  | 512   | 1.42 | 370.85  | 364  | 14 | 3.26E-02 | 22.0  |          |
| 8  | 0  | 209.03   | 126  | 386   | 1.37 | 418.44  | 413  | 12 | 1.75E-02 | 32.6  |          |
| 9  | 3  | 238.04*  | 1172 | 243   | 1.33 | 476.42  | 470  | 19 | 1.63E-01 | 3.9   | 7.61E-01 |
| 10 | 3  | 241.00   | 326  | 277   | 2.02 | 482.34  | 470  | 19 | 4.53E-02 | 15.9  |          |
| 11 | 0  | 269.56   | 90   | 187   | 1.17 | 539.44  | 535  | 9  | 1.25E-02 | 29.4  |          |
| 12 | 0  | 294.40*  | 350  | 193   | 1.26 | 589.09  | 585  | 10 | 4.85E-02 | 9.3   |          |
| 13 | 0  | 327.35   | 116  | 282   | 1.48 | 654.98  | 648  | 15 | 1.61E-02 | 33.0  |          |
| 14 | 0  | 337.58   | 259  | 211   | 1.56 | 675.43  | 670  | 12 | 3.59E-02 | 12.8  |          |
| 15 | 0  | 351.33*  | 567  | 234   | 1.41 | 702.92  | 696  | 15 | 7.88E-02 | 7.4   |          |
| 16 | 0  | 462.06   | 71   | 141   | 1.50 | 924.29  | 918  | 14 | 9.91E-03 | 37.1  |          |
| 17 | 0  | 510.42*  | 133  | 136   | 2.14 | 1020.98 | 1012 | 19 | 1.85E-02 | 25.8  |          |
| 18 | 0  | 582.60*  | 346  | 103   | 1.54 | 1165.30 | 1160 | 12 | 4.81E-02 | 8.3   |          |
| 19 | 0  | 608.75*  | 393  | 92    | 1.67 | 1217.57 | 1212 | 12 | 5.45E-02 | 7.3   |          |
| 20 | 0  | 660.91   | 365  | 144   | 1.32 | 1321.85 | 1315 | 15 | 5.07E-02 | 8.8   |          |
| 21 | 0  | 727.25*  | 62   | 134   | 1.95 | 1454.50 | 1449 | 18 | 8.61E-03 | 44.9  |          |
| 22 | 0  | 794.90*  | 37   | 67    | 1.51 | 1589.75 | 1584 | 12 | 5.10E-03 | 48.1  |          |
| 23 | 0  | 910.51*  | 266  | 61    | 1.79 | 1820.93 | 1811 | 16 | 3.70E-02 | 9.0   |          |
| 24 | 1  | 963.90   | 77   | 26    | 2.18 | 1927.67 | 1919 | 24 | 1.07E-02 | 18.9  | 1.24E+00 |
| 25 | 1  | 968.37*  | 164  | 26    | 2.19 | 1936.61 | 1919 | 24 | 2.28E-02 | 10.7  |          |
| 26 | 0  | 1119.89* | 86   | 71    | 1.72 | 2239.59 | 2231 | 15 | 1.19E-02 | 24.5  |          |
| 27 | 0  | 1460.16* | 917  | 30    | 1.82 | 2920.04 | 2910 | 20 | 1.27E-01 | 3.6   |          |
| 28 | 0  | 1511.89* | 11   | 31    | 3.84 | 3023.49 | 3011 | 20 | 1.47E-03 | 135.0 |          |
| 29 | 0  | 1764.05* | 63   | 19    | 2.65 | 3527.79 | 3518 | 16 | 8.71E-03 | 21.2  |          |

Flag: "\*" = Peak area was modified by background subtraction

## VMS Nuclide Identification Report V3.1 Generated 23-JAN-2010 16:07:57

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630015.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 8-JAN-2010 12:00:00   Acquisition date : 23-JAN-2010 14:06:29
Sample ID        : G244630015             Sample quantity  : 124.03 GRAM
Sample type      : SOLID                  Sample geometry   :
Detector name    : GAMMA15               Detector geometry: CAN
Elapsed live time: 0 02:00:00.00          Elapsed real time: 0 02:00:01.34   0.0%
Peak Width (FWHM): 3.00                  Confidence level  : 5.00 %
Energy tolerance : 1.50 keV              Half life ratio   : 8.00
Errors propagated: Yes                   Systematic Error  : 0.00 %
Efficiency type  : Empirical              Efficiencies at   : Peak Energy
Abundance limit  : 75.00                 WTM error limit   : 3.00

```

## Full Combined Activity-MDA Report

## ---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| K-40    | +         | 1460.81      | *   | 2.604E+01           | 2.750E+00 | 5.735E-01      | 4.384E-02 | 45.408  |
| CD-109  | +         | 88.03        | *   | 2.830E+00           | 1.569E+00 | 1.784E+00      | 2.063E-01 | 1.587   |
| SN-126  |           | 64.28        |     | 8.678E-01           | 1.096E+00 | 1.633E+00      | 2.799E-01 | 0.531   |
|         | +         | 86.94        |     | 1.157E+00           | 7.938E-01 | 7.428E-01      | 3.124E-01 | 1.557   |
|         | +         | 87.57        | *   | 2.782E-01           | 1.543E-01 | 1.767E-01      | 2.039E-02 | 1.574   |
| CS-135  | +         | 268.24       | *   | 4.393E-01           | 2.611E-01 | 3.295E-01      | 2.817E-02 | 1.333   |
| BA-137M | +         | 661.65       | *   | 6.085E-01           | 1.119E-01 | 6.787E-02      | 3.415E-03 | 8.965   |
| CS-137  | +         | 661.65       | *   | 6.432E-01           | 1.184E-01 | 7.175E-02      | 3.630E-03 | 8.965   |
| TL-208  |           | 277.35       |     | 4.660E-01           | 5.227E-01 | 9.027E-01      | 1.011E-01 | 0.516   |
|         | +         | 510.84       |     | 7.574E-01           | 3.979E-01 | 2.615E-01      | 2.633E-02 | 2.896   |
|         | +         | 583.14       | *   | 5.578E-01           | 9.873E-02 | 6.995E-02      | 4.454E-03 | 7.974   |
|         |           | 860.37       |     | 6.162E-01           | 4.087E-01 | 7.350E-01      | 6.318E-02 | 0.838   |
| BI-211  | +         | 72.87        |     | 2.334E+01           | 7.271E+00 | 7.795E+00      | 8.692E-01 | 2.994   |
|         | +         | 351.07       | *   | 4.136E+00           | 6.755E-01 | 4.205E-01      | 2.889E-02 | 9.837   |
| PB-212  | +         | 74.81        |     | 2.770E+00           | 9.010E-01 | 8.618E-01      | 1.251E-01 | 3.214   |
|         | +         | 77.11        |     | 2.635E+00           | 5.569E-01 | 4.587E-01      | 5.094E-02 | 5.745   |
|         | +         | 87.30        |     | 1.287E+00           | 7.250E-01 | 8.211E-01      | 1.253E-01 | 1.567   |
|         | +         | 238.63       | *   | 1.884E+00           | 2.135E-01 | 1.211E-01      | 1.002E-02 | 15.553  |
|         |           | 300.09       |     | 1.696E+00           | 1.224E+00 | 1.913E+00      | 1.715E-01 | 0.887   |
| PO-212  | +         | 74.81        |     | 2.770E+00           | 9.010E-01 | 8.618E-01      | 1.251E-01 | 3.214   |
|         | +         | 77.11        |     | 2.635E+00           | 5.569E-01 | 4.587E-01      | 5.094E-02 | 5.745   |
|         | +         | 87.30        |     | 1.287E+00           | 7.250E-01 | 8.211E-01      | 1.253E-01 | 1.567   |
|         |           | 115.19       |     | -3.790E+00          | 4.888E+00 | 7.732E+00      | 5.915E-01 | -0.490  |
|         | +         | 238.63       | *   | 1.884E+00           | 2.135E-01 | 1.211E-01      | 1.002E-02 | 15.553  |
|         |           | 300.09       |     | 1.696E+00           | 1.224E+00 | 1.913E+00      | 1.715E-01 | 0.887   |
| BI-214  | +         | 609.31       | *   | 1.190E+00           | 1.952E-01 | 1.426E-01      | 1.059E-02 | 8.349   |
|         | +         | 1120.29      |     | 1.361E+00           | 6.781E-01 | 5.542E-01      | 5.113E-02 | 2.455   |
|         | +         | 1764.49      |     | 1.362E+00           | 5.849E-01 | 3.994E-01      | 2.485E-02 | 3.410   |
| PB-214  | +         | 74.81        |     | 4.773E+00           | 1.528E+00 | 1.485E+00      | 1.983E-01 | 3.214   |
|         | +         | 77.11        |     | 4.517E+00           | 1.015E+00 | 7.864E-01      | 1.059E-01 | 5.745   |
|         | +         | 87.30        |     | 2.204E+00           | 1.234E+00 | 1.407E+00      | 1.950E-01 | 1.567   |
|         | +         | 241.98       |     | 3.148E+00           | 1.037E+00 | 6.225E-01      | 5.564E-02 | 5.056   |
|         | +         | 295.21       |     | 1.517E+00           | 3.153E-01 | 3.561E-01      | 3.293E-02 | 4.261   |
|         | +         | 351.92       | *   | 1.439E+00           | 2.467E-01 | 1.465E-01      | 1.263E-02 | 9.818   |

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PO-214  | +         | 74.81        |     | 4.773E+00           | 1.528E+00 | 1.485E+00      | 1.983E-01 | 3.214   |
|         | +         | 77.11        |     | 4.517E+00           | 1.015E+00 | 7.864E-01      | 1.059E-01 | 5.745   |
|         | +         | 87.30        |     | 2.204E+00           | 1.234E+00 | 1.407E+00      | 1.950E-01 | 1.567   |
|         | +         | 241.98       |     | 3.148E+00           | 1.037E+00 | 6.225E-01      | 5.564E-02 | 5.056   |
|         | +         | 295.21       |     | 1.517E+00           | 3.153E-01 | 3.561E-01      | 3.293E-02 | 4.261   |
| PO-216  | +         | 351.92       | *   | 1.439E+00           | 2.467E-01 | 1.465E-01      | 1.263E-02 | 9.818   |
|         | +         | 74.81        |     | 2.770E+00           | 9.010E-01 | 8.618E-01      | 1.251E-01 | 3.214   |
|         | +         | 77.11        |     | 2.635E+00           | 5.569E-01 | 4.587E-01      | 5.094E-02 | 5.745   |
|         | +         | 87.30        |     | 1.287E+00           | 7.250E-01 | 8.211E-01      | 1.253E-01 | 1.567   |
|         | +         | 238.63       | *   | 1.884E+00           | 2.135E-01 | 1.211E-01      | 1.002E-02 | 15.553  |
| PO-218  | +         | 300.09       |     | 1.696E+00           | 1.224E+00 | 1.913E+00      | 1.715E-01 | 0.887   |
|         | +         | 74.81        |     | 4.773E+00           | 1.528E+00 | 1.485E+00      | 1.983E-01 | 3.214   |
|         | +         | 77.11        |     | 4.517E+00           | 1.015E+00 | 7.864E-01      | 1.059E-01 | 5.745   |
|         | +         | 87.30        |     | 2.204E+00           | 1.234E+00 | 1.407E+00      | 1.950E-01 | 1.567   |
|         | +         | 241.98       |     | 3.148E+00           | 1.037E+00 | 6.225E-01      | 5.564E-02 | 5.056   |
| RA-224  | +         | 295.21       |     | 1.517E+00           | 3.153E-01 | 3.561E-01      | 3.293E-02 | 4.261   |
|         | +         | 351.92       | *   | 1.439E+00           | 2.467E-01 | 1.465E-01      | 1.263E-02 | 9.818   |
|         | +         | 240.98       | *   | 5.968E+00           | 1.937E+00 | 1.378E+00      | 9.590E-02 | 4.332   |
|         | +         | 609.31       | *   | 1.190E+00           | 1.952E-01 | 1.426E-01      | 1.059E-02 | 8.349   |
|         | +         | 1120.29      |     | 1.361E+00           | 6.781E-01 | 5.542E-01      | 5.113E-02 | 2.455   |
| AC-228  | +         | 1764.49      |     | 1.362E+00           | 5.849E-01 | 3.994E-01      | 2.485E-02 | 3.410   |
|         | +         | 338.32       |     | 2.083E+00           | 1.005E+00 | 5.242E-01      | 2.142E-01 | 3.973   |
|         | +         | 911.07       | *   | 1.900E+00           | 4.036E-01 | 2.785E-01      | 3.096E-02 | 6.823   |
|         | +         | 969.11       |     | 2.067E+00           | 6.521E-01 | 4.588E-01      | 1.061E-01 | 4.504   |
|         | +         | 338.32       |     | 2.083E+00           | 1.005E+00 | 5.242E-01      | 2.142E-01 | 3.973   |
| RA-228  | +         | 911.07       | *   | 1.900E+00           | 4.036E-01 | 2.785E-01      | 3.096E-02 | 6.823   |
|         | +         | 969.11       |     | 2.067E+00           | 6.521E-01 | 4.588E-01      | 1.061E-01 | 4.504   |
|         | +         | 74.81        |     | 2.812E+00           | 8.767E-01 | 8.748E-01      | 9.770E-02 | 3.214   |
|         | +         | 77.11        |     | 2.675E+00           | 5.653E-01 | 4.656E-01      | 5.171E-02 | 5.745   |
|         | +         | 87.30        |     | 1.306E+00           | 7.243E-01 | 8.336E-01      | 9.603E-02 | 1.567   |
| TH-228  | +         | 238.63       | *   | 1.912E+00           | 2.167E-01 | 1.229E-01      | 1.018E-02 | 15.553  |
|         | +         | 300.09       |     | 1.722E+00           | 1.598E+00 | 1.942E+00      | 1.146E+00 | 0.887   |
|         | +         | 609.31       | *   | 1.190E+00           | 1.952E-01 | 1.426E-01      | 1.059E-02 | 8.349   |
|         | +         | 1120.29      |     | 1.361E+00           | 6.781E-01 | 5.542E-01      | 5.113E-02 | 2.455   |
|         | +         | 1764.49      |     | 1.362E+00           | 5.849E-01 | 3.994E-01      | 2.485E-02 | 3.410   |
| TH-232  | +         | 338.32       |     | 2.083E+00           | 5.507E-01 | 5.242E-01      | 3.374E-02 | 3.973   |
|         | +         | 911.07       | *   | 1.900E+00           | 4.036E-01 | 2.785E-01      | 3.096E-02 | 6.823   |
|         | +         | 969.11       |     | 2.067E+00           | 6.521E-01 | 4.588E-01      | 1.061E-01 | 4.504   |
|         | +         | 63.29        | *   | 4.473E+00           | 3.831E+00 | 4.169E+00      | 8.227E-01 | 1.073   |
|         | +         | 92.38        |     | 4.111E+00           | 1.425E+00 | 1.125E+00      | 2.144E-01 | 3.656   |
| U-234   | +         | 609.31       | *   | 1.190E+00           | 1.952E-01 | 1.426E-01      | 1.059E-02 | 8.349   |
|         | +         | 1120.29      |     | 1.361E+00           | 6.781E-01 | 5.542E-01      | 5.113E-02 | 2.455   |
|         | +         | 1764.49      |     | 1.362E+00           | 5.849E-01 | 3.994E-01      | 2.485E-02 | 3.410   |
|         | +         | 86.50        | *   | 8.169E-01           | 4.833E-01 | 5.289E-01      | 1.248E-01 | 1.545   |
|         | +         | 95.87        |     | 3.323E-01           | 1.396E+00 | 2.030E+00      | 5.094E-01 | 0.164   |
| U-238   | +         | 63.29        | *   | 4.473E+00           | 3.831E+00 | 4.169E+00      | 8.227E-01 | 1.073   |
|         | +         | 92.38        |     | 4.111E+00           | 1.266E+00 | 1.125E+00      | 1.183E-01 | 3.656   |
|         | +         | 74.67        | *   | 4.491E-01           | 1.399E-01 | 1.404E-01      | 1.560E-02 | 3.198   |
|         | +         | 86.72        |     | 3.064E+01           | 1.699E+01 | 1.975E+01      | 2.268E+00 | 1.551   |

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 117.66       |     | -8.267E-01          | 5.004E+00 | 8.110E+00      | 6.058E-01 | -0.102  |
|         |           | 142.18       |     | -1.927E+00          | 2.447E+01 | 3.902E+01      | 2.659E+00 | -0.049  |
| ANH-511 | +         | 511.00       | *   | 1.636E-01           | 8.487E-02 | 5.651E-02      | 3.191E-03 | 2.895   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| BE-7    |           | 477.59       | *   | -4.600E-02          | 4.286E-01 | 6.956E-01           | 4.635E-02 | -0.066  |
| NA-22   |           | 1274.54      | *   | -9.573E-03          | 5.736E-02 | 9.128E-02           | 6.265E-03 | -0.105  |
| NA-24   |           | 1368.53      | *   | 6.242E-03           | 5.736E-02 | Half-Life too short |           |         |
| AL-26   |           | 1129.67      |     | 3.235E-02           | 2.076E+00 | 3.392E+00           | 2.137E-01 | 0.010   |
|         |           | 1808.65      | *   | 6.948E-03           | 3.408E-02 | 5.833E-02           | 3.490E-03 | 0.119   |
| TI-44   |           | 67.85        |     | -5.616E-02          | 9.905E-02 | 1.297E-01           | 1.480E-02 | -0.433  |
|         |           | 78.38        | *   | 2.282E-01           | 6.875E-02 | 1.047E-01           | 1.165E-02 | 2.179   |
| SC-46   |           | 889.25       | *   | 7.350E-03           | 4.063E-02 | 6.851E-02           | 5.746E-03 | 0.107   |
|         | +         | 1120.51      |     | 2.329E-01           | 1.150E-01 | 1.552E-01           | 9.966E-03 | 1.500   |
| V-48    |           | 944.10       |     | 1.249E-01           | 9.563E-01 | 1.599E+00           | 1.314E-01 | 0.078   |
|         |           | 983.50       | *   | 3.754E-03           | 8.359E-02 | 1.381E-01           | 1.091E-02 | 0.027   |
|         |           | 1312.09      |     | -1.402E-02          | 9.052E-02 | 1.433E-01           | 1.046E-02 | -0.098  |
| CR-51   |           | 320.08       | *   | 3.797E-01           | 5.332E-01 | 8.435E-01           | 6.083E-02 | 0.450   |
| MN-52   |           | 744.21       |     | -3.393E-02          | 2.818E-01 | 4.665E-01           | 2.862E-02 | -0.073  |
|         |           | 848.13       |     | 1.304E-01           | 8.505E+00 | 1.413E+01           | 1.089E+00 | 0.009   |
|         |           | 935.52       |     | 2.239E-01           | 2.831E-01 | 5.009E-01           | 4.149E-02 | 0.447   |
|         |           | 1246.25      |     | -4.202E-02          | 9.351E+00 | 1.516E+01           | 9.882E-01 | -0.003  |
|         |           | 1333.61      |     | 1.801E+00           | 5.736E+00 | 9.643E+00           | 7.278E-01 | 0.187   |
|         |           | 1434.06      | *   | 1.227E-01           | 2.949E-01 | 5.171E-01           | 3.834E-02 | 0.237   |
| MN-54   |           | 834.83       | *   | 1.137E-02           | 4.611E-02 | 7.805E-02           | 5.850E-03 | 0.146   |
| CO-56   |           | 846.75       | *   | 7.467E-03           | 4.927E-02 | 8.278E-02           | 6.362E-03 | 0.090   |
|         |           | 977.42       |     | -2.003E+00          | 3.647E+00 | 5.683E+00           | 4.519E-01 | -0.352  |
|         |           | 1037.82      |     | -1.304E-03          | 3.939E-01 | 6.458E-01           | 5.111E-02 | -0.002  |
|         |           | 1175.09      |     | -1.108E+00          | 2.579E+00 | 3.975E+00           | 2.272E-01 | -0.279  |
|         |           | 1238.25      |     | 1.593E-01           | 1.216E-01 | 2.158E-01           | 1.458E-02 | 0.738   |
|         |           | 1360.21      |     | 4.501E-01           | 1.061E+00 | 1.819E+00           | 1.368E-01 | 0.247   |
|         |           | 1771.40      |     | -8.789E-01          | 3.708E-01 | 3.534E-01           | 2.187E-02 | -2.487  |
| CO-57   |           | 122.06       | *   | 9.049E-03           | 3.825E-02 | 5.526E-02           | 3.973E-03 | 0.164   |
|         |           | 136.48       |     | -2.423E-01          | 2.829E-01 | 4.429E-01           | 3.399E-02 | -0.547  |
| CO-58   |           | 810.76       | *   | -4.745E-03          | 4.560E-02 | 7.517E-02           | 5.370E-03 | -0.063  |
| FE-59   |           | 142.65       |     | 9.741E-01           | 3.736E+00 | 6.032E+00           | 4.107E-01 | 0.161   |
|         |           | 192.34       |     | -4.990E-01          | 1.323E+00 | 1.979E+00           | 2.440E-01 | -0.252  |
|         |           | 1099.22      | *   | -5.207E-02          | 1.076E-01 | 1.670E-01           | 1.263E-02 | -0.312  |
|         |           | 1291.56      |     | 1.248E-01           | 1.389E-01 | 2.477E-01           | 2.090E-02 | 0.504   |
| CO-60   |           | 1173.22      |     | -2.231E-02          | 5.369E-02 | 8.308E-02           | 4.732E-03 | -0.269  |
|         |           | 1332.49      | *   | 4.011E-02           | 4.576E-02 | 8.186E-02           | 6.178E-03 | 0.490   |
| ZN-65   |           | 1115.52      | *   | 4.435E-02           | 1.315E-01 | 1.919E-01           | 1.247E-02 | 0.231   |
| GE-68   |           | 1077.35      | *   | 2.297E-01           | 1.584E+00 | 2.627E+00           | 1.826E-01 | 0.087   |
| AS-73   |           | 53.44        | *   | -1.814E-01          | 2.221E+00 | 3.686E+00           | 5.037E-01 | -0.049  |
| AS-74   |           | 595.88       | *   | -3.401E-02          | 1.310E-01 | 2.040E-01           | 1.097E-02 | -0.167  |
|         |           | 634.78       |     | -8.235E-02          | 4.538E-01 | 7.199E-01           | 3.734E-02 | -0.114  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| SE-75   |           | 66.05        |     | -2.533E+00          | 9.934E+00 | 1.421E+01      | 1.843E+00 | -0.178  |
|         |           | 96.73        |     | 1.230E-02           | 1.152E+00 | 1.658E+00      | 2.378E-01 | 0.007   |
|         |           | 121.11       |     | -1.230E-01          | 1.953E-01 | 2.846E-01      | 2.903E-02 | -0.432  |
|         |           | 136.00       |     | -4.662E-02          | 5.277E-02 | 8.254E-02      | 5.748E-03 | -0.565  |
|         |           | 198.60       |     | 9.857E-01           | 2.521E+00 | 4.039E+00      | 3.224E-01 | 0.244   |
|         |           | 264.65       | *   | -1.959E-02          | 6.700E-02 | 9.589E-02      | 6.706E-03 | -0.204  |
|         |           | 279.53       |     | 5.852E-02           | 1.468E-01 | 2.498E-01      | 1.823E-02 | 0.234   |
|         |           | 303.91       |     | -5.256E+00          | 2.984E+00 | 4.480E+00      | 4.549E-01 | -1.173  |
|         |           | 400.65       |     | -4.010E-02          | 3.640E-01 | 5.794E-01      | 5.233E-02 | -0.069  |
| BR-77   | +         | 87.88        |     | 6.064E+02           | 3.362E+02 | 4.859E+02      | 5.618E+01 | 1.248   |
|         |           | 200.40       |     | -9.671E+01          | 2.281E+02 | 3.588E+02      | 2.452E+01 | -0.270  |
|         | +         | 239.00       |     | 2.999E+02           | 3.122E+01 | 4.921E+01      | 3.424E+00 | 6.094   |
|         |           | 249.79       |     | 2.362E+01           | 8.304E+01 | 1.413E+02      | 9.837E+00 | 0.167   |
|         |           | 281.68       |     | -6.573E+01          | 1.212E+02 | 1.975E+02      | 1.360E+01 | -0.333  |
|         |           | 297.23       |     | 1.311E+02           | 9.256E+01 | 1.441E+02      | 9.801E+00 | 0.910   |
|         |           | 303.76       |     | -4.494E+02          | 2.496E+02 | 3.776E+02      | 2.553E+01 | -1.190  |
|         |           | 439.47       |     | 1.500E+02           | 1.986E+02 | 3.398E+02      | 1.942E+01 | 0.441   |
|         |           | 484.57       |     | -9.869E+01          | 2.971E+02 | 4.740E+02      | 2.697E+01 | -0.208  |
|         |           | 520.65       | *   | -2.629E+00          | 1.321E+01 | 2.119E+01      | 1.192E+00 | -0.124  |
|         |           | 574.64       |     | -1.967E+02          | 2.815E+02 | 4.181E+02      | 2.284E+01 | -0.470  |
|         |           | 578.91       |     | 7.563E+00           | 1.308E+02 | 1.836E+02      | 1.000E+01 | 0.041   |
|         |           | 585.48       |     | 9.452E+02           | 2.920E+02 | 5.044E+02      | 2.734E+01 | 1.874   |
|         |           | 755.35       |     | 1.917E+02           | 2.007E+02 | 3.585E+02      | 2.256E+01 | 0.535   |
|         |           | 817.79       |     | -6.062E+01          | 1.434E+02 | 2.286E+02      | 1.652E+01 | -0.265  |
| SR-82   |           | 698.33       |     | -6.968E+00          | 3.981E+01 | 6.590E+01      | 3.628E+00 | -0.106  |
|         |           | 776.49       | *   | -4.333E-02          | 4.555E-01 | 7.537E-01      | 4.975E-02 | -0.057  |
|         |           | 1395.20      |     | -3.204E+00          | 1.190E+01 | 1.916E+01      | 1.433E+00 | -0.167  |
| RB-83   |           | 520.41       | *   | -1.822E-02          | 8.892E-02 | 1.426E-01      | 8.021E-03 | -0.128  |
|         |           | 529.64       |     | -1.102E-01          | 1.364E-01 | 2.083E-01      | 1.167E-02 | -0.529  |
|         |           | 552.65       |     | 1.175E-02           | 2.779E-01 | 4.521E-01      | 2.504E-02 | 0.026   |
| RB-84   |           | 881.50       | *   | 4.924E-02           | 8.335E-02 | 1.451E-01      | 1.198E-02 | 0.339   |
| KR-85   |           | 513.99       | *   | 2.052E+01           | 9.782E+00 | 1.634E+01      | 9.217E-01 | 1.256   |
| SR-85   |           | 513.99       | *   | 1.052E-01           | 5.014E-02 | 8.376E-02      | 4.725E-03 | 1.256   |
| RB-86   |           | 1076.63      | *   | 6.629E-01           | 9.819E-01 | 1.706E+00      | 1.187E-01 | 0.389   |
| Y-88    |           | 898.02       |     | 4.594E-02           | 5.304E-02 | 9.373E-02      | 8.042E-03 | 0.490   |
|         |           | 1836.01      | *   | -1.463E-02          | 4.134E-02 | 6.322E-02      | 3.693E-03 | -0.231  |
| ZR-88   |           | 392.90       | *   | -1.234E-02          | 4.171E-02 | 6.763E-02      | 3.836E-03 | -0.182  |
| Y-91    |           | 1204.90      | *   | 2.803E+00           | 2.305E+01 | 3.787E+01      | 2.290E+00 | 0.074   |
| NB-94   |           | 702.63       | *   | -9.288E-03          | 3.840E-02 | 6.318E-02      | 3.515E-03 | -0.147  |
|         |           | 871.10       |     | 2.218E-02           | 4.330E-02 | 7.474E-02      | 6.041E-03 | 0.297   |
| NB-95   |           | 765.79       | *   | 9.661E-02           | 5.176E-02 | 9.684E-02      | 6.241E-03 | 0.998   |
| NB-95M  |           | 235.69       | *   | 1.958E+00           | 2.952E-01 | 4.627E-01      | 3.910E-02 | 4.232   |
| ZR-95   |           | 724.18       |     | 1.565E-01           | 1.265E-01 | 2.053E-01      | 1.418E-02 | 0.762   |
|         |           | 756.15       | *   | 5.961E-02           | 8.684E-02 | 1.523E-01      | 1.136E-02 | 0.391   |
| NB-97   |           | 657.90       | *   | 4.594E-01           | 8.684E-02 | Half-Life      | too short |         |
|         |           | 1024.50      |     | 2.693E-01           | 8.684E-02 | Half-Life      | too short |         |
| ZR-97   |           | 254.15       |     | -2.042E+00          | 8.684E-02 | Half-Life      | too short |         |
|         |           | 355.39       |     | -1.514E+00          | 8.684E-02 | Half-Life      | too short |         |
|         |           | 507.63       | *   | 8.954E+00           | 8.684E-02 | Half-Life      | too short |         |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         | 602.52    |              |     | -8.175E+00          | 8.684E-02 | Half-Life      | too short |         |
|         | 1021.30   |              |     | 3.196E+00           | 8.684E-02 | Half-Life      | too short |         |
|         | 1147.95   |              |     | -4.669E+00          | 8.684E-02 | Half-Life      | too short |         |
|         | 1362.66   |              |     | 2.509E+00           | 8.684E-02 | Half-Life      | too short |         |
|         | 1750.46   |              |     | -8.166E+00          | 8.684E-02 | Half-Life      | too short |         |
| MO-99   | 140.51    |              |     | 2.306E+01           | 3.518E+01 | 5.759E+01      | 1.566E+01 | 0.400   |
|         | 181.06    |              |     | -8.858E+00          | 2.646E+01 | 3.634E+01      | 6.352E+00 | -0.244  |
|         | 366.43    |              |     | -1.127E+02          | 1.135E+02 | 1.769E+02      | 1.074E+01 | -0.637  |
|         | 739.58    | *            |     | 9.781E+00           | 1.407E+01 | 2.464E+01      | 3.424E+00 | 0.397   |
|         | 778.00    |              |     | -2.993E+01          | 4.178E+01 | 6.557E+01      | 4.344E+00 | -0.456  |
| TC-99M  | 140.51    | *            |     | 3.115E+10           | 4.178E+01 | Half-Life      | too short |         |
| RH-101  | 127.23    | +            |     | 1.150E-01           | 7.693E-02 | 7.863E-02      | 5.540E-03 | 1.462   |
|         | 198.01    | *            |     | 2.917E-02           | 4.576E-02 | 7.406E-02      | 5.052E-03 | 0.394   |
|         | 325.23    |              |     | 3.173E-01           | 3.519E-01 | 5.382E-01      | 3.539E-02 | 0.590   |
| RH-102  | 418.52    |              |     | 1.777E-01           | 4.070E-01 | 6.853E-01      | 3.910E-02 | 0.259   |
|         | 475.06    | *            |     | -2.306E-02          | 3.929E-02 | 6.171E-02      | 3.518E-03 | -0.374  |
|         | 631.29    |              |     | 1.616E-02           | 6.900E-02 | 1.133E-01      | 5.895E-03 | 0.143   |
|         | 697.49    |              |     | 3.940E-02           | 9.037E-02 | 1.563E-01      | 8.586E-03 | 0.252   |
|         | 766.84    |              |     | 1.959E-01           | 1.321E-01 | 2.419E-01      | 1.562E-02 | 0.810   |
|         | 1046.59   |              |     | -1.007E-01          | 1.410E-01 | 2.143E-01      | 1.563E-02 | -0.470  |
|         | 1112.84   |              |     | 5.722E-02           | 3.250E-01 | 4.657E-01      | 3.035E-02 | 0.123   |
| RU-103  | 497.08    | *            |     | 1.944E-02           | 4.926E-02 | 8.257E-02      | 1.039E-02 | 0.235   |
|         | 610.33    |              |     | 1.238E+01           | 2.540E+00 | 3.351E+00      | 5.108E-01 | 3.693   |
| RH-106  | 511.85    | +            |     | 8.171E-01           | 4.239E-01 | 5.218E-01      | 2.945E-02 | 1.566   |
|         | 621.84    | *            |     | -1.127E-01          | 4.060E-01 | 6.396E-01      | 7.340E-02 | -0.176  |
|         | 1050.47   |              |     | 3.845E-01           | 2.851E+00 | 4.732E+00      | 3.430E-01 | 0.081   |
| RU-106  | 511.85    | +            |     | 8.171E-01           | 4.239E-01 | 5.218E-01      | 2.945E-02 | 1.566   |
|         | 621.84    | *            |     | -1.127E-01          | 4.058E-01 | 6.396E-01      | 3.360E-02 | -0.176  |
|         | 1050.47   |              |     | 3.845E-01           | 2.851E+00 | 4.732E+00      | 3.430E-01 | 0.081   |
| AG-108M | 433.93    | *            |     | -1.074E-02          | 4.230E-02 | 6.830E-02      | 4.247E-03 | -0.157  |
|         | 614.37    |              |     | -4.292E-03          | 5.545E-02 | 7.644E-02      | 4.454E-03 | -0.056  |
|         | 722.95    |              |     | -1.297E-02          | 5.202E-02 | 7.282E-02      | 4.606E-03 | -0.178  |
| AG-110M | 657.75    | *            |     | 1.339E-01           | 5.921E-02 | 9.847E-02      | 5.397E-03 | 1.360   |
|         | 677.61    |              |     | -2.857E-01          | 3.950E-01 | 5.939E-01      | 3.341E-02 | -0.481  |
|         | 706.67    |              |     | 2.662E-01           | 2.397E-01 | 4.337E-01      | 2.591E-02 | 0.614   |
|         | 763.93    |              |     | -7.613E-02          | 2.103E-01 | 3.417E-01      | 2.304E-02 | -0.223  |
|         | 884.67    |              |     | -2.816E-02          | 5.455E-02 | 8.550E-02      | 7.351E-03 | -0.329  |
|         | 937.48    |              |     | -7.812E-02          | 1.232E-01 | 1.898E-01      | 1.631E-02 | -0.411  |
|         | 1384.27   |              |     | 1.282E-01           | 1.884E-01 | 3.402E-01      | 2.644E-02 | 0.377   |
| IN-111  | 171.28    |              |     | 3.032E-01           | 1.356E+00 | 2.206E+00      | 1.472E-01 | 0.137   |
|         | 245.39    | *            |     | -7.139E-01          | 1.464E+00 | 2.073E+00      | 1.443E-01 | -0.344  |
| IN-113M | 391.69    | *            |     | -3.226E-02          | 5.907E-02 | 9.427E-02      | 5.719E-03 | -0.342  |
| SN-113  | 391.69    | *            |     | -3.226E-02          | 5.907E-02 | 9.427E-02      | 5.719E-03 | -0.342  |
| IN-114M | 190.27    | *            |     | -7.145E-03          | 2.781E-01 | 3.889E-01      | 2.637E-02 | -0.018  |
| CD-115  | 260.90    |              |     | 2.673E+01           | 1.730E+02 | 2.921E+02      | 2.030E+01 | 0.092   |
|         | 492.35    |              |     | 1.435E+01           | 4.548E+01 | 7.584E+01      | 4.307E+00 | 0.189   |
|         | 527.90    | *            |     | -2.736E+00          | 1.355E+01 | 2.170E+01      | 1.217E+00 | -0.126  |
| SN-117M | 156.02    |              |     | -2.065E+00          | 3.033E+00 | 4.763E+00      | 3.192E-01 | -0.433  |
|         | 158.56    | *            |     | -9.851E-04          | 7.396E-02 | 1.194E-01      | 7.986E-03 | -0.008  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|---------------------|-----------|---------------------|-----------|---------|
| SB-122  | 563.90    | *            |              | 3.016E-02           | 2.541E+00 | 4.121E+00           | 2.267E-01 | 0.007   |
|         | 692.80    |              |              | 9.675E+00           | 5.181E+01 | 8.808E+01           | 4.784E+00 | 0.110   |
| I-123   | 159.00    | *            |              | -2.980E+00          | 5.181E+01 | Half-Life too short |           |         |
|         | 528.96    |              |              | -4.517E+02          | 5.181E+01 | Half-Life too short |           |         |
| TE-123M | 159.00    | *            |              | -1.527E-02          | 3.884E-02 | 6.174E-02           | 4.168E-03 | -0.247  |
| I-124   | 602.71    | *            |              | -4.172E-01          | 1.030E+00 | 1.373E+00           | 7.342E-02 | -0.304  |
|         | 722.78    |              |              | -1.695E+00          | 5.382E+00 | 7.468E+00           | 4.358E-01 | -0.227  |
|         | 1325.50   |              |              | -1.696E+00          | 4.052E+01 | 6.507E+01           | 4.856E+00 | -0.026  |
|         | 1376.25   |              |              | 4.420E+01           | 3.846E+01 | 6.999E+01           | 5.252E+00 | 0.632   |
|         | 1509.49   |              |              | 2.359E+01           | 2.082E+01 | 3.779E+01           | 2.737E+00 | 0.624   |
|         | 1691.02   |              |              | -1.056E-01          | 4.295E+00 | 7.354E+00           | 4.841E-01 | -0.014  |
| SB-124  | 602.71    |              |              | -2.435E-02          | 6.011E-02 | 8.018E-02           | 4.289E-03 | -0.304  |
|         | 645.85    |              |              | -8.962E-03          | 6.696E-01 | 1.076E+00           | 6.407E-02 | -0.008  |
|         | 709.31    |              |              | -1.749E+00          | 3.210E+00 | 5.147E+00           | 2.909E-01 | -0.340  |
|         | 713.82    |              |              | -2.280E-01          | 1.815E+00 | 3.008E+00           | 3.057E-01 | -0.076  |
|         | 722.78    |              |              | -1.435E-01          | 4.555E-01 | 6.320E-01           | 3.860E-02 | -0.227  |
| +       | 968.20    |              |              | 2.127E+01           | 4.875E+00 | 8.780E+00           | 7.050E-01 | 2.422   |
|         | 1045.16   |              |              | -2.401E-01          | 3.118E+00 | 5.024E+00           | 3.670E-01 | -0.048  |
|         | 1325.50   |              |              | -1.533E-01          | 3.662E+00 | 5.882E+00           | 4.389E-01 | -0.026  |
|         | 1368.21   |              |              | -3.335E-01          | 1.998E+00 | 3.139E+00           | 4.017E-01 | -0.106  |
|         | 1436.60   |              |              | 2.230E+00           | 4.763E+00 | 8.393E+00           | 6.219E-01 | 0.266   |
|         | 1691.02   | *            |              | -2.107E-03          | 8.574E-02 | 1.468E-01           | 1.031E-02 | -0.014  |
| SB-125  | 427.89    | *            |              | 3.037E-02           | 1.174E-01 | 1.960E-01           | 1.168E-02 | 0.155   |
| +       | 463.38    |              |              | 7.973E-01           | 5.944E-01 | 6.937E-01           | 4.637E-02 | 1.149   |
|         | 600.56    |              |              | 1.858E-01           | 2.447E-01 | 4.057E-01           | 2.567E-02 | 0.458   |
|         | 635.90    |              |              | -1.415E-01          | 3.314E-01 | 5.138E-01           | 3.222E-02 | -0.275  |
| TE-125M | 109.28    | *            |              | -4.172E-01          | 1.279E+01 | 2.089E+01           | 2.076E+00 | -0.020  |
| I-126   | 388.63    |              |              | -7.082E-02          | 2.714E-01 | 4.410E-01           | 2.524E-02 | -0.161  |
|         | 666.33    | *            |              | -1.161E-01          | 2.667E-01 | 3.497E-01           | 1.780E-02 | -0.332  |
|         | 753.82    |              |              | 7.966E-01           | 1.767E+00 | 3.052E+00           | 1.914E-01 | 0.261   |
| SB-126  | 223.80    |              |              | -2.603E-01          | 5.659E+00 | 9.009E+00           | 6.242E-01 | -0.029  |
|         | 278.60    |              |              | 2.515E+00           | 3.354E+00 | 5.784E+00           | 3.991E-01 | 0.435   |
|         | 296.50    |              |              | 8.164E+00           | 2.750E+00 | 4.466E+00           | 3.041E-01 | 1.828   |
|         | 414.70    |              |              | 3.271E-02           | 1.047E-01 | 1.752E-01           | 9.990E-03 | 0.187   |
|         | 415.30    |              |              | 5.787E+00           | 8.574E+00 | 1.463E+01           | 8.343E-01 | 0.396   |
|         | 555.20    |              |              | 7.400E-02           | 5.342E+00 | 8.673E+00           | 4.797E-01 | 0.009   |
|         | 573.80    |              |              | -1.894E-01          | 1.360E+00 | 2.180E+00           | 1.192E-01 | -0.087  |
|         | 593.00    |              |              | -4.931E-01          | 1.244E+00 | 1.951E+00           | 1.051E-01 | -0.253  |
|         | 656.30    |              |              | 2.235E+00           | 4.641E+00 | 6.797E+00           | 3.442E-01 | 0.329   |
|         | 666.33    |              |              | -4.853E-02          | 1.114E-01 | 1.461E-01           | 7.437E-03 | -0.332  |
|         | 675.00    |              |              | 5.461E-01           | 2.393E+00 | 3.918E+00           | 2.037E-01 | 0.139   |
|         | 695.00    |              |              | 9.904E-02           | 9.197E-02 | 1.657E-01           | 9.050E-03 | 0.598   |
|         | 697.00    |              |              | 1.970E-01           | 3.120E-01 | 5.469E-01           | 3.001E-02 | 0.360   |
|         | 720.50    | *            |              | 4.115E-02           | 1.799E-01 | 2.670E-01           | 1.550E-02 | 0.154   |
|         | 856.80    |              |              | -1.916E-01          | 6.319E-01 | 1.023E+00           | 8.032E-02 | -0.187  |
|         | 989.30    |              |              | 9.492E-01           | 1.424E+00 | 2.495E+00           | 1.958E-01 | 0.380   |
|         | 1034.80   |              |              | -9.036E-01          | 1.076E+01 | 1.750E+01           | 1.297E+00 | -0.052  |
|         | 1213.00   |              |              | -3.670E+00          | 6.225E+00 | 9.505E+00           | 5.835E-01 | -0.386  |
| SB-127  | 61.10     | +            |              | 1.824E+02           | 1.541E+02 | 2.077E+02           | 2.911E+01 | 0.878   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|---------------------|-----------|----------------|-----------|---------|
|         | 252.40    |              |              | -1.665E-01          | 5.540E+00 | 9.292E+00      | 3.877E+00 | -0.018  |
|         | 290.80    |              |              | -4.363E+00          | 3.209E+01 | 4.618E+01      | 4.545E+00 | -0.094  |
|         | 411.60    |              |              | -1.516E+01          | 1.673E+01 | 2.586E+01      | 3.705E+00 | -0.586  |
|         | 444.90    |              |              | -1.006E+01          | 1.363E+01 | 2.126E+01      | 2.282E+00 | -0.473  |
|         | 473.00    |              |              | 1.277E+00           | 2.170E+00 | 3.677E+00      | 4.087E-01 | 0.347   |
|         | 543.00    |              |              | -4.732E+00          | 2.058E+01 | 3.281E+01      | 4.198E+00 | -0.144  |
|         | 603.60    |              |              | -1.975E+01          | 1.854E+01 | 2.283E+01      | 2.400E+00 | -0.865  |
|         | 685.20    | *            |              | 4.094E-01           | 1.598E+00 | 2.734E+00      | 2.498E-01 | 0.150   |
|         | 698.50    |              |              | -3.190E+00          | 1.745E+01 | 2.885E+01      | 4.141E+00 | -0.111  |
|         | 722.20    |              |              | -2.672E+00          | 3.586E+01 | 5.129E+01      | 4.701E+00 | -0.052  |
|         | 783.80    |              |              | 4.698E+00           | 4.359E+00 | 7.801E+00      | 8.711E-01 | 0.602   |
| XE-127  | 57.60     |              |              | 1.377E+01           | 1.559E+01 | 2.369E+01      | 3.017E+00 | 0.581   |
|         | 145.22    |              |              | 1.841E-01           | 9.043E-01 | 1.477E+00      | 1.002E-01 | 0.125   |
|         | 172.10    |              |              | 2.084E-01           | 1.617E-01 | 2.733E-01      | 1.825E-02 | 0.762   |
|         | 202.84    | *            |              | -1.509E-02          | 7.316E-02 | 1.048E-01      | 7.178E-03 | -0.144  |
|         | 374.96    |              |              | 1.120E-02           | 2.656E-01 | 4.400E-01      | 2.615E-02 | 0.025   |
| I-131   | 80.18     |              |              | -1.111E+01          | 9.632E+00 | 1.078E+01      | 1.207E+00 | -1.030  |
|         | 284.30    |              |              | -1.500E+00          | 1.996E+00 | 3.213E+00      | 2.388E-01 | -0.467  |
|         | 364.48    | *            |              | -2.622E-02          | 1.565E-01 | 2.566E-01      | 1.731E-02 | -0.102  |
|         | 636.97    |              |              | -1.272E+00          | 1.968E+00 | 2.995E+00      | 1.780E-01 | -0.425  |
|         | 722.89    |              |              | -2.376E+00          | 8.725E+00 | 1.218E+01      | 7.205E-01 | -0.195  |
| TE-132  | 49.72     |              |              | -5.686E+01          | 6.292E+01 | 1.001E+02      | 1.502E+01 | -0.568  |
|         | 111.76    |              |              | 5.039E+01           | 4.196E+01 | 7.050E+01      | 7.265E+00 | 0.715   |
|         | 116.30    |              |              | -3.982E+01          | 3.714E+01 | 5.772E+01      | 5.790E+00 | -0.690  |
|         | 228.16    | *            |              | -3.550E-01          | 8.902E-01 | 1.474E+00      | 2.189E-01 | -0.241  |
| BA-133  | 53.15     |              |              | -1.272E+00          | 9.722E+00 | 1.610E+01      | 2.207E+00 | -0.079  |
|         | 79.62     |              |              | -2.789E+00          | 2.476E+00 | 3.078E+00      | 5.166E-01 | -0.906  |
|         | 81.00     |              |              | -2.819E-01          | 2.489E-01 | 2.311E-01      | 4.023E-02 | -1.220  |
|         | 276.40    |              |              | 1.876E-01           | 5.234E-01 | 8.664E-01      | 1.169E-01 | 0.216   |
|         | 302.84    |              |              | -2.822E-01          | 2.042E-01 | 3.139E-01      | 3.819E-02 | -0.899  |
|         | 356.01    | *            |              | -4.348E-02          | 6.554E-02 | 8.885E-02      | 1.046E-02 | -0.489  |
|         | 383.85    |              |              | 5.566E-02           | 4.107E-01 | 6.831E-01      | 7.427E-02 | 0.081   |
| I-133   | 510.53    | +            |              | 1.626E+00           | 4.107E-01 | Half-Life      | too short |         |
|         | 529.87    | *            |              | -4.899E-03          | 4.107E-01 | Half-Life      | too short |         |
|         | 706.58    |              |              | 5.313E-01           | 4.107E-01 | Half-Life      | too short |         |
|         | 856.28    |              |              | -6.708E-01          | 4.107E-01 | Half-Life      | too short |         |
|         | 875.33    |              |              | -1.503E-01          | 4.107E-01 | Half-Life      | too short |         |
|         | 1236.41   |              |              | 9.859E-01           | 4.107E-01 | Half-Life      | too short |         |
|         | 1298.22   |              |              | -2.632E-02          | 4.107E-01 | Half-Life      | too short |         |
| CS-134  | 475.35    |              |              | -2.105E+00          | 2.575E+00 | 3.976E+00      | 2.266E-01 | -0.529  |
|         | 563.23    |              |              | -3.351E-01          | 4.616E-01 | 7.066E-01      | 3.979E-02 | -0.474  |
|         | 569.32    |              |              | 1.552E-01           | 2.541E-01 | 4.293E-01      | 2.432E-02 | 0.361   |
|         | 604.70    |              |              | -2.575E-02          | 5.285E-02 | 6.994E-02      | 3.757E-03 | -0.368  |
|         | 795.84    | +            | *            | 8.477E-02           | 8.171E-02 | 1.122E-01      | 7.821E-03 | 0.755   |
|         | 801.93    |              |              | -2.825E-01          | 5.443E-01 | 7.763E-01      | 5.467E-02 | -0.364  |
|         | 1038.57   |              |              | 2.664E+00           | 4.777E+00 | 8.236E+00      | 6.074E-01 | 0.323   |
|         | 1167.94   |              |              | 2.243E+00           | 3.020E+00 | 5.254E+00      | 3.032E-01 | 0.427   |
|         | 1365.15   |              |              | -9.087E-01          | 1.485E+00 | 2.178E+00      | 1.734E-01 | -0.417  |
| I-135   | 288.45    |              |              | 4.308E+10           | 1.485E+00 | Half-Life      | too short |         |



---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| CS-136  |           | 417.63       |     | 8.477E+09           | 1.485E+00 | Half-Life      | too short |         |
|         |           | 546.56       |     | 1.471E+10           | 1.485E+00 | Half-Life      | too short |         |
|         |           | 836.80       |     | 3.312E+10           | 1.485E+00 | Half-Life      | too short |         |
|         |           | 1038.76      |     | 1.179E+10           | 1.485E+00 | Half-Life      | too short |         |
|         |           | 1124.00      |     | 5.096E+09           | 1.485E+00 | Half-Life      | too short |         |
|         |           | 1131.51      |     | 1.465E+09           | 1.485E+00 | Half-Life      | too short |         |
|         |           | 1260.41      | *   | 1.702E+09           | 1.485E+00 | Half-Life      | too short |         |
|         |           | 1457.56      |     | 9.089E+11           | 1.485E+00 | Half-Life      | too short |         |
|         |           | 1678.03      |     | 0.000E+00           | 1.485E+00 | Half-Life      | too short |         |
|         |           | 1706.46      |     | -1.823E+10          | 1.485E+00 | Half-Life      | too short |         |
|         |           | 1791.20      |     | -3.003E+09          | 1.485E+00 | Half-Life      | too short |         |
|         |           | 66.91        |     | -1.091E+00          | 1.589E+00 | 2.209E+00      | 3.800E-01 | -0.494  |
|         | +         | 86.29        |     | 3.625E+00           | 2.040E+00 | 2.917E+00      | 4.345E-01 | 1.243   |
|         |           | 153.22       |     | -2.742E-01          | 8.901E-01 | 1.422E+00      | 1.135E-01 | -0.193  |
|         |           | 163.89       |     | 8.066E-01           | 1.445E+00 | 2.383E+00      | 1.895E-01 | 0.339   |
|         |           | 176.55       |     | -1.381E-01          | 5.050E-01 | 8.035E-01      | 5.892E-02 | -0.172  |
|         |           | 273.65       |     | -5.716E-01          | 7.158E-01 | 9.897E-01      | 7.536E-02 | -0.578  |
|         |           | 340.57       |     | 3.751E-01           | 1.903E-01 | 3.081E-01      | 2.078E-02 | 1.217   |
| CE-139  |           | 818.51       |     | -2.983E-02          | 8.024E-02 | 1.286E-01      | 9.318E-03 | -0.232  |
|         |           | 1048.07      | *   | -7.088E-02          | 1.334E-01 | 2.072E-01      | 1.596E-02 | -0.342  |
|         |           | 1235.34      |     | 9.830E-01           | 7.953E-01 | 1.400E+00      | 1.448E-01 | 0.702   |
|         |           | 165.85       | *   | -1.107E-02          | 4.054E-02 | 6.466E-02      | 4.300E-03 | -0.171  |
|         | BA-140    | 162.64       |     | -6.346E-03          | 1.026E+00 | 1.656E+00      | 1.209E-01 | -0.004  |
|         |           | 304.84       |     | -1.587E+00          | 1.779E+00 | 2.747E+00      | 7.557E-01 | -0.578  |
| LA-140  |           | 423.70       |     | -7.452E-02          | 2.580E+00 | 4.233E+00      | 1.345E+00 | -0.018  |
|         |           | 537.32       | *   | -2.132E-01          | 3.304E-01 | 4.981E-01      | 1.618E-01 | -0.428  |
|         | +         | 328.77       |     | 1.150E+00           | 7.628E-01 | 7.929E-01      | 5.682E-02 | 1.451   |
|         |           | 432.53       |     | -1.718E+00          | 2.634E+00 | 4.136E+00      | 2.617E-01 | -0.415  |
|         |           | 487.03       |     | -1.082E-01          | 1.766E-01 | 2.756E-01      | 1.782E-02 | -0.393  |
|         |           | 751.79       |     | -5.585E-01          | 2.013E+00 | 3.287E+00      | 2.453E-01 | -0.170  |
|         |           | 815.85       |     | -1.952E-01          | 3.568E-01 | 5.618E-01      | 4.697E-02 | -0.347  |
|         |           | 867.82       |     | -3.521E-01          | 1.806E+00 | 2.944E+00      | 2.508E-01 | -0.120  |
|         |           | 919.63       |     | -2.010E+00          | 3.327E+00 | 5.167E+00      | 5.408E-01 | -0.389  |
|         |           | 925.24       |     | 3.987E-01           | 1.295E+00 | 2.201E+00      | 1.962E-01 | 0.181   |
| CE-141  |           | 1596.49      | *   | -5.658E-02          | 1.105E-01 | 1.700E-01      | 1.185E-02 | -0.333  |
|         |           | 145.44       | *   | -3.560E-02          | 8.327E-02 | 1.326E-01      | 9.256E-03 | -0.268  |
|         | CE-143    | 57.37        |     | 2.184E-03           | 8.327E-02 | Half-Life      | too short |         |
|         |           | 231.56       |     | -6.539E-04          | 8.327E-02 | Half-Life      | too short |         |
|         | +         | 293.26       | *   | 1.424E-03           | 8.327E-02 | Half-Life      | too short |         |
|         | +         | 350.59       |     | 3.231E-02           | 8.327E-02 | Half-Life      | too short |         |
|         |           | 490.36       |     | 2.786E-03           | 8.327E-02 | Half-Life      | too short |         |
|         |           | 664.57       |     | 3.032E-03           | 8.327E-02 | Half-Life      | too short |         |
|         |           | 721.93       |     | 5.677E-04           | 8.327E-02 | Half-Life      | too short |         |
| CE-144  |           | 80.11        |     | -5.173E+00          | 4.448E+00 | 4.974E+00      | 5.549E-01 | -1.040  |
|         |           | 133.54       | *   | 2.539E-01           | 3.019E-01 | 4.459E-01      | 6.553E-02 | 0.569   |
| PM-144  |           | 476.78       |     | -5.529E-02          | 8.926E-02 | 1.397E-01      | 9.579E-03 | -0.396  |
|         |           | 618.01       |     | -4.119E-03          | 3.940E-02 | 6.300E-02      | 3.562E-03 | -0.065  |
|         |           | 696.49       | *   | 2.539E-02           | 4.061E-02 | 7.113E-02      | 3.902E-03 | 0.357   |
|         |           | 778.57       |     | -1.743E+00          | 2.857E+00 | 4.529E+00      | 3.005E-01 | -0.385  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|------------|-----------|----------------|-----------|---------|
| PR-144  |           | 696.49       | *            | 1.720E+00  | 2.752E+00 | 4.820E+00      | 2.642E-01 | 0.357   |
|         |           | 1489.15      |              | -1.846E+00 | 1.327E+01 | 2.163E+01      | 1.578E+00 | -0.085  |
| PM-146  |           | 453.90       | *            | 2.589E-02  | 6.043E-02 | 9.903E-02      | 8.481E-03 | 0.261   |
|         |           | 633.02       |              | 3.800E-01  | 1.745E+00 | 2.851E+00      | 1.047E+00 | 0.133   |
|         |           | 735.90       |              | -1.277E-01 | 2.246E-01 | 2.994E-01      | 8.361E-02 | -0.427  |
|         |           | 747.13       |              | 2.116E-02  | 1.037E-01 | 1.761E-01      | 2.234E-02 | 0.120   |
| ND-147  | +         | 91.11        |              | 2.065E+00  | 6.402E-01 | 8.280E-01      | 9.418E-02 | 2.493   |
|         |           | 319.41       |              | 1.553E+00  | 4.646E+00 | 7.443E+00      | 4.937E-01 | 0.209   |
|         |           | 439.89       |              | 5.570E+00  | 8.135E+00 | 1.387E+01      | 7.930E-01 | 0.402   |
|         |           | 531.02       | *            | 3.286E-01  | 7.062E-01 | 1.185E+00      | 1.592E-01 | 0.277   |
| PM-149  |           | 285.90       | *            | -1.668E+01 | 1.231E+02 | 2.044E+02      | 2.994E+01 | -0.082  |
| EU-152  |           | 121.78       |              | -1.680E-02 | 1.120E-01 | 1.585E-01      | 1.382E-02 | -0.106  |
|         |           | 244.69       |              | 5.655E-02  | 4.569E-01 | 6.746E-01      | 4.697E-02 | 0.084   |
|         |           | 344.27       | *            | -9.576E-03 | 1.917E-01 | 2.159E-01      | 1.521E-02 | -0.044  |
|         |           | 443.98       |              | -2.898E-01 | 1.325E+00 | 2.144E+00      | 1.225E-01 | -0.135  |
|         |           | 778.89       |              | -2.099E-01 | 3.271E-01 | 5.168E-01      | 3.430E-02 | -0.406  |
|         |           | 867.32       |              | -1.073E-01 | 1.094E+00 | 1.798E+00      | 1.443E-01 | -0.060  |
|         | +         | 964.01       |              | 1.115E+00  | 4.299E-01 | 7.426E-01      | 5.988E-02 | 1.501   |
|         |           | 1085.78      |              | -1.910E-01 | 4.344E-01 | 6.750E-01      | 4.624E-02 | -0.283  |
|         |           | 1112.02      |              | -4.589E-02 | 4.707E-01 | 6.500E-01      | 4.244E-02 | -0.071  |
|         |           | 1407.95      |              | 1.628E-02  | 2.252E-01 | 3.797E-01      | 2.833E-02 | 0.043   |
| GD-153  |           | 69.67        |              | 7.422E-01  | 3.080E+00 | 4.526E+00      | 5.109E-01 | 0.164   |
|         |           | 83.37        |              | 8.153E+00  | 2.529E+01 | 3.681E+01      | 4.153E+00 | 0.221   |
|         |           | 97.43        | *            | -2.026E-02 | 1.211E-01 | 1.725E-01      | 1.656E-02 | -0.117  |
|         |           | 103.18       |              | 1.935E-01  | 1.429E-01 | 2.442E-01      | 2.148E-02 | 0.792   |
| EU-154  |           | 123.07       |              | 7.623E-03  | 7.777E-02 | 1.115E-01      | 1.148E-02 | 0.068   |
|         |           | 247.94       |              | 8.474E-02  | 4.721E-01 | 7.572E-01      | 7.792E-02 | 0.112   |
|         |           | 591.81       |              | -3.195E-02 | 8.114E-01 | 1.308E+00      | 1.248E-01 | -0.024  |
|         |           | 723.30       |              | 6.643E-02  | 2.190E-01 | 3.273E-01      | 2.329E-02 | 0.203   |
|         |           | 756.87       |              | 8.165E-01  | 9.560E-01 | 1.691E+00      | 1.766E-01 | 0.483   |
|         |           | 873.19       |              | -2.468E-01 | 3.879E-01 | 6.059E-01      | 7.208E-02 | -0.407  |
|         |           | 996.32       |              | -5.846E-01 | 4.304E-01 | 5.837E-01      | 1.014E-01 | -1.002  |
|         |           | 1004.76      |              | -2.464E-01 | 2.737E-01 | 4.098E-01      | 4.500E-02 | -0.601  |
|         |           | 1274.45      | *            | -2.811E-02 | 1.601E-01 | 2.545E-01      | 2.553E-02 | -0.110  |
| EU-155  |           | 48.70        |              | -8.885E+00 | 8.597E+00 | 1.363E+01      | 1.754E+00 | -0.652  |
|         |           | 60.01        |              | 8.630E+00  | 1.181E+01 | 1.780E+01      | 2.176E+00 | 0.485   |
|         | +         | 86.54        |              | 3.351E-01  | 1.858E-01 | 2.689E-01      | 3.102E-02 | 1.246   |
|         |           | 105.31       | *            | -6.187E-02 | 1.462E-01 | 2.354E-01      | 2.038E-02 | -0.263  |
| TB-160  | +         | 86.79        |              | 8.947E-01  | 4.961E-01 | 7.197E-01      | 8.265E-02 | 1.243   |
|         |           | 197.04       |              | -2.810E-01 | 7.891E-01 | 1.225E+00      | 8.353E-02 | -0.229  |
|         |           | 215.65       |              | 4.273E-01  | 1.128E+00 | 1.695E+00      | 1.170E-01 | 0.252   |
|         |           | 298.57       |              | 3.383E-01  | 1.735E-01 | 2.798E-01      | 1.902E-02 | 1.209   |
|         |           | 879.36       | *            | 1.991E-01  | 1.663E-01 | 3.027E-01      | 2.488E-02 | 0.658   |
|         |           | 962.29       |              | 1.326E+00  | 7.087E-01 | 1.309E+00      | 1.057E-01 | 1.013   |
|         |           | 966.15       |              | 1.717E+00  | 3.691E-01 | 7.087E-01      | 5.702E-02 | 2.423   |
|         |           | 1177.93      |              | -1.914E-01 | 4.221E-01 | 6.549E-01      | 3.764E-02 | -0.292  |
|         |           | 1271.85      |              | -1.108E-01 | 8.615E-01 | 1.375E+00      | 9.378E-02 | -0.081  |
| HO-166M |           | 80.57        |              | -5.965E-01 | 6.623E-01 | 6.373E-01      | 7.118E-02 | -0.936  |
|         | +         | 184.41       |              | 1.981E-01  | 8.823E-02 | 9.665E-02      | 6.521E-03 | 2.049   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|---------------------|-----------|----------------|-----------|---------|
| TM-171  |           | 280.46       |              | -7.952E-02          | 1.178E-01 | 1.910E-01      | 1.317E-02 | -0.416  |
|         |           | 410.95       |              | -1.011E-01          | 3.328E-01 | 5.383E-01      | 3.067E-02 | -0.188  |
|         |           | 711.68       | *            | -4.064E-02          | 6.821E-02 | 1.086E-01      | 6.175E-03 | -0.374  |
|         |           | 752.31       |              | -1.020E-01          | 3.280E-01 | 5.343E-01      | 3.339E-02 | -0.191  |
|         |           | 810.29       |              | 1.143E-02           | 6.823E-02 | 1.151E-01      | 8.188E-03 | 0.099   |
|         |           | 51.35        |              | -4.556E+01          | 9.007E+01 | 1.467E+02      | 2.026E+01 | -0.311  |
|         |           | 52.39        |              | 1.067E+01           | 4.394E+01 | 7.383E+01      | 1.018E+01 | 0.144   |
|         |           | 59.40        |              | 3.004E+01           | 6.288E+01 | 9.392E+01      | 1.156E+01 | 0.320   |
|         |           | 66.72        | *            | -3.590E+01          | 5.797E+01 | 8.128E+01      | 9.347E+00 | -0.442  |
|         |           | 88.36        |              | 9.855E-01           | 3.047E-01 | 5.119E-01      | 5.873E-02 | 1.925   |
| LU-176  |           | 201.83       |              | -5.426E-03          | 4.001E-02 | 6.371E-02      | 4.358E-03 | -0.085  |
|         |           | 306.84       | *            | 5.934E-03           | 3.290E-02 | 5.532E-02      | 3.727E-03 | 0.107   |
|         |           | 401.10       |              | -2.636E+00          | 9.511E+00 | 1.499E+01      | 8.522E-01 | -0.176  |
| LU-177  |           | 112.95       |              | 2.660E+00           | 2.265E+00 | 3.815E+00      | 2.987E-01 | 0.697   |
|         | +         | 208.36       | *            | 3.585E+00           | 2.347E+00 | 2.667E+00      | 1.832E-01 | 1.344   |
| LU-177M |           | 52.97        |              | 3.092E-01           | 4.400E+00 | 7.345E+00      | 1.009E+00 | 0.042   |
|         |           | 54.07        |              | -1.994E-01          | 2.206E+00 | 3.658E+00      | 4.958E-01 | -0.055  |
|         | +         | 61.30        |              | 4.776E+00           | 4.020E+00 | 5.413E+00      | 6.535E-01 | 0.882   |
|         |           | 121.62       |              | -1.320E-01          | 5.731E-01 | 8.071E-01      | 5.815E-02 | -0.164  |
|         |           | 147.16       |              | -1.126E+00          | 8.671E-01 | 1.325E+00      | 8.967E-02 | -0.849  |
|         |           | 171.86       |              | 7.190E-01           | 6.530E-01 | 1.097E+00      | 7.326E-02 | 0.655   |
|         |           | 218.09       |              | -1.197E+00          | 1.219E+00 | 1.855E+00      | 1.282E-01 | -0.645  |
|         | +         | 268.79       |              | 2.207E+00           | 1.307E+00 | 1.936E+00      | 1.342E-01 | 1.140   |
|         |           | 319.02       |              | 1.211E-01           | 3.508E-01 | 5.792E-01      | 3.843E-02 | 0.209   |
|         |           | 367.43       |              | -7.169E-01          | 1.219E+00 | 1.948E+00      | 1.180E-01 | -0.368  |
|         |           | 413.65       | *            | -1.371E-01          | 2.436E-01 | 3.878E-01      | 2.210E-02 | -0.353  |
|         |           | 56.28        |              | -1.536E-01          | 2.336E+00 | 3.745E+00      | 4.890E-01 | -0.041  |
| HF-181  |           | 57.53        |              | 1.161E+00           | 1.313E+00 | 1.994E+00      | 2.544E-01 | 0.582   |
|         |           | 65.20        |              | 2.741E-01           | 1.963E+00 | 2.863E+00      | 3.333E-01 | 0.096   |
|         |           | 133.02       |              | 3.585E-02           | 9.810E-02 | 1.422E-01      | 9.863E-03 | 0.252   |
|         |           | 136.25       |              | -5.393E-01          | 6.173E-01 | 9.660E-01      | 6.652E-02 | -0.558  |
|         |           | 345.85       |              | -3.270E-01          | 3.057E-01 | 4.032E-01      | 2.559E-02 | -0.811  |
| W-181   |           | 482.03       | *            | 2.392E-02           | 5.625E-02 | 9.443E-02      | 5.375E-03 | 0.253   |
|         |           | 56.28        |              | -5.888E-02          | 9.145E-01 | 1.466E+00      | 1.915E-01 | -0.040  |
|         |           | 57.53        |              | 4.546E-01           | 5.144E-01 | 7.816E-01      | 9.968E-02 | 0.582   |
|         |           | 65.20        | *            | 1.065E-01           | 7.630E-01 | 1.113E+00      | 1.296E-01 | 0.096   |
| TA-182  |           | 67.75        |              | -1.431E-01          | 2.368E-01 | 3.093E-01      | 3.531E-02 | -0.463  |
|         |           | 100.10       |              | 1.436E-02           | 2.440E-01 | 4.009E-01      | 3.687E-02 | 0.036   |
|         |           | 152.43       |              | 1.606E-01           | 4.496E-01 | 7.375E-01      | 4.960E-02 | 0.218   |
|         |           | 222.10       |              | 1.646E-01           | 4.849E-01 | 7.855E-01      | 5.438E-02 | 0.210   |
|         |           | 1001.68      |              | 4.087E-01           | 2.474E+00 | 4.161E+00      | 3.219E-01 | 0.098   |
| RE-183  | +         | 1121.28      |              | 6.432E-01           | 3.177E-01 | 4.230E-01      | 2.711E-02 | 1.521   |
|         |           | 1189.05      |              | 1.471E-01           | 3.790E-01 | 6.382E-01      | 3.747E-02 | 0.230   |
|         |           | 1221.42      | *            | 1.186E-01           | 2.490E-01 | 4.208E-01      | 2.624E-02 | 0.282   |
|         |           | 1230.97      |              | -5.163E-01          | 6.492E-01 | 9.735E-01      | 6.176E-02 | -0.530  |
|         |           | 57.98        |              | 6.066E-01           | 5.002E-01 | 7.683E-01      | 9.715E-02 | 0.790   |
|         |           | 59.32        |              | 1.203E-01           | 2.592E-01 | 3.869E-01      | 4.769E-02 | 0.311   |
|         |           | 67.20        |              | -4.127E-01          | 4.389E-01 | 5.605E-01      | 6.423E-02 | -0.736  |
|         |           | 162.32       | *            | 2.750E-02           | 1.491E-01 | 2.425E-01      | 1.616E-02 | 0.113   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| RE-184  | +         | 208.81       |     | 3.232E+00           | 2.116E+00 | 2.412E+00      | 1.658E-01 | 1.340   |
|         |           | 291.72       |     | 1.788E+00           | 1.496E+00 | 2.325E+00      | 1.589E-01 | 0.769   |
|         |           | 57.98        |     | 2.236E+00           | 1.844E+00 | 2.832E+00      | 3.580E-01 | 0.790   |
|         |           | 59.32        |     | 4.430E-01           | 9.544E-01 | 1.425E+00      | 1.756E-01 | 0.311   |
|         |           | 67.20        |     | -1.520E+00          | 1.617E+00 | 2.065E+00      | 2.366E-01 | -0.736  |
|         |           | 161.27       |     | -4.308E-02          | 4.827E-01 | 7.766E-01      | 5.181E-02 | -0.055  |
|         |           | 216.55       |     | 1.463E-02           | 3.665E-01 | 5.865E-01      | 4.050E-02 | 0.025   |
|         |           | 252.85       | *   | -3.651E-02          | 2.987E-01 | 4.989E-01      | 3.473E-02 | -0.073  |
|         |           | 318.01       |     | -1.702E-01          | 5.918E-01 | 9.703E-01      | 6.447E-02 | -0.175  |
|         |           | 792.07       |     | 1.151E+00           | 1.328E+00 | 2.091E+00      | 1.429E-01 | 0.550   |
| OS-185  |           | 903.28       |     | -1.104E+00          | 1.545E+00 | 1.997E+00      | 1.699E-01 | -0.553  |
|         |           | 920.93       |     | -2.681E-01          | 5.468E-01 | 8.607E-01      | 7.219E-02 | -0.311  |
|         | +         | 59.72        |     | 3.433E-01           | 7.019E-01 | 1.048E+00      | 1.285E-01 | 0.328   |
|         |           | 61.14        |     | 5.223E-01           | 4.397E-01 | 5.942E-01      | 7.185E-02 | 0.879   |
|         |           | 69.30        |     | -4.195E-02          | 5.624E-01 | 8.147E-01      | 9.214E-02 | -0.051  |
|         |           | 592.07       |     | -7.828E-01          | 3.356E+00 | 5.330E+00      | 2.874E-01 | -0.147  |
|         |           | 646.12       | *   | 2.195E-03           | 5.686E-02 | 9.176E-02      | 4.701E-03 | 0.024   |
|         |           | 717.42       |     | -7.371E-02          | 1.004E+00 | 1.672E+00      | 9.632E-02 | -0.044  |
|         |           | 874.81       |     | -7.177E-01          | 7.474E-01 | 1.129E+00      | 9.196E-02 | -0.636  |
|         |           | 880.27       |     | 8.484E-01           | 9.245E-01 | 1.650E+00      | 1.359E-01 | 0.514   |
| RE-188  |           | 155.03       | *   | 1.634E-02           | 2.268E-01 | 3.678E-01      | 2.467E-02 | 0.044   |
|         |           | 477.96       |     | 7.930E-01           | 4.065E+00 | 6.728E+00      | 3.833E-01 | 0.118   |
|         |           | 633.10       |     | 6.182E-01           | 3.502E+00 | 5.723E+00      | 2.973E-01 | 0.108   |
| W-188   | +         | 63.58        |     | 1.797E+02           | 1.513E+02 | 1.787E+02      | 2.110E+01 | 1.006   |
| IR-192  |           | 227.08       |     | 1.836E+00           | 1.646E+01 | 2.789E+01      | 1.934E+00 | 0.066   |
|         | *         | 290.67       |     | -1.765E+00          | 1.116E+01 | 1.603E+01      | 1.097E+00 | -0.110  |
|         |           | 295.96       |     | 7.545E-01           | 2.215E-01 | 3.616E-01      | 2.492E-02 | 2.087   |
|         |           | 308.46       |     | 7.874E-02           | 1.281E-01 | 2.196E-01      | 1.489E-02 | 0.359   |
| AU-195  |           | 316.51       | *   | -1.495E-02          | 4.511E-02 | 7.380E-02      | 4.932E-03 | -0.203  |
|         |           | 468.07       |     | -4.784E-02          | 1.035E-01 | 1.402E-01      | 9.258E-03 | -0.341  |
|         |           | 604.41       |     | -5.898E-01          | 7.039E-01 | 8.897E-01      | 9.894E-02 | -0.663  |
|         |           | 612.46       |     | 9.645E-01           | 9.785E-01 | 1.500E+00      | 1.080E-01 | 0.643   |
|         |           | 65.12        |     | 6.770E-02           | 3.548E-01 | 5.189E-01      | 6.044E-02 | 0.130   |
|         |           | 66.83        |     | -1.260E-01          | 1.909E-01 | 2.670E-01      | 3.068E-02 | -0.472  |
| TL-200  | +         | 75.70        |     | 2.325E+00           | 4.914E-01 | 6.983E-01      | 7.754E-02 | 3.330   |
|         | *         | 98.88        |     | -1.228E-01          | 3.178E-01 | 4.949E-01      | 4.639E-02 | -0.248  |
|         | +         | 129.76       |     | 1.013E+01           | 6.780E+00 | 6.904E+00      | 4.828E-01 | 1.468   |
| TL-201  |           | 367.94       | *   | -2.786E-04          | 6.780E+00 | Half-Life      | too short |         |
|         |           | 579.30       |     | 7.600E-03           | 6.780E+00 | Half-Life      | too short |         |
|         |           | 828.27       |     | 7.188E-04           | 6.780E+00 | Half-Life      | too short |         |
|         |           | 1205.75      |     | -3.920E-04          | 6.780E+00 | Half-Life      | too short |         |
| TL-202  |           | 68.90        |     | -2.159E+00          | 9.096E+00 | 1.307E+01      | 1.482E+00 | -0.165  |
|         |           | 70.82        |     | 4.865E+00           | 4.910E+00 | 7.418E+00      | 8.329E-01 | 0.656   |
|         |           | 80.30        |     | -1.186E+01          | 1.044E+01 | 1.170E+01      | 1.306E+00 | -1.014  |
|         |           | 135.34       |     | -2.327E+01          | 3.377E+01 | 5.330E+01      | 3.677E+00 | -0.437  |
| TL-202  | *         | 167.43       |     | -4.428E+00          | 9.464E+00 | 1.496E+01      | 9.956E-01 | -0.296  |
|         |           | 68.90        |     | -1.951E-01          | 8.221E-01 | 1.181E+00      | 1.339E-01 | -0.165  |
|         |           | 70.82        |     | 4.386E-01           | 4.426E-01 | 6.686E-01      | 7.507E-02 | 0.656   |
|         |           | 80.30        |     | -1.069E+00          | 9.411E-01 | 1.055E+00      | 1.177E-01 | -1.014  |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| HG-203  |           | 439.56       | *   | 7.462E-02           | 9.689E-02 | 1.659E-01      | 9.482E-03 | 0.450   |
|         |           | 70.83        |     | 1.912E+00           | 1.931E+00 | 2.902E+00      | 4.466E-01 | 0.659   |
|         | +         | 72.87        |     | 4.640E+00           | 1.518E+00 | 1.949E+00      | 2.919E-01 | 2.381   |
|         |           | 82.60        |     | -3.226E-01          | 2.060E+00 | 2.740E+00      | 4.254E-01 | -0.118  |
| BI-207  |           | 279.20       | *   | 2.191E-02           | 5.541E-02 | 9.427E-02      | 6.790E-03 | 0.232   |
|         | +         | 72.80        |     | 1.361E+00           | 4.240E-01 | 5.688E-01      | 6.343E-02 | 2.392   |
|         | +         | 74.97        |     | 8.061E-01           | 2.511E-01 | 3.927E-01      | 4.362E-02 | 2.053   |
|         |           | 84.90        |     | 7.751E-01           | 3.370E-01 | 5.154E-01      | 5.857E-02 | 1.504   |
| TL-207  |           | 569.67       |     | 9.995E-03           | 4.006E-02 | 6.604E-02      | 3.620E-03 | 0.151   |
|         |           | 1063.62      | *   | -1.378E-02          | 6.159E-02 | 9.855E-02      | 7.002E-03 | -0.140  |
|         |           | 1770.23      |     | -2.801E-02          | 5.757E-01 | 7.970E-01      | 4.936E-02 | -0.035  |
|         |           | 81.07        |     | -4.592E-01          | 5.297E-01 | 5.116E-01      | 5.723E-02 | -0.898  |
| PO-209  |           | 83.78        |     | 1.502E-01           | 2.152E-01 | 3.175E-01      | 3.588E-02 | 0.473   |
|         |           | 94.90        |     | 4.775E-01           | 3.431E-01 | 5.231E-01      | 5.245E-02 | 0.913   |
|         |           | 122.32       |     | 1.150E+00           | 2.617E+00 | 3.821E+00      | 3.025E-01 | 0.301   |
|         |           | 144.24       |     | 4.896E-01           | 9.159E-01 | 1.492E+00      | 1.201E-01 | 0.328   |
| BI-210  |           | 154.21       |     | 2.289E-01           | 5.278E-01 | 8.679E-01      | 6.757E-02 | 0.264   |
|         | +         | 269.46       |     | 5.168E-01           | 3.062E-01 | 4.514E-01      | 3.229E-02 | 1.145   |
|         |           | 323.87       | *   | -1.937E-02          | 1.004E+00 | 1.448E+00      | 2.433E-01 | -0.013  |
|         | +         | 338.28       |     | 8.696E+00           | 2.423E+00 | 3.243E+00      | 3.534E-01 | 2.681   |
| PB-210  |           | 445.03       |     | -2.382E+00          | 3.189E+00 | 4.974E+00      | 5.084E-01 | -0.479  |
|         |           | 260.50       |     | 7.446E+00           | 1.268E+01 | 2.180E+01      | 1.516E+00 | 0.342   |
|         |           | 262.80       |     | 1.164E+00           | 3.745E+01 | 5.944E+01      | 4.130E+00 | 0.020   |
|         |           | 896.60       | *   | 3.367E+00           | 9.153E+00 | 1.562E+01      | 1.330E+00 | 0.216   |
| PO-210  |           | 46.50        | *   | 1.329E+01           | 1.478E+01 | 2.478E+01      | 2.574E+00 | 0.536   |
| PB-211  |           | 46.50        | *   | 1.329E+01           | 1.478E+01 | 2.478E+01      | 2.574E+00 | 0.536   |
| BI-212  |           | 46.50        | *   | 1.329E+01           | 1.477E+01 | 2.478E+01      | 2.381E+00 | 0.536   |
|         |           | 404.84       | *   | -6.117E-01          | 1.347E+00 | 2.072E+00      | 1.292E+00 | -0.295  |
|         |           | 427.08       |     | 6.601E-01           | 2.689E+00 | 4.435E+00      | 2.741E+00 | 0.149   |
|         |           | 831.96       |     | -4.602E-01          | 1.479E+00 | 2.346E+00      | 1.467E+00 | -0.196  |
| PO-215  |           | 727.18       | *   | 8.516E-01           | 7.682E-01 | 7.578E-01      | 5.900E-02 | 1.124   |
|         |           | 785.46       |     | 1.664E+00           | 2.086E+00 | 3.686E+00      | 2.482E-01 | 0.451   |
|         |           | 1620.62      |     | 2.302E+00           | 1.655E+00 | 3.218E+00      | 2.214E-01 | 0.715   |
|         |           | 81.07        |     | -4.592E-01          | 5.297E-01 | 5.116E-01      | 5.723E-02 | -0.898  |
| RN-219  |           | 83.78        |     | 1.502E-01           | 2.152E-01 | 3.175E-01      | 3.588E-02 | 0.473   |
|         |           | 94.90        |     | 4.775E-01           | 3.431E-01 | 5.231E-01      | 5.245E-02 | 0.913   |
|         |           | 122.32       |     | 1.150E+00           | 2.617E+00 | 3.821E+00      | 3.025E-01 | 0.301   |
|         |           | 144.24       |     | 4.896E-01           | 9.159E-01 | 1.492E+00      | 1.201E-01 | 0.328   |
| RA-223  |           | 154.21       |     | 2.289E-01           | 5.278E-01 | 8.679E-01      | 6.757E-02 | 0.264   |
|         | +         | 269.46       |     | 5.168E-01           | 3.062E-01 | 4.514E-01      | 3.229E-02 | 1.145   |
|         |           | 323.87       | *   | -1.937E-02          | 1.004E+00 | 1.448E+00      | 2.433E-01 | -0.013  |
|         | +         | 338.28       |     | 8.696E+00           | 2.423E+00 | 3.243E+00      | 3.534E-01 | 2.681   |
| RN-220  |           | 445.03       |     | -2.382E+00          | 3.189E+00 | 4.974E+00      | 5.084E-01 | -0.479  |
|         |           | 271.23       |     | 5.669E-01           | 3.805E-01 | 5.978E-01      | 5.347E-02 | 0.948   |
|         |           | 401.81       | *   | -2.850E-01          | 5.664E-01 | 9.044E-01      | 1.226E-01 | -0.315  |
|         |           | 549.76       | *   | 1.127E+01           | 3.632E+01 | 6.016E+01      | 3.338E+00 | 0.187   |
| RA-223  |           | 81.07        |     | -4.592E-01          | 5.297E-01 | 5.116E-01      | 5.723E-02 | -0.898  |
|         |           | 83.78        |     | 1.502E-01           | 2.152E-01 | 3.175E-01      | 3.588E-02 | 0.473   |
|         |           | 94.90        |     | 4.775E-01           | 3.431E-01 | 5.231E-01      | 5.245E-02 | 0.913   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| AC-227  |           | 122.32       |     | 1.150E+00           | 2.617E+00 | 3.821E+00      | 3.025E-01 | 0.301   |
|         |           | 144.24       |     | 4.896E-01           | 9.159E-01 | 1.492E+00      | 1.201E-01 | 0.328   |
|         |           | 154.21       |     | 2.289E-01           | 5.278E-01 | 8.679E-01      | 6.757E-02 | 0.264   |
|         | +         | 269.46       |     | 5.168E-01           | 3.062E-01 | 4.514E-01      | 3.229E-02 | 1.145   |
|         |           | 323.87       | *   | -1.937E-02          | 1.004E+00 | 1.448E+00      | 2.433E-01 | -0.013  |
|         | +         | 338.28       |     | 8.696E+00           | 2.423E+00 | 3.243E+00      | 3.534E-01 | 2.681   |
|         |           | 445.03       |     | -2.382E+00          | 3.189E+00 | 4.974E+00      | 5.084E-01 | -0.479  |
|         |           | 79.80        |     | -3.660E+00          | 3.184E+00 | 3.881E+00      | 8.784E-01 | -0.943  |
|         |           | 236.00       |     | 5.130E+00           | 7.554E-01 | 9.694E-01      | 1.079E-01 | 5.292   |
|         |           | 256.20       | *   | 8.625E-02           | 4.962E-01 | 8.391E-01      | 1.215E-01 | 0.103   |
|         |           | 286.10       |     | -3.200E-01          | 2.093E+00 | 3.474E+00      | 4.215E-01 | -0.092  |
|         |           | 299.80       |     | 4.408E+00           | 2.314E+00 | 3.578E+00      | 5.962E-01 | 1.232   |
|         |           | 304.40       |     | -3.705E+00          | 2.657E+00 | 3.997E+00      | 7.052E-01 | -0.927  |
|         |           | 334.20       |     | 5.221E-02           | 5.153E+00 | 4.984E+00      | 9.250E-01 | 0.010   |
| TH-227  |           | 79.80        |     | -3.660E+00          | 3.186E+00 | 3.881E+00      | 8.886E-01 | -0.943  |
|         |           | 94.00        |     | 1.363E+01           | 4.333E+00 | 5.241E+00      | 1.177E+00 | 2.601   |
|         |           | 236.00       |     | 5.130E+00           | 7.064E-01 | 9.694E-01      | 9.535E-02 | 5.292   |
|         |           | 256.20       | *   | 8.625E-02           | 4.962E-01 | 8.391E-01      | 1.454E-01 | 0.103   |
|         |           | 286.10       |     | -3.200E-01          | 2.117E+00 | 3.474E+00      | 3.483E+00 | -0.092  |
|         |           | 299.80       |     | 4.408E+00           | 2.314E+00 | 3.578E+00      | 5.962E-01 | 1.232   |
|         |           | 304.40       |     | -3.705E+00          | 2.657E+00 | 3.997E+00      | 7.052E-01 | -0.927  |
|         |           | 334.20       |     | 5.221E-02           | 5.153E+00 | 4.984E+00      | 9.250E-01 | 0.010   |
|         | +         | 85.43        |     | 6.238E-01           | 3.459E-01 | 5.110E-01      | 5.823E-02 | 1.221   |
|         |           | 88.47        |     | 5.426E-01           | 1.734E-01 | 2.920E-01      | 3.342E-02 | 1.858   |
| TH-229  |           | 100.00       |     | 3.616E-02           | 2.536E-01 | 4.178E-01      | 3.849E-02 | 0.087   |
|         |           | 193.63       | *   | -9.009E-01          | 7.026E-01 | 1.041E+00      | 7.081E-02 | -0.865  |
|         |           | 210.97       |     | 2.604E-01           | 1.233E+00 | 1.740E+00      | 1.198E-01 | 0.150   |
|         |           | 283.67       | *   | -1.591E+00          | 2.091E+00 | 3.353E+00      | 4.783E-01 | -0.475  |
|         |           | 301.29       |     | 3.147E-01           | 8.365E-01 | 1.342E+00      | 1.480E-01 | 0.234   |
| PA-231  |           | 81.07        |     | -4.592E-01          | 5.297E-01 | 5.116E-01      | 5.723E-02 | -0.898  |
|         |           | 83.78        |     | 1.502E-01           | 2.152E-01 | 3.175E-01      | 3.588E-02 | 0.473   |
|         |           | 94.90        |     | 4.775E-01           | 3.431E-01 | 5.231E-01      | 5.245E-02 | 0.913   |
| TH-231  |           | 122.32       |     | 1.150E+00           | 2.617E+00 | 3.821E+00      | 3.025E-01 | 0.301   |
|         |           | 144.24       |     | 4.896E-01           | 9.159E-01 | 1.492E+00      | 1.201E-01 | 0.328   |
|         |           | 154.21       |     | 2.289E-01           | 5.278E-01 | 8.679E-01      | 6.757E-02 | 0.264   |
|         | +         | 269.46       |     | 5.168E-01           | 3.062E-01 | 4.514E-01      | 3.229E-02 | 1.145   |
|         |           | 323.87       | *   | -1.937E-02          | 1.004E+00 | 1.448E+00      | 2.433E-01 | -0.013  |
|         | +         | 338.28       |     | 8.696E+00           | 2.423E+00 | 3.243E+00      | 3.534E-01 | 2.681   |
|         |           | 445.03       |     | -2.382E+00          | 3.189E+00 | 4.974E+00      | 5.084E-01 | -0.479  |
|         |           | 84.21        |     | 1.205E+01           | 9.256E+00 | 1.389E+01      | 1.573E+00 | 0.868   |
|         | +         | 92.29        |     | 1.561E+01           | 4.809E+00 | 6.060E+00      | 6.386E-01 | 2.577   |
|         |           | 95.87        | *   | 3.748E-01           | 1.572E+00 | 2.290E+00      | 2.256E-01 | 0.164   |
| U-231   |           | 108.00       |     | -4.801E+00          | 2.857E+00 | 4.330E+00      | 3.582E-01 | -1.109  |
|         | +         | 75.28        |     | 3.764E+01           | 9.281E+00 | 1.152E+01      | 1.944E+00 | 3.267   |
|         | +         | 86.59        |     | 5.446E+00           | 3.322E+00 | 4.374E+00      | 1.219E+00 | 1.245   |
|         |           | 300.12       |     | 8.712E-01           | 6.390E-01 | 9.876E-01      | 1.372E-01 | 0.882   |
|         |           | 311.98       | *   | 2.565E-02           | 8.499E-02 | 1.437E-01      | 1.007E-02 | 0.178   |
|         |           | 340.50       |     | 1.982E+00           | 1.031E+00 | 1.520E+00      | 3.515E-01 | 1.304   |
|         |           | 398.62       |     | 8.387E-02           | 3.012E+00 | 4.837E+00      | 1.249E+00 | 0.017   |
|         |           |              |     |                     |           |                |           |         |
| PA-233  |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PA-234  | +         | 415.76       |     | 1.212E+00           | 2.320E+00 | 3.905E+00      | 8.029E-01 | 0.310   |
|         |           | 63.00        |     | 5.214E+00           | 4.440E+00 | 5.404E+00      | 9.467E-01 | 0.965   |
|         |           | 94.67        |     | 5.390E-01           | 2.595E-01 | 3.956E-01      | 5.321E-02 | 1.362   |
|         |           | 98.44        |     | -7.227E-03          | 1.326E-01 | 2.006E-01      | 1.122E-01 | -0.036  |
|         |           | 99.86        |     | 1.027E-01           | 6.392E-01 | 1.054E+00      | 9.730E-02 | 0.097   |
|         |           | 111.00       |     | 3.024E-01           | 2.566E-01 | 4.332E-01      | 5.047E-02 | 0.698   |
|         |           | 131.20       |     | 1.046E-01           | 1.608E-01 | 2.364E-01      | 1.647E-02 | 0.442   |
|         |           | 152.70       |     | 8.219E-02           | 4.350E-01 | 7.088E-01      | 1.146E-01 | 0.116   |
|         | +         | 186.00       |     | 7.130E+00           | 3.829E+00 | 3.527E+00      | 1.085E+00 | 2.021   |
|         |           | 226.40       |     | -1.326E-01          | 5.270E-01 | 8.795E-01      | 1.070E-01 | -0.151  |
|         |           | 227.20       |     | 3.867E-02           | 5.553E-01 | 9.389E-01      | 6.513E-02 | 0.041   |
|         |           | 248.90       |     | -4.831E-02          | 1.023E+00 | 1.716E+00      | 3.746E-01 | -0.028  |
|         | +         | 293.70       |     | 7.282E+00           | 1.810E+00 | 2.261E+00      | 3.725E-01 | 3.221   |
|         |           | 369.80       |     | 3.542E-01           | 1.129E+00 | 1.896E+00      | 3.960E-01 | 0.187   |
|         |           | 568.70       |     | 7.107E-01           | 1.282E+00 | 2.159E+00      | 1.184E-01 | 0.329   |
|         |           | 569.50       |     | 1.209E-01           | 3.559E-01 | 5.903E-01      | 3.236E-02 | 0.205   |
|         |           | 574.00       |     | -6.084E-01          | 1.964E+00 | 3.108E+00      | 1.698E-01 | -0.196  |
|         |           | 699.00       |     | -4.035E-01          | 8.469E-01 | 1.365E+00      | 2.442E-01 | -0.296  |
|         |           | 706.10       |     | 1.565E+00           | 1.371E+00 | 2.179E+00      | 9.611E-01 | 0.718   |
|         |           | 733.00       |     | 6.442E-02           | 5.441E-01 | 7.947E-01      | 1.693E-01 | 0.081   |
|         |           | 742.81       |     | 2.694E-02           | 1.635E+00 | 2.737E+00      | 1.832E+00 | 0.010   |
|         | +         | 796.30       |     | 1.647E+00           | 1.643E+00 | 2.181E+00      | 5.790E-01 | 0.756   |
|         |           | 805.60       |     | 3.835E-01           | 1.149E+00 | 1.958E+00      | 5.921E-01 | 0.196   |
|         |           | 819.60       |     | 3.055E-02           | 1.328E+00 | 2.212E+00      | 8.349E-01 | 0.014   |
|         |           | 826.30       |     | 5.442E-01           | 9.561E-01 | 1.618E+00      | 7.201E-01 | 0.336   |
|         |           | 831.60       |     | -1.057E-01          | 7.420E-01 | 1.217E+00      | 3.592E-01 | -0.087  |
|         |           | 876.40       |     | -2.560E-01          | 1.086E+00 | 1.709E+00      | 1.757E+00 | -0.150  |
|         |           | 880.51       |     | 3.785E-01           | 3.303E-01 | 5.997E-01      | 4.942E-02 | 0.631   |
|         |           | 883.24       |     | -3.711E-02          | 3.291E-01 | 5.374E-01      | 3.610E-01 | -0.069  |
|         |           | 899.00       |     | 9.924E-01           | 1.128E+00 | 1.860E+00      | 8.128E-01 | 0.534   |
|         |           | 925.00       |     | 3.830E-01           | 1.344E+00 | 2.280E+00      | 1.906E-01 | 0.168   |
|         |           | 926.50       |     | 3.989E-02           | 1.985E-01 | 3.337E-01      | 8.405E-02 | 0.120   |
|         |           | 946.00       | *   | 1.155E-01           | 3.434E-01 | 5.836E-01      | 1.084E-01 | 0.198   |
|         |           | 949.00       |     | 2.018E-01           | 5.187E-01 | 8.862E-01      | 7.251E-02 | 0.228   |
|         |           | 980.50       |     | 1.471E-01           | 8.746E-01 | 1.462E+00      | 1.159E-01 | 0.101   |
|         |           | 1394.10      |     | -5.620E-01          | 1.330E+00 | 2.007E+00      | 1.304E+00 | -0.280  |
| PA-234M |           | 766.42       |     | 2.222E+01           | 1.778E+01 | 2.557E+01      | 1.289E+01 | 0.869   |
|         |           | 1001.03      | *   | 3.441E+00           | 5.570E+00 | 9.724E+00      | 8.962E-01 | 0.354   |
| U-235   |           | 89.95        |     | 6.179E+00           | 2.535E+00 | 2.940E+00      | 9.299E-01 | 2.102   |
|         | +         | 93.35        |     | 4.943E+00           | 2.014E+00 | 1.807E+00      | 5.167E-01 | 2.735   |
|         |           | 105.00       |     | -3.071E-01          | 1.430E+00 | 2.318E+00      | 6.915E-01 | -0.133  |
|         |           | 143.76       | *   | 9.886E-02           | 2.874E-01 | 4.647E-01      | 7.754E-02 | 0.213   |
|         |           | 163.35       |     | 2.885E-01           | 6.397E-01 | 1.048E+00      | 1.915E-01 | 0.275   |
| NP-236  | +         | 185.71       |     | 2.641E-01           | 1.176E-01 | 1.306E-01      | 8.819E-03 | 2.023   |
|         |           | 205.31       |     | -7.650E-02          | 8.349E-01 | 1.140E+00      | 2.092E-01 | -0.067  |
|         |           | 94.67        |     | 4.121E-01           | 1.936E-01 | 3.004E-01      | 3.025E-02 | 1.372   |
|         |           | 98.44        |     | -5.439E-03          | 1.002E-01 | 1.517E-01      | 1.432E-02 | -0.036  |
|         |           | 111.00       |     | 2.287E-01           | 1.931E-01 | 3.277E-01      | 2.620E-02 | 0.698   |
|         |           | 160.31       | *   | -1.574E-04          | 1.078E-01 | 1.741E-01      | 1.162E-02 | -0.001  |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| NP-239  |           | 99.55        |     | 4.953E-03           | 2.125E-01 | 3.487E-01      | 3.234E-02 | 0.014   |
|         |           | 117.00       | *   | -1.414E-01          | 2.543E-01 | 4.056E-01      | 3.049E-02 | -0.349  |
|         | +         | 209.75       |     | 2.550E+00           | 1.669E+00 | 1.907E+00      | 1.312E-01 | 1.337   |
|         |           | 228.18       |     | -1.189E-01          | 2.925E-01 | 4.848E-01      | 3.364E-02 | -0.245  |
|         |           | 277.60       |     | 3.179E-01           | 2.511E-01 | 4.406E-01      | 3.042E-02 | 0.722   |
| AM-241  |           | 334.30       |     | 3.423E-01           | 2.930E+00 | 2.877E+00      | 1.865E-01 | 0.119   |
|         |           | 59.54        | *   | 1.061E-01           | 3.696E-01 | 5.472E-01      | 6.963E-02 | 0.194   |
|         | CM-243    | 99.55        |     | 5.096E-03           | 2.186E-01 | 3.588E-01      | 3.328E-02 | 0.014   |
|         |           | 103.76       | *   | 1.189E-01           | 1.320E-01 | 2.227E-01      | 1.944E-02 | 0.534   |
|         |           | 117.00       |     | -1.455E-01          | 2.617E-01 | 4.173E-01      | 3.137E-02 | -0.349  |
| AM-246  | +         | 209.75       |     | 2.514E+00           | 1.646E+00 | 1.880E+00      | 1.293E-01 | 1.337   |
|         |           | 228.18       |     | -1.202E-01          | 2.955E-01 | 4.899E-01      | 3.399E-02 | -0.245  |
|         |           | 277.60       |     | 3.205E-01           | 2.532E-01 | 4.441E-01      | 3.067E-02 | 0.722   |
|         |           | 798.80       |     | -1.146E-01          | 2.016E-01 | 2.694E-01      | 1.868E-02 | -0.425  |
|         |           | 1036.00      |     | -2.481E-01          | 3.775E-01 | 5.790E-01      | 4.285E-02 | -0.429  |
| CM-247  |           | 1062.04      |     | 9.802E-02           | 2.659E-01 | 4.514E-01      | 3.215E-02 | 0.217   |
|         |           | 1078.86      | *   | 4.328E-03           | 1.822E-01 | 2.987E-01      | 2.071E-02 | 0.014   |
|         |           | 278.00       |     | 1.511E+00           | 1.033E+00 | 1.825E+00      | 1.260E-01 | 0.828   |
|         |           | 287.40       |     | 1.484E+00           | 1.682E+00 | 2.853E+00      | 1.957E-01 | 0.520   |
|         |           | 402.60       | *   | -3.221E-02          | 5.081E-02 | 8.064E-02      | 4.586E-03 | -0.399  |
| CF-249  |           | 252.85       |     | -1.370E-01          | 1.121E+00 | 1.872E+00      | 1.303E-01 | -0.073  |
|         |           | 333.44       |     | -6.544E-02          | 3.795E-01 | 3.570E-01      | 2.318E-02 | -0.183  |
|         |           | 387.95       | *   | -2.384E-02          | 5.339E-02 | 8.583E-02      | 4.921E-03 | -0.278  |
| CF-251  |           | 176.60       | *   | -4.569E-02          | 1.745E-01 | 2.778E-01      | 1.862E-02 | -0.164  |
|         |           | 227.00       |     | 6.953E-02           | 4.948E-01 | 8.391E-01      | 5.820E-02 | 0.083   |
|         |           | 285.00       |     | -1.230E+00          | 2.343E+00 | 3.819E+00      | 2.624E-01 | -0.322  |



# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC
*                                     2040 Savage Road
*                                     Charleston, SC 29414
*****
*
*                               DETECTOR DATA
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630015
* Acquisition date   : 23-JAN-2010 14:06:29 Detector SN#      :
* Detector ID        : GAM15                               Sensitivity      : 5.000
* Geometry           : CAN                                  Energy tolerance: 1.500
* Elapsed live time   : 0 02:00:00.00                      Abundance limit : 75.000
* Elapsed real time   : 0 02:00:01.34                      Half life ratio  : 8.000
*****
*
*                               SAMPLE DATA
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID
* Sample ID          : G244630015                      Analyst initials: MXR1
* Batch Number       : 941639                          Sample Quantity : 1.2403E+02 GRAM
* Recovery           : 1.00000                          Carrier Weight   : 0.00000
*****
*
*                               QC DATA
*
* Standard Weight    : 0.00000
* CALIB. DATE/TIME   : 16-FEB-2009 10:54:12 MS Isotope      :
* MSD DPM            : 0.000                             MSD Isotope      :
* LCS DPM            : 0.000                             LCS Isotope      :
* LCSD DPM           : 0.000                             LCSD Isotope     :
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act error | MDA<br>(pCi/GRAM ) |           |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 2.604E+01               | 2.695E+00 | 5.728E-01          | 0.000E+00 |
| CD-109  | 2.830E+00               | 1.538E+00 | 1.850E+00          | 0.000E+00 |
| SN-126  | 2.782E-01               | 1.512E-01 | 1.833E-01          | 0.000E+00 |
| CS-135  | 4.393E-01               | 2.559E-01 | 3.368E-01          | 0.000E+00 |
| BA-137M | 6.085E-01               | 1.097E-01 | 6.854E-02          | 0.000E+00 |
| CS-137  | 6.432E-01               | 1.160E-01 | 7.245E-02          | 0.000E+00 |
| TL-208  | 5.578E-01               | 9.676E-02 | 7.076E-02          | 0.000E+00 |
| BI-211  | 4.136E+00               | 6.619E-01 | 4.282E-01          | 0.000E+00 |
| PB-212  | 1.884E+00               | 2.092E-01 | 1.240E-01          | 0.000E+00 |
| PO-212  | 1.884E+00               | 2.092E-01 | 1.240E-01          | 0.000E+00 |
| BI-214  | 1.190E+00               | 1.913E-01 | 1.441E-01          | 0.000E+00 |
| PB-214  | 1.439E+00               | 2.417E-01 | 1.492E-01          | 0.000E+00 |
| PO-214  | 1.439E+00               | 2.417E-01 | 1.492E-01          | 0.000E+00 |
| PO-216  | 1.884E+00               | 2.092E-01 | 1.240E-01          | 0.000E+00 |
| PO-218  | 1.439E+00               | 2.417E-01 | 1.492E-01          | 0.000E+00 |
| RA-224  | 5.968E+00               | 1.899E+00 | 1.410E+00          | 0.000E+00 |
| RA-226  | 1.190E+00               | 1.913E-01 | 1.441E-01          | 0.000E+00 |
| AC-228  | 1.900E+00               | 3.956E-01 | 2.800E-01          | 0.000E+00 |
| RA-228  | 1.900E+00               | 3.956E-01 | 2.800E-01          | 0.000E+00 |
| TH-228  | 1.912E+00               | 2.124E-01 | 1.259E-01          | 0.000E+00 |
| TH-230  | 1.190E+00               | 1.913E-01 | 1.441E-01          | 0.000E+00 |
| TH-232  | 1.900E+00               | 3.956E-01 | 2.800E-01          | 0.000E+00 |
| TH-234  | 4.473E+00               | 3.755E+00 | 4.342E+00          | 0.000E+00 |
| U-234   | 1.190E+00               | 1.913E-01 | 1.441E-01          | 0.000E+00 |
| NP-237  | 8.169E-01               | 4.737E-01 | 5.487E-01          | 0.000E+00 |
| U-238   | 4.473E+00               | 3.755E+00 | 4.342E+00          | 0.000E+00 |
| AM-243  | 4.491E-01               | 1.371E-01 | 1.459E-01          | 0.000E+00 |
| ANH-511 | 1.636E-01               | 8.317E-02 | 5.726E-02          | 0.000E+00 |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L. Act error<br>) Ided | MDA<br>(pCi/GRAM ) |
|---------|-------------------------------------|--------------------------|--------------------|
|---------|-------------------------------------|--------------------------|--------------------|

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| BE-7    | -4.600E-02 | 4.201E-01 | 7.055E-01 | 0.000E+00 | NOT IDENT. |
| NA-22   | -9.573E-03 | 5.621E-02 | 9.135E-02 | 0.000E+00 | NOT IDENT. |
| NA-24   | 0.000E+00  | 8.184E+05 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| AL-26   | 6.948E-03  | 3.340E-02 | 5.808E-02 | 0.000E+00 | NOT IDENT. |
| TI-44   | 0.000E+00  | 6.738E-02 | 1.088E-01 | 0.000E+00 | NOT IDENT. |
| SC-46   | 7.350E-03  | 3.982E-02 | 6.890E-02 | 0.000E+00 | FAIL ABUN  |
| V-48    | 3.754E-03  | 8.191E-02 | 1.387E-01 | 0.000E+00 | NOT IDENT. |
| CR-51   | 3.797E-01  | 5.225E-01 | 8.602E-01 | 0.000E+00 | NOT IDENT. |
| MN-52   | 1.227E-01  | 2.890E-01 | 5.166E-01 | 0.000E+00 | NOT IDENT. |
| MN-54   | 1.137E-02  | 4.519E-02 | 7.857E-02 | 0.000E+00 | NOT IDENT. |
| CO-56   | 7.467E-03  | 4.828E-02 | 8.330E-02 | 0.000E+00 | NOT IDENT. |
| CO-57   | 9.049E-03  | 3.748E-02 | 5.708E-02 | 0.000E+00 | NOT IDENT. |
| CO-58   | -4.745E-03 | 4.469E-02 | 7.570E-02 | 0.000E+00 | NOT IDENT. |
| FE-59   | -5.207E-02 | 1.054E-01 | 1.674E-01 | 0.000E+00 | NOT IDENT. |
| CO-60   | 4.011E-02  | 4.484E-02 | 8.187E-02 | 0.000E+00 | NOT IDENT. |
| ZN-65   | 4.435E-02  | 1.288E-01 | 1.924E-01 | 0.000E+00 | NOT IDENT. |
| GE-68   | 2.297E-01  | 1.552E+00 | 2.635E+00 | 0.000E+00 | NOT IDENT. |
| AS-73   | -1.814E-01 | 2.177E+00 | 3.848E+00 | 0.000E+00 | NOT IDENT. |
| AS-74   | -3.401E-02 | 1.284E-01 | 2.063E-01 | 0.000E+00 | NOT IDENT. |
| SE-75   | -1.959E-02 | 6.566E-02 | 9.803E-02 | 0.000E+00 | NOT IDENT. |
| BR-77   | -2.629E+00 | 1.295E+01 | 2.146E+01 | 0.000E+00 | FAIL ABUN  |
| SR-82   | -4.333E-02 | 4.464E-01 | 7.594E-01 | 0.000E+00 | NOT IDENT. |
| RB-83   | -1.822E-02 | 8.714E-02 | 1.444E-01 | 0.000E+00 | NOT IDENT. |
| RB-84   | 4.924E-02  | 8.169E-02 | 1.459E-01 | 0.000E+00 | NOT IDENT. |
| KR-85   | 0.000E+00  | 9.586E+00 | 1.656E+01 | 0.000E+00 | NOT IDENT. |
| SR-85   | 0.000E+00  | 4.914E-02 | 8.487E-02 | 0.000E+00 | NOT IDENT. |
| RB-86   | 6.629E-01  | 9.623E-01 | 1.711E+00 | 0.000E+00 | NOT IDENT. |
| Y-88    | -1.463E-02 | 4.051E-02 | 6.294E-02 | 0.000E+00 | NOT IDENT. |
| ZR-88   | -1.234E-02 | 4.088E-02 | 6.878E-02 | 0.000E+00 | NOT IDENT. |
| Y-91    | 2.803E+00  | 2.259E+01 | 3.793E+01 | 0.000E+00 | NOT IDENT. |
| NB-94   | -9.288E-03 | 3.764E-02 | 6.375E-02 | 0.000E+00 | NOT IDENT. |
| NB-95   | 9.661E-02  | 5.073E-02 | 9.759E-02 | 0.000E+00 | NOT IDENT. |
| NB-95M  | 0.000E+00  | 2.893E-01 | 4.738E-01 | 0.000E+00 | NOT IDENT. |
| ZR-95   | 5.961E-02  | 8.511E-02 | 1.535E-01 | 0.000E+00 | NOT IDENT. |
| NB-97   | 0.000E+00  | 1.628E+05 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| ZR-97   | 0.000E+00  | 2.691E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| MO-99   | 9.781E+00  | 1.378E+01 | 2.484E+01 | 0.000E+00 | NOT IDENT. |
| TC-99M  | 0.000E+00  | 4.666E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | 2.917E-02  | 4.485E-02 | 7.601E-02 | 0.000E+00 | FAIL ABUN  |
| RH-102  | -2.306E-02 | 3.851E-02 | 6.260E-02 | 0.000E+00 | NOT IDENT. |
| RU-103  | 1.944E-02  | 4.828E-02 | 8.370E-02 | 0.000E+00 | NOT IDENT. |
| RH-106  | -1.127E-01 | 3.979E-01 | 6.464E-01 | 0.000E+00 | FAIL ABUN  |
| RU-106  | -1.127E-01 | 3.977E-01 | 6.464E-01 | 0.000E+00 | FAIL ABUN  |
| AG-108M | -1.074E-02 | 4.145E-02 | 6.936E-02 | 0.000E+00 | NOT IDENT. |
| AG-110M | 0.000E+00  | 5.802E-02 | 9.944E-02 | 0.000E+00 | NOT IDENT. |
| IN-111  | -7.139E-01 | 1.435E+00 | 2.122E+00 | 0.000E+00 | NOT IDENT. |
| IN-113M | -3.226E-02 | 5.789E-02 | 9.588E-02 | 0.000E+00 | NOT IDENT. |
| SN-113  | -3.226E-02 | 5.789E-02 | 9.588E-02 | 0.000E+00 | NOT IDENT. |
| IN-114M | -7.145E-03 | 2.726E-01 | 3.994E-01 | 0.000E+00 | NOT IDENT. |
| CD-115  | -2.736E+00 | 1.328E+01 | 2.198E+01 | 0.000E+00 | NOT IDENT. |
| SN-117M | -9.851E-04 | 7.248E-02 | 1.229E-01 | 0.000E+00 | NOT IDENT. |
| SB-122  | 3.016E-02  | 2.490E+00 | 4.171E+00 | 0.000E+00 | NOT IDENT. |
| I-123   | 0.000E+00  | 7.428E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TE-123M | -1.527E-02 | 3.807E-02 | 6.355E-02 | 0.000E+00 | NOT IDENT. |
| I-124   | -4.172E-01 | 1.009E+00 | 1.389E+00 | 0.000E+00 | NOT IDENT. |
| SB-124  | -2.107E-03 | 8.403E-02 | 1.463E-01 | 0.000E+00 | FAIL ABUN  |
| SB-125  | 3.037E-02  | 1.150E-01 | 1.991E-01 | 0.000E+00 | FAIL ABUN  |
| TE-125M | -4.172E-01 | 1.253E+01 | 2.160E+01 | 0.000E+00 | NOT IDENT. |
| I-126   | -1.161E-01 | 2.613E-01 | 3.531E-01 | 0.000E+00 | NOT IDENT. |
| SB-126  | 4.115E-02  | 1.763E-01 | 2.693E-01 | 0.000E+00 | NOT IDENT. |
| SB-127  | 4.094E-01  | 1.566E+00 | 2.759E+00 | 0.000E+00 | FAIL ABUN  |
| XE-127  | -1.509E-02 | 7.170E-02 | 1.076E-01 | 0.000E+00 | NOT IDENT. |
| I-131   | -2.622E-02 | 1.534E-01 | 2.612E-01 | 0.000E+00 | NOT IDENT. |
| TE-132  | -3.550E-01 | 8.724E-01 | 1.510E+00 | 0.000E+00 | NOT IDENT. |
| BA-133  | -4.348E-02 | 6.422E-02 | 9.048E-02 | 0.000E+00 | NOT IDENT. |
| I-133   | 0.000E+00  | 7.395E+03 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-134  | 8.477E-02  | 8.008E-02 | 1.131E-01 | 0.000E+00 | FAIL ABUN  |
| I-135   | 0.000E+00  | 5.833E+15 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-136  | -7.088E-02 | 1.308E-01 | 2.079E-01 | 0.000E+00 | FAIL ABUN  |
| CE-139  | -1.107E-02 | 3.973E-02 | 6.652E-02 | 0.000E+00 | NOT IDENT. |
| BA-140  | -2.132E-01 | 3.238E-01 | 5.045E-01 | 0.000E+00 | NOT IDENT. |
| LA-140  | -5.658E-02 | 1.082E-01 | 1.696E-01 | 0.000E+00 | FAIL ABUN  |
| CE-141  | -3.560E-02 | 8.161E-02 | 1.366E-01 | 0.000E+00 | NOT IDENT. |
| CE-143  | 0.000E+00  | 4.046E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CE-144  | 2.539E-01  | 2.958E-01 | 4.600E-01 | 0.000E+00 | NOT IDENT. |
| PM-144  | 2.539E-02  | 3.980E-02 | 7.178E-02 | 0.000E+00 | NOT IDENT. |
| PR-144  | 1.720E+00  | 2.697E+00 | 4.864E+00 | 0.000E+00 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PM-146  | 2.589E-02  | 5.922E-02 | 1.005E-01 | 0.000E+00 | NOT IDENT. |
| ND-147  | 3.286E-01  | 6.921E-01 | 1.200E+00 | 0.000E+00 | FAIL ABUN  |
| PM-149  | -1.668E+01 | 1.206E+02 | 2.088E+02 | 0.000E+00 | NOT IDENT. |
| EU-152  | -9.576E-03 | 1.879E-01 | 2.199E-01 | 0.000E+00 | FAIL ABUN  |
| GD-153  | -2.026E-02 | 1.186E-01 | 1.787E-01 | 0.000E+00 | NOT IDENT. |
| EU-154  | -2.811E-02 | 1.569E-01 | 2.547E-01 | 0.000E+00 | NOT IDENT. |
| EU-155  | -6.187E-02 | 1.433E-01 | 2.436E-01 | 0.000E+00 | FAIL ABUN  |
| TB-160  | 1.991E-01  | 1.630E-01 | 3.045E-01 | 0.000E+00 | FAIL ABUN  |
| HO-166M | -4.064E-02 | 6.685E-02 | 1.096E-01 | 0.000E+00 | FAIL ABUN  |
| TM-171  | -3.590E+01 | 5.681E+01 | 8.461E+01 | 0.000E+00 | NOT IDENT. |
| LU-176  | 5.934E-03  | 3.224E-02 | 5.645E-02 | 0.000E+00 | NOT IDENT. |
| LU-177  | 0.000E+00  | 2.300E+00 | 2.735E+00 | 0.000E+00 | FAIL ABUN  |
| LU-177M | -1.371E-01 | 2.388E-01 | 3.941E-01 | 0.000E+00 | FAIL ABUN  |
| HF-181  | 2.392E-02  | 5.513E-02 | 9.576E-02 | 0.000E+00 | NOT IDENT. |
| W-181   | 1.065E-01  | 7.477E-01 | 1.159E+00 | 0.000E+00 | NOT IDENT. |
| TA-182  | 1.186E-01  | 2.440E-01 | 4.214E-01 | 0.000E+00 | FAIL ABUN  |
| RE-183  | 2.750E-02  | 1.461E-01 | 2.495E-01 | 0.000E+00 | FAIL ABUN  |
| RE-184  | -3.651E-02 | 2.927E-01 | 5.104E-01 | 0.000E+00 | NOT IDENT. |
| OS-185  | 2.195E-03  | 5.573E-02 | 9.269E-02 | 0.000E+00 | FAIL ABUN  |
| RE-188  | 1.634E-02  | 2.223E-01 | 3.787E-01 | 0.000E+00 | NOT IDENT. |
| W-188   | -1.765E+00 | 1.093E+01 | 1.637E+01 | 0.000E+00 | FAIL ABUN  |
| IR-192  | -1.495E-02 | 4.421E-02 | 7.527E-02 | 0.000E+00 | NOT IDENT. |
| AU-195  | -1.228E-01 | 3.114E-01 | 5.125E-01 | 0.000E+00 | FAIL ABUN  |
| TL-200  | 0.000E+00  | 5.807E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TL-201  | -4.428E+00 | 9.275E+00 | 1.539E+01 | 0.000E+00 | NOT IDENT. |
| TL-202  | 7.462E-02  | 9.495E-02 | 1.685E-01 | 0.000E+00 | NOT IDENT. |
| HG-203  | 2.191E-02  | 5.430E-02 | 9.631E-02 | 0.000E+00 | FAIL ABUN  |
| BI-207  | -1.378E-02 | 6.035E-02 | 9.887E-02 | 0.000E+00 | FAIL ABUN  |
| TL-207  | -1.937E-02 | 9.834E-01 | 1.476E+00 | 0.000E+00 | FAIL ABUN  |
| PO-209  | 3.367E+00  | 8.970E+00 | 1.571E+01 | 0.000E+00 | NOT IDENT. |
| BI-210  | 1.329E+01  | 1.448E+01 | 2.592E+01 | 0.000E+00 | NOT IDENT. |
| PB-210  | 1.329E+01  | 1.448E+01 | 2.592E+01 | 0.000E+00 | NOT IDENT. |
| PO-210  | 1.329E+01  | 1.447E+01 | 2.592E+01 | 0.000E+00 | NOT IDENT. |
| PB-211  | -6.117E-01 | 1.320E+00 | 2.106E+00 | 0.000E+00 | NOT IDENT. |
| BI-212  | 0.000E+00  | 7.528E-01 | 7.643E-01 | 0.000E+00 | FAIL ABUN  |
| PO-215  | -1.937E-02 | 9.834E-01 | 1.476E+00 | 0.000E+00 | FAIL ABUN  |
| RN-219  | -2.850E-01 | 5.551E-01 | 9.195E-01 | 0.000E+00 | NOT IDENT. |
| RN-220  | 1.127E+01  | 3.559E+01 | 6.091E+01 | 0.000E+00 | NOT IDENT. |
| RA-223  | -1.937E-02 | 9.834E-01 | 1.476E+00 | 0.000E+00 | FAIL ABUN  |
| AC-227  | 8.625E-02  | 4.863E-01 | 8.582E-01 | 0.000E+00 | NOT IDENT. |
| TH-227  | 8.625E-02  | 4.863E-01 | 8.582E-01 | 0.000E+00 | NOT IDENT. |
| TH-229  | -9.009E-01 | 6.886E-01 | 1.069E+00 | 0.000E+00 | FAIL ABUN  |
| PA-231  | -1.591E+00 | 2.049E+00 | 3.424E+00 | 0.000E+00 | NOT IDENT. |
| TH-231  | -1.937E-02 | 9.834E-01 | 1.476E+00 | 0.000E+00 | FAIL ABUN  |
| U-231   | 3.748E-01  | 1.540E+00 | 2.372E+00 | 0.000E+00 | FAIL ABUN  |
| PA-233  | 2.565E-02  | 8.329E-02 | 1.466E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234  | 1.155E-01  | 3.365E-01 | 5.864E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234M | 3.441E+00  | 5.458E+00 | 9.763E+00 | 0.000E+00 | NOT IDENT. |
| U-235   | 9.886E-02  | 2.817E-01 | 4.789E-01 | 0.000E+00 | FAIL ABUN  |
| NP-236  | -1.574E-04 | 1.056E-01 | 1.792E-01 | 0.000E+00 | NOT IDENT. |
| NP-239  | -1.414E-01 | 2.493E-01 | 4.191E-01 | 0.000E+00 | FAIL ABUN  |
| AM-241  | 1.061E-01  | 3.622E-01 | 5.704E-01 | 0.000E+00 | NOT IDENT. |
| CM-243  | 1.189E-01  | 1.294E-01 | 2.305E-01 | 0.000E+00 | FAIL ABUN  |
| AM-246  | 4.328E-03  | 1.785E-01 | 2.996E-01 | 0.000E+00 | NOT IDENT. |
| CM-247  | -3.221E-02 | 4.979E-02 | 8.198E-02 | 0.000E+00 | NOT IDENT. |
| CF-249  | -2.384E-02 | 5.233E-02 | 8.730E-02 | 0.000E+00 | NOT IDENT. |
| CF-251  | -4.569E-02 | 1.710E-01 | 2.855E-01 | 0.000E+00 | NOT IDENT. |

```

*****
*                                     GEL Laboratories LLC
*                                     2040 Savage Road
*                                     Charleston, SC 29414
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630015.CNF;1
Sample date        : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 14:06:29
Sample ID          : G244630015           Sample quantity  : 1.24030E+02 GRAM
Detector name      : GAM15                Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00        Elapsed real time: 0 02:00:01.34  0.0%
Energy tolerance   : 1.50000 keV          Analyst Initials  : MXR1
Abundance limit    : 75.00000             Sensitivity        : 5.00000
Batch ID           : 941639               Detector SN#       :
Matrix Spike ID    :                     LCS ID           : 1032-A
*****

```

## Nuclide Line Activity Report

## Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| K-40    | 1460.81 | 917   | 10.67* | 9.991E-01 | 2.604E+01               | 2.604E+01              | 10.56             |
| CD-109  | 88.03   | 150   | 3.72*  | 4.417E+00 | 2.767E+00               | 2.830E+00              | 55.45             |
| SN-126  | 64.28   | ----- | 9.60   | 1.930E+00 | -----                   | Line Not Found         | -----             |
|         | 86.94   | 150   | 8.90   | 4.417E+00 | 1.157E+00               | 1.157E+00              | 68.64             |
|         | 87.57   | 150   | 37.00* | 4.417E+00 | 2.782E-01               | 2.782E-01              | 55.45             |
| CS-135  | 268.24  | 90    | 16.00* | 3.866E+00 | 4.393E-01               | 4.393E-01              | 59.44             |
| BA-137M | 661.65  | 365   | 89.98* | 2.020E+00 | 6.079E-01               | 6.085E-01              | 18.40             |
| CS-137  | 661.65  | 365   | 85.12* | 2.020E+00 | 6.426E-01               | 6.432E-01              | 18.40             |
| TL-208  | 277.35  | ----- | 6.80   | 3.788E+00 | -----                   | Line Not Found         | -----             |
|         | 510.84  | 133   | 21.60  | 2.462E+00 | 7.574E-01               | 7.574E-01              | 52.54             |
|         | 583.14  | 346   | 84.20* | 2.230E+00 | 5.578E-01               | 5.578E-01              | 17.70             |
|         | 860.37  | ----- | 12.46  | 1.613E+00 | -----                   | Line Not Found         | -----             |
| BI-211  | 72.87   | 307   | 1.27   | 3.130E+00 | 2.334E+01               | 2.334E+01              | 31.16             |
|         | 351.07  | 567   | 12.94* | 3.206E+00 | 4.136E+00               | 4.136E+00              | 16.33             |
| PB-212  | 74.81   | 307   | 10.70  | 3.130E+00 | 2.770E+00               | 2.770E+00              | 32.53             |
|         | 77.11   | 535   | 18.00  | 3.413E+00 | 2.635E+00               | 2.635E+00              | 21.13             |
|         | 87.30   | 150   | 8.00   | 4.417E+00 | 1.287E+00               | 1.287E+00              | 56.34             |
|         | 238.63  | 1172  | 44.60* | 4.221E+00 | 1.884E+00               | 1.884E+00              | 11.34             |
|         | 300.09  | ----- | 3.41   | 3.583E+00 | -----                   | Line Not Found         | -----             |
| PO-212  | 74.81   | 307   | 10.70  | 3.130E+00 | 2.770E+00               | 2.770E+00              | 32.53             |
|         | 77.11   | 535   | 18.00  | 3.413E+00 | 2.635E+00               | 2.635E+00              | 21.13             |
|         | 87.30   | 150   | 8.00   | 4.417E+00 | 1.287E+00               | 1.287E+00              | 56.34             |
|         | 115.19  | ----- | 0.60   | 5.666E+00 | -----                   | Line Not Found         | -----             |
|         | 238.63  | 1172  | 44.60* | 4.221E+00 | 1.884E+00               | 1.884E+00              | 11.34             |
|         | 300.09  | ----- | 3.41   | 3.583E+00 | -----                   | Line Not Found         | -----             |
| BI-214  | 609.31  | 393   | 46.30* | 2.156E+00 | 1.190E+00               | 1.190E+00              | 16.40             |
|         | 1120.29 | 86    | 15.10  | 1.264E+00 | 1.361E+00               | 1.361E+00              | 49.84             |
|         | 1764.49 | 63    | 15.80  | 8.816E-01 | 1.362E+00               | 1.362E+00              | 42.95             |
| PB-214  | 74.81   | 307   | 6.21   | 3.130E+00 | 4.773E+00               | 4.773E+00              | 32.03             |
|         | 77.11   | 535   | 10.50  | 3.413E+00 | 4.517E+00               | 4.517E+00              | 22.46             |
|         | 87.30   | 150   | 4.67   | 4.417E+00 | 2.204E+00               | 2.204E+00              | 55.98             |
|         | 241.98  | 326   | 7.49   | 4.184E+00 | 3.147E+00               | 3.148E+00              | 32.94             |

Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| PO-214  | 295.21  | 350   | 19.20  | 3.632E+00 | 1.517E+00               | 1.517E+00              | 20.79             |
|         | 351.92  | 567   | 37.20* | 3.206E+00 | 1.439E+00               | 1.439E+00              | 17.14             |
|         | 74.81   | 307   | 6.21   | 3.130E+00 | 4.773E+00               | 4.773E+00              | 32.03             |
|         | 77.11   | 535   | 10.50  | 3.413E+00 | 4.517E+00               | 4.517E+00              | 22.46             |
|         | 87.30   | 150   | 4.67   | 4.417E+00 | 2.204E+00               | 2.204E+00              | 55.98             |
| PO-216  | 241.98  | 326   | 7.49   | 4.184E+00 | 3.147E+00               | 3.148E+00              | 32.94             |
|         | 295.21  | 350   | 19.20  | 3.632E+00 | 1.517E+00               | 1.517E+00              | 20.79             |
|         | 351.92  | 567   | 37.20* | 3.206E+00 | 1.439E+00               | 1.439E+00              | 17.14             |
|         | 74.81   | 307   | 10.70  | 3.130E+00 | 2.770E+00               | 2.770E+00              | 32.53             |
|         | 77.11   | 535   | 18.00  | 3.413E+00 | 2.635E+00               | 2.635E+00              | 21.13             |
| PO-218  | 87.30   | 150   | 8.00   | 4.417E+00 | 1.287E+00               | 1.287E+00              | 56.34             |
|         | 238.63  | 1172  | 44.60* | 4.221E+00 | 1.884E+00               | 1.884E+00              | 11.34             |
|         | 300.09  | ----- | 3.41   | 3.583E+00 | -----                   | Line Not Found         | -----             |
|         | 74.81   | 307   | 6.21   | 3.130E+00 | 4.773E+00               | 4.773E+00              | 32.03             |
|         | 77.11   | 535   | 10.50  | 3.413E+00 | 4.517E+00               | 4.517E+00              | 22.46             |
| RA-224  | 87.30   | 150   | 4.67   | 4.417E+00 | 2.204E+00               | 2.204E+00              | 55.98             |
|         | 241.98  | 326   | 7.49   | 4.184E+00 | 3.147E+00               | 3.148E+00              | 32.94             |
|         | 295.21  | 350   | 19.20  | 3.632E+00 | 1.517E+00               | 1.517E+00              | 20.79             |
|         | 351.92  | 567   | 37.20* | 3.206E+00 | 1.439E+00               | 1.439E+00              | 17.14             |
|         | 240.98  | 326   | 3.95*  | 4.184E+00 | 5.968E+00               | 5.968E+00              | 32.46             |
| RA-226  | 609.31  | 393   | 46.30* | 2.156E+00 | 1.190E+00               | 1.190E+00              | 16.40             |
|         | 1120.29 | 86    | 15.10  | 1.264E+00 | 1.361E+00               | 1.361E+00              | 49.84             |
|         | 1764.49 | 63    | 15.80  | 8.816E-01 | 1.362E+00               | 1.362E+00              | 42.95             |
|         | 338.32  | 259   | 11.40  | 3.297E+00 | 2.083E+00               | 2.083E+00              | 48.24             |
|         | 911.07  | 266   | 27.70* | 1.532E+00 | 1.900E+00               | 1.900E+00              | 21.24             |
| AC-228  | 969.11  | 164   | 16.60  | 1.448E+00 | 2.067E+00               | 2.067E+00              | 31.56             |
|         | 338.32  | 259   | 11.40  | 3.297E+00 | 2.083E+00               | 2.083E+00              | 48.24             |
|         | 911.07  | 266   | 27.70* | 1.532E+00 | 1.900E+00               | 1.900E+00              | 21.24             |
|         | 969.11  | 164   | 16.60  | 1.448E+00 | 2.067E+00               | 2.067E+00              | 31.56             |
|         | 74.81   | 307   | 10.70  | 3.130E+00 | 2.770E+00               | 2.812E+00              | 31.18             |
| TH-228  | 77.11   | 535   | 18.00  | 3.413E+00 | 2.635E+00               | 2.675E+00              | 21.13             |
|         | 87.30   | 150   | 8.00   | 4.417E+00 | 1.287E+00               | 1.306E+00              | 55.45             |
|         | 238.63  | 1172  | 44.60* | 4.221E+00 | 1.884E+00               | 1.912E+00              | 11.34             |
|         | 300.09  | ----- | 3.41   | 3.583E+00 | -----                   | Line Not Found         | -----             |
|         | 609.31  | 393   | 46.30* | 2.156E+00 | 1.190E+00               | 1.190E+00              | 16.40             |
| TH-230  | 1120.29 | 86    | 15.10  | 1.264E+00 | 1.361E+00               | 1.361E+00              | 49.84             |
|         | 1764.49 | 63    | 15.80  | 8.816E-01 | 1.362E+00               | 1.362E+00              | 42.95             |
|         | 338.32  | 259   | 11.40  | 3.297E+00 | 2.083E+00               | 2.083E+00              | 26.44             |
|         | 911.07  | 266   | 27.70* | 1.532E+00 | 1.900E+00               | 1.900E+00              | 21.24             |
|         | 969.11  | 164   | 16.60  | 1.448E+00 | 2.067E+00               | 2.067E+00              | 31.56             |
| TH-232  | 63.29   | 94    | 3.80*  | 1.665E+00 | 4.473E+00               | 4.473E+00              | 85.65             |
|         | 92.38   | 354   | 5.41   | 4.820E+00 | 4.111E+00               | 4.111E+00              | 34.66             |
|         | 609.31  | 393   | 46.30* | 2.156E+00 | 1.190E+00               | 1.190E+00              | 16.40             |
|         | 1120.29 | 86    | 15.10  | 1.264E+00 | 1.361E+00               | 1.361E+00              | 49.84             |
|         | 1764.49 | 63    | 15.80  | 8.816E-01 | 1.362E+00               | 1.362E+00              | 42.95             |
| NP-237  | 86.50   | 150   | 12.60* | 4.417E+00 | 8.169E-01               | 8.169E-01              | 59.17             |
|         | 95.87   | ----- | 2.60   | 5.041E+00 | -----                   | Line Not Found         | -----             |
|         | 63.29   | 94    | 3.80*  | 1.665E+00 | 4.473E+00               | 4.473E+00              | 85.65             |
|         | 92.38   | 354   | 5.41   | 4.820E+00 | 4.111E+00               | 4.111E+00              | 30.80             |
|         |         |       |        |           |                         |                        |                   |

Nuclide Type:

| Nuclide | Energy | Area  | %Abn    | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|--------|-------|---------|-----------|-------------------------|------------------------|-------------------|
| AM-243  | 74.67  | 307   | 66.00*  | 3.130E+00 | 4.491E-01               | 4.491E-01              | 31.16             |
|         | 86.72  | 150   | 0.34    | 4.417E+00 | 3.064E+01               | 3.064E+01              | 55.45             |
|         | 117.66 | ----- | 0.55    | 5.694E+00 | -----                   | Line Not Found         | -----             |
|         | 142.18 | ----- | 0.13    | 5.637E+00 | -----                   | Line Not Found         | -----             |
| ANH-511 | 511.00 | 133   | 100.00* | 2.462E+00 | 1.636E-01               | 1.636E-01              | 51.87             |

Flag: "\*" = Keyline

Total number of lines in spectrum 29  
Number of unidentified lines 1  
Number of lines tentatively identified by NID 28 96.55%

Nuclide Type :

| Nuclide | Hlife     | Decay | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | Decay Corr<br>2-Sigma Error | 2-Sigma<br>%Error | Flags |
|---------|-----------|-------|-------------------------|------------------------|-----------------------------|-------------------|-------|
| K-40    | 1.28E+09Y | 1.00  | 2.604E+01               | 2.604E+01              | 0.275E+01                   | 10.56             |       |
| CD-109  | 464.00D   | 1.02  | 2.767E+00               | 2.830E+00              | 1.569E+00                   | 55.45             |       |
| SN-126  | 1.00E+05Y | 1.00  | 2.782E-01               | 2.782E-01              | 1.543E-01                   | 55.45             |       |
| CS-135  | 2.30E+06Y | 1.00  | 4.393E-01               | 4.393E-01              | 2.611E-01                   | 59.44             |       |
| BA-137M | 30.17Y    | 1.00  | 6.079E-01               | 6.085E-01              | 1.119E-01                   | 18.40             |       |
| CS-137  | 30.17Y    | 1.00  | 6.426E-01               | 6.432E-01              | 1.184E-01                   | 18.40             |       |
| TL-208  | 1.41E+10Y | 1.00  | 5.578E-01               | 5.578E-01              | 0.987E-01                   | 17.70             |       |
| BI-211  | 7.04E+08Y | 1.00  | 4.136E+00               | 4.136E+00              | 0.675E+00                   | 16.33             |       |
| PB-212  | 1.41E+10Y | 1.00  | 1.884E+00               | 1.884E+00              | 0.214E+00                   | 11.34             |       |
| PO-212  | 1.41E+10Y | 1.00  | 1.884E+00               | 1.884E+00              | 0.214E+00                   | 11.34             |       |
| BI-214  | 1600.00Y  | 1.00  | 1.190E+00               | 1.190E+00              | 0.195E+00                   | 16.40             |       |
| PB-214  | 1600.00Y  | 1.00  | 1.439E+00               | 1.439E+00              | 0.247E+00                   | 17.14             |       |
| PO-214  | 1600.00Y  | 1.00  | 1.439E+00               | 1.439E+00              | 0.247E+00                   | 17.14             |       |
| PO-216  | 1.41E+10Y | 1.00  | 1.884E+00               | 1.884E+00              | 0.214E+00                   | 11.34             |       |
| PO-218  | 1600.00Y  | 1.00  | 1.439E+00               | 1.439E+00              | 0.247E+00                   | 17.14             |       |
| RA-224  | 1.41E+10Y | 1.00  | 5.968E+00               | 5.968E+00              | 1.937E+00                   | 32.46             |       |
| RA-226  | 1600.00Y  | 1.00  | 1.190E+00               | 1.190E+00              | 0.195E+00                   | 16.40             |       |
| AC-228  | 1.41E+10Y | 1.00  | 1.900E+00               | 1.900E+00              | 0.404E+00                   | 21.24             |       |
| RA-228  | 1.41E+10Y | 1.00  | 1.900E+00               | 1.900E+00              | 0.404E+00                   | 21.24             |       |
| TH-228  | 1.91Y     | 1.02  | 1.884E+00               | 1.912E+00              | 0.217E+00                   | 11.34             |       |
| TH-230  | 4.47E+09Y | 1.00  | 1.190E+00               | 1.190E+00              | 0.195E+00                   | 16.40             |       |
| TH-232  | 1.41E+10Y | 1.00  | 1.900E+00               | 1.900E+00              | 0.404E+00                   | 21.24             |       |
| TH-234  | 4.47E+09Y | 1.00  | 4.473E+00               | 4.473E+00              | 3.831E+00                   | 85.65             |       |
| U-234   | 4.47E+09Y | 1.00  | 1.190E+00               | 1.190E+00              | 0.195E+00                   | 16.40             |       |
| NP-237  | 2.14E+06Y | 1.00  | 8.169E-01               | 8.169E-01              | 4.833E-01                   | 59.17             |       |
| U-238   | 4.47E+09Y | 1.00  | 4.473E+00               | 4.473E+00              | 3.831E+00                   | 85.65             |       |
| AM-243  | 7380.00Y  | 1.00  | 4.491E-01               | 4.491E-01              | 1.399E-01                   | 31.16             |       |
| ANH-511 | 1.00E+09Y | 1.00  | 1.636E-01               | 1.636E-01              | 0.849E-01                   | 51.87             |       |

Total Activity : 7.413E+01 7.422E+01

Grand Total Activity : 7.413E+01 7.422E+01

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

Unidentified Energy Lines  
Sample ID : G244630015

Page : 5  
Acquisition date : 23-JAN-2010 14:06:29

| It | Energy  | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | %Eff     | Flags |
|----|---------|------|-------|------|---------|------|----|----------|------|----------|-------|
| 0  | 128.30  | 147  | 527   | 1.61 | 257.04  | 250  | 13 | 2.04E-02 | 66.6 | 5.73E+00 | T     |
| 0  | 185.23  | 235  | 512   | 1.42 | 370.85  | 364  | 14 | 3.26E-02 | 44.0 | 4.99E+00 | T     |
| 0  | 209.03  | 126  | 386   | 1.37 | 418.44  | 413  | 12 | 1.75E-02 | 65.1 | 4.62E+00 | T     |
| 0  | 327.35  | 116  | 282   | 1.48 | 654.98  | 648  | 15 | 1.61E-02 | 65.9 | 3.37E+00 | T     |
| 0  | 462.06  | 71   | 141   | 1.50 | 924.29  | 918  | 14 | 9.91E-03 | 74.3 | 2.64E+00 | T     |
| 0  | 727.25  | 62   | 134   | 1.95 | 1454.50 | 1449 | 18 | 8.61E-03 | 89.9 | 1.87E+00 | T     |
| 0  | 794.90  | 37   | 67    | 1.51 | 1589.75 | 1584 | 12 | 5.10E-03 | 96.1 | 1.73E+00 | T     |
| 1  | 963.90  | 77   | 26    | 2.18 | 1927.67 | 1919 | 24 | 1.07E-02 | 37.7 | 1.45E+00 | T     |
| 0  | 1511.89 | 11   | 31    | 3.84 | 3023.49 | 3011 | 20 | 1.47E-03 | **** | 9.73E-01 |       |

Flags: "T" = Tentatively associated



```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630015.CNF;1
* Acquisition date   : 23-JAN-2010 14:06:29  Detector SN#      :
* Detector ID        : GAM15                      Sensitivity    : 5.00000
* Geometry           : CAN                      Energy tolerance: 1.50000
* Elapsed live time  : 0 02:00:00.00           Abundance limit  : 75.00000
* Elapsed real time  : 0 02:00:01.34           Half life ratio  : 8.00000
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 8-JAN-2010 12:00:00.  Nuclide Library : SOLID
* Sample ID          : G244630015           Analyst initials: MXR1
* Batch Number       : 941639               Sample Quantity : 1.24030E+02 GRAM
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 16-FEB-2009 10:54:12.9MS Isotope      :
* MSD ID              :                      MSD Isotope       :
* LCS ID              : 1032-A              LCS Isotope        :
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| K-40    | 2.604E+01              | 2.750E+00 | 5.735E-01         | 4.384E-02 | 45.408  |
| CD-109  | 2.830E+00              | 1.569E+00 | 1.784E+00         | 2.063E-01 | 1.587   |
| SN-126  | 2.782E-01              | 1.543E-01 | 1.767E-01         | 2.039E-02 | 1.574   |
| CS-135  | 4.393E-01              | 2.611E-01 | 3.295E-01         | 2.817E-02 | 1.333   |
| BA-137M | 6.085E-01              | 1.119E-01 | 6.787E-02         | 3.415E-03 | 8.965   |
| CS-137  | 6.432E-01              | 1.184E-01 | 7.175E-02         | 3.630E-03 | 8.965   |
| TL-208  | 5.578E-01              | 9.873E-02 | 6.995E-02         | 4.454E-03 | 7.974   |
| BI-211  | 4.136E+00              | 6.755E-01 | 4.205E-01         | 2.889E-02 | 9.837   |
| PB-212  | 1.884E+00              | 2.135E-01 | 1.211E-01         | 1.002E-02 | 15.553  |
| PO-212  | 1.884E+00              | 2.135E-01 | 1.211E-01         | 1.002E-02 | 15.553  |
| BI-214  | 1.190E+00              | 1.952E-01 | 1.426E-01         | 1.059E-02 | 8.349   |
| PB-214  | 1.439E+00              | 2.467E-01 | 1.465E-01         | 1.263E-02 | 9.818   |
| PO-214  | 1.439E+00              | 2.467E-01 | 1.465E-01         | 1.263E-02 | 9.818   |
| PO-216  | 1.884E+00              | 2.135E-01 | 1.211E-01         | 1.002E-02 | 15.553  |
| PO-218  | 1.439E+00              | 2.467E-01 | 1.465E-01         | 1.263E-02 | 9.818   |
| RA-224  | 5.968E+00              | 1.937E+00 | 1.378E+00         | 9.590E-02 | 4.332   |
| RA-226  | 1.190E+00              | 1.952E-01 | 1.426E-01         | 1.059E-02 | 8.349   |
| AC-228  | 1.900E+00              | 4.036E-01 | 2.785E-01         | 3.096E-02 | 6.823   |

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| RA-228  | 1.900E+00              | 4.036E-01 | 2.785E-01         | 3.096E-02 | 6.823   |
| TH-228  | 1.912E+00              | 2.167E-01 | 1.229E-01         | 1.018E-02 | 15.553  |
| TH-230  | 1.190E+00              | 1.952E-01 | 1.426E-01         | 1.059E-02 | 8.349   |
| TH-232  | 1.900E+00              | 4.036E-01 | 2.785E-01         | 3.096E-02 | 6.823   |
| TH-234  | 4.473E+00              | 3.831E+00 | 4.169E+00         | 8.227E-01 | 1.073   |
| U-234   | 1.190E+00              | 1.952E-01 | 1.426E-01         | 1.059E-02 | 8.349   |
| NP-237  | 8.169E-01              | 4.833E-01 | 5.289E-01         | 1.248E-01 | 1.545   |
| U-238   | 4.473E+00              | 3.831E+00 | 4.169E+00         | 8.227E-01 | 1.073   |
| AM-243  | 4.491E-01              | 1.399E-01 | 1.404E-01         | 1.560E-02 | 3.198   |
| ANH-511 | 1.636E-01              | 8.487E-02 | 5.651E-02         | 3.191E-03 | 2.895   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| BE-7    | -4.600E-02                         |              | 4.286E-01 | 6.956E-01           | 4.635E-02 | -0.066  |
| NA-22   | -9.573E-03                         |              | 5.736E-02 | 9.128E-02           | 6.265E-03 | -0.105  |
| NA-24   | 6.242E-03                          |              | 4.176E-01 | Half-Life too short |           |         |
| AL-26   | 6.948E-03                          |              | 3.408E-02 | 5.833E-02           | 3.490E-03 | 0.119   |
| TI-44   | 2.282E-01                          |              | 6.875E-02 | 1.047E-01           | 1.165E-02 | 2.179   |
| SC-46   | 7.350E-03                          |              | 4.063E-02 | 6.851E-02           | 5.746E-03 | 0.107   |
| V-48    | 3.754E-03                          |              | 8.359E-02 | 1.381E-01           | 1.091E-02 | 0.027   |
| CR-51   | 3.797E-01                          |              | 5.332E-01 | 8.435E-01           | 6.083E-02 | 0.450   |
| MN-52   | 1.227E-01                          |              | 2.949E-01 | 5.171E-01           | 3.834E-02 | 0.237   |
| MN-54   | 1.137E-02                          |              | 4.611E-02 | 7.805E-02           | 5.850E-03 | 0.146   |
| CO-56   | 7.467E-03                          |              | 4.927E-02 | 8.278E-02           | 6.362E-03 | 0.090   |
| CO-57   | 9.049E-03                          |              | 3.825E-02 | 5.526E-02           | 3.973E-03 | 0.164   |
| CO-58   | -4.745E-03                         |              | 4.560E-02 | 7.517E-02           | 5.370E-03 | -0.063  |
| FE-59   | -5.207E-02                         |              | 1.076E-01 | 1.670E-01           | 1.263E-02 | -0.312  |
| CO-60   | 4.011E-02                          |              | 4.576E-02 | 8.186E-02           | 6.178E-03 | 0.490   |
| ZN-65   | 4.435E-02                          |              | 1.315E-01 | 1.919E-01           | 1.247E-02 | 0.231   |
| GE-68   | 2.297E-01                          |              | 1.584E+00 | 2.627E+00           | 1.826E-01 | 0.087   |
| AS-73   | -1.814E-01                         |              | 2.221E+00 | 3.686E+00           | 5.037E-01 | -0.049  |
| AS-74   | -3.401E-02                         |              | 1.310E-01 | 2.040E-01           | 1.097E-02 | -0.167  |
| SE-75   | -1.959E-02                         |              | 6.700E-02 | 9.589E-02           | 6.706E-03 | -0.204  |
| BR-77   | -2.629E+00                         |              | 1.321E+01 | 2.119E+01           | 1.192E+00 | -0.124  |
| SR-82   | -4.333E-02                         |              | 4.555E-01 | 7.537E-01           | 4.975E-02 | -0.057  |
| RB-83   | -1.822E-02                         |              | 8.892E-02 | 1.426E-01           | 8.021E-03 | -0.128  |
| RB-84   | 4.924E-02                          |              | 8.335E-02 | 1.451E-01           | 1.198E-02 | 0.339   |
| KR-85   | 2.052E+01                          |              | 9.782E+00 | 1.634E+01           | 9.217E-01 | 1.256   |
| SR-85   | 1.052E-01                          |              | 5.014E-02 | 8.376E-02           | 4.725E-03 | 1.256   |
| RB-86   | 6.629E-01                          |              | 9.819E-01 | 1.706E+00           | 1.187E-01 | 0.389   |
| Y-88    | -1.463E-02                         |              | 4.134E-02 | 6.322E-02           | 3.693E-03 | -0.231  |
| ZR-88   | -1.234E-02                         |              | 4.171E-02 | 6.763E-02           | 3.836E-03 | -0.182  |
| Y-91    | 2.803E+00                          |              | 2.305E+01 | 3.787E+01           | 2.290E+00 | 0.074   |
| NB-94   | -9.288E-03                         |              | 3.840E-02 | 6.318E-02           | 3.515E-03 | -0.147  |
| NB-95   | 9.661E-02                          |              | 5.176E-02 | 9.684E-02           | 6.241E-03 | 0.998   |
| NB-95M  | 1.958E+00                          |              | 2.952E-01 | 4.627E-01           | 3.910E-02 | 4.232   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| ZR-95   | 5.961E-02                          |              | 8.684E-02 | 1.523E-01           | 1.136E-02 | 0.391   |
| NB-97   | 4.594E-01                          |              | 8.308E-02 | Half-Life too short |           |         |
| ZR-97   | 8.954E+00                          |              | 1.373E+00 | Half-Life too short |           |         |
| MO-99   | 9.781E+00                          |              | 1.407E+01 | 2.464E+01           | 3.424E+00 | 0.397   |
| TC-99M  | 3.115E+10                          |              | 2.380E+10 | Half-Life too short |           |         |
| RH-101  | 2.917E-02                          |              | 4.576E-02 | 7.406E-02           | 5.052E-03 | 0.394   |
| RH-102  | -2.306E-02                         |              | 3.929E-02 | 6.171E-02           | 3.518E-03 | -0.374  |
| RU-103  | 1.944E-02                          |              | 4.926E-02 | 8.257E-02           | 1.039E-02 | 0.235   |
| RH-106  | -1.127E-01                         |              | 4.060E-01 | 6.396E-01           | 7.340E-02 | -0.176  |
| RU-106  | -1.127E-01                         |              | 4.058E-01 | 6.396E-01           | 3.360E-02 | -0.176  |
| AG-108M | -1.074E-02                         |              | 4.230E-02 | 6.830E-02           | 4.247E-03 | -0.157  |
| AG-110M | 1.339E-01                          |              | 5.921E-02 | 9.847E-02           | 5.397E-03 | 1.360   |
| IN-111  | -7.139E-01                         |              | 1.464E+00 | 2.073E+00           | 1.443E-01 | -0.344  |
| IN-113M | -3.226E-02                         |              | 5.907E-02 | 9.427E-02           | 5.719E-03 | -0.342  |
| SN-113  | -3.226E-02                         |              | 5.907E-02 | 9.427E-02           | 5.719E-03 | -0.342  |
| IN-114M | -7.145E-03                         |              | 2.781E-01 | 3.889E-01           | 2.637E-02 | -0.018  |
| CD-115  | -2.736E+00                         |              | 1.355E+01 | 2.170E+01           | 1.217E+00 | -0.126  |
| SN-117M | -9.851E-04                         |              | 7.396E-02 | 1.194E-01           | 7.986E-03 | -0.008  |
| SB-122  | 3.016E-02                          |              | 2.541E+00 | 4.121E+00           | 2.267E-01 | 0.007   |
| I-123   | -2.980E+00                         |              | 3.790E+00 | Half-Life too short |           |         |
| TE-123M | -1.527E-02                         |              | 3.884E-02 | 6.174E-02           | 4.168E-03 | -0.247  |
| I-124   | -4.172E-01                         |              | 1.030E+00 | 1.373E+00           | 7.342E-02 | -0.304  |
| SB-124  | -2.107E-03                         |              | 8.574E-02 | 1.468E-01           | 1.031E-02 | -0.014  |
| SB-125  | 3.037E-02                          |              | 1.174E-01 | 1.960E-01           | 1.168E-02 | 0.155   |
| TE-125M | -4.172E-01                         |              | 1.279E+01 | 2.089E+01           | 2.076E+00 | -0.020  |
| I-126   | -1.161E-01                         |              | 2.667E-01 | 3.497E-01           | 1.780E-02 | -0.332  |
| SB-126  | 4.115E-02                          |              | 1.799E-01 | 2.670E-01           | 1.550E-02 | 0.154   |
| SB-127  | 4.094E-01                          |              | 1.598E+00 | 2.734E+00           | 2.498E-01 | 0.150   |
| XE-127  | -1.509E-02                         |              | 7.316E-02 | 1.048E-01           | 7.178E-03 | -0.144  |
| I-131   | -2.622E-02                         |              | 1.565E-01 | 2.566E-01           | 1.731E-02 | -0.102  |
| TE-132  | -3.550E-01                         |              | 8.902E-01 | 1.474E+00           | 2.189E-01 | -0.241  |
| BA-133  | -4.348E-02                         |              | 6.554E-02 | 8.885E-02           | 1.046E-02 | -0.489  |
| I-133   | -4.899E-03                         |              | 3.773E-03 | Half-Life too short |           |         |
| CS-134  | 8.477E-02                          | +            | 8.171E-02 | 1.122E-01           | 7.821E-03 | 0.755   |
| I-135   | 1.702E+09                          |              | 2.976E+09 | Half-Life too short |           |         |
| CS-136  | -7.088E-02                         |              | 1.334E-01 | 2.072E-01           | 1.596E-02 | -0.342  |
| CE-139  | -1.107E-02                         |              | 4.054E-02 | 6.466E-02           | 4.300E-03 | -0.171  |
| BA-140  | -2.132E-01                         |              | 3.304E-01 | 4.981E-01           | 1.618E-01 | -0.428  |
| LA-140  | -5.658E-02                         |              | 1.105E-01 | 1.700E-01           | 1.185E-02 | -0.333  |
| CE-141  | -3.560E-02                         |              | 8.327E-02 | 1.326E-01           | 9.256E-03 | -0.268  |
| CE-143  | 1.424E-03                          | +            | 2.064E-04 | Half-Life too short |           |         |
| CE-144  | 2.539E-01                          |              | 3.019E-01 | 4.459E-01           | 6.553E-02 | 0.569   |
| PM-144  | 2.539E-02                          |              | 4.061E-02 | 7.113E-02           | 3.902E-03 | 0.357   |
| PR-144  | 1.720E+00                          |              | 2.752E+00 | 4.820E+00           | 2.642E-01 | 0.357   |
| PM-146  | 2.589E-02                          |              | 6.043E-02 | 9.903E-02           | 8.481E-03 | 0.261   |
| ND-147  | 3.286E-01                          |              | 7.062E-01 | 1.185E+00           | 1.592E-01 | 0.277   |
| PM-149  | -1.668E+01                         |              | 1.231E+02 | 2.044E+02           | 2.994E+01 | -0.082  |
| EU-152  | -9.576E-03                         |              | 1.917E-01 | 2.159E-01           | 1.521E-02 | -0.044  |

----- Non-Identified Nuclides -----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| GD-153  | -2.026E-02                         |              | 1.211E-01 | 1.725E-01           | 1.656E-02 | -0.117  |
| EU-154  | -2.811E-02                         |              | 1.601E-01 | 2.545E-01           | 2.553E-02 | -0.110  |
| EU-155  | -6.187E-02                         |              | 1.462E-01 | 2.354E-01           | 2.038E-02 | -0.263  |
| TB-160  | 1.991E-01                          |              | 1.663E-01 | 3.027E-01           | 2.488E-02 | 0.658   |
| HO-166M | -4.064E-02                         |              | 6.821E-02 | 1.086E-01           | 6.175E-03 | -0.374  |
| TM-171  | -3.590E+01                         |              | 5.797E+01 | 8.128E+01           | 9.347E+00 | -0.442  |
| LU-176  | 5.934E-03                          |              | 3.290E-02 | 5.532E-02           | 3.727E-03 | 0.107   |
| LU-177  | 3.585E+00                          | +            | 2.347E+00 | 2.667E+00           | 1.832E-01 | 1.344   |
| LU-177M | -1.371E-01                         |              | 2.436E-01 | 3.878E-01           | 2.210E-02 | -0.353  |
| HF-181  | 2.392E-02                          |              | 5.625E-02 | 9.443E-02           | 5.375E-03 | 0.253   |
| W-181   | 1.065E-01                          |              | 7.630E-01 | 1.113E+00           | 1.296E-01 | 0.096   |
| TA-182  | 1.186E-01                          |              | 2.490E-01 | 4.208E-01           | 2.624E-02 | 0.282   |
| RE-183  | 2.750E-02                          |              | 1.491E-01 | 2.425E-01           | 1.616E-02 | 0.113   |
| RE-184  | -3.651E-02                         |              | 2.987E-01 | 4.989E-01           | 3.473E-02 | -0.073  |
| OS-185  | 2.195E-03                          |              | 5.686E-02 | 9.176E-02           | 4.701E-03 | 0.024   |
| RE-188  | 1.634E-02                          |              | 2.268E-01 | 3.678E-01           | 2.467E-02 | 0.044   |
| W-188   | -1.765E+00                         |              | 1.116E+01 | 1.603E+01           | 1.097E+00 | -0.110  |
| IR-192  | -1.495E-02                         |              | 4.511E-02 | 7.380E-02           | 4.932E-03 | -0.203  |
| AU-195  | -1.228E-01                         |              | 3.178E-01 | 4.949E-01           | 4.639E-02 | -0.248  |
| TL-200  | -2.786E-04                         |              | 2.963E-04 | Half-Life too short |           |         |
| TL-201  | -4.428E+00                         |              | 9.464E+00 | 1.496E+01           | 9.956E-01 | -0.296  |
| TL-202  | 7.462E-02                          |              | 9.689E-02 | 1.659E-01           | 9.482E-03 | 0.450   |
| HG-203  | 2.191E-02                          |              | 5.541E-02 | 9.427E-02           | 6.790E-03 | 0.232   |
| BI-207  | -1.378E-02                         |              | 6.159E-02 | 9.855E-02           | 7.002E-03 | -0.140  |
| TL-207  | -1.937E-02                         |              | 1.004E+00 | 1.448E+00           | 2.433E-01 | -0.013  |
| PO-209  | 3.367E+00                          |              | 9.153E+00 | 1.562E+01           | 1.330E+00 | 0.216   |
| BI-210  | 1.329E+01                          |              | 1.478E+01 | 2.478E+01           | 2.574E+00 | 0.536   |
| PB-210  | 1.329E+01                          |              | 1.478E+01 | 2.478E+01           | 2.574E+00 | 0.536   |
| PO-210  | 1.329E+01                          |              | 1.477E+01 | 2.478E+01           | 2.381E+00 | 0.536   |
| PB-211  | -6.117E-01                         |              | 1.347E+00 | 2.072E+00           | 1.292E+00 | -0.295  |
| BI-212  | 8.516E-01                          | +            | 7.682E-01 | 7.578E-01           | 5.900E-02 | 1.124   |
| PO-215  | -1.937E-02                         |              | 1.004E+00 | 1.448E+00           | 2.433E-01 | -0.013  |
| RN-219  | -2.850E-01                         |              | 5.664E-01 | 9.044E-01           | 1.226E-01 | -0.315  |
| RN-220  | 1.127E+01                          |              | 3.632E+01 | 6.016E+01           | 3.338E+00 | 0.187   |
| RA-223  | -1.937E-02                         |              | 1.004E+00 | 1.448E+00           | 2.433E-01 | -0.013  |
| AC-227  | 8.625E-02                          |              | 4.962E-01 | 8.391E-01           | 1.215E-01 | 0.103   |
| TH-227  | 8.625E-02                          |              | 4.962E-01 | 8.391E-01           | 1.454E-01 | 0.103   |
| TH-229  | -9.009E-01                         |              | 7.026E-01 | 1.041E+00           | 7.081E-02 | -0.865  |
| PA-231  | -1.591E+00                         |              | 2.091E+00 | 3.353E+00           | 4.783E-01 | -0.475  |
| TH-231  | -1.937E-02                         |              | 1.004E+00 | 1.448E+00           | 2.433E-01 | -0.013  |
| U-231   | 3.748E-01                          |              | 1.572E+00 | 2.290E+00           | 2.256E-01 | 0.164   |
| PA-233  | 2.565E-02                          |              | 8.499E-02 | 1.437E-01           | 1.007E-02 | 0.178   |
| PA-234  | 1.155E-01                          |              | 3.434E-01 | 5.836E-01           | 1.084E-01 | 0.198   |
| PA-234M | 3.441E+00                          |              | 5.570E+00 | 9.724E+00           | 8.962E-01 | 0.354   |
| U-235   | 9.886E-02                          |              | 2.874E-01 | 4.647E-01           | 7.754E-02 | 0.213   |
| NP-236  | -1.574E-04                         |              | 1.078E-01 | 1.741E-01           | 1.162E-02 | -0.001  |
| NP-239  | -1.414E-01                         |              | 2.543E-01 | 4.056E-01           | 3.049E-02 | -0.349  |
| AM-241  | 1.061E-01                          |              | 3.696E-01 | 5.472E-01           | 6.963E-02 | 0.194   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| CM-243  | 1.189E-01                          |              | 1.320E-01 | 2.227E-01         | 1.944E-02 | 0.534   |
| AM-246  | 4.328E-03                          |              | 1.822E-01 | 2.987E-01         | 2.071E-02 | 0.014   |
| CM-247  | -3.221E-02                         |              | 5.081E-02 | 8.064E-02         | 4.586E-03 | -0.399  |
| CF-249  | -2.384E-02                         |              | 5.339E-02 | 8.583E-02         | 4.921E-03 | -0.278  |
| CF-251  | -4.569E-02                         |              | 1.745E-01 | 2.778E-01         | 1.862E-02 | -0.164  |

## VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : SYS$SYSROOT:[ALPHA.ARCHIVE.GAMMA]G244630015          *
* Acquisition date   : 23-JAN-2010 14:06:29 Detector SN# :                  *
* Detector ID        : GAM15 Sensitivity : 5.000                          *
* Geometry           : CAN Energy tolerance: 1.500                        *
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000             *
* Elapsed real time  : 0 02:00:01.34 Half life ratio : 8.000              *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G244630015 Analyst initials: MXR1                 *
* Batch Number       : 941639 Sample Quantity : 1.2403E+02 GRAM          *
* Recovery           : 1.00000 Carrier Weight : 0.00000                  *
*****
*                                     QC DATA                                *
*
* CALIB. DATE/TIME  : 16-FEB-2009 10:54:12 MS Isotope :                  *
* MSD DPM           : 0.000 MSD Isotope :                               *
* LCS DPM           : 0.000 LCS Isotope :                               *
* LCSD DPM          : 0.000 LCSD Isotope :                               *
*****

```

## Combined Activity-MDA Report

## ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act Error | DLC<br>(pCi/GRAM ) | TPU       |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 2.604E+01               | 2.695E+00 | 2.866E-01          | 1.375E+00 |
| CD-109  | 2.830E+00               | 1.538E+00 | 9.257E-01          | 7.847E-01 |
| SN-126  | 2.782E-01               | 1.512E-01 | 9.171E-02          | 7.713E-02 |
| CS-135  | 4.393E-01               | 2.559E-01 | 1.685E-01          | 1.306E-01 |
| BA-137M | 6.085E-01               | 1.097E-01 | 3.429E-02          | 5.597E-02 |
| CS-137  | 6.432E-01               | 1.160E-01 | 3.625E-02          | 5.919E-02 |
| TL-208  | 5.578E-01               | 9.676E-02 | 3.540E-02          | 4.937E-02 |
| BI-211  | 4.136E+00               | 6.619E-01 | 2.143E-01          | 3.377E-01 |
| PB-212  | 1.884E+00               | 2.092E-01 | 6.203E-02          | 1.068E-01 |
| PO-212  | 1.884E+00               | 2.092E-01 | 6.203E-02          | 1.068E-01 |
| BI-214  | 1.190E+00               | 1.913E-01 | 7.211E-02          | 9.761E-02 |
| PB-214  | 1.439E+00               | 2.417E-01 | 7.467E-02          | 1.233E-01 |
| PO-214  | 1.439E+00               | 2.417E-01 | 7.467E-02          | 1.233E-01 |
| PO-216  | 1.884E+00               | 2.092E-01 | 6.203E-02          | 1.068E-01 |
| PO-218  | 1.439E+00               | 2.417E-01 | 7.467E-02          | 1.233E-01 |
| RA-224  | 5.968E+00               | 1.899E+00 | 7.056E-01          | 9.687E-01 |
| RA-226  | 1.190E+00               | 1.913E-01 | 7.211E-02          | 9.761E-02 |
| AC-228  | 1.900E+00               | 3.956E-01 | 1.401E-01          | 2.018E-01 |
| RA-228  | 1.900E+00               | 3.956E-01 | 1.401E-01          | 2.018E-01 |
| TH-228  | 1.912E+00               | 2.124E-01 | 6.297E-02          | 1.084E-01 |
| TH-230  | 1.190E+00               | 1.913E-01 | 7.211E-02          | 9.761E-02 |
| TH-232  | 1.900E+00               | 3.956E-01 | 1.401E-01          | 2.018E-01 |
| TH-234  | 4.473E+00               | 3.755E+00 | 2.172E+00          | 1.916E+00 |
| U-234   | 1.190E+00               | 1.913E-01 | 7.211E-02          | 9.761E-02 |
| NP-237  | 8.169E-01               | 4.737E-01 | 2.745E-01          | 2.417E-01 |
| U-238   | 4.473E+00               | 3.755E+00 | 2.172E+00          | 1.916E+00 |
| AM-243  | 4.491E-01               | 1.371E-01 | 7.302E-02          | 6.996E-02 |
| ANH-511 | 1.636E-01               | 8.317E-02 | 2.865E-02          | 4.243E-02 |

## ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L Act error | DLC<br>(pCi/GRAM ) | TPU |
|---------|-------------------------------------|---------------|--------------------|-----|
|---------|-------------------------------------|---------------|--------------------|-----|

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| BE-7    | -4.600E-02 | 4.201E-01 | 3.530E-01 | 2.143E-01 | NOT IDENT. |
| NA-22   | -9.573E-03 | 5.621E-02 | 4.570E-02 | 2.868E-02 | NOT IDENT. |
| NA-24   | 6.242E+03  | 8.184E+05 | 0.000E+00 | 4.176E+05 | SHORT HLIF |
| AL-26   | 6.948E-03  | 3.340E-02 | 2.906E-02 | 1.704E-02 | NOT IDENT. |
| TI-44   | 2.282E-01  | 6.738E-02 | 5.443E-02 | 3.438E-02 | NOT IDENT. |
| SC-46   | 7.350E-03  | 3.982E-02 | 3.447E-02 | 2.032E-02 | FAIL ABUN  |
| V-48    | 3.754E-03  | 8.191E-02 | 6.941E-02 | 4.179E-02 | NOT IDENT. |
| CR-51   | 3.797E-01  | 5.225E-01 | 4.303E-01 | 2.666E-01 | NOT IDENT. |
| MN-52   | 1.227E-01  | 2.890E-01 | 2.584E-01 | 1.475E-01 | NOT IDENT. |
| MN-54   | 1.137E-02  | 4.519E-02 | 3.931E-02 | 2.306E-02 | NOT IDENT. |
| CO-56   | 7.467E-03  | 4.828E-02 | 4.168E-02 | 2.463E-02 | NOT IDENT. |
| CO-57   | 9.049E-03  | 3.748E-02 | 2.856E-02 | 1.912E-02 | NOT IDENT. |
| CO-58   | -4.745E-03 | 4.469E-02 | 3.787E-02 | 2.280E-02 | NOT IDENT. |
| FE-59   | -5.207E-02 | 1.054E-01 | 8.376E-02 | 5.379E-02 | NOT IDENT. |
| CO-60   | 4.011E-02  | 4.484E-02 | 4.096E-02 | 2.288E-02 | NOT IDENT. |
| ZN-65   | 4.435E-02  | 1.288E-01 | 9.625E-02 | 6.573E-02 | NOT IDENT. |
| GE-68   | 2.297E-01  | 1.552E+00 | 1.318E+00 | 7.921E-01 | NOT IDENT. |
| AS-73   | -1.814E-01 | 2.177E+00 | 1.925E+00 | 1.111E+00 | NOT IDENT. |
| AS-74   | -3.401E-02 | 1.284E-01 | 1.032E-01 | 6.552E-02 | NOT IDENT. |
| SE-75   | -1.959E-02 | 6.566E-02 | 4.904E-02 | 3.350E-02 | NOT IDENT. |
| BR-77   | -2.629E+00 | 1.295E+01 | 1.074E+01 | 6.606E+00 | FAIL ABUN  |
| SR-82   | -4.333E-02 | 4.464E-01 | 3.799E-01 | 2.277E-01 | NOT IDENT. |
| RB-83   | -1.822E-02 | 8.714E-02 | 7.225E-02 | 4.446E-02 | NOT IDENT. |
| RB-84   | 4.924E-02  | 8.169E-02 | 7.301E-02 | 4.168E-02 | NOT IDENT. |
| KR-85   | 2.052E+01  | 9.586E+00 | 8.284E+00 | 4.891E+00 | NOT IDENT. |
| SR-85   | 1.052E-01  | 4.914E-02 | 4.246E-02 | 2.507E-02 | NOT IDENT. |
| RB-86   | 6.629E-01  | 9.623E-01 | 8.560E-01 | 4.910E-01 | NOT IDENT. |
| Y-88    | -1.463E-02 | 4.051E-02 | 3.149E-02 | 2.067E-02 | NOT IDENT. |
| ZR-88   | -1.234E-02 | 4.088E-02 | 3.441E-02 | 2.086E-02 | NOT IDENT. |
| Y-91    | 2.803E+00  | 2.259E+01 | 1.898E+01 | 1.152E+01 | NOT IDENT. |
| NB-94   | -9.288E-03 | 3.764E-02 | 3.189E-02 | 1.920E-02 | NOT IDENT. |
| NB-95   | 9.661E-02  | 5.073E-02 | 4.883E-02 | 2.588E-02 | NOT IDENT. |
| NB-95M  | 1.958E+00  | 2.893E-01 | 2.370E-01 | 1.476E-01 | NOT IDENT. |
| ZR-95   | 5.961E-02  | 8.511E-02 | 7.682E-02 | 4.342E-02 | NOT IDENT. |
| NB-97   | 4.594E+05  | 1.628E+05 | 0.000E+00 | 8.308E+04 | SHORT HLIF |
| ZR-97   | 8.954E+06  | 2.691E+06 | 0.000E+00 | 1.373E+06 | SHORT HLIF |
| MO-99   | 9.781E+00  | 1.378E+01 | 1.243E+01 | 7.033E+00 | NOT IDENT. |
| TC-99M  | 3.115E+16  | 4.666E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | 2.917E-02  | 4.485E-02 | 3.803E-02 | 2.288E-02 | FAIL ABUN  |
| RH-102  | -2.306E-02 | 3.851E-02 | 3.132E-02 | 1.965E-02 | NOT IDENT. |
| RU-103  | 1.944E-02  | 4.828E-02 | 4.188E-02 | 2.463E-02 | NOT IDENT. |
| RH-106  | -1.127E-01 | 3.979E-01 | 3.234E-01 | 2.030E-01 | FAIL ABUN  |
| RU-106  | -1.127E-01 | 3.977E-01 | 3.234E-01 | 2.029E-01 | FAIL ABUN  |
| AG-108M | -1.074E-02 | 4.145E-02 | 3.470E-02 | 2.115E-02 | NOT IDENT. |
| AG-110M | 1.339E-01  | 5.802E-02 | 4.975E-02 | 2.960E-02 | NOT IDENT. |
| IN-111  | -7.139E-01 | 1.435E+00 | 1.062E+00 | 7.321E-01 | NOT IDENT. |
| IN-113M | -3.226E-02 | 5.789E-02 | 4.797E-02 | 2.953E-02 | NOT IDENT. |
| SN-113  | -3.226E-02 | 5.789E-02 | 4.797E-02 | 2.953E-02 | NOT IDENT. |
| IN-114M | -7.145E-03 | 2.726E-01 | 1.998E-01 | 1.391E-01 | NOT IDENT. |
| CD-115  | -2.736E+00 | 1.328E+01 | 1.100E+01 | 6.774E+00 | NOT IDENT. |
| SN-117M | -9.851E-04 | 7.248E-02 | 6.151E-02 | 3.698E-02 | NOT IDENT. |
| SB-122  | 3.016E-02  | 2.490E+00 | 2.087E+00 | 1.270E+00 | NOT IDENT. |
| I-123   | -2.980E+06 | 7.428E+06 | 0.000E+00 | 3.790E+06 | SHORT HLIF |
| TE-123M | -1.527E-02 | 3.807E-02 | 3.179E-02 | 1.942E-02 | NOT IDENT. |
| I-124   | -4.172E-01 | 1.009E+00 | 6.947E-01 | 5.148E-01 | NOT IDENT. |
| SB-124  | -2.107E-03 | 8.403E-02 | 7.321E-02 | 4.287E-02 | FAIL ABUN  |
| SB-125  | 3.037E-02  | 1.150E-01 | 9.961E-02 | 5.870E-02 | FAIL ABUN  |
| TE-125M | -4.172E-01 | 1.253E+01 | 1.081E+01 | 6.394E+00 | NOT IDENT. |
| I-126   | -1.161E-01 | 2.613E-01 | 1.766E-01 | 1.333E-01 | NOT IDENT. |
| SB-126  | 4.115E-02  | 1.763E-01 | 1.347E-01 | 8.994E-02 | NOT IDENT. |
| SB-127  | 4.094E-01  | 1.566E+00 | 1.380E+00 | 7.991E-01 | FAIL ABUN  |
| XE-127  | -1.509E-02 | 7.170E-02 | 5.381E-02 | 3.658E-02 | NOT IDENT. |
| I-131   | -2.622E-02 | 1.534E-01 | 1.307E-01 | 7.826E-02 | NOT IDENT. |
| TE-132  | -3.550E-01 | 8.724E-01 | 7.554E-01 | 4.451E-01 | NOT IDENT. |
| BA-133  | -4.348E-02 | 6.422E-02 | 4.527E-02 | 3.277E-02 | NOT IDENT. |
| I-133   | -4.899E+03 | 7.395E+03 | 0.000E+00 | 3.773E+03 | SHORT HLIF |
| CS-134  | 8.477E-02  | 8.008E-02 | 5.656E-02 | 4.086E-02 | FAIL ABUN  |
| I-135   | 1.702E+15  | 5.833E+15 | 0.000E+00 | 2.976E+15 | SHORT HLIF |
| CS-136  | -7.088E-02 | 1.308E-01 | 1.040E-01 | 6.672E-02 | FAIL ABUN  |
| CE-139  | -1.107E-02 | 3.973E-02 | 3.328E-02 | 2.027E-02 | NOT IDENT. |
| BA-140  | -2.132E-01 | 3.238E-01 | 2.524E-01 | 1.652E-01 | NOT IDENT. |
| LA-140  | -5.658E-02 | 1.082E-01 | 8.483E-02 | 5.523E-02 | FAIL ABUN  |
| CE-141  | -3.560E-02 | 8.161E-02 | 6.837E-02 | 4.164E-02 | NOT IDENT. |
| CE-143  | 1.424E+03  | 4.046E+02 | 0.000E+00 | 2.064E+02 | SHORT HLIF |
| CE-144  | 2.539E-01  | 2.958E-01 | 2.301E-01 | 1.509E-01 | NOT IDENT. |
| PM-144  | 2.539E-02  | 3.980E-02 | 3.591E-02 | 2.031E-02 | NOT IDENT. |
| PR-144  | 1.720E+00  | 2.697E+00 | 2.433E+00 | 1.376E+00 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PM-146  | 2.589E-02  | 5.922E-02 | 5.029E-02 | 3.022E-02 | NOT IDENT. |
| ND-147  | 3.286E-01  | 6.921E-01 | 6.005E-01 | 3.531E-01 | FAIL ABUN  |
| PM-149  | -1.668E+01 | 1.206E+02 | 1.045E+02 | 6.154E+01 | NOT IDENT. |
| EU-152  | -9.576E-03 | 1.879E-01 | 1.100E-01 | 9.586E-02 | FAIL ABUN  |
| GD-153  | -2.026E-02 | 1.186E-01 | 8.942E-02 | 6.053E-02 | NOT IDENT. |
| EU-154  | -2.811E-02 | 1.569E-01 | 1.274E-01 | 8.005E-02 | NOT IDENT. |
| EU-155  | -6.187E-02 | 1.433E-01 | 1.219E-01 | 7.312E-02 | FAIL ABUN  |
| TB-160  | 1.991E-01  | 1.630E-01 | 1.523E-01 | 8.317E-02 | FAIL ABUN  |
| HO-166M | -4.064E-02 | 6.685E-02 | 5.483E-02 | 3.411E-02 | FAIL ABUN  |
| TM-171  | -3.590E+01 | 5.681E+01 | 4.233E+01 | 2.898E+01 | NOT IDENT. |
| LU-176  | 5.934E-03  | 3.224E-02 | 2.824E-02 | 1.645E-02 | NOT IDENT. |
| LU-177  | 3.585E+00  | 2.300E+00 | 1.368E+00 | 1.173E+00 | FAIL ABUN  |
| LU-177M | -1.371E-01 | 2.388E-01 | 1.972E-01 | 1.218E-01 | FAIL ABUN  |
| HF-181  | 2.392E-02  | 5.513E-02 | 4.791E-02 | 2.813E-02 | NOT IDENT. |
| W-181   | 1.065E-01  | 7.477E-01 | 5.799E-01 | 3.815E-01 | NOT IDENT. |
| TA-182  | 1.186E-01  | 2.440E-01 | 2.108E-01 | 1.245E-01 | FAIL ABUN  |
| RE-183  | 2.750E-02  | 1.461E-01 | 1.248E-01 | 7.454E-02 | FAIL ABUN  |
| RE-184  | -3.651E-02 | 2.927E-01 | 2.553E-01 | 1.493E-01 | NOT IDENT. |
| OS-185  | 2.195E-03  | 5.573E-02 | 4.637E-02 | 2.843E-02 | FAIL ABUN  |
| RE-188  | 1.634E-02  | 2.223E-01 | 1.895E-01 | 1.134E-01 | NOT IDENT. |
| W-188   | -1.765E+00 | 1.093E+01 | 8.189E+00 | 5.578E+00 | FAIL ABUN  |
| IR-192  | -1.495E-02 | 4.421E-02 | 3.766E-02 | 2.256E-02 | NOT IDENT. |
| AU-195  | -1.228E-01 | 3.114E-01 | 2.564E-01 | 1.589E-01 | FAIL ABUN  |
| TL-200  | -2.786E+02 | 5.807E+02 | 0.000E+00 | 2.963E+02 | SHORT HLIF |
| TL-201  | -4.428E+00 | 9.275E+00 | 7.699E+00 | 4.732E+00 | NOT IDENT. |
| TL-202  | 7.462E-02  | 9.495E-02 | 8.429E-02 | 4.844E-02 | NOT IDENT. |
| HG-203  | 2.191E-02  | 5.430E-02 | 4.818E-02 | 2.771E-02 | FAIL ABUN  |
| BI-207  | -1.378E-02 | 6.035E-02 | 4.946E-02 | 3.079E-02 | FAIL ABUN  |
| TL-207  | -1.937E-02 | 9.834E-01 | 7.385E-01 | 5.018E-01 | FAIL ABUN  |
| PO-209  | 3.367E+00  | 8.970E+00 | 7.858E+00 | 4.577E+00 | NOT IDENT. |
| BI-210  | 1.329E+01  | 1.448E+01 | 1.297E+01 | 7.390E+00 | NOT IDENT. |
| PB-210  | 1.329E+01  | 1.448E+01 | 1.297E+01 | 7.390E+00 | NOT IDENT. |
| PO-210  | 1.329E+01  | 1.447E+01 | 1.297E+01 | 7.385E+00 | NOT IDENT. |
| PB-211  | -6.117E-01 | 1.320E+00 | 1.054E+00 | 6.737E-01 | NOT IDENT. |
| BI-212  | 8.516E-01  | 7.528E-01 | 3.824E-01 | 3.841E-01 | FAIL ABUN  |
| PO-215  | -1.937E-02 | 9.834E-01 | 7.385E-01 | 5.018E-01 | FAIL ABUN  |
| RN-219  | -2.850E-01 | 5.551E-01 | 4.600E-01 | 2.832E-01 | NOT IDENT. |
| RN-220  | 1.127E+01  | 3.559E+01 | 3.047E+01 | 1.816E+01 | NOT IDENT. |
| RA-223  | -1.937E-02 | 9.834E-01 | 7.385E-01 | 5.018E-01 | FAIL ABUN  |
| AC-227  | 8.625E-02  | 4.863E-01 | 4.294E-01 | 2.481E-01 | NOT IDENT. |
| TH-227  | 8.625E-02  | 4.863E-01 | 4.294E-01 | 2.481E-01 | NOT IDENT. |
| TH-229  | -9.009E-01 | 6.886E-01 | 5.349E-01 | 3.513E-01 | FAIL ABUN  |
| PA-231  | -1.591E+00 | 2.049E+00 | 1.713E+00 | 1.046E+00 | NOT IDENT. |
| TH-231  | -1.937E-02 | 9.834E-01 | 7.385E-01 | 5.018E-01 | FAIL ABUN  |
| U-231   | 3.748E-01  | 1.540E+00 | 1.187E+00 | 7.859E-01 | FAIL ABUN  |
| PA-233  | 2.565E-02  | 8.329E-02 | 7.333E-02 | 4.250E-02 | FAIL ABUN  |
| PA-234  | 1.155E-01  | 3.365E-01 | 2.934E-01 | 1.717E-01 | FAIL ABUN  |
| PA-234M | 3.441E+00  | 5.458E+00 | 4.885E+00 | 2.785E+00 | NOT IDENT. |
| U-235   | 9.886E-02  | 2.817E-01 | 2.396E-01 | 1.437E-01 | FAIL ABUN  |
| NP-236  | -1.574E-04 | 1.056E-01 | 8.964E-02 | 5.389E-02 | NOT IDENT. |
| NP-239  | -1.414E-01 | 2.493E-01 | 2.097E-01 | 1.272E-01 | FAIL ABUN  |
| AM-241  | 1.061E-01  | 3.622E-01 | 2.854E-01 | 1.848E-01 | NOT IDENT. |
| CM-243  | 1.189E-01  | 1.294E-01 | 1.153E-01 | 6.601E-02 | FAIL ABUN  |
| AM-246  | 4.328E-03  | 1.785E-01 | 1.499E-01 | 9.109E-02 | NOT IDENT. |
| CM-247  | -3.221E-02 | 4.979E-02 | 4.101E-02 | 2.541E-02 | NOT IDENT. |
| CF-249  | -2.384E-02 | 5.233E-02 | 4.368E-02 | 2.670E-02 | NOT IDENT. |
| CF-251  | -4.569E-02 | 1.710E-01 | 1.428E-01 | 8.725E-02 | NOT IDENT. |



\*\*\*\*\*  
 \* GEL Laboratories LLC \*  
 \* 2040 SAVAGE ROAD \*  
 \* CHARLESTON , SC 29417 \*  
 \* GAMMA SPECTROSCOPY BACKGROUND REPORT \*  
 \*\*\*\*\*

| ENERGY | MDA COUNTS |
|--------|------------|
| 46.50  | 286.6117   |
| 46.50  | 286.6117   |
| 46.50  | 286.6117   |
| 48.70  | 335.8217   |
| 49.72  | 321.2876   |
| 51.35  | 306.0611   |
| 52.39  | 290.4522   |
| 52.97  | 297.3795   |
| 53.15  | 307.9214   |
| 53.44  | 308.0666   |
| 54.07  | 306.4782   |
| 56.28  | 327.4822   |
| 56.28  | 327.4835   |
| 57.37  | 0.0000     |
| 57.53  | 306.2512   |
| 57.53  | 306.2524   |
| 57.60  | 307.8162   |
| 57.98  | 294.2068   |
| 57.98  | 294.2068   |
| 59.32  | 327.0604   |
| 59.32  | 327.0604   |
| 59.40  | 327.1007   |
| 59.54  | 344.0664   |
| 59.72  | 344.1614   |
| 60.01  | 345.8503   |
| 61.10  | 358.7381   |
| 61.14  | 358.7594   |
| 61.30  | 358.8455   |
| 63.00  | 430.7799   |
| 63.29  | 413.9720   |
| 63.29  | 413.9720   |
| 63.58  | 415.6944   |
| 64.28  | 400.6517   |
| 65.12  | 401.1413   |
| 65.20  | 401.1876   |
| 65.20  | 401.1876   |
| 66.05  | 420.2899   |
| 66.72  | 436.2155   |
| 66.83  | 436.2858   |
| 66.91  | 436.3355   |
| 67.20  | 464.0891   |
| 67.20  | 464.0891   |
| 67.75  | 445.0171   |
| 67.85  | 445.0800   |
| 68.90  | 429.7777   |
| 68.90  | 429.7777   |
| 69.30  | 425.3445   |
| 69.67  | 408.4171   |
| 70.82  | 395.0145   |
| 70.82  | 395.0145   |
| 70.83  | 395.0206   |
| 72.80  | 443.0511   |
| 72.87  | 443.0926   |
| 72.87  | 443.0926   |
| 74.67  | 445.3441   |
| 74.81  | 445.4272   |
| 74.81  | 445.4272   |
| 74.81  | 445.4272   |
| 74.81  | 445.4272   |
| 74.81  | 445.4272   |
| 74.81  | 445.4272   |
| 74.81  | 445.4272   |
| 74.97  | 445.5225   |
| 75.28  | 445.7061   |
| 75.70  | 445.9537   |
| 77.11  | 417.2585   |
| 77.11  | 417.2585   |

|        |          |
|--------|----------|
| 77.11  | 417.2585 |
| 77.11  | 417.2585 |
| 77.11  | 417.2585 |
| 77.11  | 417.2585 |
| 77.11  | 417.2585 |
| 78.38  | 414.7948 |
| 79.62  | 523.2735 |
| 79.80  | 523.3948 |
| 79.80  | 523.3948 |
| 80.11  | 529.5306 |
| 80.18  | 529.5777 |
| 80.30  | 529.6595 |
| 80.30  | 529.6595 |
| 80.57  | 525.8874 |
| 81.00  | 561.7814 |
| 81.07  | 534.1354 |
| 81.07  | 534.1354 |
| 81.07  | 534.1354 |
| 81.07  | 534.1354 |
| 82.60  | 495.5254 |
| 83.37  | 476.1621 |
| 83.78  | 470.0554 |
| 83.78  | 470.0554 |
| 83.78  | 470.0554 |
| 83.78  | 470.0554 |
| 84.21  | 457.5955 |
| 84.90  | 467.5289 |
| 85.43  | 496.4769 |
| 86.29  | 433.0834 |
| 86.50  | 433.1946 |
| 86.54  | 433.2162 |
| 86.59  | 433.2427 |
| 86.72  | 433.3107 |
| 86.79  | 433.3473 |
| 86.94  | 433.4269 |
| 87.30  | 433.6177 |
| 87.30  | 433.6177 |
| 87.30  | 433.6177 |
| 87.30  | 433.6177 |
| 87.30  | 433.6177 |
| 87.30  | 433.6177 |
| 87.57  | 433.7588 |
| 87.88  | 433.9214 |
| 88.03  | 434.0010 |
| 88.36  | 434.1736 |
| 88.47  | 434.2317 |
| 89.95  | 435.0016 |
| 91.11  | 435.6024 |
| 92.29  | 436.2080 |
| 92.38  | 436.2545 |
| 92.38  | 436.2545 |
| 93.35  | 346.9896 |
| 94.00  | 350.4685 |
| 94.67  | 342.6942 |
| 94.67  | 342.6955 |
| 94.90  | 342.7865 |
| 94.90  | 342.7865 |
| 94.90  | 342.7865 |
| 94.90  | 342.7865 |
| 95.87  | 343.1700 |
| 95.87  | 343.1700 |
| 96.73  | 349.9595 |
| 97.43  | 364.7630 |
| 98.44  | 354.1393 |
| 98.44  | 354.1393 |
| 98.88  | 375.2924 |
| 99.55  | 360.9861 |
| 99.55  | 360.9861 |
| 99.86  | 361.1114 |
| 100.00 | 365.2140 |
| 100.10 | 367.2802 |
| 103.18 | 319.8017 |
| 103.76 | 336.2590 |
| 105.00 | 365.1969 |
| 105.31 | 374.4772 |
| 108.00 | 430.6720 |
| 109.28 | 381.1830 |

|        |          |
|--------|----------|
| 111.00 | 347.0656 |
| 111.00 | 347.0656 |
| 111.76 | 354.5146 |
| 112.95 | 343.6682 |
| 115.19 | 393.8189 |
| 116.30 | 385.0013 |
| 117.00 | 360.5523 |
| 117.00 | 360.5523 |
| 117.66 | 339.1457 |
| 121.11 | 348.9405 |
| 121.62 | 342.7705 |
| 121.78 | 342.8248 |
| 122.06 | 328.0100 |
| 122.32 | 316.4941 |
| 122.32 | 316.4941 |
| 122.32 | 316.4941 |
| 122.32 | 316.4941 |
| 123.07 | 329.9946 |
| 127.23 | 364.2180 |
| 129.76 | 368.8578 |
| 131.20 | 344.2906 |
| 133.02 | 331.4880 |
| 133.54 | 304.8500 |
| 135.34 | 370.1663 |
| 136.00 | 375.6389 |
| 136.25 | 377.8253 |
| 136.48 | 380.0045 |
| 140.51 | 341.3702 |
| 140.51 | 0.0000   |
| 142.18 | 367.2091 |
| 142.65 | 352.5854 |
| 143.76 | 341.3122 |
| 144.24 | 323.4861 |
| 144.24 | 323.4861 |
| 144.24 | 323.4861 |
| 144.24 | 323.4861 |
| 145.22 | 338.5815 |
| 145.44 | 365.1043 |
| 147.16 | 383.6777 |
| 152.43 | 337.5260 |
| 152.70 | 345.0608 |
| 153.22 | 365.4581 |
| 154.21 | 332.7092 |
| 154.21 | 332.7092 |
| 154.21 | 332.7092 |
| 154.21 | 332.7092 |
| 155.03 | 336.1439 |
| 156.02 | 360.9920 |
| 158.56 | 338.2212 |
| 159.00 | 0.0000   |
| 159.00 | 355.4755 |
| 160.31 | 338.7154 |
| 161.27 | 343.2764 |
| 162.32 | 336.0585 |
| 162.64 | 345.8149 |
| 163.35 | 325.5992 |
| 163.89 | 322.5197 |
| 165.85 | 343.4960 |
| 167.43 | 345.0159 |
| 171.28 | 316.8854 |
| 171.86 | 289.9823 |
| 172.10 | 283.5442 |
| 176.55 | 334.5016 |
| 176.60 | 334.5134 |
| 181.06 | 340.0360 |
| 184.41 | 321.2418 |
| 185.71 | 321.5603 |
| 186.00 | 321.6298 |
| 190.27 | 305.5450 |
| 192.34 | 298.9817 |
| 193.63 | 333.3747 |
| 197.04 | 317.6653 |
| 198.01 | 283.6741 |
| 198.60 | 295.9405 |
| 200.40 | 337.2401 |
| 201.83 | 324.3047 |
| 202.84 | 323.4318 |
| 205.31 | 312.4644 |

|        |          |
|--------|----------|
| 208.36 | 300.2399 |
| 208.81 | 300.3346 |
| 209.75 | 300.5345 |
| 209.75 | 300.5345 |
| 210.97 | 329.7548 |
| 215.65 | 284.6328 |
| 216.55 | 285.1805 |
| 218.09 | 325.7854 |
| 222.10 | 277.2814 |
| 223.80 | 285.4671 |
| 226.40 | 280.1107 |
| 227.00 | 262.2019 |
| 227.08 | 262.2162 |
| 227.20 | 262.2357 |
| 228.16 | 275.0287 |
| 228.18 | 275.0324 |
| 228.18 | 275.0324 |
| 231.56 | 0.0000   |
| 235.69 | 296.0277 |
| 236.00 | 303.6408 |
| 236.00 | 303.6408 |
| 238.63 | 261.4851 |
| 238.63 | 261.4851 |
| 238.63 | 261.4851 |
| 238.63 | 261.4851 |
| 239.00 | 261.5467 |
| 240.98 | 261.8806 |
| 241.98 | 191.0764 |
| 241.98 | 191.0764 |
| 241.98 | 191.0764 |
| 244.69 | 214.1937 |
| 245.39 | 220.3674 |
| 247.94 | 203.2173 |
| 248.90 | 211.1076 |
| 249.79 | 207.5684 |
| 252.40 | 217.9812 |
| 252.85 | 220.7907 |
| 252.85 | 220.7907 |
| 254.15 | 0.0000   |
| 256.20 | 219.4120 |
| 256.20 | 219.4120 |
| 260.50 | 210.7865 |
| 260.90 | 226.4900 |
| 262.80 | 222.3729 |
| 264.65 | 227.6187 |
| 268.24 | 211.1554 |
| 268.79 | 239.5940 |
| 269.46 | 234.1393 |
| 269.46 | 234.1393 |
| 269.46 | 234.1393 |
| 269.46 | 234.1393 |
| 271.23 | 223.8839 |
| 273.65 | 276.7777 |
| 276.40 | 242.6370 |
| 277.35 | 233.3699 |
| 277.60 | 223.1748 |
| 277.60 | 223.1748 |
| 278.00 | 213.9264 |
| 278.60 | 223.3066 |
| 279.20 | 226.1781 |
| 279.53 | 221.5649 |
| 280.46 | 253.3531 |
| 281.68 | 235.8224 |
| 283.67 | 233.2947 |
| 284.30 | 224.9784 |
| 285.00 | 220.4001 |
| 285.90 | 217.7094 |
| 286.10 | 220.5384 |
| 286.10 | 220.5384 |
| 287.40 | 188.0752 |
| 288.45 | 0.0000   |
| 290.67 | 212.3672 |
| 290.80 | 212.3838 |
| 291.72 | 212.4945 |
| 293.26 | 0.0000   |
| 293.70 | 197.0903 |
| 295.21 | 309.9752 |
| 295.21 | 309.9752 |

|        |          |
|--------|----------|
| 295.21 | 309.9752 |
| 295.96 | 321.0674 |
| 296.50 | 302.3675 |
| 297.23 | 268.0085 |
| 298.57 | 186.6493 |
| 299.80 | 185.2056 |
| 299.80 | 185.2056 |
| 300.09 | 207.2141 |
| 300.09 | 207.2141 |
| 300.09 | 207.2141 |
| 300.09 | 207.2141 |
| 300.12 | 207.2168 |
| 301.29 | 228.5574 |
| 302.84 | 257.5238 |
| 303.76 | 261.4289 |
| 303.91 | 261.4526 |
| 304.40 | 243.5820 |
| 304.40 | 243.5820 |
| 304.84 | 224.7549 |
| 306.84 | 185.2956 |
| 308.46 | 175.9961 |
| 311.98 | 177.2802 |
| 316.51 | 181.5153 |
| 318.01 | 183.5620 |
| 319.02 | 172.3474 |
| 319.41 | 173.7047 |
| 320.08 | 161.8652 |
| 323.87 | 184.4526 |
| 323.87 | 184.4526 |
| 323.87 | 184.4526 |
| 323.87 | 184.4526 |
| 325.23 | 187.7672 |
| 328.77 | 176.9559 |
| 333.44 | 182.1792 |
| 334.20 | 182.2511 |
| 334.20 | 182.2511 |
| 334.30 | 182.2604 |
| 338.28 | 195.4502 |
| 338.28 | 195.4502 |
| 338.28 | 195.4502 |
| 338.28 | 195.4502 |
| 338.32 | 195.4552 |
| 338.32 | 195.4552 |
| 338.32 | 195.4552 |
| 340.50 | 157.1784 |
| 340.57 | 157.1844 |
| 344.27 | 176.7627 |
| 345.85 | 202.6351 |
| 350.59 | 0.0000   |
| 351.07 | 153.8275 |
| 351.92 | 153.8915 |
| 351.92 | 153.8915 |
| 351.92 | 153.8915 |
| 355.39 | 0.0000   |
| 356.01 | 171.3378 |
| 364.48 | 163.6113 |
| 366.43 | 175.4648 |
| 367.43 | 166.7730 |
| 367.94 | 0.0000   |
| 369.80 | 145.4823 |
| 374.96 | 154.6518 |
| 383.85 | 156.2885 |
| 387.95 | 160.5267 |
| 388.63 | 155.6528 |
| 391.69 | 157.8477 |
| 391.69 | 157.8477 |
| 392.90 | 159.9097 |
| 398.62 | 154.3928 |
| 400.65 | 153.5450 |
| 401.10 | 156.5496 |
| 401.81 | 166.5111 |
| 402.60 | 169.5472 |
| 404.84 | 170.7108 |
| 410.95 | 162.2260 |
| 411.60 | 173.2226 |
| 413.65 | 166.4068 |
| 414.70 | 150.5337 |
| 415.30 | 138.6080 |

|        |          |
|--------|----------|
| 415.76 | 145.6186 |
| 417.63 | 0.0000   |
| 418.52 | 149.7913 |
| 423.70 | 143.1274 |
| 427.08 | 123.2928 |
| 427.89 | 119.3254 |
| 432.53 | 131.6237 |
| 433.93 | 127.6806 |
| 439.47 | 131.0093 |
| 439.56 | 131.0140 |
| 439.89 | 132.0410 |
| 443.98 | 142.3683 |
| 444.90 | 153.5345 |
| 445.03 | 153.5437 |
| 445.03 | 153.5437 |
| 445.03 | 153.5437 |
| 445.03 | 153.5437 |
| 453.90 | 123.9261 |
| 463.38 | 118.7602 |
| 468.07 | 135.9879 |
| 473.00 | 106.2851 |
| 475.06 | 132.9675 |
| 475.35 | 137.0752 |
| 476.78 | 128.9670 |
| 477.59 | 122.8652 |
| 477.96 | 115.7160 |
| 482.03 | 110.7765 |
| 484.57 | 119.1039 |
| 487.03 | 118.1937 |
| 490.36 | 0.0000   |
| 492.35 | 99.9045  |
| 497.08 | 89.7729  |
| 507.63 | 0.0000   |
| 510.53 | 0.0000   |
| 510.84 | 97.5170  |
| 511.00 | 97.5233  |
| 511.85 | 97.5554  |
| 511.85 | 97.5554  |
| 513.99 | 79.6315  |
| 513.99 | 79.6315  |
| 520.41 | 106.2060 |
| 520.65 | 104.1333 |
| 527.90 | 100.2422 |
| 528.96 | 0.0000   |
| 529.64 | 113.8912 |
| 529.87 | 0.0000   |
| 531.02 | 89.9053  |
| 537.32 | 103.7397 |
| 543.00 | 96.6090  |
| 546.56 | 0.0000   |
| 549.76 | 110.5345 |
| 552.65 | 115.9216 |
| 555.20 | 106.5358 |
| 563.23 | 111.0780 |
| 563.90 | 94.1736  |
| 568.70 | 93.2766  |
| 569.32 | 93.2980  |
| 569.50 | 99.6639  |
| 569.67 | 100.7311 |
| 573.80 | 105.1271 |
| 574.00 | 108.3202 |
| 574.64 | 114.4823 |
| 578.91 | 108.1549 |
| 579.30 | 0.0000   |
| 583.14 | 87.0081  |
| 585.48 | 97.7427  |
| 591.81 | 98.3160  |
| 592.07 | 103.6664 |
| 593.00 | 107.9783 |
| 595.88 | 114.5051 |
| 600.56 | 98.8507  |
| 602.52 | 0.0000   |
| 602.71 | 117.9949 |
| 602.71 | 117.9949 |
| 603.60 | 135.9131 |
| 604.41 | 125.2187 |
| 604.70 | 125.2315 |
| 609.31 | 102.1343 |

|        |          |
|--------|----------|
| 609.31 | 102.1343 |
| 609.31 | 102.1343 |
| 609.31 | 102.1343 |
| 610.33 | 105.7563 |
| 612.46 | 80.7184  |
| 614.37 | 93.3359  |
| 618.01 | 86.2617  |
| 621.84 | 91.7714  |
| 621.84 | 91.7714  |
| 631.29 | 81.2311  |
| 633.02 | 80.1950  |
| 633.10 | 80.1968  |
| 634.78 | 87.8324  |
| 635.90 | 83.5251  |
| 636.97 | 93.3213  |
| 645.85 | 92.5060  |
| 646.12 | 91.4259  |
| 656.30 | 70.9811  |
| 657.75 | 83.7606  |
| 657.90 | 0.0000   |
| 661.65 | 76.5728  |
| 661.65 | 76.5728  |
| 664.57 | 0.0000   |
| 666.33 | 93.1202  |
| 666.33 | 93.1202  |
| 675.00 | 71.4064  |
| 677.61 | 92.3569  |
| 685.20 | 73.4733  |
| 692.80 | 81.0140  |
| 695.00 | 68.1721  |
| 696.49 | 73.7337  |
| 696.49 | 73.7337  |
| 697.00 | 71.9015  |
| 697.49 | 76.5224  |
| 698.33 | 83.9184  |
| 698.50 | 82.0795  |
| 699.00 | 89.4712  |
| 702.63 | 80.3376  |
| 706.10 | 58.2371  |
| 706.58 | 0.0000   |
| 706.67 | 61.9456  |
| 709.31 | 82.3529  |
| 711.68 | 76.8567  |
| 713.82 | 68.5665  |
| 717.42 | 68.6418  |
| 720.50 | 62.0746  |
| 721.93 | 0.0000   |
| 722.20 | 63.6984  |
| 722.78 | 70.0805  |
| 722.78 | 70.0805  |
| 722.89 | 70.0836  |
| 722.95 | 70.0851  |
| 723.30 | 65.3137  |
| 724.18 | 66.9243  |
| 727.18 | 68.8450  |
| 733.00 | 81.4805  |
| 735.90 | 91.1439  |
| 739.58 | 66.2996  |
| 742.81 | 72.9060  |
| 744.21 | 72.9362  |
| 747.13 | 62.7035  |
| 751.79 | 74.0352  |
| 752.31 | 76.8583  |
| 753.82 | 68.4538  |
| 755.35 | 63.7929  |
| 756.15 | 67.5615  |
| 756.87 | 66.6376  |
| 763.93 | 95.9301  |
| 765.79 | 60.2240  |
| 766.42 | 65.8813  |
| 766.84 | 67.7725  |
| 776.49 | 72.6810  |
| 778.00 | 84.0441  |
| 778.57 | 84.0568  |
| 778.89 | 83.1213  |
| 783.80 | 61.4823  |
| 785.46 | 62.4578  |
| 792.07 | 60.1366  |

|         |         |
|---------|---------|
| 795.84  | 60.1998 |
| 796.30  | 65.0893 |
| 798.80  | 83.0475 |
| 801.93  | 71.3043 |
| 805.60  | 58.0538 |
| 810.29  | 59.0824 |
| 810.76  | 62.9036 |
| 815.85  | 60.1289 |
| 817.79  | 56.3412 |
| 818.51  | 55.3969 |
| 819.60  | 50.6364 |
| 826.30  | 49.7730 |
| 828.27  | 0.0000  |
| 831.60  | 68.0576 |
| 831.96  | 71.8994 |
| 834.83  | 72.9153 |
| 836.80  | 0.0000  |
| 846.75  | 67.3753 |
| 848.13  | 69.3267 |
| 856.28  | 0.0000  |
| 856.80  | 86.8597 |
| 860.37  | 66.6556 |
| 867.32  | 74.5201 |
| 867.82  | 73.5632 |
| 871.10  | 60.0638 |
| 873.19  | 76.5746 |
| 874.81  | 77.5765 |
| 875.33  | 0.0000  |
| 876.40  | 67.9079 |
| 879.36  | 44.6598 |
| 880.27  | 47.5844 |
| 880.51  | 43.7027 |
| 881.50  | 51.4850 |
| 883.24  | 54.4243 |
| 884.67  | 54.4448 |
| 889.25  | 41.8557 |
| 896.60  | 57.5392 |
| 898.02  | 56.5840 |
| 899.00  | 52.6959 |
| 903.28  | 82.0603 |
| 911.07  | 70.4780 |
| 911.07  | 70.4780 |
| 911.07  | 70.4780 |
| 919.63  | 62.7839 |
| 920.93  | 62.8047 |
| 925.00  | 48.1347 |
| 925.24  | 48.1377 |
| 926.50  | 48.1526 |
| 935.52  | 43.3376 |
| 937.48  | 56.1685 |
| 944.10  | 43.4298 |
| 946.00  | 47.4004 |
| 949.00  | 49.4120 |
| 962.29  | 61.4727 |
| 964.01  | 61.4980 |
| 966.15  | 61.5308 |
| 968.20  | 61.5610 |
| 969.11  | 61.2912 |
| 969.11  | 61.2912 |
| 969.11  | 61.2912 |
| 977.42  | 63.6901 |
| 980.50  | 51.7863 |
| 983.50  | 51.8244 |
| 989.30  | 40.9183 |
| 996.32  | 63.9805 |
| 1001.03 | 45.0366 |
| 1001.68 | 51.0498 |
| 1004.76 | 73.1248 |
| 1021.30 | 0.0000  |
| 1024.50 | 0.0000  |
| 1034.80 | 54.4746 |
| 1036.00 | 64.5807 |
| 1037.82 | 58.5522 |
| 1038.57 | 49.4745 |
| 1038.76 | 0.0000  |
| 1045.16 | 56.6289 |
| 1046.59 | 62.7165 |
| 1048.07 | 61.7248 |



|         |         |
|---------|---------|
| 1050.47 | 54.6724 |
| 1050.47 | 54.6724 |
| 1062.04 | 45.6812 |
| 1063.62 | 52.8062 |
| 1076.63 | 48.8887 |
| 1077.35 | 57.0459 |
| 1078.86 | 59.1021 |
| 1085.78 | 46.9471 |
| 1099.22 | 56.3025 |
| 1112.02 | 63.3541 |
| 1112.84 | 58.0861 |
| 1115.52 | 61.6406 |
| 1120.29 | 56.4174 |
| 1120.29 | 56.4174 |
| 1120.29 | 56.4174 |
| 1120.29 | 56.4174 |
| 1120.51 | 56.4196 |
| 1121.28 | 58.1920 |
| 1124.00 | 0.0000  |
| 1129.67 | 56.6807 |
| 1131.51 | 0.0000  |
| 1147.95 | 0.0000  |
| 1167.94 | 48.8359 |
| 1173.22 | 56.1731 |
| 1175.09 | 52.0325 |
| 1177.93 | 58.3105 |
| 1189.05 | 56.3599 |
| 1204.90 | 60.7353 |
| 1205.75 | 0.0000  |
| 1213.00 | 77.6193 |
| 1221.42 | 63.0444 |
| 1230.97 | 89.4859 |
| 1235.34 | 70.5986 |
| 1236.41 | 0.0000  |
| 1238.25 | 67.4792 |
| 1246.25 | 63.3643 |
| 1260.41 | 0.0000  |
| 1271.85 | 46.7070 |
| 1274.45 | 55.2267 |
| 1274.54 | 55.2267 |
| 1291.56 | 28.7732 |
| 1298.22 | 0.0000  |
| 1312.09 | 34.2383 |
| 1325.50 | 33.2541 |
| 1325.50 | 33.2541 |
| 1332.49 | 24.7061 |
| 1333.61 | 27.9350 |
| 1360.21 | 20.5176 |
| 1362.66 | 0.0000  |
| 1365.15 | 33.5076 |
| 1368.21 | 27.0376 |
| 1368.53 | 0.0000  |
| 1376.25 | 27.0782 |
| 1384.27 | 24.1746 |
| 1394.10 | 27.0135 |
| 1395.20 | 26.0879 |
| 1407.95 | 31.7529 |
| 1434.06 | 26.2744 |
| 1436.60 | 26.2871 |
| 1457.56 | 0.0000  |
| 1460.81 | 18.8581 |
| 1489.15 | 20.8491 |
| 1509.49 | 17.1198 |
| 1596.49 | 29.9264 |
| 1620.62 | 14.5386 |
| 1678.03 | 0.0000  |
| 1691.02 | 10.7848 |
| 1691.02 | 10.7848 |
| 1706.46 | 0.0000  |
| 1750.46 | 0.0000  |
| 1764.49 | 15.6220 |
| 1764.49 | 15.6220 |
| 1764.49 | 15.6220 |
| 1764.49 | 15.6220 |
| 1770.23 | 12.1611 |
| 1771.40 | 43.6885 |
| 1791.20 | 0.0000  |
| 1808.65 | 10.9847 |

1836.01

16.0441

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G244630015

|                             |            |      |
|-----------------------------|------------|------|
| Total Uranium Activity      | 1.3353E+01 | ug/g |
| Total Uranium Counting Unc. | 1.1170E+01 | ug/g |
| Total Uranium Tpu           | 5.6992E-06 | ug/g |
| Total Uranium Mda           | 6.4640E+00 | ug/g |

```

*****
*
*                               GEL Laboratories LLC                               *
*                               2040 SAVAGE ROAD                               *
*                               CHARLESTON , SC 29417                          *
*                               GROSS GAMMA REPORT                            *
*
*****
*
*  BATCH ID      : 941639                SAMPLE ID   : G244630015                *
*  ANALYST       : MXR1                  DETECTOR    : GAM15                  *
*  SAMPLE DATE   : 8-JAN-2010 12:00:00.00  COUNT TIME : 0 02:00:00.00          *
*  ANALYSIS DATE: 23-JAN-2010 14:06:29.75  SAMPLE ALQT: 124.030 GRAM          *
*
*****

```

```

GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.012E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.657E+00
GROSS GAMMA MDA     (pCi/GRAM ) : 3.494E+00
GROSS GAMMA DLC     (pCi/GRAM ) : 1.693E+00

```

VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 16:08:52.98

```

*****
*                               GEL Laboratories LLC                      *
*                               2040 Savage Road                          *
*                               Charleston, SC 29414                      *
*****
Configuration   : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630016.CNF;1
Sample date     : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 14:06:56
Sample ID       : G244630016      Sample quantity   : 1.33280E+02 GRAM
Detector name   : GAM18           Detector geometry: CAN
Elapsed live time: 0 02:00:00.00   Elapsed real time: 0 02:00:02.06 0.0%
Energy tolerance: 1.50000 keV      Analyst Initials : MXR1
Abundance limit : 75.00000         Sensitivity    : 5.00000
Batch ID        : 941639           Detector SN#    :
Matrix Spike ID :                  LCS ID           : 1032-A
*****

```

| Pk | It | Energy   | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | Fit      |
|----|----|----------|------|-------|------|---------|------|----|----------|------|----------|
| 1  | 0  | 63.77*   | 60   | 554   | 0.82 | 126.66  | 124  | 7  | 8.35E-03 | 68.1 |          |
| 2  | 1  | 75.03*   | 545  | 500   | 1.08 | 149.18  | 142  | 17 | 7.58E-02 | 8.0  | 3.00E+00 |
| 3  | 1  | 77.34*   | 886  | 484   | 1.00 | 153.80  | 142  | 17 | 1.23E-01 | 5.3  |          |
| 4  | 0  | 87.05    | 257  | 661   | 1.37 | 173.20  | 171  | 7  | 3.57E-02 | 17.6 |          |
| 5  | 6  | 90.02    | 236  | 311   | 1.02 | 179.16  | 177  | 14 | 3.27E-02 | 12.1 | 1.59E+00 |
| 6  | 6  | 93.16*   | 398  | 752   | 1.82 | 185.43  | 177  | 14 | 5.53E-02 | 15.0 |          |
| 7  | 0  | 129.77   | 112  | 576   | 0.74 | 258.62  | 254  | 9  | 1.55E-02 | 39.9 |          |
| 8  | 0  | 186.00*  | 321  | 519   | 1.18 | 371.03  | 367  | 9  | 4.46E-02 | 14.4 |          |
| 9  | 0  | 209.41   | 245  | 472   | 1.10 | 417.84  | 413  | 10 | 3.40E-02 | 17.8 |          |
| 10 | 3  | 238.76*  | 2356 | 254   | 1.20 | 476.52  | 469  | 21 | 3.27E-01 | 2.4  | 2.77E+00 |
| 11 | 3  | 241.75   | 609  | 368   | 1.77 | 482.50  | 469  | 21 | 8.46E-02 | 9.4  |          |
| 12 | 0  | 270.27   | 176  | 302   | 1.33 | 539.52  | 535  | 10 | 2.44E-02 | 19.9 |          |
| 13 | 0  | 277.63   | 68   | 321   | 1.30 | 554.24  | 549  | 10 | 9.39E-03 | 51.2 |          |
| 14 | 0  | 295.27*  | 706  | 301   | 1.25 | 589.51  | 584  | 12 | 9.81E-02 | 6.4  |          |
| 15 | 0  | 300.01   | 134  | 240   | 1.06 | 598.97  | 596  | 9  | 1.86E-02 | 22.5 |          |
| 16 | 0  | 327.73   | 150  | 260   | 1.12 | 654.41  | 650  | 11 | 2.08E-02 | 22.3 |          |
| 17 | 0  | 338.49*  | 507  | 319   | 1.35 | 675.91  | 670  | 14 | 7.05E-02 | 8.8  |          |
| 18 | 0  | 351.86*  | 1315 | 257   | 1.40 | 702.65  | 695  | 14 | 1.83E-01 | 3.8  |          |
| 19 | 0  | 409.42   | 105  | 160   | 1.45 | 817.74  | 813  | 10 | 1.46E-02 | 24.5 |          |
| 20 | 0  | 462.82   | 112  | 192   | 1.90 | 924.51  | 920  | 10 | 1.56E-02 | 24.9 |          |
| 21 | 0  | 510.90*  | 254  | 284   | 1.88 | 1020.64 | 1013 | 17 | 3.53E-02 | 18.0 |          |
| 22 | 0  | 583.09*  | 820  | 167   | 1.47 | 1164.97 | 1157 | 16 | 1.14E-01 | 5.0  |          |
| 23 | 0  | 609.16*  | 903  | 192   | 1.50 | 1217.10 | 1210 | 14 | 1.25E-01 | 4.8  |          |
| 24 | 0  | 727.15*  | 187  | 144   | 1.75 | 1453.03 | 1447 | 15 | 2.60E-02 | 16.0 |          |
| 25 | 0  | 768.89   | 85   | 167   | 1.48 | 1536.48 | 1531 | 14 | 1.18E-02 | 34.1 |          |
| 26 | 0  | 795.24   | 101  | 112   | 1.95 | 1589.17 | 1582 | 16 | 1.40E-02 | 25.5 |          |
| 27 | 0  | 860.22   | 93   | 114   | 1.63 | 1719.10 | 1715 | 12 | 1.29E-02 | 25.0 |          |
| 28 | 0  | 911.08*  | 515  | 160   | 1.99 | 1820.80 | 1812 | 17 | 7.16E-02 | 7.3  |          |
| 29 | 0  | 934.47*  | 24   | 93    | 1.46 | 1867.57 | 1863 | 10 | 3.40E-03 | 80.5 |          |
| 30 | 1  | 964.40   | 133  | 112   | 2.32 | 1927.42 | 1916 | 27 | 1.85E-02 | 18.3 | 9.33E-01 |
| 31 | 1  | 968.62   | 348  | 74    | 2.33 | 1935.85 | 1916 | 27 | 4.83E-02 | 8.0  |          |
| 32 | 0  | 1119.78* | 247  | 165   | 2.46 | 2238.13 | 2228 | 23 | 3.43E-02 | 14.9 |          |
| 33 | 0  | 1238.27  | 86   | 139   | 1.43 | 2475.08 | 2468 | 14 | 1.19E-02 | 31.2 |          |
| 34 | 0  | 1377.49  | 58   | 60    | 0.71 | 2753.48 | 2748 | 15 | 8.06E-03 | 31.9 |          |
| 35 | 0  | 1407.57  | 43   | 30    | 1.86 | 2813.64 | 2805 | 13 | 5.96E-03 | 30.2 |          |
| 36 | 0  | 1460.10* | 2697 | 78    | 2.29 | 2918.69 | 2907 | 22 | 3.75E-01 | 2.1  |          |
| 37 | 0  | 1589.50  | 70   | 44    | 4.35 | 3177.46 | 3169 | 23 | 9.77E-03 | 28.8 |          |
| 38 | 0  | 1763.52* | 196  | 15    | 2.59 | 3525.50 | 3515 | 20 | 2.72E-02 | 9.0  |          |

Peak Search Report (continued)  
Sample ID : G244630016

Page : 2  
Acquisition date : 23-JAN-2010 14:06:56

| Pk | It | Energy | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec | %Err | Fit |
|----|----|--------|------|-------|------|---------|------|----|---------|------|-----|
|----|----|--------|------|-------|------|---------|------|----|---------|------|-----|

Flag: "\*" = Peak area was modified by background subtraction

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630016.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 8-JAN-2010 12:00:00 Acquisition date : 23-JAN-2010 14:06:56
Sample ID        : G244630016 Sample quantity : 133.28 GRAM
Sample type      : SOLID Sample geometry :
Detector name    : GAMMA18 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:02.06 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 0.00 %
Efficiency type  : Empirical Efficiencies at : Peak Energy
Abundance limit  : 75.00 WTM error limit : 3.00

```

## Full Combined Activity-MDA Report

## ---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| K-40    | +         | 1460.81      | *   | 3.760E+01           | 3.263E+00 | 4.576E-01      | 3.472E-02 | 82.179  |
| CD-109  | +         | 88.03        | *   | 3.097E+00           | 1.127E+00 | 1.189E+00      | 1.099E-01 | 2.605   |
| SN-126  | +         | 64.28        |     | 5.583E-01           | 7.649E-01 | 9.583E-01      | 1.417E-01 | 0.583   |
|         | +         | 86.94        |     | 1.265E+00           | 6.886E-01 | 5.763E-01      | 2.390E-01 | 2.196   |
|         | +         | 87.57        | *   | 3.044E-01           | 1.108E-01 | 1.418E-01      | 1.306E-02 | 2.147   |
| TL-208  | +         | 277.35       |     | 4.475E-01           | 4.603E-01 | 4.955E-01      | 5.204E-02 | 0.903   |
|         | +         | 510.84       |     | 7.688E-01           | 2.890E-01 | 1.923E-01      | 2.044E-02 | 3.998   |
|         | +         | 583.14       | *   | 6.972E-01           | 8.901E-02 | 4.705E-02      | 3.689E-03 | 14.817  |
|         | +         | 860.37       |     | 7.203E-01           | 3.692E-01 | 3.647E-01      | 4.079E-02 | 1.975   |
| BI-211  |           | 72.87        |     | 6.756E+00           | 3.221E+00 | 5.570E+00      | 4.599E-01 | 1.213   |
|         | +         | 351.07       | *   | 5.252E+00           | 5.243E-01 | 2.598E-01      | 1.668E-02 | 20.212  |
| PB-212  | +         | 74.81        |     | 2.905E+00           | 5.888E-01 | 5.493E-01      | 6.885E-02 | 5.290   |
|         | +         | 77.11        |     | 2.633E+00           | 3.574E-01 | 3.073E-01      | 2.605E-02 | 8.569   |
|         | +         | 87.30        |     | 1.408E+00           | 5.314E-01 | 6.582E-01      | 8.940E-02 | 2.139   |
|         | +         | 238.63       | *   | 2.190E+00           | 1.880E-01 | 7.758E-02      | 5.542E-03 | 28.230  |
|         | +         | 300.09       |     | 1.843E+00           | 8.442E-01 | 9.260E-01      | 7.604E-02 | 1.991   |
| PO-212  | +         | 74.81        |     | 2.905E+00           | 5.888E-01 | 5.493E-01      | 6.885E-02 | 5.290   |
|         | +         | 77.11        |     | 2.633E+00           | 3.574E-01 | 3.073E-01      | 2.605E-02 | 8.569   |
|         | +         | 87.30        |     | 1.408E+00           | 5.314E-01 | 6.582E-01      | 8.940E-02 | 2.139   |
|         |           | 115.19       |     | 1.980E+00           | 3.395E+00 | 5.582E+00      | 3.516E-01 | 0.355   |
|         | +         | 238.63       | *   | 2.190E+00           | 1.880E-01 | 7.758E-02      | 5.542E-03 | 28.230  |
|         | +         | 300.09       |     | 1.843E+00           | 8.442E-01 | 9.260E-01      | 7.604E-02 | 1.991   |
| BI-214  | +         | 609.31       | *   | 1.441E+00           | 1.879E-01 | 9.662E-02      | 8.631E-03 | 14.910  |
|         | +         | 1120.29      |     | 1.975E+00           | 6.180E-01 | 3.914E-01      | 3.748E-02 | 5.044   |
|         | +         | 1764.49      |     | 2.060E+00           | 3.915E-01 | 1.955E-01      | 1.189E-02 | 10.536  |
| PB-214  | +         | 74.81        |     | 5.006E+00           | 9.736E-01 | 9.464E-01      | 1.057E-01 | 5.290   |
|         | +         | 77.11        |     | 4.514E+00           | 7.026E-01 | 5.268E-01      | 6.004E-02 | 8.569   |
|         | +         | 87.30        |     | 2.412E+00           | 8.972E-01 | 1.128E+00      | 1.353E-01 | 2.139   |
|         | +         | 241.98       |     | 3.396E+00           | 6.930E-01 | 4.664E-01      | 3.688E-02 | 7.282   |
|         | +         | 295.21       |     | 1.715E+00           | 2.622E-01 | 1.706E-01      | 1.447E-02 | 10.053  |
|         | +         | 351.92       | *   | 1.827E+00           | 2.058E-01 | 9.055E-02      | 7.490E-03 | 20.175  |
| PO-214  | +         | 74.81        |     | 5.006E+00           | 9.736E-01 | 9.464E-01      | 1.057E-01 | 5.290   |
|         | +         | 77.11        |     | 4.514E+00           | 7.026E-01 | 5.268E-01      | 6.004E-02 | 8.569   |
|         | +         | 87.30        |     | 2.412E+00           | 8.972E-01 | 1.128E+00      | 1.353E-01 | 2.139   |

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PO-216  | +         | 241.98       |     | 3.396E+00           | 6.930E-01 | 4.664E-01      | 3.688E-02 | 7.282   |
|         | +         | 295.21       |     | 1.715E+00           | 2.622E-01 | 1.706E-01      | 1.447E-02 | 10.053  |
|         | +         | 351.92       | *   | 1.827E+00           | 2.058E-01 | 9.055E-02      | 7.490E-03 | 20.175  |
|         | +         | 74.81        |     | 2.905E+00           | 5.888E-01 | 5.493E-01      | 6.885E-02 | 5.290   |
|         | +         | 77.11        |     | 2.633E+00           | 3.574E-01 | 3.073E-01      | 2.605E-02 | 8.569   |
|         | +         | 87.30        |     | 1.408E+00           | 5.314E-01 | 6.582E-01      | 8.940E-02 | 2.139   |
| PO-218  | +         | 238.63       | *   | 2.190E+00           | 1.880E-01 | 7.758E-02      | 5.542E-03 | 28.230  |
|         | +         | 300.09       |     | 1.843E+00           | 8.442E-01 | 9.260E-01      | 7.604E-02 | 1.991   |
|         | +         | 74.81        |     | 5.006E+00           | 9.736E-01 | 9.464E-01      | 1.057E-01 | 5.290   |
|         | +         | 77.11        |     | 4.514E+00           | 7.026E-01 | 5.268E-01      | 6.004E-02 | 8.569   |
|         | +         | 87.30        |     | 2.412E+00           | 8.972E-01 | 1.128E+00      | 1.353E-01 | 2.139   |
|         | +         | 241.98       |     | 3.396E+00           | 6.930E-01 | 4.664E-01      | 3.688E-02 | 7.282   |
| RA-224  | +         | 295.21       |     | 1.715E+00           | 2.622E-01 | 1.706E-01      | 1.447E-02 | 10.053  |
|         | +         | 351.92       | *   | 1.827E+00           | 2.058E-01 | 9.055E-02      | 7.490E-03 | 20.175  |
|         | +         | 240.98       | *   | 6.440E+00           | 1.263E+00 | 8.818E-01      | 4.912E-02 | 7.303   |
| RA-226  | +         | 609.31       | *   | 1.441E+00           | 1.879E-01 | 9.662E-02      | 8.631E-03 | 14.910  |
|         | +         | 1120.29      |     | 1.975E+00           | 6.180E-01 | 3.914E-01      | 3.748E-02 | 5.044   |
|         | +         | 1764.49      |     | 2.060E+00           | 3.915E-01 | 1.955E-01      | 1.189E-02 | 10.536  |
| AC-228  | +         | 338.32       |     | 2.247E+00           | 9.973E-01 | 3.035E-01      | 1.237E-01 | 7.404   |
|         | +         | 911.07       | *   | 1.886E+00           | 3.710E-01 | 1.910E-01      | 2.530E-02 | 9.875   |
|         | +         | 969.11       |     | 2.234E+00           | 6.434E-01 | 3.169E-01      | 7.588E-02 | 7.049   |
| RA-228  | +         | 338.32       |     | 2.247E+00           | 9.973E-01 | 3.035E-01      | 1.237E-01 | 7.404   |
|         | +         | 911.07       | *   | 1.886E+00           | 3.710E-01 | 1.910E-01      | 2.530E-02 | 9.875   |
|         | +         | 969.11       |     | 2.234E+00           | 6.434E-01 | 3.169E-01      | 7.588E-02 | 7.049   |
| TH-228  | +         | 74.81        |     | 2.949E+00           | 5.314E-01 | 5.576E-01      | 4.699E-02 | 5.290   |
|         | +         | 77.11        |     | 2.673E+00           | 3.628E-01 | 3.119E-01      | 2.644E-02 | 8.569   |
|         | +         | 87.30        |     | 1.429E+00           | 5.201E-01 | 6.682E-01      | 6.141E-02 | 2.139   |
| TH-230  | +         | 238.63       | *   | 2.223E+00           | 1.908E-01 | 7.876E-02      | 5.626E-03 | 28.230  |
|         | +         | 300.09       |     | 1.871E+00           | 1.388E+00 | 9.401E-01      | 5.540E-01 | 1.991   |
|         | +         | 609.31       | *   | 1.441E+00           | 1.879E-01 | 9.662E-02      | 8.631E-03 | 14.910  |
| TH-232  | +         | 1120.29      |     | 1.975E+00           | 6.180E-01 | 3.914E-01      | 3.748E-02 | 5.044   |
|         | +         | 1764.49      |     | 2.060E+00           | 3.915E-01 | 1.955E-01      | 1.189E-02 | 10.536  |
|         | +         | 338.32       |     | 2.247E+00           | 4.155E-01 | 3.035E-01      | 1.755E-02 | 7.404   |
| TH-234  | +         | 911.07       | *   | 1.886E+00           | 3.710E-01 | 1.910E-01      | 2.530E-02 | 9.875   |
|         | +         | 969.11       |     | 2.234E+00           | 6.434E-01 | 3.169E-01      | 7.588E-02 | 7.049   |
|         | +         | 63.29        | *   | 1.410E+00           | 1.937E+00 | 2.443E+00      | 4.307E-01 | 0.577   |
| U-234   | +         | 92.38        |     | 2.973E+00           | 1.042E+00 | 6.887E-01      | 1.241E-01 | 4.317   |
|         | +         | 609.31       | *   | 1.441E+00           | 1.879E-01 | 9.662E-02      | 8.631E-03 | 14.910  |
|         | +         | 1120.29      |     | 1.975E+00           | 6.180E-01 | 3.914E-01      | 3.748E-02 | 5.044   |
| NP-237  | +         | 1764.49      |     | 2.060E+00           | 3.915E-01 | 1.955E-01      | 1.189E-02 | 10.536  |
|         | +         | 86.50        | *   | 8.938E-01           | 3.740E-01 | 3.987E-01      | 8.995E-02 | 2.242   |
|         | +         | 95.87        |     | -2.239E-01          | 9.788E-01 | 1.406E+00      | 3.435E-01 | -0.159  |
| U-238   | +         | 63.29        | *   | 1.410E+00           | 1.937E+00 | 2.443E+00      | 4.307E-01 | 0.577   |
|         | +         | 92.38        |     | 2.973E+00           | 9.286E-01 | 6.887E-01      | 5.854E-02 | 4.317   |
|         | +         | 74.67        | *   | 4.710E-01           | 8.470E-02 | 8.940E-02      | 7.460E-03 | 5.269   |
| AM-243  | +         | 86.72        |     | 3.352E+01           | 1.220E+01 | 1.531E+01      | 1.400E+00 | 2.189   |
|         | +         | 117.66       |     | -6.139E+00          | 3.696E+00 | 5.534E+00      | 3.404E-01 | -1.109  |
|         | +         | 142.18       |     | 2.647E+00           | 1.693E+01 | 2.703E+01      | 1.489E+00 | 0.098   |
| ANH-511 | +         | 511.00       | *   | 1.661E-01           | 6.086E-02 | 4.154E-02      | 2.744E-03 | 3.997   |



---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| BE-7    |           | 477.59       | *   | -1.834E-01          | 2.655E-01 | 4.205E-01           | 3.047E-02 | -0.436  |
| NA-22   |           | 1274.54      | *   | -4.635E-02          | 4.037E-02 | 6.071E-02           | 4.131E-03 | -0.763  |
| NA-24   |           | 1368.53      | *   | -5.302E-01          | 4.037E-02 | Half-Life too short |           |         |
| AL-26   |           | 1129.67      |     | -5.196E-01          | 1.721E+00 | 2.373E+00           | 1.585E-01 | -0.219  |
|         |           | 1808.65      | *   | -3.027E-03          | 2.304E-02 | 3.705E-02           | 2.163E-03 | -0.082  |
| TI-44   |           | 67.85        |     | -4.306E-03          | 5.603E-02 | 8.319E-02           | 6.690E-03 | -0.052  |
|         | +         | 78.38        | *   | 4.859E-01           | 6.595E-02 | 8.597E-02           | 7.350E-03 | 5.653   |
| SC-46   |           | 889.25       | *   | -2.649E-02          | 3.280E-02 | 5.024E-02           | 5.604E-03 | -0.527  |
|         | +         | 1120.51      |     | 3.379E-01           | 1.034E-01 | 1.169E-01           | 8.075E-03 | 2.891   |
| V-48    |           | 944.10       |     | 5.567E-02           | 7.857E-01 | 1.283E+00           | 1.358E-01 | 0.043   |
|         |           | 983.50       | *   | 4.924E-02           | 6.091E-02 | 1.039E-01           | 1.028E-02 | 0.474   |
|         |           | 1312.09      |     | 1.254E-02           | 6.834E-02 | 1.135E-01           | 8.271E-03 | 0.110   |
| CR-51   |           | 320.08       | *   | 1.829E-01           | 3.239E-01 | 5.354E-01           | 3.447E-02 | 0.342   |
| MN-52   |           | 744.21       |     | 4.276E-02           | 2.049E-01 | 3.443E-01           | 3.036E-02 | 0.124   |
|         |           | 848.13       |     | -5.725E+00          | 5.648E+00 | 8.563E+00           | 8.958E-01 | -0.669  |
|         | +         | 935.52       |     | 1.750E-01           | 2.825E-01 | 3.967E-01           | 4.255E-02 | 0.441   |
|         |           | 1246.25      |     | 1.474E+00           | 7.436E+00 | 1.101E+01           | 7.078E-01 | 0.134   |
|         |           | 1333.61      |     | 8.004E-01           | 4.156E+00 | 6.909E+00           | 5.219E-01 | 0.116   |
|         |           | 1434.06      | *   | -2.373E-02          | 2.066E-01 | 3.316E-01           | 2.443E-02 | -0.072  |
| MN-54   |           | 834.83       | *   | 2.468E-02           | 3.406E-02 | 5.812E-02           | 5.954E-03 | 0.425   |
| CO-56   |           | 846.75       | *   | -1.151E-02          | 3.260E-02 | 5.219E-02           | 5.449E-03 | -0.221  |
|         |           | 977.42       |     | -1.895E+00          | 2.709E+00 | 3.923E+00           | 3.924E-01 | -0.483  |
|         |           | 1037.82      |     | 6.959E-02           | 2.590E-01 | 4.411E-01           | 4.087E-02 | 0.158   |
|         |           | 1175.09      |     | 9.456E-01           | 1.919E+00 | 3.273E+00           | 1.816E-01 | 0.289   |
|         | +         | 1238.25      |     | 1.915E-01           | 1.202E-01 | 1.564E-01           | 1.042E-02 | 1.225   |
|         |           | 1360.21      |     | 6.838E-01           | 7.987E-01 | 1.405E+00           | 1.056E-01 | 0.487   |
|         |           | 1771.40      |     | -7.534E-02          | 1.947E-01 | 2.469E-01           | 1.492E-02 | -0.305  |
| CO-57   |           | 122.06       | *   | 1.814E-02           | 2.457E-02 | 4.046E-02           | 2.396E-03 | 0.448   |
|         |           | 136.48       |     | -9.241E-02          | 1.952E-01 | 3.050E-01           | 1.996E-02 | -0.303  |
| CO-58   |           | 810.76       | *   | -1.146E-02          | 3.392E-02 | 5.469E-02           | 5.399E-03 | -0.210  |
| FE-59   |           | 142.65       |     | -3.852E-01          | 2.694E+00 | 4.217E+00           | 2.320E-01 | -0.091  |
|         |           | 192.34       |     | -3.083E-01          | 8.494E-01 | 1.402E+00           | 1.626E-01 | -0.220  |
|         |           | 1099.22      | *   | -5.356E-04          | 7.988E-02 | 1.330E-01           | 1.094E-02 | -0.004  |
|         |           | 1291.56      |     | 3.429E-02           | 1.069E-01 | 1.795E-01           | 1.509E-02 | 0.191   |
| CO-60   |           | 1173.22      |     | 3.919E-03           | 3.871E-02 | 6.448E-02           | 3.563E-03 | 0.061   |
|         |           | 1332.49      | *   | -1.357E-02          | 3.249E-02 | 5.111E-02           | 3.861E-03 | -0.265  |
| ZN-65   |           | 1115.52      | *   | 4.258E-02           | 9.518E-02 | 1.405E-01           | 9.896E-03 | 0.303   |
| GE-68   |           | 1077.35      | *   | 1.047E+00           | 1.065E+00 | 1.881E+00           | 1.494E-01 | 0.557   |
| AS-73   |           | 53.44        | *   | 1.155E+00           | 1.087E+00 | 1.887E+00           | 1.496E-01 | 0.612   |
| AS-74   |           | 595.88       | *   | 1.555E-03           | 7.748E-02 | 1.255E-01           | 9.018E-03 | 0.012   |
|         |           | 634.78       |     | 1.270E-01           | 2.975E-01 | 4.916E-01           | 3.660E-02 | 0.258   |
| SE-75   |           | 66.05        |     | -8.702E-01          | 5.986E+00 | 8.789E+00           | 8.705E-01 | -0.099  |
|         |           | 96.73        |     | -8.624E-01          | 8.179E-01 | 1.116E+00           | 1.472E-01 | -0.773  |
|         |           | 121.11       |     | 1.642E-01           | 1.296E-01 | 2.165E-01           | 2.021E-02 | 0.758   |
|         |           | 136.00       |     | -2.967E-02          | 3.710E-02 | 5.720E-02           | 3.257E-03 | -0.519  |
|         |           | 198.60       |     | 2.631E-01           | 1.602E+00 | 2.663E+00           | 1.807E-01 | 0.099   |
|         |           | 264.65       | *   | 1.976E-02           | 4.101E-02 | 6.357E-02           | 3.636E-03 | 0.311   |
|         |           | 279.53       |     | 2.947E-02           | 1.063E-01 | 1.540E-01           | 9.514E-03 | 0.191   |
|         |           | 303.91       |     | -4.002E-01          | 2.055E+00 | 2.867E+00           | 2.728E-01 | -0.140  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| BR-77   | +         | 400.65       |     | -1.220E-01          | 2.144E-01 | 3.485E-01      | 3.175E-02 | -0.350  |
|         |           | 87.88        |     | 6.635E+02           | 2.415E+02 | 3.482E+02      | 3.217E+01 | 1.906   |
|         | +         | 200.40       |     | -4.241E+01          | 1.417E+02 | 2.339E+02      | 1.260E+01 | -0.181  |
|         |           | 239.00       |     | 3.488E+02           | 2.552E+01 | 3.632E+01      | 2.021E+00 | 9.602   |
|         |           | 249.79       |     | -2.146E+01          | 5.694E+01 | 9.200E+01      | 5.157E+00 | -0.233  |
|         |           | 281.68       |     | -6.869E+01          | 8.853E+01 | 1.197E+02      | 6.833E+00 | -0.574  |
|         |           | 297.23       |     | 4.269E+02           | 7.601E+01 | 1.108E+02      | 6.361E+00 | 3.854   |
|         |           | 303.76       |     | -2.559E+01          | 1.740E+02 | 2.435E+02      | 1.401E+01 | -0.105  |
|         |           | 439.47       |     | 1.098E+02           | 1.243E+02 | 2.148E+02      | 1.309E+01 | 0.511   |
|         |           | 484.57       |     | 5.911E+01           | 1.918E+02 | 3.211E+02      | 2.061E+01 | 0.184   |
|         |           | 520.65       | *   | -5.380E+00          | 8.475E+00 | 1.334E+01      | 8.898E-01 | -0.403  |
|         |           | 574.64       |     | -3.229E+01          | 1.836E+02 | 2.771E+02      | 1.951E+01 | -0.117  |
|         |           | 578.91       |     | 5.830E+01           | 8.208E+01 | 1.215E+02      | 8.593E+00 | 0.480   |
|         |           | 585.48       |     | 1.996E+03           | 2.671E+02 | 4.517E+02      | 3.214E+01 | 4.418   |
|         |           | 755.35       |     | 9.121E+01           | 1.383E+02 | 2.378E+02      | 2.137E+01 | 0.384   |
|         |           | 817.79       |     | -1.120E+02          | 1.068E+02 | 1.618E+02      | 1.613E+01 | -0.692  |
|         |           | 698.33       |     | -1.841E+01          | 3.011E+01 | 4.861E+01      | 3.958E+00 | -0.379  |
| SR-82   | *         | 776.49       |     | -3.012E-01          | 3.824E-01 | 5.036E-01      | 4.690E-02 | -0.598  |
|         |           | 1395.20      |     | -1.026E+01          | 9.288E+00 | 1.336E+01      | 9.955E-01 | -0.768  |
| RB-83   | *         | 520.41       |     | -3.663E-02          | 5.644E-02 | 8.875E-02      | 5.919E-03 | -0.413  |
|         |           | 529.64       |     | 2.757E-02           | 8.856E-02 | 1.460E-01      | 9.832E-03 | 0.189   |
|         |           | 552.65       |     | -1.337E-02          | 1.695E-01 | 2.748E-01      | 1.894E-02 | -0.049  |
| RB-84   | *         | 881.50       |     | 3.174E-02           | 6.116E-02 | 1.033E-01      | 1.138E-02 | 0.307   |
| KR-85   | *         | 513.99       |     | 1.874E+01           | 7.358E+00 | 1.202E+01      | 7.961E-01 | 1.559   |
| SR-85   | *         | 513.99       |     | 9.603E-02           | 3.771E-02 | 6.159E-02      | 4.080E-03 | 1.559   |
| RB-86   | *         | 1076.63      |     | 2.946E-01           | 6.795E-01 | 1.164E+00      | 9.269E-02 | 0.253   |
| Y-88    |           | 898.02       |     | 5.895E-03           | 3.700E-02 | 6.103E-02      | 6.918E-03 | 0.097   |
|         |           | 1836.01      |     | 3.401E-03           | 2.621E-02 | 4.373E-02      | 2.491E-03 | 0.078   |
| ZR-88   | *         | 392.90       |     | -1.969E-02          | 2.652E-02 | 4.289E-02      | 2.467E-03 | -0.459  |
| Y-91    | *         | 1204.90      |     | 3.076E+00           | 1.629E+01 | 2.720E+01      | 1.608E+00 | 0.113   |
| NB-94   | *         | 702.63       |     | 4.253E-02           | 2.960E-02 | 5.267E-02      | 4.321E-03 | 0.808   |
|         |           | 871.10       |     | -4.855E-03          | 2.817E-02 | 4.555E-02      | 4.940E-03 | -0.107  |
| NB-95   | *         | 765.79       |     | 5.894E-02           | 4.307E-02 | 6.733E-02      | 6.159E-03 | 0.875   |
| NB-95M  | *         | 235.69       |     | 1.028E-01           | 1.201E-01 | 1.810E-01      | 1.328E-02 | 0.568   |
| ZR-95   | *         | 724.18       |     | 1.492E-01           | 9.733E-02 | 1.537E-01      | 1.425E-02 | 0.971   |
|         |           | 756.15       |     | 7.002E-02           | 5.949E-02 | 1.048E-01      | 1.031E-02 | 0.668   |
| NB-97   | *         | 657.90       |     | -2.223E-03          | 5.949E-02 | Half-Life      | too short |         |
|         |           | 1024.50      |     | 5.714E+00           | 5.949E-02 | Half-Life      | too short |         |
| ZR-97   | *         | 254.15       |     | -2.869E-01          | 5.949E-02 | Half-Life      | too short |         |
|         |           | 355.39       |     | 1.041E+00           | 5.949E-02 | Half-Life      | too short |         |
|         |           | 507.63       |     | 4.796E+00           | 5.949E-02 | Half-Life      | too short |         |
|         |           | 602.52       |     | 8.161E+00           | 5.949E-02 | Half-Life      | too short |         |
|         |           | 1021.30      |     | 8.580E+00           | 5.949E-02 | Half-Life      | too short |         |
|         |           | 1147.95      |     | -1.727E+00          | 5.949E-02 | Half-Life      | too short |         |
|         |           | 1362.66      |     | -1.632E+00          | 5.949E-02 | Half-Life      | too short |         |
| MO-99   |           | 1750.46      |     | -6.716E-01          | 5.949E-02 | Half-Life      | too short |         |
|         |           | 140.51       |     | -5.197E+00          | 2.570E+01 | 4.004E+01      | 1.077E+01 | -0.130  |
|         |           | 181.06       |     | -6.971E+00          | 1.701E+01 | 2.465E+01      | 4.185E+00 | -0.283  |
|         |           | 366.43       |     | 1.283E+01           | 6.908E+01 | 1.173E+02      | 6.779E+00 | 0.109   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| TC-99M  | 739.58    | *            |     | 2.440E+00           | 9.849E+00 | 1.659E+01      | 2.531E+00 | 0.147   |
|         | 778.00    |              |     | -4.383E+01          | 3.097E+01 | 4.347E+01      | 4.058E+00 | -1.008  |
|         | 140.51    | *            |     | -7.028E+09          | 3.097E+01 | Half-Life      | too short |         |
|         | 127.23    |              |     | 1.795E-02           | 3.343E-02 | 4.885E-02      | 2.822E-03 | 0.367   |
| RH-101  | 198.01    | *            |     | 5.426E-03           | 2.927E-02 | 4.870E-02      | 2.618E-03 | 0.111   |
|         | 325.23    |              |     | -4.703E-02          | 2.123E-01 | 2.935E-01      | 1.696E-02 | -0.160  |
|         | 418.52    |              |     | -5.091E-02          | 2.456E-01 | 4.054E-01      | 2.409E-02 | -0.126  |
|         | 475.06    | *            |     | -1.535E-02          | 2.439E-02 | 3.884E-02      | 2.467E-03 | -0.395  |
| RH-102  | 631.29    |              |     | -1.010E-02          | 4.690E-02 | 7.445E-02      | 5.526E-03 | -0.136  |
|         | 697.49    |              |     | -2.481E-02          | 6.725E-02 | 1.101E-01      | 8.949E-03 | -0.225  |
|         | 766.84    |              |     | 1.548E-01           | 1.117E-01 | 1.743E-01      | 1.597E-02 | 0.888   |
|         | 1046.59   |              |     | -2.189E-02          | 9.929E-02 | 1.637E-01      | 1.412E-02 | -0.134  |
| RU-103  | 1112.84   |              |     | 9.828E-02           | 2.180E-01 | 3.235E-01      | 2.296E-02 | 0.304   |
|         | 497.08    | *            |     | -1.274E-02          | 3.438E-02 | 5.528E-02      | 7.178E-03 | -0.230  |
|         | 610.33    | +            |     | 1.555E+01           | 2.898E+00 | 2.598E+00      | 4.166E-01 | 5.984   |
|         | 511.85    | +            |     | 8.294E-01           | 3.040E-01 | 3.820E-01      | 2.525E-02 | 2.171   |
| RH-106  | 621.84    | *            |     | 2.162E-01           | 2.677E-01 | 4.509E-01      | 5.673E-02 | 0.479   |
|         | 1050.47   |              |     | 9.568E-01           | 2.001E+00 | 3.443E+00      | 2.942E-01 | 0.278   |
|         | 511.85    | +            |     | 8.294E-01           | 3.040E-01 | 3.820E-01      | 2.525E-02 | 2.171   |
|         | 621.84    | *            |     | 2.162E-01           | 2.668E-01 | 4.509E-01      | 3.318E-02 | 0.479   |
| RU-106  | 1050.47   |              |     | 9.568E-01           | 2.001E+00 | 3.443E+00      | 2.942E-01 | 0.278   |
|         | 433.93    | *            |     | -8.795E-03          | 2.686E-02 | 4.388E-02      | 2.867E-03 | -0.200  |
|         | 614.37    |              |     | 2.318E-03           | 3.551E-02 | 4.969E-02      | 3.829E-03 | 0.047   |
|         | 722.95    |              |     | -2.980E-02          | 4.053E-02 | 5.437E-02      | 4.808E-03 | -0.548  |
| AG-108M | 657.75    | *            |     | 9.958E-04           | 2.757E-02 | 4.638E-02      | 3.658E-03 | 0.021   |
|         | 677.61    |              |     | -4.289E-02          | 2.426E-01 | 4.019E-01      | 3.260E-02 | -0.107  |
|         | 706.67    |              |     | -1.196E-01          | 1.857E-01 | 2.986E-01      | 2.542E-02 | -0.400  |
|         | 763.93    |              |     | -3.851E-02          | 1.563E-01 | 2.178E-01      | 2.037E-02 | -0.177  |
| AG-110M | 884.67    |              |     | -8.672E-03          | 4.166E-02 | 6.710E-02      | 7.578E-03 | -0.129  |
|         | 937.48    |              |     | 4.593E-02           | 1.114E-01 | 1.613E-01      | 1.766E-02 | 0.285   |
|         | 1384.27   |              |     | 8.875E-02           | 1.469E-01 | 2.212E-01      | 1.715E-02 | 0.401   |
|         | 171.28    |              |     | -3.582E-01          | 8.680E-01 | 1.443E+00      | 7.590E-02 | -0.248  |
| IN-111  | 245.39    | *            |     | 2.798E-01           | 1.015E+00 | 1.486E+00      | 8.305E-02 | 0.188   |
|         | 391.69    | *            |     | -8.296E-03          | 3.854E-02 | 6.396E-02      | 3.924E-03 | -0.130  |
|         | 391.69    | *            |     | -8.296E-03          | 3.854E-02 | 6.396E-02      | 3.924E-03 | -0.130  |
|         | 190.27    | *            |     | 1.222E-01           | 1.783E-01 | 2.714E-01      | 1.449E-02 | 0.450   |
| IN-113M | 260.90    |              |     | -6.785E+01          | 1.157E+02 | 1.846E+02      | 1.042E+01 | -0.368  |
|         | 492.35    |              |     | 5.077E+00           | 2.960E+01 | 4.916E+01      | 3.182E+00 | 0.103   |
|         | 527.90    | *            |     | -1.081E+00          | 8.978E+00 | 1.444E+01      | 9.707E-01 | -0.075  |
|         | 156.02    |              |     | 1.232E+00           | 2.039E+00 | 3.519E+00      | 1.880E-01 | 0.350   |
| SN-113  | 158.56    | *            |     | 1.008E-03           | 4.783E-02 | 8.109E-02      | 4.310E-03 | 0.012   |
|         | 563.90    | *            |     | 1.548E+00           | 1.710E+00 | 2.920E+00      | 2.035E-01 | 0.530   |
|         | 692.80    |              |     | 1.295E+01           | 3.691E+01 | 6.282E+01      | 5.065E+00 | 0.206   |
|         | 159.00    | *            |     | -3.616E+00          | 3.691E+01 | Half-Life      | too short |         |
| SN-117M | 528.96    |              |     | 1.003E+02           | 3.691E+01 | Half-Life      | too short |         |
|         | 159.00    | *            |     | -1.853E-02          | 2.493E-02 | 4.118E-02      | 2.222E-03 | -0.450  |
|         | 602.71    | *            |     | 5.767E-01           | 6.443E-01 | 9.543E-01      | 6.900E-02 | 0.604   |
|         | 722.78    |              |     | -3.532E+00          | 4.193E+00 | 5.563E+00      | 4.728E-01 | -0.635  |
| SB-122  | 1325.50   |              |     | -2.147E+00          | 2.816E+01 | 4.576E+01      | 3.414E+00 | -0.047  |
|         |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |
| I-123   |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |
| TE-123M |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |
| I-124   |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| SB-124  | +         | 1376.25      |     | 6.274E+01           | 4.034E+01 | 5.545E+01      | 4.152E+00 | 1.131   |
|         |           | 1509.49      |     | 1.371E+01           | 1.431E+01 | 2.569E+01      | 1.841E+00 | 0.533   |
|         |           | 1691.02      |     | 4.164E-01           | 3.033E+00 | 5.096E+00      | 3.287E-01 | 0.082   |
|         |           | 602.71       |     | 3.367E-02           | 3.761E-02 | 5.571E-02      | 4.029E-03 | 0.604   |
|         |           | 645.85       |     | -4.490E-01          | 4.114E-01 | 6.076E-01      | 4.926E-02 | -0.739  |
|         |           | 709.31       |     | -1.324E+00          | 2.428E+00 | 3.924E+00      | 3.257E-01 | -0.338  |
|         |           | 713.82       |     | -7.167E-02          | 1.472E+00 | 2.447E+00      | 2.901E-01 | -0.029  |
|         |           | 722.78       |     | -2.989E-01          | 3.549E-01 | 4.708E-01      | 4.090E-02 | -0.635  |
|         | +         | 968.20       |     | 2.299E+01           | 4.358E+00 | 6.481E+00      | 6.591E-01 | 3.547   |
|         |           | 1045.16      |     | 8.887E-01           | 2.067E+00 | 3.552E+00      | 3.076E-01 | 0.250   |
| SB-125  |           | 1325.50      |     | -1.941E-01          | 2.545E+00 | 4.136E+00      | 3.086E-01 | -0.047  |
|         |           | 1368.21      |     | -1.854E+00          | 1.563E+00 | 2.092E+00      | 2.675E-01 | -0.886  |
|         |           | 1436.60      |     | 6.257E-01           | 3.251E+00 | 5.376E+00      | 3.958E-01 | 0.116   |
|         |           | 1691.02      | *   | 8.313E-03           | 6.054E-02 | 1.017E-01      | 7.018E-03 | 0.082   |
|         |           | 427.89       | *   | 1.869E-02           | 7.599E-02 | 1.280E-01      | 7.999E-03 | 0.146   |
|         | +         | 463.38       |     | 6.715E-01           | 3.385E-01 | 4.869E-01      | 3.491E-02 | 1.379   |
|         |           | 600.56       |     | 7.538E-02           | 1.537E-01 | 2.490E-01      | 1.983E-02 | 0.303   |
|         |           | 635.90       |     | 6.784E-02           | 2.299E-01 | 3.767E-01      | 3.107E-02 | 0.180   |
|         | TE-125M   | 109.28       | *   | -5.567E+00          | 9.043E+00 | 1.427E+01      | 1.254E+00 | -0.390  |
|         | I-126     | 388.63       |     | 1.311E-01           | 1.772E-01 | 3.064E-01      | 1.761E-02 | 0.428   |
| SB-126  |           | 666.33       | *   | 1.099E-01           | 1.523E-01 | 2.647E-01      | 2.035E-02 | 0.415   |
|         |           | 753.82       |     | 3.926E-01           | 1.227E+00 | 2.074E+00      | 1.859E-01 | 0.189   |
|         |           | 223.80       |     | 3.670E-01           | 3.567E+00 | 5.927E+00      | 3.258E-01 | 0.062   |
|         | +         | 278.60       |     | 2.954E+00           | 3.027E+00 | 3.732E+00      | 2.127E-01 | 0.791   |
|         | +         | 296.50       |     | 1.705E+01           | 2.378E+00 | 3.331E+00      | 1.912E-01 | 5.118   |
|         |           | 414.70       |     | -2.687E-02          | 7.084E-02 | 9.992E-02      | 5.910E-03 | -0.269  |
|         |           | 415.30       |     | -1.749E+00          | 5.619E+00 | 8.356E+00      | 4.946E-01 | -0.209  |
|         |           | 555.20       |     | 2.467E+00           | 3.338E+00 | 5.661E+00      | 3.911E-01 | 0.436   |
|         |           | 573.80       |     | -1.498E-01          | 8.812E-01 | 1.376E+00      | 9.681E-02 | -0.109  |
|         |           | 593.00       |     | 4.946E-01           | 7.895E-01 | 1.324E+00      | 9.491E-02 | 0.373   |
| SB-127  |           | 656.30       |     | 4.185E-01           | 2.723E+00 | 4.611E+00      | 3.499E-01 | 0.091   |
|         |           | 666.33       |     | 4.592E-02           | 6.365E-02 | 1.106E-01      | 8.504E-03 | 0.415   |
|         |           | 675.00       |     | 2.224E-01           | 1.618E+00 | 2.731E+00      | 2.133E-01 | 0.081   |
|         |           | 695.00       |     | 9.013E-02           | 6.676E-02 | 1.187E-01      | 9.607E-03 | 0.759   |
|         |           | 697.00       |     | 7.165E-03           | 2.330E-01 | 3.898E-01      | 3.166E-02 | 0.018   |
|         |           | 720.50       | *   | -4.253E-02          | 1.417E-01 | 1.981E-01      | 1.677E-02 | -0.215  |
|         |           | 856.80       |     | 2.200E-01           | 4.429E-01 | 6.523E-01      | 6.918E-02 | 0.337   |
|         |           | 989.30       |     | 6.791E-01           | 1.091E+00 | 1.840E+00      | 1.800E-01 | 0.369   |
|         |           | 1034.80      |     | 8.578E+00           | 7.467E+00 | 1.298E+01      | 1.153E+00 | 0.661   |
|         |           | 1213.00      |     | -7.137E-01          | 4.073E+00 | 6.648E+00      | 3.997E-01 | -0.107  |
| SB-127  |           | 61.10        |     | 1.341E+01           | 7.300E+01 | 1.103E+02      | 1.154E+01 | 0.122   |
|         |           | 252.40       |     | -8.465E-01          | 3.689E+00 | 5.966E+00      | 2.477E+00 | -0.142  |
|         |           | 290.80       |     | -6.138E+00          | 2.072E+01 | 2.885E+01      | 2.626E+00 | -0.213  |
|         |           | 411.60       |     | 1.932E+01           | 1.130E+01 | 1.781E+01      | 2.566E+00 | 1.085   |
|         |           | 444.90       |     | 1.928E+00           | 8.547E+00 | 1.396E+01      | 1.531E+00 | 0.138   |
|         |           | 473.00       |     | 8.064E-01           | 1.386E+00 | 2.354E+00      | 2.696E-01 | 0.343   |
|         |           | 543.00       |     | -9.044E+00          | 1.366E+01 | 2.131E+01      | 2.853E+00 | -0.424  |
|         |           | 603.60       |     | 8.443E+00           | 1.130E+01 | 1.651E+01      | 1.914E+00 | 0.511   |
|         |           | 685.20       | *   | 1.031E+00           | 1.105E+00 | 1.936E+00      | 2.107E-01 | 0.532   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| XE-127  |           | 698.50       |     | -8.163E+00          | 1.340E+01 | 2.156E+01      | 3.353E+00 | -0.379  |
|         |           | 722.20       |     | -2.948E+01          | 2.864E+01 | 3.711E+01      | 4.101E+00 | -0.794  |
|         |           | 783.80       |     | 4.233E+00           | 3.205E+00 | 5.609E+00      | 7.281E-01 | 0.755   |
|         |           | 57.60        |     | 1.310E+00           | 7.245E+00 | 1.221E+01      | 9.413E-01 | 0.107   |
|         |           | 145.22       |     | 4.972E-01           | 6.831E-01 | 1.101E+00      | 6.019E-02 | 0.452   |
|         |           | 172.10       |     | -5.449E-02          | 1.044E-01 | 1.728E-01      | 9.097E-03 | -0.315  |
|         |           | 202.84       | *   | -2.637E-02          | 4.106E-02 | 6.687E-02      | 3.610E-03 | -0.394  |
| I-131   |           | 374.96       |     | 1.299E-01           | 1.603E-01 | 2.793E-01      | 1.611E-02 | 0.465   |
|         |           | 80.18        |     | 6.289E-01           | 4.771E+00 | 7.068E+00      | 6.161E-01 | 0.089   |
|         |           | 284.30       |     | -4.786E-02          | 1.318E+00 | 2.140E+00      | 1.363E-01 | -0.022  |
|         |           | 364.48       | *   | -1.611E-02          | 9.361E-02 | 1.565E-01      | 1.010E-02 | -0.103  |
|         |           | 636.97       |     | 4.949E-01           | 1.316E+00 | 2.167E+00      | 1.736E-01 | 0.228   |
| TE-132  |           | 722.89       |     | -5.254E+00          | 6.797E+00 | 9.084E+00      | 7.772E-01 | -0.578  |
|         |           | 49.72        |     | 1.502E+01           | 2.718E+01 | 4.666E+01      | 4.757E+00 | 0.322   |
|         |           | 111.76       |     | -2.307E+01          | 2.825E+01 | 4.408E+01      | 4.086E+00 | -0.523  |
|         |           | 116.30       |     | 2.745E+01           | 2.601E+01 | 4.330E+01      | 3.926E+00 | 0.634   |
| BA-133  |           | 228.16       | *   | 1.812E-01           | 6.121E-01 | 1.022E+00      | 1.456E-01 | 0.177   |
|         |           | 53.15        |     | 2.756E+00           | 4.688E+00 | 8.038E+00      | 6.379E-01 | 0.343   |
|         |           | 79.62        |     | 9.629E-01           | 1.365E+00 | 2.061E+00      | 3.138E-01 | 0.467   |
|         |           | 81.00        |     | -1.376E-01          | 1.087E-01 | 1.480E-01      | 2.358E-02 | -0.930  |
|         | +         | 276.40       |     | 4.422E-01           | 4.560E-01 | 5.550E-01      | 7.168E-02 | 0.797   |
| I-133   |           | 302.84       |     | 4.466E-02           | 1.377E-01 | 1.987E-01      | 2.312E-02 | 0.225   |
|         |           | 356.01       | *   | -2.407E-03          | 4.164E-02 | 5.767E-02      | 6.662E-03 | -0.042  |
|         |           | 383.85       |     | 9.609E-02           | 2.533E-01 | 4.321E-01      | 4.687E-02 | 0.222   |
|         | +         | 510.53       |     | 1.651E+00           | 2.533E-01 | Half-Life      | too short |         |
|         |           | 529.87       | *   | 2.056E-03           | 2.533E-01 | Half-Life      | too short |         |
|         |           | 706.58       |     | -2.310E-01          | 2.533E-01 | Half-Life      | too short |         |
|         |           | 856.28       |     | 1.970E-01           | 2.533E-01 | Half-Life      | too short |         |
|         |           | 875.33       |     | -3.175E-02          | 2.533E-01 | Half-Life      | too short |         |
|         |           | 1236.41      |     | 1.045E+00           | 2.533E-01 | Half-Life      | too short |         |
|         |           | 1298.22      |     | -8.250E-02          | 2.533E-01 | Half-Life      | too short |         |
| CS-134  |           | 475.35       |     | -8.207E-01          | 1.581E+00 | 2.533E+00      | 1.609E-01 | -0.324  |
|         |           | 563.23       |     | 2.207E-01           | 3.022E-01 | 5.113E-01      | 3.612E-02 | 0.432   |
|         |           | 569.32       |     | 7.203E-02           | 1.640E-01 | 2.732E-01      | 1.953E-02 | 0.264   |
|         |           | 604.70       |     | 1.005E-02           | 3.427E-02 | 4.847E-02      | 3.524E-03 | 0.207   |
|         | +         | 795.84       | *   | 1.207E-01           | 6.256E-02 | 7.538E-02      | 7.291E-03 | 1.602   |
|         |           | 801.93       |     | -6.009E-01          | 4.144E-01 | 5.143E-01      | 5.018E-02 | -1.168  |
| CS-135  |           | 1038.57      |     | 8.467E-01           | 3.242E+00 | 5.517E+00      | 4.854E-01 | 0.153   |
|         |           | 1167.94      |     | 1.106E+00           | 2.129E+00 | 3.639E+00      | 2.063E-01 | 0.304   |
|         |           | 1365.15      |     | -6.185E-01          | 9.946E-01 | 1.518E+00      | 1.208E-01 | -0.407  |
|         |           | 268.24       | *   | 2.094E-01           | 1.553E-01 | 2.379E-01      | 1.799E-02 | 0.880   |
|         | I-135     | 288.45       |     | 1.319E+10           | 1.553E-01 | Half-Life      | too short |         |
|         |           | 417.63       |     | -1.182E+10          | 1.553E-01 | Half-Life      | too short |         |
|         |           | 546.56       |     | 4.771E+09           | 1.553E-01 | Half-Life      | too short |         |
|         |           | 836.80       |     | 1.058E+10           | 1.553E-01 | Half-Life      | too short |         |
|         |           | 1038.76      |     | 3.013E+09           | 1.553E-01 | Half-Life      | too short |         |
|         |           | 1124.00      |     | 3.521E+10           | 1.553E-01 | Half-Life      | too short |         |
| I-135   |           | 1131.51      |     | -9.137E+07          | 1.553E-01 | Half-Life      | too short |         |
|         |           | 1260.41      | *   | 1.166E+09           | 1.553E-01 | Half-Life      | too short |         |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| CS-136  |           | 1457.56      |     | 1.367E+12           | 1.553E-01 | Half-Life      | too short |         |
|         |           | 1678.03      |     | -1.149E+09          | 1.553E-01 | Half-Life      | too short |         |
|         |           | 1706.46      |     | -7.246E+09          | 1.553E-01 | Half-Life      | too short |         |
|         |           | 1791.20      |     | -2.532E+09          | 1.553E-01 | Half-Life      | too short |         |
|         |           | 66.91        |     | -6.479E-01          | 9.817E-01 | 1.403E+00      | 2.119E-01 | -0.462  |
|         | +         | 86.29        |     | 3.966E+00           | 1.492E+00 | 2.052E+00      | 2.705E-01 | 1.933   |
|         |           | 153.22       |     | 3.114E-01           | 5.976E-01 | 1.030E+00      | 7.088E-02 | 0.302   |
|         |           | 163.89       |     | 8.862E-01           | 9.324E-01 | 1.621E+00      | 1.107E-01 | 0.547   |
|         |           | 176.55       |     | 1.827E-01           | 3.240E-01 | 5.550E-01      | 3.363E-02 | 0.329   |
|         |           | 273.65       |     | 8.474E-02           | 5.878E-01 | 6.128E-01      | 3.992E-02 | 0.138   |
|         |           | 340.57       |     | 5.932E-01           | 1.376E-01 | 2.310E-01      | 1.421E-02 | 2.568   |
|         |           | 818.51       |     | -7.043E-02          | 6.070E-02 | 9.106E-02      | 9.092E-03 | -0.773  |
|         |           | 1048.07      | *   | 2.292E-02           | 9.237E-02 | 1.569E-01      | 1.406E-02 | 0.146   |
|         |           | 1235.34      |     | 9.900E-01           | 6.930E-01 | 1.049E+00      | 1.078E-01 | 0.944   |
| BA-137M |           | 661.65       | *   | -3.205E-02          | 2.922E-02 | 4.579E-02      | 3.490E-03 | -0.700  |
| CS-137  |           | 661.65       | *   | -3.388E-02          | 3.089E-02 | 4.840E-02      | 3.699E-03 | -0.700  |
| CE-139  |           | 165.85       | *   | -2.653E-03          | 2.640E-02 | 4.446E-02      | 2.334E-03 | -0.060  |
| BA-140  |           | 162.64       |     | 2.289E-01           | 6.495E-01 | 1.111E+00      | 6.734E-02 | 0.206   |
|         |           | 304.84       |     | -5.857E-01          | 1.275E+00 | 1.733E+00      | 4.728E-01 | -0.338  |
|         |           | 423.70       |     | 4.782E-01           | 1.623E+00 | 2.729E+00      | 8.683E-01 | 0.175   |
| LA-140  | +         | 537.32       | *   | 1.662E-01           | 2.160E-01 | 3.573E-01      | 1.169E-01 | 0.465   |
|         |           | 328.77       |     | 8.215E-01           | 3.699E-01 | 4.823E-01      | 3.125E-02 | 1.703   |
|         |           | 432.53       |     | 2.148E-02           | 1.680E+00 | 2.795E+00      | 1.853E-01 | 0.008   |
|         |           | 487.03       |     | 3.358E-03           | 1.134E-01 | 1.870E-01      | 1.334E-02 | 0.018   |
|         |           | 751.79       |     | -1.737E+00          | 1.451E+00 | 2.213E+00      | 2.174E-01 | -0.785  |
|         |           | 815.85       |     | -2.921E-02          | 2.591E-01 | 4.235E-01      | 4.578E-02 | -0.069  |
|         |           | 867.82       |     | 9.411E-02           | 1.322E+00 | 1.870E+00      | 2.087E-01 | 0.050   |
|         |           | 919.63       |     | -1.554E+00          | 2.606E+00 | 3.709E+00      | 4.686E-01 | -0.419  |
|         |           | 925.24       |     | 6.936E-01           | 9.599E-01 | 1.636E+00      | 1.853E-01 | 0.424   |
|         |           | 1596.49      | *   | 8.145E-02           | 6.610E-02 | 1.133E-01      | 7.770E-03 | 0.719   |
| CE-141  |           | 145.44       | *   | 4.422E-02           | 6.196E-02 | 9.981E-02      | 5.698E-03 | 0.443   |
| CE-143  |           | 57.37        |     | -1.388E-04          | 6.196E-02 | Half-Life      | too short |         |
|         |           | 231.56       |     | -4.777E-05          | 6.196E-02 | Half-Life      | too short |         |
|         |           | 293.26       | *   | 7.960E-04           | 6.196E-02 | Half-Life      | too short |         |
|         | +         | 350.59       |     | 4.103E-02           | 6.196E-02 | Half-Life      | too short |         |
|         |           | 490.36       |     | -2.554E-03          | 6.196E-02 | Half-Life      | too short |         |
|         |           | 664.57       |     | 8.087E-04           | 6.196E-02 | Half-Life      | too short |         |
|         |           | 721.93       |     | -1.369E-03          | 6.196E-02 | Half-Life      | too short |         |
|         |           | 80.11        |     | 3.445E-01           | 2.204E+00 | 3.269E+00      | 2.830E-01 | 0.105   |
|         |           | 133.54       | *   | 6.668E-02           | 2.189E-01 | 3.149E-01      | 4.452E-02 | 0.212   |
| PM-144  |           | 476.78       |     | -5.083E-02          | 5.566E-02 | 8.693E-02      | 6.450E-03 | -0.585  |
|         |           | 618.01       |     | -2.366E-02          | 2.681E-02 | 4.067E-02      | 3.096E-03 | -0.582  |
|         |           | 696.49       | *   | 1.166E-02           | 2.974E-02 | 5.068E-02      | 4.114E-03 | 0.230   |
|         |           | 778.57       |     | -2.596E+00          | 2.015E+00 | 2.953E+00      | 2.761E-01 | -0.879  |
| PR-144  |           | 696.49       | *   | 7.899E-01           | 2.015E+00 | 3.434E+00      | 2.787E-01 | 0.230   |
|         |           | 1489.15      |     | -4.933E+00          | 1.013E+01 | 1.547E+01      | 1.118E+00 | -0.319  |
| PM-146  |           | 453.90       | *   | 4.857E-02           | 3.625E-02 | 6.368E-02      | 5.665E-03 | 0.763   |
|         |           | 633.02       |     | -6.334E-01          | 1.211E+00 | 1.846E+00      | 6.850E-01 | -0.343  |
|         |           | 735.90       |     | -5.634E-02          | 1.393E-01 | 2.070E-01      | 5.925E-02 | -0.272  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| ND-147  | +         | 747.13       |     | 4.657E-02           | 7.637E-02 | 1.309E-01      | 1.858E-02 | 0.356   |
|         |           | 91.11        |     | 9.183E-01           | 2.398E-01 | 4.958E-01      | 4.663E-02 | 1.852   |
|         |           | 319.41       |     | 1.709E+00           | 2.876E+00 | 4.763E+00      | 2.751E-01 | 0.359   |
|         |           | 439.89       |     | 5.714E+00           | 5.101E+00 | 8.898E+00      | 5.429E-01 | 0.642   |
| PM-149  | *         | 531.02       |     | -2.098E-03          | 4.611E-01 | 7.534E-01      | 1.051E-01 | -0.003  |
|         |           | 285.90       |     | -8.398E+00          | 8.123E+01 | 1.314E+02      | 1.858E+01 | -0.064  |
| EU-152  |           | 121.78       |     | 9.039E-02           | 7.038E-02 | 1.178E-01      | 9.077E-03 | 0.767   |
|         |           | 244.69       |     | 9.518E-02           | 3.256E-01 | 4.772E-01      | 2.665E-02 | 0.199   |
|         |           | 344.27       | *   | 2.680E-02           | 1.042E-01 | 1.245E-01      | 8.126E-03 | 0.215   |
|         |           | 443.98       |     | 3.595E-01           | 8.571E-01 | 1.415E+00      | 8.671E-02 | 0.254   |
|         |           | 778.89       |     | -2.642E-01          | 2.278E-01 | 3.472E-01      | 3.247E-02 | -0.761  |
|         |           | 867.32       |     | 3.691E-02           | 7.811E-01 | 1.103E+00      | 1.189E-01 | 0.033   |
|         |           | 964.01       |     | 9.841E-01           | 3.746E-01 | 5.470E-01      | 5.603E-02 | 1.799   |
|         |           | 1085.78      |     | -2.287E-01          | 3.222E-01 | 5.092E-01      | 3.946E-02 | -0.449  |
|         |           | 1112.02      |     | 1.770E-01           | 3.064E-01 | 4.598E-01      | 3.273E-02 | 0.385   |
|         |           | 1407.95      |     | 3.009E-01           | 1.832E-01 | 2.926E-01      | 2.173E-02 | 1.028   |
| GD-153  | +         | 69.67        |     | -2.509E-02          | 1.947E+00 | 2.894E+00      | 2.349E-01 | -0.009  |
|         |           | 83.37        |     | 1.871E+01           | 1.616E+01 | 2.448E+01      | 2.175E+00 | 0.764   |
|         |           | 97.43        | *   | -8.808E-02          | 8.511E-02 | 1.170E-01      | 9.151E-03 | -0.753  |
|         |           | 103.18       |     | -1.456E-01          | 1.056E-01 | 1.619E-01      | 1.168E-02 | -0.899  |
| EU-154  |           | 123.07       |     | -3.832E-02          | 5.126E-02 | 7.971E-02      | 7.538E-03 | -0.481  |
|         |           | 247.94       |     | 2.443E-01           | 3.516E-01 | 5.258E-01      | 4.953E-02 | 0.465   |
|         |           | 591.81       |     | 2.381E-01           | 5.335E-01 | 8.637E-01      | 9.187E-02 | 0.276   |
|         |           | 723.30       |     | -4.592E-02          | 1.704E-01 | 2.388E-01      | 2.251E-02 | -0.192  |
|         |           | 756.87       |     | 5.513E-01           | 6.504E-01 | 1.127E+00      | 1.381E-01 | 0.489   |
|         |           | 873.19       |     | -5.306E-02          | 2.481E-01 | 3.999E-01      | 5.570E-02 | -0.133  |
|         |           | 996.32       |     | -3.811E-01          | 3.342E-01 | 4.838E-01      | 8.847E-02 | -0.788  |
|         |           | 1004.76      |     | -1.493E-01          | 1.866E-01 | 2.823E-01      | 3.470E-02 | -0.529  |
|         |           | 1274.45      | *   | -9.856E-02          | 1.108E-01 | 1.697E-01      | 1.695E-02 | -0.581  |
|         |           | 48.70        |     | 1.833E+00           | 3.549E+00 | 6.096E+00      | 4.624E-01 | 0.301   |
| EU-155  | +         | 60.01        |     | -3.259E-01          | 6.427E+00 | 9.625E+00      | 7.345E-01 | -0.034  |
|         |           | 86.54        |     | 3.666E-01           | 1.335E-01 | 1.923E-01      | 1.771E-02 | 1.906   |
| TB-160  | +         | 105.31       | *   | 1.620E-01           | 1.064E-01 | 1.804E-01      | 1.290E-02 | 0.898   |
|         |           | 86.79        |     | 9.790E-01           | 3.563E-01 | 5.164E-01      | 4.724E-02 | 1.896   |
|         |           | 197.04       |     | -5.886E-02          | 5.044E-01 | 8.310E-01      | 4.463E-02 | -0.071  |
|         |           | 215.65       |     | -1.051E-01          | 6.778E-01 | 1.081E+00      | 5.899E-02 | -0.097  |
|         |           | 298.57       |     | 2.682E-01           | 1.218E-01 | 1.763E-01      | 1.012E-02 | 1.521   |
|         |           | 879.36       | *   | 1.004E-01           | 1.218E-01 | 2.092E-01      | 2.298E-02 | 0.480   |
|         |           | 962.29       |     | 1.529E+00           | 5.309E-01 | 9.529E-01      | 9.789E-02 | 1.605   |
|         |           | 966.15       |     | 1.829E+00           | 3.103E-01 | 5.147E-01      | 5.252E-02 | 3.553   |
|         |           | 1177.93      |     | 2.036E-02           | 3.072E-01 | 5.104E-01      | 2.850E-02 | 0.040   |
|         |           | 1271.85      |     | 1.474E-02           | 6.161E-01 | 1.014E+00      | 6.850E-02 | 0.015   |
| HO-166M |           | 80.57        |     | -7.426E-02          | 2.851E-01 | 4.151E-01      | 3.606E-02 | -0.179  |
|         |           | 184.41       |     | 1.035E-01           | 3.817E-02 | 6.273E-02      | 3.333E-03 | 1.649   |
|         |           | 280.46       |     | -5.058E-02          | 8.265E-02 | 1.131E-01      | 6.449E-03 | -0.447  |
|         |           | 410.95       |     | 3.849E-01           | 2.327E-01 | 3.725E-01      | 2.193E-02 | 1.033   |
|         |           | 711.68       | *   | 1.951E-02           | 5.310E-02 | 9.025E-02      | 7.523E-03 | 0.216   |
|         |           | 752.31       |     | -1.624E-01          | 2.277E-01 | 3.603E-01      | 3.222E-02 | -0.451  |
|         |           | 810.29       |     | -3.069E-02          | 5.149E-02 | 8.152E-02      | 8.026E-03 | -0.377  |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| TM-171  |           | 51.35        |     | -5.411E+01          | 4.229E+01 | 6.769E+01      | 5.365E+00 | -0.799  |
|         |           | 52.39        |     | -9.336E+00          | 2.110E+01 | 3.496E+01      | 2.778E+00 | -0.267  |
|         |           | 59.40        |     | -8.841E+00          | 3.268E+01 | 5.167E+01      | 3.923E+00 | -0.171  |
| LU-176  | +         | 66.72        | *   | -1.435E+01          | 3.520E+01 | 5.107E+01      | 4.084E+00 | -0.281  |
|         |           | 88.36        |     | 7.219E-01           | 2.628E-01 | 3.798E-01      | 3.487E-02 | 1.901   |
|         |           | 201.83       |     | -2.273E-02          | 2.538E-02 | 4.095E-02      | 2.208E-03 | -0.555  |
|         |           | 306.84       | *   | -1.431E-02          | 2.289E-02 | 3.453E-02      | 1.988E-03 | -0.414  |
| LU-177  | +         | 401.10       |     | -5.150E+00          | 5.581E+00 | 8.910E+00      | 5.180E-01 | -0.578  |
|         |           | 112.95       |     | -3.876E-01          | 1.539E+00 | 2.459E+00      | 1.585E-01 | -0.158  |
| LU-177M | +         | 208.36       | *   | 4.122E+00           | 1.487E+00 | 1.904E+00      | 1.033E-01 | 2.165   |
|         |           | 52.97        |     | 6.704E-01           | 2.122E+00 | 3.609E+00      | 2.865E-01 | 0.186   |
|         |           | 54.07        |     | 1.067E+00           | 1.108E+00 | 1.918E+00      | 1.516E-01 | 0.556   |
|         |           | 61.30        |     | 3.602E-01           | 1.890E+00 | 2.855E+00      | 2.206E-01 | 0.126   |
|         |           | 121.62       |     | 4.695E-01           | 3.605E-01 | 6.048E-01      | 3.588E-02 | 0.776   |
|         |           | 147.16       |     | -6.322E-01          | 6.374E-01 | 9.705E-01      | 5.281E-02 | -0.651  |
|         |           | 171.86       |     | -1.274E-01          | 4.183E-01 | 6.977E-01      | 3.673E-02 | -0.183  |
|         |           | 218.09       |     | 6.126E-01           | 7.414E-01 | 1.265E+00      | 6.920E-02 | 0.484   |
|         |           | 268.79       |     | 2.448E+00           | 9.861E-01 | 1.271E+00      | 7.209E-02 | 1.926   |
|         |           | 319.02       |     | 1.024E-01           | 2.262E-01 | 3.723E-01      | 2.149E-02 | 0.275   |
|         |           | 367.43       |     | 2.777E-01           | 7.465E-01 | 1.278E+00      | 7.382E-02 | 0.217   |
|         |           | 413.65       | *   | 2.902E-02           | 1.577E-01 | 2.318E-01      | 1.369E-02 | 0.125   |
|         |           | 56.28        |     | -6.363E-01          | 1.168E+00 | 1.921E+00      | 1.496E-01 | -0.331  |
|         |           | 57.53        |     | -6.761E-02          | 6.164E-01 | 1.029E+00      | 7.936E-02 | -0.066  |
|         |           | 65.20        |     | 1.090E+00           | 1.486E+00 | 1.743E+00      | 1.382E-01 | 0.625   |
| HF-181  | +         | 133.02       |     | 5.657E-02           | 6.870E-02 | 1.014E-01      | 5.736E-03 | 0.558   |
|         |           | 136.25       |     | -3.146E-01          | 4.312E-01 | 6.666E-01      | 3.732E-02 | -0.472  |
|         |           | 345.85       |     | 4.697E-02           | 2.005E-01 | 2.402E-01      | 1.390E-02 | 0.196   |
|         |           | 482.03       | *   | 1.478E-02           | 3.579E-02 | 6.027E-02      | 3.858E-03 | 0.245   |
|         |           | 56.28        |     | -2.490E-01          | 4.573E-01 | 7.521E-01      | 5.859E-02 | -0.331  |
| W-181   | +         | 57.53        |     | -2.649E-02          | 2.415E-01 | 4.033E-01      | 3.110E-02 | -0.066  |
|         |           | 65.20        | *   | 4.236E-01           | 5.779E-01 | 6.776E-01      | 5.374E-02 | 0.625   |
| TA-182  |           | 67.75        |     | -7.842E-02          | 1.382E-01 | 1.990E-01      | 1.600E-02 | -0.394  |
|         |           | 100.10       |     | 1.778E-01           | 1.699E-01 | 2.855E-01      | 2.147E-02 | 0.623   |
|         |           | 152.43       |     | -1.453E-01          | 3.321E-01 | 5.161E-01      | 2.776E-02 | -0.281  |
|         |           | 222.10       |     | -2.209E-01          | 3.046E-01 | 4.905E-01      | 2.692E-02 | -0.450  |
|         |           | 1001.68      |     | 8.754E-01           | 1.801E+00 | 2.934E+00      | 2.801E-01 | 0.298   |
|         |           | 1121.28      |     | 8.013E-01           | 1.692E-01 | 3.175E-01      | 2.187E-02 | 2.524   |
|         |           | 1189.05      |     | -1.957E-01          | 2.613E-01 | 4.104E-01      | 2.347E-02 | -0.477  |
|         |           | 1221.42      | *   | 2.616E-02           | 1.686E-01 | 2.806E-01      | 1.717E-02 | 0.093   |
|         |           | 1230.97      |     | 4.154E-01           | 4.913E-01 | 7.393E-01      | 4.611E-02 | 0.562   |
|         |           | 57.98        |     | -1.866E-02          | 2.393E-01 | 3.997E-01      | 3.071E-02 | -0.047  |
| RE-183  |           | 59.32        |     | -4.984E-02          | 1.341E-01 | 2.112E-01      | 1.605E-02 | -0.236  |
|         |           | 67.20        |     | -9.643E-02          | 2.476E-01 | 3.595E-01      | 2.882E-02 | -0.268  |
|         |           | 162.32       | *   | 1.279E-02           | 9.492E-02 | 1.613E-01      | 8.513E-03 | 0.079   |
|         |           | 208.81       |     | 3.716E+00           | 1.340E+00 | 1.716E+00      | 9.313E-02 | 2.165   |
| RE-184  |           | 291.72       |     | -9.227E-01          | 9.315E-01 | 1.236E+00      | 7.085E-02 | -0.746  |
|         |           | 57.98        |     | -6.878E-02          | 8.818E-01 | 1.473E+00      | 1.132E-01 | -0.047  |
|         |           | 59.32        |     | -1.835E-01          | 4.939E-01 | 7.778E-01      | 5.910E-02 | -0.236  |
|         |           | 67.20        |     | -3.553E-01          | 9.124E-01 | 1.325E+00      | 1.062E-01 | -0.268  |



---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|------------|-----------|----------------|-----------|---------|
| OS-185  |           | 161.27       |              | -3.833E-01 | 3.073E-01 | 4.973E-01      | 2.630E-02 | -0.771  |
|         |           | 216.55       |              | 1.628E-02  | 2.320E-01 | 3.859E-01      | 2.108E-02 | 0.042   |
|         |           | 252.85       | *            | -2.528E-02 | 1.981E-01 | 3.232E-01      | 1.816E-02 | -0.078  |
|         |           | 318.01       |              | -1.262E-01 | 4.018E-01 | 6.377E-01      | 3.681E-02 | -0.198  |
|         |           | 792.07       |              | -9.317E-02 | 1.023E+00 | 1.441E+00      | 1.377E-01 | -0.065  |
|         |           | 903.28       |              | 2.989E-02  | 1.045E+00 | 1.465E+00      | 1.645E-01 | 0.020   |
|         |           | 920.93       |              | -1.795E-01 | 3.852E-01 | 5.903E-01      | 6.468E-02 | -0.304  |
|         |           | 59.72        |              | 8.187E-03  | 3.613E-01 | 5.777E-01      | 4.394E-02 | 0.014   |
|         |           | 61.14        |              | 3.805E-02  | 2.085E-01 | 3.150E-01      | 2.431E-02 | 0.121   |
|         |           | 69.30        |              | -1.847E-01 | 3.547E-01 | 5.158E-01      | 4.179E-02 | -0.358  |
|         |           | 592.07       |              | 6.411E-01  | 2.139E+00 | 3.525E+00      | 2.524E-01 | 0.182   |
|         |           | 646.12       | *            | -3.987E-02 | 3.521E-02 | 5.187E-02      | 3.901E-03 | -0.769  |
|         |           | 717.42       |              | 4.682E-01  | 7.829E-01 | 1.345E+00      | 1.133E-01 | 0.348   |
|         |           | 874.81       |              | -1.780E-01 | 5.104E-01 | 8.151E-01      | 8.891E-02 | -0.218  |
| RE-188  |           | 880.27       |              | 6.175E-01  | 6.718E-01 | 1.160E+00      | 1.276E-01 | 0.532   |
|         |           | 155.03       | *            | 1.596E-01  | 1.565E-01 | 2.732E-01      | 1.462E-02 | 0.584   |
|         |           | 477.96       |              | -1.475E+00 | 2.558E+00 | 4.083E+00      | 2.601E-01 | -0.361  |
| W-188   | +         | 633.10       |              | -1.641E+00 | 2.428E+00 | 3.733E+00      | 2.775E-01 | -0.439  |
|         |           | 63.58        |              | 5.667E+01  | 7.732E+01 | 1.040E+02      | 8.170E+00 | 0.545   |
| IR-192  |           | 227.08       |              | 7.221E+00  | 1.133E+01 | 1.915E+01      | 1.056E+00 | 0.377   |
|         | *         | 290.67       |              | -1.466E+00 | 7.233E+00 | 1.014E+01      | 5.805E-01 | -0.145  |
|         | +         | 295.96       |              | 1.307E+00  | 1.829E-01 | 2.625E-01      | 1.531E-02 | 4.980   |
|         |           | 308.46       |              | 3.674E-02  | 8.316E-02 | 1.371E-01      | 7.988E-03 | 0.268   |
| AU-195  |           | 316.51       | *            | -8.151E-03 | 3.040E-02 | 4.836E-02      | 2.805E-03 | -0.169  |
|         |           | 468.07       |              | -1.307E-02 | 6.371E-02 | 8.983E-02      | 6.401E-03 | -0.146  |
|         |           | 604.41       |              | 2.510E-01  | 4.485E-01 | 6.466E-01      | 7.857E-02 | 0.388   |
|         |           | 612.46       |              | 3.236E+00  | 7.878E-01 | 1.328E+00      | 1.165E-01 | 2.436   |
|         | +         | 65.12        |              | 1.957E-01  | 2.670E-01 | 3.149E-01      | 2.497E-02 | 0.621   |
|         |           | 66.83        |              | -8.012E-02 | 1.178E-01 | 1.688E-01      | 1.351E-02 | -0.475  |
|         | +         | 75.70        |              | 1.524E+00  | 2.741E-01 | 4.730E-01      | 3.973E-02 | 3.222   |
|         |           | 98.88        | *            | 2.898E-01  | 2.127E-01 | 3.609E-01      | 2.761E-02 | 0.803   |
| TL-200  | +         | 129.76       |              | 4.988E+00  | 3.992E+00 | 4.819E+00      | 2.757E-01 | 1.035   |
|         |           | 367.94       | *            | 2.982E-04  | 3.992E+00 | Half-Life      | too short |         |
|         |           | 579.30       |              | 5.003E-03  | 3.992E+00 | Half-Life      | too short |         |
|         |           | 828.27       |              | -5.776E-04 | 3.992E+00 | Half-Life      | too short |         |
| TL-201  |           | 1205.75      |              | 1.286E-03  | 3.992E+00 | Half-Life      | too short |         |
|         |           | 68.90        |              | -9.933E-01 | 5.630E+00 | 8.315E+00      | 6.722E-01 | -0.119  |
|         |           | 70.82        |              | 1.661E+00  | 3.065E+00 | 4.650E+00      | 3.797E-01 | 0.357   |
|         |           | 80.30        |              | -1.202E+00 | 5.251E+00 | 7.656E+00      | 6.638E-01 | -0.157  |
| TL-202  |           | 135.34       |              | -1.155E+01 | 2.388E+01 | 3.733E+01      | 2.096E+00 | -0.309  |
|         | *         | 167.43       |              | 1.492E+00  | 6.152E+00 | 1.047E+01      | 5.495E-01 | 0.143   |
|         |           | 68.90        |              | -8.978E-02 | 5.088E-01 | 7.515E-01      | 6.076E-02 | -0.119  |
|         |           | 70.82        |              | 1.497E-01  | 2.763E-01 | 4.191E-01      | 3.422E-02 | 0.357   |
| HG-203  |           | 80.30        |              | -1.084E-01 | 4.734E-01 | 6.903E-01      | 5.985E-02 | -0.157  |
|         | *         | 439.56       |              | 5.654E-02  | 6.074E-02 | 1.051E-01      | 6.410E-03 | 0.538   |
|         |           | 70.83        |              | 6.552E-01  | 1.201E+00 | 1.819E+00      | 2.423E-01 | 0.360   |
|         |           | 72.87        |              | 1.343E+00  | 6.543E-01 | 1.107E+00      | 1.436E-01 | 1.213   |
|         |           | 82.60        |              | -5.357E-01 | 1.145E+00 | 1.761E+00      | 2.444E-01 | -0.304  |
|         | *         | 279.20       |              | 2.704E-02  | 4.034E-02 | 5.972E-02      | 3.622E-03 | 0.453   |

## ---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| BI-207  |           | 72.80        |     | 3.566E-01           | 1.865E-01 | 3.219E-01      | 2.657E-02 | 1.108   |
|         | +         | 74.97        |     | 8.455E-01           | 1.520E-01 | 2.396E-01      | 2.003E-02 | 3.529   |
|         |           | 84.90        |     | 3.237E-01           | 2.075E-01 | 3.173E-01      | 2.856E-02 | 1.020   |
|         |           | 569.67       |     | 1.012E-02           | 2.577E-02 | 4.281E-02      | 3.000E-03 | 0.236   |
|         |           | 1063.62      | *   | 4.691E-02           | 4.493E-02 | 7.967E-02      | 6.577E-03 | 0.589   |
| TL-207  |           | 1770.23      |     | -2.696E-02          | 3.869E-01 | 5.312E-01      | 3.214E-02 | -0.051  |
|         |           | 81.07        |     | -3.104E-01          | 2.362E-01 | 3.257E-01      | 2.841E-02 | -0.953  |
|         |           | 83.78        |     | 2.048E-01           | 1.388E-01 | 2.120E-01      | 1.890E-02 | 0.966   |
|         |           | 94.90        |     | 7.857E-01           | 2.476E-01 | 3.973E-01      | 3.233E-02 | 1.978   |
|         |           | 122.32       |     | 1.044E+00           | 1.691E+00 | 2.773E+00      | 1.883E-01 | 0.376   |
|         |           | 144.24       |     | 4.262E-01           | 6.678E-01 | 1.073E+00      | 7.490E-02 | 0.397   |
|         |           | 154.21       |     | 4.157E-01           | 3.626E-01 | 6.346E-01      | 4.223E-02 | 0.655   |
|         | +         | 269.46       |     | 5.733E-01           | 2.311E-01 | 3.049E-01      | 1.811E-02 | 1.880   |
|         |           | 323.87       | *   | -4.799E-01          | 6.508E-01 | 8.600E-01      | 1.420E-01 | -0.558  |
|         | +         | 338.28       |     | 9.383E+00           | 1.921E+00 | 2.258E+00      | 2.376E-01 | 4.156   |
|         |           | 445.03       |     | -1.227E-03          | 2.002E+00 | 3.235E+00      | 3.384E-01 | 0.000   |
|         | PO-209    | 260.50       |     | -2.961E+00          | 8.600E+00 | 1.387E+01      | 7.829E-01 | -0.213  |
|         |           | 262.80       |     | -1.585E+01          | 2.372E+01 | 3.767E+01      | 2.129E+00 | -0.421  |
|         |           | 896.60       | *   | 1.031E+00           | 6.537E+00 | 1.079E+01      | 1.217E+00 | 0.096   |
| BI-210  |           | 46.50        | *   | -3.113E+00          | 5.444E+00 | 9.029E+00      | 6.985E-01 | -0.345  |
| PB-210  |           | 46.50        | *   | -3.113E+00          | 5.444E+00 | 9.029E+00      | 6.985E-01 | -0.345  |
| PO-210  |           | 46.50        | *   | -3.113E+00          | 5.442E+00 | 9.029E+00      | 6.006E-01 | -0.345  |
| PB-211  |           | 404.84       | *   | -3.289E-01          | 8.754E-01 | 1.203E+00      | 7.499E-01 | -0.273  |
|         |           | 427.08       |     | -8.111E-01          | 1.805E+00 | 2.819E+00      | 1.743E+00 | -0.288  |
|         |           | 831.96       |     | 1.604E-01           | 1.083E+00 | 1.788E+00      | 1.125E+00 | 0.090   |
| BI-212  | +         | 727.18       | *   | 1.337E+00           | 4.482E-01 | 5.809E-01      | 5.786E-02 | 2.302   |
|         |           | 785.46       |     | 2.706E+00           | 1.576E+00 | 2.816E+00      | 2.662E-01 | 0.961   |
|         |           | 1620.62      |     | 8.121E-01           | 1.027E+00 | 1.842E+00      | 1.245E-01 | 0.441   |
| PO-215  |           | 81.07        |     | -3.104E-01          | 2.362E-01 | 3.257E-01      | 2.841E-02 | -0.953  |
|         |           | 83.78        |     | 2.048E-01           | 1.388E-01 | 2.120E-01      | 1.890E-02 | 0.966   |
|         |           | 94.90        |     | 7.857E-01           | 2.476E-01 | 3.973E-01      | 3.233E-02 | 1.978   |
|         |           | 122.32       |     | 1.044E+00           | 1.691E+00 | 2.773E+00      | 1.883E-01 | 0.376   |
|         |           | 144.24       |     | 4.262E-01           | 6.678E-01 | 1.073E+00      | 7.490E-02 | 0.397   |
|         |           | 154.21       |     | 4.157E-01           | 3.626E-01 | 6.346E-01      | 4.223E-02 | 0.655   |
|         | +         | 269.46       |     | 5.733E-01           | 2.311E-01 | 3.049E-01      | 1.811E-02 | 1.880   |
|         |           | 323.87       | *   | -4.799E-01          | 6.508E-01 | 8.600E-01      | 1.420E-01 | -0.558  |
|         | +         | 338.28       |     | 9.383E+00           | 1.921E+00 | 2.258E+00      | 2.376E-01 | 4.156   |
|         |           | 445.03       |     | -1.227E-03          | 2.002E+00 | 3.235E+00      | 3.384E-01 | 0.000   |
| RN-219  | +         | 271.23       |     | 7.355E-01           | 2.991E-01 | 3.994E-01      | 3.202E-02 | 1.841   |
|         |           | 401.81       | *   | -1.714E-01          | 3.359E-01 | 5.466E-01      | 7.441E-02 | -0.314  |
| RN-220  |           | 549.76       | *   | -8.043E+00          | 2.236E+01 | 3.566E+01      | 2.450E+00 | -0.226  |
| RA-223  |           | 81.07        |     | -3.104E-01          | 2.362E-01 | 3.257E-01      | 2.841E-02 | -0.953  |
|         |           | 83.78        |     | 2.048E-01           | 1.388E-01 | 2.120E-01      | 1.890E-02 | 0.966   |
|         |           | 94.90        |     | 7.857E-01           | 2.476E-01 | 3.973E-01      | 3.233E-02 | 1.978   |
|         |           | 122.32       |     | 1.044E+00           | 1.691E+00 | 2.773E+00      | 1.883E-01 | 0.376   |
|         |           | 144.24       |     | 4.262E-01           | 6.678E-01 | 1.073E+00      | 7.490E-02 | 0.397   |
|         |           | 154.21       |     | 4.157E-01           | 3.626E-01 | 6.346E-01      | 4.223E-02 | 0.655   |
|         | +         | 269.46       |     | 5.733E-01           | 2.311E-01 | 3.049E-01      | 1.811E-02 | 1.880   |
|         |           | 323.87       | *   | -4.799E-01          | 6.508E-01 | 8.600E-01      | 1.420E-01 | -0.558  |
|         |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| AC-227  | +         | 338.28       |     | 9.383E+00           | 1.921E+00 | 2.258E+00      | 2.376E-01 | 4.156   |
|         |           | 445.03       |     | -1.227E-03          | 2.002E+00 | 3.235E+00      | 3.384E-01 | 0.000   |
|         |           | 79.80        |     | 4.535E-01           | 1.718E+00 | 2.557E+00      | 5.501E-01 | 0.177   |
|         |           | 236.00       |     | 6.736E-01           | 2.496E-01 | 3.903E-01      | 4.026E-02 | 1.726   |
|         |           | 256.20       | *   | 9.676E-02           | 3.394E-01 | 5.622E-01      | 7.810E-02 | 0.172   |
|         |           | 286.10       |     | 6.417E-02           | 1.382E+00 | 2.251E+00      | 2.593E-01 | 0.029   |
| TH-227  | +         | 299.80       |     | 3.416E+00           | 1.636E+00 | 2.240E+00      | 3.644E-01 | 1.525   |
|         |           | 304.40       |     | -9.933E-01          | 1.858E+00 | 2.522E+00      | 4.358E-01 | -0.394  |
|         |           | 334.20       |     | -1.403E+00          | 2.804E+00 | 3.121E+00      | 5.721E-01 | -0.450  |
|         |           | 79.80        |     | 4.535E-01           | 1.718E+00 | 2.557E+00      | 5.571E-01 | 0.177   |
|         | +         | 94.00        |     | 1.149E+01           | 4.261E+00 | 3.791E+00      | 8.204E-01 | 3.031   |
|         |           | 236.00       |     | 6.736E-01           | 2.471E-01 | 3.903E-01      | 3.473E-02 | 1.726   |
| TH-229  |           | 256.20       | *   | 9.676E-02           | 3.395E-01 | 5.622E-01      | 9.469E-02 | 0.172   |
|         |           | 286.10       |     | 6.417E-02           | 1.384E+00 | 2.251E+00      | 2.254E+00 | 0.029   |
|         | +         | 299.80       |     | 3.416E+00           | 1.636E+00 | 2.240E+00      | 3.644E-01 | 1.525   |
|         |           | 304.40       |     | -9.933E-01          | 1.858E+00 | 2.522E+00      | 4.358E-01 | -0.394  |
|         |           | 334.20       |     | -1.403E+00          | 2.804E+00 | 3.121E+00      | 5.721E-01 | -0.450  |
|         |           | 85.43        |     | 3.836E-01           | 2.102E-01 | 3.229E-01      | 2.919E-02 | 1.188   |
| PA-231  | +         | 88.47        |     | 4.156E-01           | 1.513E-01 | 2.181E-01      | 1.998E-02 | 1.906   |
|         |           | 100.00       |     | 1.916E-01           | 1.767E-01 | 2.973E-01      | 2.238E-02 | 0.644   |
|         |           | 193.63       | *   | 1.391E-01           | 4.480E-01 | 7.568E-01      | 4.053E-02 | 0.184   |
|         |           | 210.97       |     | 2.441E+00           | 7.814E-01 | 1.284E+00      | 6.979E-02 | 1.901   |
|         |           | 283.67       | *   | 8.790E-02           | 1.368E+00 | 2.154E+00      | 2.960E-01 | 0.041   |
|         | +         | 301.29       |     | 1.367E+00           | 6.319E-01 | 9.092E-01      | 9.478E-02 | 1.503   |
| TH-231  |           | 81.07        |     | -3.104E-01          | 2.362E-01 | 3.257E-01      | 2.841E-02 | -0.953  |
|         |           | 83.78        |     | 2.048E-01           | 1.388E-01 | 2.120E-01      | 1.890E-02 | 0.966   |
|         |           | 94.90        |     | 7.857E-01           | 2.476E-01 | 3.973E-01      | 3.233E-02 | 1.978   |
|         |           | 122.32       |     | 1.044E+00           | 1.691E+00 | 2.773E+00      | 1.883E-01 | 0.376   |
|         |           | 144.24       |     | 4.262E-01           | 6.678E-01 | 1.073E+00      | 7.490E-02 | 0.397   |
|         |           | 154.21       |     | 4.157E-01           | 3.626E-01 | 6.346E-01      | 4.223E-02 | 0.655   |
| U-231   | +         | 269.46       |     | 5.733E-01           | 2.311E-01 | 3.049E-01      | 1.811E-02 | 1.880   |
|         |           | 323.87       | *   | -4.799E-01          | 6.508E-01 | 8.600E-01      | 1.420E-01 | -0.558  |
|         | +         | 338.28       |     | 9.383E+00           | 1.921E+00 | 2.258E+00      | 2.376E-01 | 4.156   |
|         |           | 445.03       |     | -1.227E-03          | 2.002E+00 | 3.235E+00      | 3.384E-01 | 0.000   |
|         |           | 84.21        |     | 1.020E+01           | 5.908E+00 | 9.082E+00      | 8.124E-01 | 1.123   |
|         | +         | 92.29        |     | 1.129E+01           | 3.527E+00 | 3.834E+00      | 3.264E-01 | 2.946   |
| PA-233  |           | 95.87        | *   | -2.525E-01          | 1.102E+00 | 1.586E+00      | 1.270E-01 | -0.159  |
|         |           | 108.00       |     | -6.078E-01          | 1.986E+00 | 3.176E+00      | 2.160E-01 | -0.191  |
|         | +         | 75.28        |     | 2.467E+01           | 5.431E+00 | 7.049E+00      | 1.072E+00 | 3.500   |
|         | +         | 86.59        |     | 5.959E+00           | 2.645E+00 | 3.135E+00      | 8.461E-01 | 1.901   |
|         | +         | 300.12       |     | 9.524E-01           | 4.477E-01 | 6.305E-01      | 8.457E-02 | 1.511   |
|         |           | 311.98       | *   | 6.729E-03           | 5.605E-02 | 9.098E-02      | 5.574E-03 | 0.074   |
| PA-234  |           | 340.50       |     | 3.142E+00           | 9.734E-01 | 1.150E+00      | 2.640E-01 | 2.733   |
|         |           | 398.62       |     | 5.210E-01           | 1.732E+00 | 2.930E+00      | 7.576E-01 | 0.178   |
|         |           | 415.76       |     | -2.756E-01          | 1.441E+00 | 2.243E+00      | 4.626E-01 | -0.123  |
|         | +         | 63.00        |     | 1.644E+00           | 2.253E+00 | 3.121E+00      | 4.704E-01 | 0.527   |
|         |           | 94.67        |     | 7.055E-01           | 1.949E-01 | 2.975E-01      | 3.598E-02 | 2.371   |
|         |           | 98.44        |     | 8.439E-02           | 1.011E-01 | 1.441E-01      | 8.022E-02 | 0.585   |
|         |           | 99.86        |     | 5.092E-01           | 4.486E-01 | 7.557E-01      | 5.701E-02 | 0.674   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-------------------------|-----------|----------------|-----------|---------|
|         |           | 111.00       | -1.051E-01              | 1.741E-01 | 2.742E-01      | 2.941E-02 | -0.383  |
|         | +         | 131.20       | 1.870E-01               | 1.497E-01 | 1.723E-01      | 9.810E-03 | 1.085   |
|         |           | 152.70       | 1.005E-01               | 3.159E-01 | 5.044E-01      | 7.898E-02 | 0.199   |
|         | +         | 186.00       | 5.911E+00               | 2.479E+00 | 2.471E+00      | 7.528E-01 | 2.392   |
|         |           | 226.40       | 1.908E-01               | 3.598E-01 | 6.054E-01      | 6.911E-02 | 0.315   |
|         |           | 227.20       | 1.477E-01               | 3.847E-01 | 6.449E-01      | 3.555E-02 | 0.229   |
|         |           | 248.90       | 1.077E-01               | 7.216E-01 | 1.152E+00      | 2.470E-01 | 0.093   |
|         |           | 293.70       | 6.323E+00               | 1.322E+00 | 1.549E+00      | 2.488E-01 | 4.081   |
|         |           | 369.80       | 1.704E-01               | 7.022E-01 | 1.194E+00      | 2.485E-01 | 0.143   |
|         |           | 568.70       | 5.175E-01               | 8.287E-01 | 1.394E+00      | 9.760E-02 | 0.371   |
|         |           | 569.50       | 8.112E-02               | 2.282E-01 | 3.783E-01      | 2.650E-02 | 0.214   |
|         |           | 574.00       | -4.278E-01              | 1.276E+00 | 1.970E+00      | 1.386E-01 | -0.217  |
|         |           | 699.00       | -6.858E-01              | 6.457E-01 | 9.955E-01      | 1.879E-01 | -0.689  |
|         |           | 706.10       | -2.402E-01              | 9.308E-01 | 1.522E+00      | 6.775E-01 | -0.158  |
|         |           | 733.00       | 1.983E-01               | 3.562E-01 | 5.309E-01      | 1.179E-01 | 0.373   |
|         |           | 742.81       | 6.019E-02               | 1.176E+00 | 1.959E+00      | 1.317E+00 | 0.031   |
|         | +         | 796.30       | 2.346E+00               | 1.356E+00 | 1.442E+00      | 3.950E-01 | 1.627   |
|         |           | 805.60       | 3.979E-01               | 8.642E-01 | 1.451E+00      | 4.497E-01 | 0.274   |
|         |           | 819.60       | -6.511E-01              | 1.020E+00 | 1.553E+00      | 5.958E-01 | -0.419  |
|         |           | 826.30       | -4.392E-01              | 7.156E-01 | 1.083E+00      | 4.877E-01 | -0.406  |
|         |           | 831.60       | -1.116E-01              | 5.574E-01 | 9.038E-01      | 2.742E-01 | -0.124  |
|         |           | 876.40       | 6.404E-03               | 7.168E-01 | 1.174E+00      | 1.209E+00 | 0.005   |
|         |           | 880.51       | 1.578E-01               | 2.435E-01 | 4.144E-01      | 4.560E-02 | 0.381   |
|         |           | 883.24       | -4.225E-02              | 2.479E-01 | 3.981E-01      | 2.690E-01 | -0.106  |
|         |           | 899.00       | -3.257E-01              | 7.729E-01 | 1.205E+00      | 5.339E-01 | -0.270  |
|         |           | 925.00       | 6.625E-01               | 9.941E-01 | 1.690E+00      | 1.841E-01 | 0.392   |
|         |           | 926.50       | 9.914E-02               | 1.600E-01 | 2.570E-01      | 6.716E-02 | 0.386   |
|         |           | 946.00       | * 9.888E-02             | 2.576E-01 | 4.287E-01      | 8.457E-02 | 0.231   |
|         |           | 949.00       | 1.702E-01               | 3.718E-01 | 6.230E-01      | 6.542E-02 | 0.273   |
|         |           | 980.50       | -2.463E-01              | 6.440E-01 | 1.013E+00      | 1.008E-01 | -0.243  |
| PA-234M |           | 1394.10      | -4.863E-01              | 1.025E+00 | 1.508E+00      | 9.791E-01 | -0.323  |
|         |           | 766.42       | 1.233E+01               | 1.337E+01 | 1.813E+01      | 9.215E+00 | 0.680   |
| U-235   | +         | 1001.03      | * 3.373E+00             | 4.094E+00 | 6.802E+00      | 7.338E-01 | 0.496   |
|         | +         | 89.95        | 3.664E+00               | 1.441E+00 | 1.931E+00      | 5.973E-01 | 1.898   |
|         | +         | 93.35        | 3.575E+00               | 1.468E+00 | 1.241E+00      | 3.467E-01 | 2.881   |
|         |           | 105.00       | 1.778E+00               | 1.153E+00 | 1.765E+00      | 5.194E-01 | 1.007   |
|         |           | 143.76       | * 2.332E-02             | 2.094E-01 | 3.306E-01      | 5.354E-02 | 0.071   |
|         |           | 163.35       | 4.629E-01               | 4.156E-01 | 7.140E-01      | 1.272E-01 | 0.648   |
|         | +         | 185.71       | 2.189E-01               | 6.416E-02 | 9.193E-02      | 4.890E-03 | 2.381   |
|         |           | 205.31       | 6.404E-01               | 5.082E-01 | 7.711E-01      | 1.377E-01 | 0.830   |
| NP-236  |           | 94.67        | 5.379E-01               | 1.400E-01 | 2.259E-01      | 1.846E-02 | 2.381   |
|         |           | 98.44        | 6.374E-02               | 6.786E-02 | 1.090E-01      | 8.391E-03 | 0.585   |
|         |           | 111.00       | -7.951E-02              | 1.315E-01 | 2.074E-01      | 1.364E-02 | -0.383  |
|         |           | 160.31       | * -8.915E-02            | 6.892E-02 | 1.114E-01      | 5.900E-03 | -0.800  |
| NP-239  |           | 99.55        | 2.572E-01               | 1.484E-01 | 2.540E-01      | 1.925E-02 | 1.013   |
|         |           | 117.00       | * 1.275E-02             | 1.789E-01 | 2.886E-01      | 1.786E-02 | 0.044   |
|         | +         | 209.75       | 2.932E+00               | 1.058E+00 | 1.357E+00      | 7.370E-02 | 2.161   |
|         |           | 228.18       | 5.935E-02               | 2.013E-01 | 3.363E-01      | 1.855E-02 | 0.176   |
|         | +         | 277.60       | 2.158E-01               | 2.212E-01 | 2.722E-01      | 1.550E-02 | 0.793   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 334.30       |     | -7.901E-01          | 1.583E+00 | 1.769E+00      | 1.023E-01 | -0.447  |
| AM-241  |           | 59.54        | *   | -1.816E-02          | 1.904E-01 | 3.031E-01      | 2.514E-02 | -0.060  |
| CM-243  |           | 99.55        |     | 2.647E-01           | 1.527E-01 | 2.614E-01      | 1.981E-02 | 1.013   |
|         |           | 103.76       | *   | -3.546E-02          | 9.539E-02 | 1.526E-01      | 1.092E-02 | -0.232  |
|         |           | 117.00       |     | 1.311E-02           | 1.840E-01 | 2.969E-01      | 1.838E-02 | 0.044   |
|         | +         | 209.75       |     | 2.891E+00           | 1.043E+00 | 1.338E+00      | 7.265E-02 | 2.161   |
|         |           | 228.18       |     | 5.997E-02           | 2.034E-01 | 3.398E-01      | 1.874E-02 | 0.176   |
|         | +         | 277.60       |     | 2.176E-01           | 2.230E-01 | 2.744E-01      | 1.563E-02 | 0.793   |
| AM-246  |           | 798.80       |     | -2.876E-02          | 1.281E-01 | 1.777E-01      | 1.717E-02 | -0.162  |
|         |           | 1036.00      |     | 1.793E-01           | 2.482E-01 | 4.342E-01      | 3.844E-02 | 0.413   |
|         |           | 1062.04      |     | 1.288E-01           | 1.957E-01 | 3.400E-01      | 2.819E-02 | 0.379   |
|         |           | 1078.86      | *   | 9.659E-02           | 1.215E-01 | 2.126E-01      | 1.681E-02 | 0.454   |
| CM-247  | +         | 278.00       |     | 8.949E-01           | 9.171E-01 | 1.137E+00      | 6.476E-02 | 0.787   |
|         |           | 287.40       |     | 8.115E-01           | 1.103E+00 | 1.848E+00      | 1.057E-01 | 0.439   |
|         |           | 402.60       | *   | -3.484E-03          | 3.194E-02 | 5.014E-02      | 2.920E-03 | -0.069  |
| CF-249  |           | 252.85       |     | -9.488E-02          | 7.435E-01 | 1.213E+00      | 6.813E-02 | -0.078  |
|         |           | 333.44       |     | -5.308E-02          | 2.358E-01 | 2.296E-01      | 1.328E-02 | -0.231  |
|         |           | 387.95       | *   | 1.735E-02           | 3.474E-02 | 5.951E-02      | 3.421E-03 | 0.292   |
| CF-251  |           | 176.60       | *   | 6.413E-02           | 1.119E-01 | 1.918E-01      | 1.013E-02 | 0.334   |
|         |           | 227.00       |     | 2.283E-01           | 3.405E-01 | 5.763E-01      | 3.176E-02 | 0.396   |
|         |           | 285.00       |     | -3.390E-02          | 1.550E+00 | 2.517E+00      | 1.438E-01 | -0.013  |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC
*                                     2040 Savage Road
*                                     Charleston, SC 29414
*****
*
*                               DETECTOR DATA
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630016
* Acquisition date   : 23-JAN-2010 14:06:56 Detector SN#      :
* Detector ID        : GAM18 Sensitivity      : 5.000
* Geometry           : CAN Energy tolerance: 1.500
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 02:00:02.06 Half life ratio : 8.000
*****
*
*                               SAMPLE DATA
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID
* Sample ID          : G244630016 Analyst initials: MXR1
* Batch Number       : 941639 Sample Quantity : 1.3328E+02 GRAM
* Recovery           : 1.00000 Carrier Weight : 0.00000
*****
*
*                               QC DATA
*
* Standard Weight    : 0.00000
* CALIB. DATE/TIME   : 23-APR-2009 11:59:23 MS Isotope      :
* MSD DPM            : 0.000 MSD Isotope      :
* LCS DPM            : 0.000 LCS Isotope      :
* LCSD DPM           : 0.000 LCSD Isotope     :
*****

```

## Combined Activity-MDA Report

### ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act error | MDA<br>(pCi/GRAM ) |           |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 3.760E+01               | 3.198E+00 | 4.583E-01          | 0.000E+00 |
| CD-109  | 3.097E+00               | 1.105E+00 | 1.250E+00          | 0.000E+00 |
| SN-126  | 3.044E-01               | 1.086E-01 | 1.491E-01          | 0.000E+00 |
| TL-208  | 6.972E-01               | 8.723E-02 | 4.791E-02          | 0.000E+00 |
| BI-211  | 5.252E+00               | 5.138E-01 | 2.669E-01          | 0.000E+00 |
| PB-212  | 2.190E+00               | 1.842E-01 | 8.024E-02          | 0.000E+00 |
| PO-212  | 2.190E+00               | 1.842E-01 | 8.024E-02          | 0.000E+00 |
| BI-214  | 1.441E+00               | 1.842E-01 | 9.831E-02          | 0.000E+00 |
| PB-214  | 1.827E+00               | 2.017E-01 | 9.302E-02          | 0.000E+00 |
| PO-214  | 1.827E+00               | 2.017E-01 | 9.302E-02          | 0.000E+00 |
| PO-216  | 2.190E+00               | 1.842E-01 | 8.024E-02          | 0.000E+00 |
| PO-218  | 1.827E+00               | 2.017E-01 | 9.302E-02          | 0.000E+00 |
| RA-224  | 6.440E+00               | 1.238E+00 | 9.119E-01          | 0.000E+00 |
| RA-226  | 1.441E+00               | 1.842E-01 | 9.831E-02          | 0.000E+00 |
| AC-228  | 1.886E+00               | 3.636E-01 | 1.929E-01          | 0.000E+00 |
| RA-228  | 1.886E+00               | 3.636E-01 | 1.929E-01          | 0.000E+00 |
| TH-228  | 2.223E+00               | 1.870E-01 | 8.146E-02          | 0.000E+00 |
| TH-230  | 1.441E+00               | 1.842E-01 | 9.831E-02          | 0.000E+00 |
| TH-232  | 1.886E+00               | 3.636E-01 | 1.929E-01          | 0.000E+00 |
| TH-234  | 1.410E+00               | 1.898E+00 | 2.584E+00          | 0.000E+00 |
| U-234   | 1.441E+00               | 1.842E-01 | 9.831E-02          | 0.000E+00 |
| NP-237  | 8.938E-01               | 3.665E-01 | 4.194E-01          | 0.000E+00 |
| U-238   | 1.410E+00               | 1.898E+00 | 2.584E+00          | 0.000E+00 |
| AM-243  | 4.710E-01               | 8.300E-02 | 9.428E-02          | 0.000E+00 |
| ANH-511 | 1.661E-01               | 5.965E-02 | 4.240E-02          | 0.000E+00 |

### ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L. Act error<br>) Ided | MDA<br>(pCi/GRAM ) |                      |
|---------|-------------------------------------|--------------------------|--------------------|----------------------|
| BE-7    | -1.834E-01                          | 2.602E-01                | 4.297E-01          | 0.000E+00 NOT IDENT. |
| NA-22   | -4.635E-02                          | 3.956E-02                | 6.097E-02          | 0.000E+00 NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| NA-24   | 0.000E+00  | 6.236E+05 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| AL-26   | -3.027E-03 | 2.258E-02 | 3.697E-02 | 0.000E+00 | NOT IDENT. |
| TI-44   | 0.000E+00  | 6.464E-02 | 9.059E-02 | 0.000E+00 | FAIL ABUN  |
| SC-46   | -2.649E-02 | 3.215E-02 | 5.078E-02 | 0.000E+00 | FAIL ABUN  |
| V-48    | 4.924E-02  | 5.969E-02 | 1.049E-01 | 0.000E+00 | NOT IDENT. |
| CR-51   | 1.829E-01  | 3.174E-01 | 5.510E-01 | 0.000E+00 | NOT IDENT. |
| MN-52   | -2.373E-02 | 2.025E-01 | 3.322E-01 | 0.000E+00 | FAIL ABUN  |
| MN-54   | 2.468E-02  | 3.338E-02 | 5.881E-02 | 0.000E+00 | NOT IDENT. |
| CO-56   | -1.151E-02 | 3.195E-02 | 5.280E-02 | 0.000E+00 | FAIL ABUN  |
| CO-57   | 1.814E-02  | 2.407E-02 | 4.232E-02 | 0.000E+00 | NOT IDENT. |
| CO-58   | -1.146E-02 | 3.325E-02 | 5.536E-02 | 0.000E+00 | NOT IDENT. |
| FE-59   | -5.356E-04 | 7.828E-02 | 1.339E-01 | 0.000E+00 | NOT IDENT. |
| CO-60   | -1.357E-02 | 3.184E-02 | 5.128E-02 | 0.000E+00 | NOT IDENT. |
| ZN-65   | 4.258E-02  | 9.327E-02 | 1.414E-01 | 0.000E+00 | NOT IDENT. |
| GE-68   | 1.047E+00  | 1.043E+00 | 1.895E+00 | 0.000E+00 | NOT IDENT. |
| AS-73   | 1.155E+00  | 1.065E+00 | 2.001E+00 | 0.000E+00 | NOT IDENT. |
| AS-74   | 1.555E-03  | 7.593E-02 | 1.278E-01 | 0.000E+00 | NOT IDENT. |
| SE-75   | 1.976E-02  | 4.019E-02 | 6.563E-02 | 0.000E+00 | NOT IDENT. |
| BR-77   | -5.380E+00 | 8.305E+00 | 1.361E+01 | 0.000E+00 | FAIL ABUN  |
| SR-82   | -3.012E-01 | 3.747E-01 | 5.102E-01 | 0.000E+00 | NOT IDENT. |
| RB-83   | -3.663E-02 | 5.531E-02 | 9.056E-02 | 0.000E+00 | NOT IDENT. |
| RB-84   | 3.174E-02  | 5.993E-02 | 1.044E-01 | 0.000E+00 | NOT IDENT. |
| KR-85   | 0.000E+00  | 7.211E+00 | 1.226E+01 | 0.000E+00 | NOT IDENT. |
| SR-85   | 0.000E+00  | 3.696E-02 | 6.286E-02 | 0.000E+00 | NOT IDENT. |
| RB-86   | 2.946E-01  | 6.659E-01 | 1.173E+00 | 0.000E+00 | NOT IDENT. |
| Y-88    | 3.401E-03  | 2.568E-02 | 4.362E-02 | 0.000E+00 | NOT IDENT. |
| ZR-88   | -1.969E-02 | 2.599E-02 | 4.398E-02 | 0.000E+00 | NOT IDENT. |
| Y-91    | 3.076E+00  | 1.596E+01 | 2.734E+01 | 0.000E+00 | NOT IDENT. |
| NB-94   | 4.253E-02  | 2.901E-02 | 5.346E-02 | 0.000E+00 | NOT IDENT. |
| NB-95   | 5.894E-02  | 4.221E-02 | 6.823E-02 | 0.000E+00 | NOT IDENT. |
| NB-95M  | 1.028E-01  | 1.177E-01 | 1.872E-01 | 0.000E+00 | NOT IDENT. |
| ZR-95   | 7.002E-02  | 5.830E-02 | 1.062E-01 | 0.000E+00 | NOT IDENT. |
| NB-97   | 0.000E+00  | 7.294E+04 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| ZR-97   | 0.000E+00  | 1.773E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| MO-99   | 2.440E+00  | 9.652E+00 | 1.682E+01 | 0.000E+00 | NOT IDENT. |
| TC-99M  | 0.000E+00  | 3.405E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | 5.426E-03  | 2.869E-02 | 5.053E-02 | 0.000E+00 | NOT IDENT. |
| RH-102  | -1.535E-02 | 2.390E-02 | 3.969E-02 | 0.000E+00 | NOT IDENT. |
| RU-103  | -1.274E-02 | 3.369E-02 | 5.645E-02 | 0.000E+00 | FAIL ABUN  |
| RH-106  | 2.162E-01  | 2.623E-01 | 4.587E-01 | 0.000E+00 | FAIL ABUN  |
| RU-106  | 2.162E-01  | 2.614E-01 | 4.587E-01 | 0.000E+00 | FAIL ABUN  |
| AG-108M | -8.795E-03 | 2.632E-02 | 4.491E-02 | 0.000E+00 | NOT IDENT. |
| AG-110M | 9.958E-04  | 2.702E-02 | 4.713E-02 | 0.000E+00 | NOT IDENT. |
| IN-111  | 2.798E-01  | 9.943E-01 | 1.536E+00 | 0.000E+00 | NOT IDENT. |
| IN-113M | -8.296E-03 | 3.777E-02 | 6.559E-02 | 0.000E+00 | NOT IDENT. |
| SN-113  | -8.296E-03 | 3.777E-02 | 6.559E-02 | 0.000E+00 | NOT IDENT. |
| IN-114M | 1.222E-01  | 1.748E-01 | 2.817E-01 | 0.000E+00 | NOT IDENT. |
| CD-115  | -1.081E+00 | 8.799E+00 | 1.473E+01 | 0.000E+00 | NOT IDENT. |
| SN-117M | 1.008E-03  | 4.687E-02 | 8.445E-02 | 0.000E+00 | NOT IDENT. |
| SB-122  | 1.548E+00  | 1.676E+00 | 2.975E+00 | 0.000E+00 | NOT IDENT. |
| I-123   | 0.000E+00  | 4.770E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TE-123M | -1.853E-02 | 2.443E-02 | 4.288E-02 | 0.000E+00 | NOT IDENT. |
| I-124   | 5.767E-01  | 6.314E-01 | 9.712E-01 | 0.000E+00 | FAIL ABUN  |
| SB-124  | 8.313E-03  | 5.933E-02 | 1.016E-01 | 0.000E+00 | FAIL ABUN  |
| SB-125  | 1.869E-02  | 7.447E-02 | 1.311E-01 | 0.000E+00 | FAIL ABUN  |
| TE-125M | -5.567E+00 | 8.862E+00 | 1.495E+01 | 0.000E+00 | NOT IDENT. |
| I-126   | 1.099E-01  | 1.493E-01 | 2.689E-01 | 0.000E+00 | NOT IDENT. |
| SB-126  | -4.253E-02 | 1.389E-01 | 2.010E-01 | 0.000E+00 | FAIL ABUN  |
| SB-127  | 1.031E+00  | 1.083E+00 | 1.966E+00 | 0.000E+00 | NOT IDENT. |
| XE-127  | -2.637E-02 | 4.024E-02 | 6.935E-02 | 0.000E+00 | NOT IDENT. |
| I-131   | -1.611E-02 | 9.174E-02 | 1.607E-01 | 0.000E+00 | NOT IDENT. |
| TE-132  | 1.812E-01  | 5.999E-01 | 1.058E+00 | 0.000E+00 | NOT IDENT. |
| BA-133  | -2.407E-03 | 4.081E-02 | 5.924E-02 | 0.000E+00 | FAIL ABUN  |
| I-133   | 0.000E+00  | 4.892E+03 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-134  | 0.000E+00  | 6.131E-02 | 7.634E-02 | 0.000E+00 | FAIL ABUN  |
| CS-135  | 2.094E-01  | 1.522E-01 | 2.456E-01 | 0.000E+00 | NOT IDENT. |
| I-135   | 0.000E+00  | 4.557E+15 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-136  | 2.292E-02  | 9.052E-02 | 1.581E-01 | 0.000E+00 | FAIL ABUN  |
| BA-137M | -3.205E-02 | 2.864E-02 | 4.652E-02 | 0.000E+00 | NOT IDENT. |
| CS-137  | -3.388E-02 | 3.027E-02 | 4.918E-02 | 0.000E+00 | NOT IDENT. |
| CE-139  | -2.653E-03 | 2.587E-02 | 4.627E-02 | 0.000E+00 | NOT IDENT. |
| BA-140  | 1.662E-01  | 2.116E-01 | 3.644E-01 | 0.000E+00 | NOT IDENT. |
| LA-140  | 8.145E-02  | 6.477E-02 | 1.133E-01 | 0.000E+00 | FAIL ABUN  |
| CE-141  | 4.422E-02  | 6.072E-02 | 1.041E-01 | 0.000E+00 | NOT IDENT. |
| CE-143  | 0.000E+00  | 2.279E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CE-144  | 6.668E-02  | 2.145E-01 | 3.289E-01 | 0.000E+00 | NOT IDENT. |
| PM-144  | 1.166E-02  | 2.915E-02 | 5.145E-02 | 0.000E+00 | NOT IDENT. |
| PR-144  | 7.899E-01  | 1.975E+00 | 3.486E+00 | 0.000E+00 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PM-146  | 4.857E-02  | 3.553E-02 | 6.514E-02 | 0.000E+00 | NOT IDENT. |
| ND-147  | -2.098E-03 | 4.518E-01 | 7.685E-01 | 0.000E+00 | FAIL ABUN  |
| PM-149  | -8.398E+00 | 7.961E+01 | 1.355E+02 | 0.000E+00 | NOT IDENT. |
| EU-152  | 2.680E-02  | 1.021E-01 | 1.280E-01 | 0.000E+00 | FAIL ABUN  |
| GD-153  | -8.808E-02 | 8.341E-02 | 1.229E-01 | 0.000E+00 | NOT IDENT. |
| EU-154  | -9.856E-02 | 1.086E-01 | 1.704E-01 | 0.000E+00 | NOT IDENT. |
| EU-155  | 1.620E-01  | 1.043E-01 | 1.892E-01 | 0.000E+00 | FAIL ABUN  |
| TB-160  | 1.004E-01  | 1.194E-01 | 2.115E-01 | 0.000E+00 | FAIL ABUN  |
| HO-166M | 1.951E-02  | 5.203E-02 | 9.158E-02 | 0.000E+00 | NOT IDENT. |
| TM-171  | -1.435E+01 | 3.450E+01 | 5.396E+01 | 0.000E+00 | NOT IDENT. |
| LU-176  | -1.431E-02 | 2.244E-02 | 3.555E-02 | 0.000E+00 | FAIL ABUN  |
| LU-177  | 0.000E+00  | 1.457E+00 | 1.974E+00 | 0.000E+00 | FAIL ABUN  |
| LU-177M | 2.902E-02  | 1.545E-01 | 2.375E-01 | 0.000E+00 | FAIL ABUN  |
| HF-181  | 1.478E-02  | 3.508E-02 | 6.158E-02 | 0.000E+00 | FAIL ABUN  |
| W-181   | 4.236E-01  | 5.663E-01 | 7.162E-01 | 0.000E+00 | FAIL ABUN  |
| TA-182  | 2.616E-02  | 1.652E-01 | 2.820E-01 | 0.000E+00 | NOT IDENT. |
| RE-183  | 1.279E-02  | 9.302E-02 | 1.679E-01 | 0.000E+00 | FAIL ABUN  |
| RE-184  | -2.528E-02 | 1.941E-01 | 3.340E-01 | 0.000E+00 | NOT IDENT. |
| OS-185  | -3.987E-02 | 3.450E-02 | 5.272E-02 | 0.000E+00 | NOT IDENT. |
| RE-188  | 1.596E-01  | 1.533E-01 | 2.846E-01 | 0.000E+00 | NOT IDENT. |
| W-188   | -1.466E+00 | 7.089E+00 | 1.045E+01 | 0.000E+00 | FAIL ABUN  |
| IR-192  | -8.151E-03 | 2.979E-02 | 4.978E-02 | 0.000E+00 | FAIL ABUN  |
| AU-195  | 2.898E-01  | 2.085E-01 | 3.789E-01 | 0.000E+00 | FAIL ABUN  |
| TL-200  | 0.000E+00  | 3.605E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TL-201  | 1.492E+00  | 6.029E+00 | 1.089E+01 | 0.000E+00 | NOT IDENT. |
| TL-202  | 5.654E-02  | 5.953E-02 | 1.076E-01 | 0.000E+00 | NOT IDENT. |
| HG-203  | 2.704E-02  | 3.954E-02 | 6.160E-02 | 0.000E+00 | NOT IDENT. |
| BI-207  | 4.691E-02  | 4.404E-02 | 8.027E-02 | 0.000E+00 | FAIL ABUN  |
| TL-207  | -4.799E-01 | 6.378E-01 | 8.848E-01 | 0.000E+00 | FAIL ABUN  |
| PO-209  | 1.031E+00  | 6.407E+00 | 1.090E+01 | 0.000E+00 | NOT IDENT. |
| BI-210  | -3.113E+00 | 5.335E+00 | 9.596E+00 | 0.000E+00 | NOT IDENT. |
| PB-210  | -3.113E+00 | 5.335E+00 | 9.596E+00 | 0.000E+00 | NOT IDENT. |
| PO-210  | -3.113E+00 | 5.333E+00 | 9.596E+00 | 0.000E+00 | NOT IDENT. |
| PB-211  | -3.289E-01 | 8.579E-01 | 1.233E+00 | 0.000E+00 | NOT IDENT. |
| BI-212  | 0.000E+00  | 4.392E-01 | 5.893E-01 | 0.000E+00 | FAIL ABUN  |
| PO-215  | -4.799E-01 | 6.378E-01 | 8.848E-01 | 0.000E+00 | FAIL ABUN  |
| RN-219  | -1.714E-01 | 3.292E-01 | 5.603E-01 | 0.000E+00 | FAIL ABUN  |
| RN-220  | -8.043E+00 | 2.191E+01 | 3.635E+01 | 0.000E+00 | NOT IDENT. |
| RA-223  | -4.799E-01 | 6.378E-01 | 8.848E-01 | 0.000E+00 | FAIL ABUN  |
| AC-227  | 9.676E-02  | 3.326E-01 | 5.808E-01 | 0.000E+00 | FAIL ABUN  |
| TH-227  | 9.676E-02  | 3.327E-01 | 5.808E-01 | 0.000E+00 | FAIL ABUN  |
| TH-229  | 1.391E-01  | 4.390E-01 | 7.856E-01 | 0.000E+00 | FAIL ABUN  |
| PA-231  | 8.790E-02  | 1.340E+00 | 2.221E+00 | 0.000E+00 | FAIL ABUN  |
| TH-231  | -4.799E-01 | 6.378E-01 | 8.848E-01 | 0.000E+00 | FAIL ABUN  |
| U-231   | -2.525E-01 | 1.080E+00 | 1.665E+00 | 0.000E+00 | FAIL ABUN  |
| PA-233  | 6.729E-03  | 5.493E-02 | 9.367E-02 | 0.000E+00 | FAIL ABUN  |
| PA-234  | 9.888E-02  | 2.525E-01 | 4.328E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234M | 3.373E+00  | 4.012E+00 | 6.860E+00 | 0.000E+00 | NOT IDENT. |
| U-235   | 2.332E-02  | 2.052E-01 | 3.449E-01 | 0.000E+00 | FAIL ABUN  |
| NP-236  | -8.915E-02 | 6.754E-02 | 1.160E-01 | 0.000E+00 | NOT IDENT. |
| NP-239  | 1.275E-02  | 1.753E-01 | 3.021E-01 | 0.000E+00 | FAIL ABUN  |
| AM-241  | -1.816E-02 | 1.866E-01 | 3.208E-01 | 0.000E+00 | NOT IDENT. |
| CM-243  | -3.546E-02 | 9.348E-02 | 1.600E-01 | 0.000E+00 | FAIL ABUN  |
| AM-246  | 9.659E-02  | 1.191E-01 | 2.141E-01 | 0.000E+00 | NOT IDENT. |
| CM-247  | -3.484E-03 | 3.130E-02 | 5.139E-02 | 0.000E+00 | FAIL ABUN  |
| CF-249  | 1.735E-02  | 3.405E-02 | 6.104E-02 | 0.000E+00 | NOT IDENT. |
| CF-251  | 6.413E-02  | 1.097E-01 | 1.994E-01 | 0.000E+00 | NOT IDENT. |



```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630016.CNF;1
Sample date   : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 14:06:56
Sample ID     : G244630016           Sample quantity : 1.33280E+02 GRAM
Detector name : GAM18                Detector geometry: CAN
Elapsed live time: 0 02:00:00.00      Elapsed real time: 0 02:00:02.06 0.0%
Energy tolerance: 1.50000 keV         Analyst Initials : MXR1
Abundance limit: 75.00000             Sensitivity      : 5.00000
Batch ID      : 941639                Detector SN#     :
Matrix Spike ID :                     LCS ID          : 1032-A
*****

```

## Nuclide Line Activity Report

## Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| K-40    | 1460.81 | 2697  | 10.67* | 1.893E+00 | 3.760E+01               | 3.760E+01              | 8.68              |
| CD-109  | 88.03   | 257   | 3.72*  | 6.422E+00 | 3.027E+00               | 3.097E+00              | 36.40             |
| SN-126  | 64.28   | 60    | 9.60   | 3.160E+00 | 5.583E-01               | 5.583E-01              | 137.00            |
|         | 86.94   | 257   | 8.90   | 6.422E+00 | 1.265E+00               | 1.265E+00              | 54.41             |
|         | 87.57   | 257   | 37.00* | 6.422E+00 | 3.044E-01               | 3.044E-01              | 36.40             |
| TL-208  | 277.35  | 68    | 6.80   | 6.255E+00 | 4.475E-01               | 4.475E-01              | 102.86            |
|         | 510.84  | 254   | 21.60  | 4.309E+00 | 7.688E-01               | 7.688E-01              | 37.59             |
|         | 583.14  | 820   | 84.20* | 3.934E+00 | 6.972E-01               | 6.972E-01              | 12.77             |
|         | 860.37  | 93    | 12.46  | 2.915E+00 | 7.203E-01               | 7.203E-01              | 51.26             |
| BI-211  | 72.87   | ----- | 1.27   | 4.622E+00 | -----                   | Line Not Found         | -----             |
|         | 351.07  | 1315  | 12.94* | 5.452E+00 | 5.252E+00               | 5.252E+00              | 9.98              |
| PB-212  | 74.81   | 545   | 10.70  | 4.941E+00 | 2.905E+00               | 2.905E+00              | 20.26             |
|         | 77.11   | 886   | 18.00  | 5.266E+00 | 2.633E+00               | 2.633E+00              | 13.57             |
|         | 87.30   | 257   | 8.00   | 6.422E+00 | 1.408E+00               | 1.408E+00              | 37.75             |
|         | 238.63  | 2356  | 44.60* | 6.792E+00 | 2.190E+00               | 2.190E+00              | 8.58              |
|         | 300.09  | 134   | 3.41   | 5.985E+00 | 1.843E+00               | 1.843E+00              | 45.79             |
| PO-212  | 74.81   | 545   | 10.70  | 4.941E+00 | 2.905E+00               | 2.905E+00              | 20.26             |
|         | 77.11   | 886   | 18.00  | 5.266E+00 | 2.633E+00               | 2.633E+00              | 13.57             |
|         | 87.30   | 257   | 8.00   | 6.422E+00 | 1.408E+00               | 1.408E+00              | 37.75             |
|         | 115.19  | ----- | 0.60   | 8.058E+00 | -----                   | Line Not Found         | -----             |
|         | 238.63  | 2356  | 44.60* | 6.792E+00 | 2.190E+00               | 2.190E+00              | 8.58              |
|         | 300.09  | 134   | 3.41   | 5.985E+00 | 1.843E+00               | 1.843E+00              | 45.79             |
| BI-214  | 609.31  | 903   | 46.30* | 3.812E+00 | 1.441E+00               | 1.441E+00              | 13.05             |
|         | 1120.29 | 247   | 15.10  | 2.335E+00 | 1.975E+00               | 1.975E+00              | 31.30             |
|         | 1764.49 | 196   | 15.80  | 1.695E+00 | 2.060E+00               | 2.060E+00              | 19.00             |
| PB-214  | 74.81   | 545   | 6.21   | 4.941E+00 | 5.006E+00               | 5.006E+00              | 19.45             |
|         | 77.11   | 886   | 10.50  | 5.266E+00 | 4.514E+00               | 4.514E+00              | 15.56             |
|         | 87.30   | 257   | 4.67   | 6.422E+00 | 2.412E+00               | 2.412E+00              | 37.20             |
|         | 241.98  | 609   | 7.49   | 6.747E+00 | 3.396E+00               | 3.396E+00              | 20.40             |
|         | 295.21  | 706   | 19.20  | 6.040E+00 | 1.715E+00               | 1.715E+00              | 15.29             |
|         | 351.92  | 1315  | 37.20* | 5.452E+00 | 1.827E+00               | 1.827E+00              | 11.26             |
| PO-214  | 74.81   | 545   | 6.21   | 4.941E+00 | 5.006E+00               | 5.006E+00              | 19.45             |

Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
|         | 77.11   | 886   | 10.50  | 5.266E+00 | 4.514E+00               | 4.514E+00              | 15.56             |
|         | 87.30   | 257   | 4.67   | 6.422E+00 | 2.412E+00               | 2.412E+00              | 37.20             |
|         | 241.98  | 609   | 7.49   | 6.747E+00 | 3.396E+00               | 3.396E+00              | 20.40             |
|         | 295.21  | 706   | 19.20  | 6.040E+00 | 1.715E+00               | 1.715E+00              | 15.29             |
|         | 351.92  | 1315  | 37.20* | 5.452E+00 | 1.827E+00               | 1.827E+00              | 11.26             |
| PO-216  | 74.81   | 545   | 10.70  | 4.941E+00 | 2.905E+00               | 2.905E+00              | 20.26             |
|         | 77.11   | 886   | 18.00  | 5.266E+00 | 2.633E+00               | 2.633E+00              | 13.57             |
|         | 87.30   | 257   | 8.00   | 6.422E+00 | 1.408E+00               | 1.408E+00              | 37.75             |
|         | 238.63  | 2356  | 44.60* | 6.792E+00 | 2.190E+00               | 2.190E+00              | 8.58              |
|         | 300.09  | 134   | 3.41   | 5.985E+00 | 1.843E+00               | 1.843E+00              | 45.79             |
| PO-218  | 74.81   | 545   | 6.21   | 4.941E+00 | 5.006E+00               | 5.006E+00              | 19.45             |
|         | 77.11   | 886   | 10.50  | 5.266E+00 | 4.514E+00               | 4.514E+00              | 15.56             |
|         | 87.30   | 257   | 4.67   | 6.422E+00 | 2.412E+00               | 2.412E+00              | 37.20             |
|         | 241.98  | 609   | 7.49   | 6.747E+00 | 3.396E+00               | 3.396E+00              | 20.40             |
|         | 295.21  | 706   | 19.20  | 6.040E+00 | 1.715E+00               | 1.715E+00              | 15.29             |
|         | 351.92  | 1315  | 37.20* | 5.452E+00 | 1.827E+00               | 1.827E+00              | 11.26             |
| RA-224  | 240.98  | 609   | 3.95*  | 6.747E+00 | 6.440E+00               | 6.440E+00              | 19.62             |
| RA-226  | 609.31  | 903   | 46.30* | 3.812E+00 | 1.441E+00               | 1.441E+00              | 13.05             |
|         | 1120.29 | 247   | 15.10  | 2.335E+00 | 1.975E+00               | 1.975E+00              | 31.30             |
|         | 1764.49 | 196   | 15.80  | 1.695E+00 | 2.060E+00               | 2.060E+00              | 19.00             |
| AC-228  | 338.32  | 507   | 11.40  | 5.579E+00 | 2.247E+00               | 2.247E+00              | 44.39             |
|         | 911.07  | 515   | 27.70* | 2.779E+00 | 1.886E+00               | 1.886E+00              | 19.67             |
|         | 969.11  | 348   | 16.60  | 2.640E+00 | 2.234E+00               | 2.234E+00              | 28.81             |
| RA-228  | 338.32  | 507   | 11.40  | 5.579E+00 | 2.247E+00               | 2.247E+00              | 44.39             |
|         | 911.07  | 515   | 27.70* | 2.779E+00 | 1.886E+00               | 1.886E+00              | 19.67             |
|         | 969.11  | 348   | 16.60  | 2.640E+00 | 2.234E+00               | 2.234E+00              | 28.81             |
| TH-228  | 74.81   | 545   | 10.70  | 4.941E+00 | 2.905E+00               | 2.949E+00              | 18.02             |
|         | 77.11   | 886   | 18.00  | 5.266E+00 | 2.633E+00               | 2.673E+00              | 13.57             |
|         | 87.30   | 257   | 8.00   | 6.422E+00 | 1.408E+00               | 1.429E+00              | 36.40             |
|         | 238.63  | 2356  | 44.60* | 6.792E+00 | 2.190E+00               | 2.223E+00              | 8.58              |
|         | 300.09  | 134   | 3.41   | 5.985E+00 | 1.843E+00               | 1.871E+00              | 74.18             |
| TH-230  | 609.31  | 903   | 46.30* | 3.812E+00 | 1.441E+00               | 1.441E+00              | 13.05             |
|         | 1120.29 | 247   | 15.10  | 2.335E+00 | 1.975E+00               | 1.975E+00              | 31.30             |
|         | 1764.49 | 196   | 15.80  | 1.695E+00 | 2.060E+00               | 2.060E+00              | 19.00             |
| TH-232  | 338.32  | 507   | 11.40  | 5.579E+00 | 2.247E+00               | 2.247E+00              | 18.49             |
|         | 911.07  | 515   | 27.70* | 2.779E+00 | 1.886E+00               | 1.886E+00              | 19.67             |
|         | 969.11  | 348   | 16.60  | 2.640E+00 | 2.234E+00               | 2.234E+00              | 28.81             |
| TH-234  | 63.29   | 60    | 3.80*  | 3.160E+00 | 1.410E+00               | 1.410E+00              | 137.34            |
|         | 92.38   | 398   | 5.41   | 6.976E+00 | 2.973E+00               | 2.973E+00              | 35.04             |
| U-234   | 609.31  | 903   | 46.30* | 3.812E+00 | 1.441E+00               | 1.441E+00              | 13.05             |
|         | 1120.29 | 247   | 15.10  | 2.335E+00 | 1.975E+00               | 1.975E+00              | 31.30             |
|         | 1764.49 | 196   | 15.80  | 1.695E+00 | 2.060E+00               | 2.060E+00              | 19.00             |
| NP-237  | 86.50   | 257   | 12.60* | 6.422E+00 | 8.938E-01               | 8.938E-01              | 41.84             |
|         | 95.87   | ----- | 2.60   | 7.180E+00 | -----                   | Line Not Found         | -----             |
| U-238   | 63.29   | 60    | 3.80*  | 3.160E+00 | 1.410E+00               | 1.410E+00              | 137.34            |
|         | 92.38   | 398   | 5.41   | 6.976E+00 | 2.973E+00               | 2.973E+00              | 31.23             |
| AM-243  | 74.67   | 545   | 66.00* | 4.941E+00 | 4.710E-01               | 4.710E-01              | 17.98             |
|         | 86.72   | 257   | 0.34   | 6.422E+00 | 3.352E+01               | 3.352E+01              | 36.40             |
|         | 117.66  | ----- | 0.55   | 8.112E+00 | -----                   | Line Not Found         | -----             |

Nuclide Type:

| Nuclide | Energy | Area  | %Abn    | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|--------|-------|---------|-----------|-------------------------|------------------------|-------------------|
|         | 142.18 | ----- | 0.13    | 8.232E+00 | -----                   | Line Not Found         | -----             |
| ANH-511 | 511.00 | 254   | 100.00* | 4.309E+00 | 1.661E-01               | 1.661E-01              | 36.65             |

Flag: "\*" = Keyline

Total number of lines in spectrum 38  
Number of unidentified lines 3  
Number of lines tentatively identified by NID 35 92.11%

Nuclide Type :

| Nuclide          | Hlife     | Decay | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | Decay Corr<br>2-Sigma Error | 2-Sigma<br>%Error | Flags |
|------------------|-----------|-------|-------------------------|------------------------|-----------------------------|-------------------|-------|
| K-40             | 1.28E+09Y | 1.00  | 3.760E+01               | 3.760E+01              | 0.326E+01                   | 8.68              |       |
| CD-109           | 464.00D   | 1.02  | 3.027E+00               | 3.097E+00              | 1.127E+00                   | 36.40             |       |
| SN-126           | 1.00E+05Y | 1.00  | 3.044E-01               | 3.044E-01              | 1.108E-01                   | 36.40             |       |
| TL-208           | 1.41E+10Y | 1.00  | 6.972E-01               | 6.972E-01              | 0.890E-01                   | 12.77             |       |
| BI-211           | 7.04E+08Y | 1.00  | 5.252E+00               | 5.252E+00              | 0.524E+00                   | 9.98              |       |
| PB-212           | 1.41E+10Y | 1.00  | 2.190E+00               | 2.190E+00              | 0.188E+00                   | 8.58              |       |
| PO-212           | 1.41E+10Y | 1.00  | 2.190E+00               | 2.190E+00              | 0.188E+00                   | 8.58              |       |
| BI-214           | 1600.00Y  | 1.00  | 1.441E+00               | 1.441E+00              | 0.188E+00                   | 13.05             |       |
| PB-214           | 1600.00Y  | 1.00  | 1.827E+00               | 1.827E+00              | 0.206E+00                   | 11.26             |       |
| PO-214           | 1600.00Y  | 1.00  | 1.827E+00               | 1.827E+00              | 0.206E+00                   | 11.26             |       |
| PO-216           | 1.41E+10Y | 1.00  | 2.190E+00               | 2.190E+00              | 0.188E+00                   | 8.58              |       |
| PO-218           | 1600.00Y  | 1.00  | 1.827E+00               | 1.827E+00              | 0.206E+00                   | 11.26             |       |
| RA-224           | 1.41E+10Y | 1.00  | 6.440E+00               | 6.440E+00              | 1.263E+00                   | 19.62             |       |
| RA-226           | 1600.00Y  | 1.00  | 1.441E+00               | 1.441E+00              | 0.188E+00                   | 13.05             |       |
| AC-228           | 1.41E+10Y | 1.00  | 1.886E+00               | 1.886E+00              | 0.371E+00                   | 19.67             |       |
| RA-228           | 1.41E+10Y | 1.00  | 1.886E+00               | 1.886E+00              | 0.371E+00                   | 19.67             |       |
| TH-228           | 1.91Y     | 1.02  | 2.190E+00               | 2.223E+00              | 0.191E+00                   | 8.58              |       |
| TH-230           | 4.47E+09Y | 1.00  | 1.441E+00               | 1.441E+00              | 0.188E+00                   | 13.05             |       |
| TH-232           | 1.41E+10Y | 1.00  | 1.886E+00               | 1.886E+00              | 0.371E+00                   | 19.67             |       |
| TH-234           | 4.47E+09Y | 1.00  | 1.410E+00               | 1.410E+00              | 1.937E+00                   | 137.34            |       |
| U-234            | 4.47E+09Y | 1.00  | 1.441E+00               | 1.441E+00              | 0.188E+00                   | 13.05             |       |
| NP-237           | 2.14E+06Y | 1.00  | 8.938E-01               | 8.938E-01              | 3.740E-01                   | 41.84             |       |
| U-238            | 4.47E+09Y | 1.00  | 1.410E+00               | 1.410E+00              | 1.937E+00                   | 137.34            |       |
| AM-243           | 7380.00Y  | 1.00  | 4.710E-01               | 4.710E-01              | 0.847E-01                   | 17.98             |       |
| ANH-511          | 1.00E+09Y | 1.00  | 1.661E-01               | 1.661E-01              | 0.609E-01                   | 36.65             |       |
| Total Activity : |           |       | 8.333E+01               | 8.344E+01              |                             |                   |       |

Grand Total Activity : 8.333E+01 8.344E+01

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

Unidentified Energy Lines  
Sample ID : G244630016

Page : 5  
Acquisition date : 23-JAN-2010 14:06:56

| It | Energy  | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | %Eff     | Flags |
|----|---------|------|-------|------|---------|------|----|----------|------|----------|-------|
| 6  | 90.02   | 236  | 311   | 1.02 | 179.16  | 177  | 14 | 3.27E-02 | 24.3 | 6.71E+00 | T     |
| 0  | 129.77  | 112  | 576   | 0.74 | 258.62  | 254  | 9  | 1.55E-02 | 79.8 | 8.25E+00 | T     |
| 0  | 186.00  | 321  | 519   | 1.18 | 371.03  | 367  | 9  | 4.46E-02 | 28.8 | 7.65E+00 | T     |
| 0  | 209.41  | 245  | 472   | 1.10 | 417.84  | 413  | 10 | 3.40E-02 | 35.7 | 7.26E+00 | T     |
| 0  | 270.27  | 176  | 302   | 1.33 | 539.52  | 535  | 10 | 2.44E-02 | 39.9 | 6.35E+00 | T     |
| 0  | 327.73  | 150  | 260   | 1.12 | 654.41  | 650  | 11 | 2.08E-02 | 44.6 | 5.69E+00 | T     |
| 0  | 409.42  | 105  | 160   | 1.45 | 817.74  | 813  | 10 | 1.46E-02 | 48.9 | 4.97E+00 |       |
| 0  | 462.82  | 112  | 192   | 1.90 | 924.51  | 920  | 10 | 1.56E-02 | 49.9 | 4.60E+00 | T     |
| 0  | 727.15  | 187  | 144   | 1.75 | 1453.03 | 1447 | 15 | 2.60E-02 | 32.0 | 3.34E+00 | T     |
| 0  | 768.89  | 85   | 167   | 1.48 | 1536.48 | 1531 | 14 | 1.18E-02 | 68.3 | 3.19E+00 |       |
| 0  | 795.24  | 101  | 112   | 1.95 | 1589.17 | 1582 | 16 | 1.40E-02 | 50.9 | 3.11E+00 | T     |
| 0  | 934.47  | 24   | 93    | 1.46 | 1867.57 | 1863 | 10 | 3.40E-03 | **** | 2.72E+00 | T     |
| 1  | 964.40  | 133  | 112   | 2.32 | 1927.42 | 1916 | 27 | 1.85E-02 | 36.7 | 2.65E+00 | T     |
| 0  | 1238.27 | 86   | 139   | 1.43 | 2475.08 | 2468 | 14 | 1.19E-02 | 62.4 | 2.15E+00 | T     |
| 0  | 1377.49 | 58   | 60    | 0.71 | 2753.48 | 2748 | 15 | 8.06E-03 | 63.9 | 1.98E+00 | T     |
| 0  | 1407.57 | 43   | 30    | 1.86 | 2813.64 | 2805 | 13 | 5.96E-03 | 60.4 | 1.94E+00 | T     |
| 0  | 1589.50 | 70   | 44    | 4.35 | 3177.46 | 3169 | 23 | 9.77E-03 | 57.7 | 1.79E+00 |       |

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC
*                                     2040 Savage Road
*                                     Charleston, SC 29414
*****
*
*                               DETECTOR DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G244630016.CNF;1
* Acquisition date   : 23-JAN-2010 14:06:56   Detector SN#      :
* Detector ID        : GAM18                   Sensitivity         : 5.00000
* Geometry           : CAN                     Energy tolerance: 1.50000
* Elapsed live time  : 0 02:00:00.00           Abundance limit  : 75.00000
* Elapsed real time  : 0 02:00:02.06           Half life ratio  : 8.00000
*****
*
*                               SAMPLE DATA
*
* Sample date        : 8-JAN-2010 12:00:00.   Nuclide Library : SOLID
* Sample ID          : G244630016             Analyst initials: MXR1
* Batch Number       : 941639                 Sample Quantity  : 1.33280E+02 GRAM
*****
*
*                               QC DATA
*
* CALIB. DATE/TIME   : 23-APR-2009 11:59:23.2MS Isotope      :
* MSD ID             :                          MSD Isotope   :
* LCS ID             : 1032-A                  LCS Isotope       :
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| K-40    | 3.760E+01              | 3.263E+00 | 4.576E-01         | 3.472E-02 | 82.179  |
| CD-109  | 3.097E+00              | 1.127E+00 | 1.189E+00         | 1.099E-01 | 2.605   |
| SN-126  | 3.044E-01              | 1.108E-01 | 1.418E-01         | 1.306E-02 | 2.147   |
| TL-208  | 6.972E-01              | 8.901E-02 | 4.705E-02         | 3.689E-03 | 14.817  |
| BI-211  | 5.252E+00              | 5.243E-01 | 2.598E-01         | 1.668E-02 | 20.212  |
| PB-212  | 2.190E+00              | 1.880E-01 | 7.758E-02         | 5.542E-03 | 28.230  |
| PO-212  | 2.190E+00              | 1.880E-01 | 7.758E-02         | 5.542E-03 | 28.230  |
| BI-214  | 1.441E+00              | 1.879E-01 | 9.662E-02         | 8.631E-03 | 14.910  |
| PB-214  | 1.827E+00              | 2.058E-01 | 9.055E-02         | 7.490E-03 | 20.175  |
| PO-214  | 1.827E+00              | 2.058E-01 | 9.055E-02         | 7.490E-03 | 20.175  |
| PO-216  | 2.190E+00              | 1.880E-01 | 7.758E-02         | 5.542E-03 | 28.230  |
| PO-218  | 1.827E+00              | 2.058E-01 | 9.055E-02         | 7.490E-03 | 20.175  |
| RA-224  | 6.440E+00              | 1.263E+00 | 8.818E-01         | 4.912E-02 | 7.303   |
| RA-226  | 1.441E+00              | 1.879E-01 | 9.662E-02         | 8.631E-03 | 14.910  |
| AC-228  | 1.886E+00              | 3.710E-01 | 1.910E-01         | 2.530E-02 | 9.875   |
| RA-228  | 1.886E+00              | 3.710E-01 | 1.910E-01         | 2.530E-02 | 9.875   |
| TH-228  | 2.223E+00              | 1.908E-01 | 7.876E-02         | 5.626E-03 | 28.230  |
| TH-230  | 1.441E+00              | 1.879E-01 | 9.662E-02         | 8.631E-03 | 14.910  |

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| TH-232  | 1.886E+00              | 3.710E-01 | 1.910E-01         | 2.530E-02 | 9.875   |
| TH-234  | 1.410E+00              | 1.937E+00 | 2.443E+00         | 4.307E-01 | 0.577   |
| U-234   | 1.441E+00              | 1.879E-01 | 9.662E-02         | 8.631E-03 | 14.910  |
| NP-237  | 8.938E-01              | 3.740E-01 | 3.987E-01         | 8.995E-02 | 2.242   |
| U-238   | 1.410E+00              | 1.937E+00 | 2.443E+00         | 4.307E-01 | 0.577   |
| AM-243  | 4.710E-01              | 8.470E-02 | 8.940E-02         | 7.460E-03 | 5.269   |
| ANH-511 | 1.661E-01              | 6.086E-02 | 4.154E-02         | 2.744E-03 | 3.997   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| BE-7    | -1.834E-01                         |              | 2.655E-01 | 4.205E-01           | 3.047E-02 | -0.436  |
| NA-22   | -4.635E-02                         |              | 4.037E-02 | 6.071E-02           | 4.131E-03 | -0.763  |
| NA-24   | -5.302E-01                         |              | 3.182E-01 | Half-Life too short |           |         |
| AL-26   | -3.027E-03                         |              | 2.304E-02 | 3.705E-02           | 2.163E-03 | -0.082  |
| TI-44   | 4.859E-01                          | +            | 6.595E-02 | 8.597E-02           | 7.350E-03 | 5.653   |
| SC-46   | -2.649E-02                         |              | 3.280E-02 | 5.024E-02           | 5.604E-03 | -0.527  |
| V-48    | 4.924E-02                          |              | 6.091E-02 | 1.039E-01           | 1.028E-02 | 0.474   |
| CR-51   | 1.829E-01                          |              | 3.239E-01 | 5.354E-01           | 3.447E-02 | 0.342   |
| MN-52   | -2.373E-02                         |              | 2.066E-01 | 3.316E-01           | 2.443E-02 | -0.072  |
| MN-54   | 2.468E-02                          |              | 3.406E-02 | 5.812E-02           | 5.954E-03 | 0.425   |
| CO-56   | -1.151E-02                         |              | 3.260E-02 | 5.219E-02           | 5.449E-03 | -0.221  |
| CO-57   | 1.814E-02                          |              | 2.457E-02 | 4.046E-02           | 2.396E-03 | 0.448   |
| CO-58   | -1.146E-02                         |              | 3.392E-02 | 5.469E-02           | 5.399E-03 | -0.210  |
| FE-59   | -5.356E-04                         |              | 7.988E-02 | 1.330E-01           | 1.094E-02 | -0.004  |
| CO-60   | -1.357E-02                         |              | 3.249E-02 | 5.111E-02           | 3.861E-03 | -0.265  |
| ZN-65   | 4.258E-02                          |              | 9.518E-02 | 1.405E-01           | 9.896E-03 | 0.303   |
| GE-68   | 1.047E+00                          |              | 1.065E+00 | 1.881E+00           | 1.494E-01 | 0.557   |
| AS-73   | 1.155E+00                          |              | 1.087E+00 | 1.887E+00           | 1.496E-01 | 0.612   |
| AS-74   | 1.555E-03                          |              | 7.748E-02 | 1.255E-01           | 9.018E-03 | 0.012   |
| SE-75   | 1.976E-02                          |              | 4.101E-02 | 6.357E-02           | 3.636E-03 | 0.311   |
| BR-77   | -5.380E+00                         |              | 8.475E+00 | 1.334E+01           | 8.898E-01 | -0.403  |
| SR-82   | -3.012E-01                         |              | 3.824E-01 | 5.036E-01           | 4.690E-02 | -0.598  |
| RB-83   | -3.663E-02                         |              | 5.644E-02 | 8.875E-02           | 5.919E-03 | -0.413  |
| RB-84   | 3.174E-02                          |              | 6.116E-02 | 1.033E-01           | 1.138E-02 | 0.307   |
| KR-85   | 1.874E+01                          |              | 7.358E+00 | 1.202E+01           | 7.961E-01 | 1.559   |
| SR-85   | 9.603E-02                          |              | 3.771E-02 | 6.159E-02           | 4.080E-03 | 1.559   |
| RB-86   | 2.946E-01                          |              | 6.795E-01 | 1.164E+00           | 9.269E-02 | 0.253   |
| Y-88    | 3.401E-03                          |              | 2.621E-02 | 4.373E-02           | 2.491E-03 | 0.078   |
| ZR-88   | -1.969E-02                         |              | 2.652E-02 | 4.289E-02           | 2.467E-03 | -0.459  |
| Y-91    | 3.076E+00                          |              | 1.629E+01 | 2.720E+01           | 1.608E+00 | 0.113   |
| NB-94   | 4.253E-02                          |              | 2.960E-02 | 5.267E-02           | 4.321E-03 | 0.808   |
| NB-95   | 5.894E-02                          |              | 4.307E-02 | 6.733E-02           | 6.159E-03 | 0.875   |
| NB-95M  | 1.028E-01                          |              | 1.201E-01 | 1.810E-01           | 1.328E-02 | 0.568   |
| ZR-95   | 7.002E-02                          |              | 5.949E-02 | 1.048E-01           | 1.031E-02 | 0.668   |
| NB-97   | -2.223E-03                         |              | 3.721E-02 | Half-Life too short |           |         |
| ZR-97   | 4.796E+00                          |              | 9.044E-01 | Half-Life too short |           |         |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| MO-99   | 2.440E+00                          |              | 9.849E+00 | 1.659E+01           | 2.531E+00 | 0.147   |
| TC-99M  | -7.028E+09                         |              | 1.737E+10 | Half-Life too short |           |         |
| RH-101  | 5.426E-03                          |              | 2.927E-02 | 4.870E-02           | 2.618E-03 | 0.111   |
| RH-102  | -1.535E-02                         |              | 2.439E-02 | 3.884E-02           | 2.467E-03 | -0.395  |
| RU-103  | -1.274E-02                         |              | 3.438E-02 | 5.528E-02           | 7.178E-03 | -0.230  |
| RH-106  | 2.162E-01                          |              | 2.677E-01 | 4.509E-01           | 5.673E-02 | 0.479   |
| RU-106  | 2.162E-01                          |              | 2.668E-01 | 4.509E-01           | 3.318E-02 | 0.479   |
| AG-108M | -8.795E-03                         |              | 2.686E-02 | 4.388E-02           | 2.867E-03 | -0.200  |
| AG-110M | 9.958E-04                          |              | 2.757E-02 | 4.638E-02           | 3.658E-03 | 0.021   |
| IN-111  | 2.798E-01                          |              | 1.015E+00 | 1.486E+00           | 8.305E-02 | 0.188   |
| IN-113M | -8.296E-03                         |              | 3.854E-02 | 6.396E-02           | 3.924E-03 | -0.130  |
| SN-113  | -8.296E-03                         |              | 3.854E-02 | 6.396E-02           | 3.924E-03 | -0.130  |
| IN-114M | 1.222E-01                          |              | 1.783E-01 | 2.714E-01           | 1.449E-02 | 0.450   |
| CD-115  | -1.081E+00                         |              | 8.978E+00 | 1.444E+01           | 9.707E-01 | -0.075  |
| SN-117M | 1.008E-03                          |              | 4.783E-02 | 8.109E-02           | 4.310E-03 | 0.012   |
| SB-122  | 1.548E+00                          |              | 1.710E+00 | 2.920E+00           | 2.035E-01 | 0.530   |
| I-123   | -3.616E+00                         |              | 2.433E+00 | Half-Life too short |           |         |
| TE-123M | -1.853E-02                         |              | 2.493E-02 | 4.118E-02           | 2.222E-03 | -0.450  |
| I-124   | 5.767E-01                          |              | 6.443E-01 | 9.543E-01           | 6.900E-02 | 0.604   |
| SB-124  | 8.313E-03                          |              | 6.054E-02 | 1.017E-01           | 7.018E-03 | 0.082   |
| SB-125  | 1.869E-02                          |              | 7.599E-02 | 1.280E-01           | 7.999E-03 | 0.146   |
| TE-125M | -5.567E+00                         |              | 9.043E+00 | 1.427E+01           | 1.254E+00 | -0.390  |
| I-126   | 1.099E-01                          |              | 1.523E-01 | 2.647E-01           | 2.035E-02 | 0.415   |
| SB-126  | -4.253E-02                         |              | 1.417E-01 | 1.981E-01           | 1.677E-02 | -0.215  |
| SB-127  | 1.031E+00                          |              | 1.105E+00 | 1.936E+00           | 2.107E-01 | 0.532   |
| XE-127  | -2.637E-02                         |              | 4.106E-02 | 6.687E-02           | 3.610E-03 | -0.394  |
| I-131   | -1.611E-02                         |              | 9.361E-02 | 1.565E-01           | 1.010E-02 | -0.103  |
| TE-132  | 1.812E-01                          |              | 6.121E-01 | 1.022E+00           | 1.456E-01 | 0.177   |
| BA-133  | -2.407E-03                         |              | 4.164E-02 | 5.767E-02           | 6.662E-03 | -0.042  |
| I-133   | 2.056E-03                          |              | 2.496E-03 | Half-Life too short |           |         |
| CS-134  | 1.207E-01                          | +            | 6.256E-02 | 7.538E-02           | 7.291E-03 | 1.602   |
| CS-135  | 2.094E-01                          |              | 1.553E-01 | 2.379E-01           | 1.799E-02 | 0.880   |
| I-135   | 1.166E+09                          |              | 2.325E+09 | Half-Life too short |           |         |
| CS-136  | 2.292E-02                          |              | 9.237E-02 | 1.569E-01           | 1.406E-02 | 0.146   |
| BA-137M | -3.205E-02                         |              | 2.922E-02 | 4.579E-02           | 3.490E-03 | -0.700  |
| CS-137  | -3.388E-02                         |              | 3.089E-02 | 4.840E-02           | 3.699E-03 | -0.700  |
| CE-139  | -2.653E-03                         |              | 2.640E-02 | 4.446E-02           | 2.334E-03 | -0.060  |
| BA-140  | 1.662E-01                          |              | 2.160E-01 | 3.573E-01           | 1.169E-01 | 0.465   |
| LA-140  | 8.145E-02                          |              | 6.610E-02 | 1.133E-01           | 7.770E-03 | 0.719   |
| CE-141  | 4.422E-02                          |              | 6.196E-02 | 9.981E-02           | 5.698E-03 | 0.443   |
| CE-143  | 7.960E-04                          |              | 1.163E-04 | Half-Life too short |           |         |
| CE-144  | 6.668E-02                          |              | 2.189E-01 | 3.149E-01           | 4.452E-02 | 0.212   |
| PM-144  | 1.166E-02                          |              | 2.974E-02 | 5.068E-02           | 4.114E-03 | 0.230   |
| PR-144  | 7.899E-01                          |              | 2.015E+00 | 3.434E+00           | 2.787E-01 | 0.230   |
| PM-146  | 4.857E-02                          |              | 3.625E-02 | 6.368E-02           | 5.665E-03 | 0.763   |
| ND-147  | -2.098E-03                         |              | 4.611E-01 | 7.534E-01           | 1.051E-01 | -0.003  |
| PM-149  | -8.398E+00                         |              | 8.123E+01 | 1.314E+02           | 1.858E+01 | -0.064  |
| EU-152  | 2.680E-02                          |              | 1.042E-01 | 1.245E-01           | 8.126E-03 | 0.215   |



---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| GD-153  | -8.808E-02                         |              | 8.511E-02 | 1.170E-01           | 9.151E-03 | -0.753  |
| EU-154  | -9.856E-02                         |              | 1.108E-01 | 1.697E-01           | 1.695E-02 | -0.581  |
| EU-155  | 1.620E-01                          |              | 1.064E-01 | 1.804E-01           | 1.290E-02 | 0.898   |
| TB-160  | 1.004E-01                          |              | 1.218E-01 | 2.092E-01           | 2.298E-02 | 0.480   |
| HO-166M | 1.951E-02                          |              | 5.310E-02 | 9.025E-02           | 7.523E-03 | 0.216   |
| TM-171  | -1.435E+01                         |              | 3.520E+01 | 5.107E+01           | 4.084E+00 | -0.281  |
| LU-176  | -1.431E-02                         |              | 2.289E-02 | 3.453E-02           | 1.988E-03 | -0.414  |
| LU-177  | 4.122E+00                          | +            | 1.487E+00 | 1.904E+00           | 1.033E-01 | 2.165   |
| LU-177M | 2.902E-02                          |              | 1.577E-01 | 2.318E-01           | 1.369E-02 | 0.125   |
| HF-181  | 1.478E-02                          |              | 3.579E-02 | 6.027E-02           | 3.858E-03 | 0.245   |
| W-181   | 4.236E-01                          | +            | 5.779E-01 | 6.776E-01           | 5.374E-02 | 0.625   |
| TA-182  | 2.616E-02                          |              | 1.686E-01 | 2.806E-01           | 1.717E-02 | 0.093   |
| RE-183  | 1.279E-02                          |              | 9.492E-02 | 1.613E-01           | 8.513E-03 | 0.079   |
| RE-184  | -2.528E-02                         |              | 1.981E-01 | 3.232E-01           | 1.816E-02 | -0.078  |
| OS-185  | -3.987E-02                         |              | 3.521E-02 | 5.187E-02           | 3.901E-03 | -0.769  |
| RE-188  | 1.596E-01                          |              | 1.565E-01 | 2.732E-01           | 1.462E-02 | 0.584   |
| W-188   | -1.466E+00                         |              | 7.233E+00 | 1.014E+01           | 5.805E-01 | -0.145  |
| IR-192  | -8.151E-03                         |              | 3.040E-02 | 4.836E-02           | 2.805E-03 | -0.169  |
| AU-195  | 2.898E-01                          |              | 2.127E-01 | 3.609E-01           | 2.761E-02 | 0.803   |
| TL-200  | 2.982E-04                          |              | 1.839E-04 | Half-Life too short |           |         |
| TL-201  | 1.492E+00                          |              | 6.152E+00 | 1.047E+01           | 5.495E-01 | 0.143   |
| TL-202  | 5.654E-02                          |              | 6.074E-02 | 1.051E-01           | 6.410E-03 | 0.538   |
| HG-203  | 2.704E-02                          |              | 4.034E-02 | 5.972E-02           | 3.622E-03 | 0.453   |
| BI-207  | 4.691E-02                          |              | 4.493E-02 | 7.967E-02           | 6.577E-03 | 0.589   |
| TL-207  | -4.799E-01                         |              | 6.508E-01 | 8.600E-01           | 1.420E-01 | -0.558  |
| PO-209  | 1.031E+00                          |              | 6.537E+00 | 1.079E+01           | 1.217E+00 | 0.096   |
| BI-210  | -3.113E+00                         |              | 5.444E+00 | 9.029E+00           | 6.985E-01 | -0.345  |
| PB-210  | -3.113E+00                         |              | 5.444E+00 | 9.029E+00           | 6.985E-01 | -0.345  |
| PO-210  | -3.113E+00                         |              | 5.442E+00 | 9.029E+00           | 6.006E-01 | -0.345  |
| PB-211  | -3.289E-01                         |              | 8.754E-01 | 1.203E+00           | 7.499E-01 | -0.273  |
| BI-212  | 1.337E+00                          | +            | 4.482E-01 | 5.809E-01           | 5.786E-02 | 2.302   |
| PO-215  | -4.799E-01                         |              | 6.508E-01 | 8.600E-01           | 1.420E-01 | -0.558  |
| RN-219  | -1.714E-01                         |              | 3.359E-01 | 5.466E-01           | 7.441E-02 | -0.314  |
| RN-220  | -8.043E+00                         |              | 2.236E+01 | 3.566E+01           | 2.450E+00 | -0.226  |
| RA-223  | -4.799E-01                         |              | 6.508E-01 | 8.600E-01           | 1.420E-01 | -0.558  |
| AC-227  | 9.676E-02                          |              | 3.394E-01 | 5.622E-01           | 7.810E-02 | 0.172   |
| TH-227  | 9.676E-02                          |              | 3.395E-01 | 5.622E-01           | 9.469E-02 | 0.172   |
| TH-229  | 1.391E-01                          |              | 4.480E-01 | 7.568E-01           | 4.053E-02 | 0.184   |
| PA-231  | 8.790E-02                          |              | 1.368E+00 | 2.154E+00           | 2.960E-01 | 0.041   |
| TH-231  | -4.799E-01                         |              | 6.508E-01 | 8.600E-01           | 1.420E-01 | -0.558  |
| U-231   | -2.525E-01                         |              | 1.102E+00 | 1.586E+00           | 1.270E-01 | -0.159  |
| PA-233  | 6.729E-03                          |              | 5.605E-02 | 9.098E-02           | 5.574E-03 | 0.074   |
| PA-234  | 9.888E-02                          |              | 2.576E-01 | 4.287E-01           | 8.457E-02 | 0.231   |
| PA-234M | 3.373E+00                          |              | 4.094E+00 | 6.802E+00           | 7.338E-01 | 0.496   |
| U-235   | 2.332E-02                          |              | 2.094E-01 | 3.306E-01           | 5.354E-02 | 0.071   |
| NP-236  | -8.915E-02                         |              | 6.892E-02 | 1.114E-01           | 5.900E-03 | -0.800  |
| NP-239  | 1.275E-02                          |              | 1.789E-01 | 2.886E-01           | 1.786E-02 | 0.044   |
| AM-241  | -1.816E-02                         |              | 1.904E-01 | 3.031E-01           | 2.514E-02 | -0.060  |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| CM-243  | -3.546E-02                         |              | 9.539E-02 | 1.526E-01         | 1.092E-02 | -0.232  |
| AM-246  | 9.659E-02                          |              | 1.215E-01 | 2.126E-01         | 1.681E-02 | 0.454   |
| CM-247  | -3.484E-03                         |              | 3.194E-02 | 5.014E-02         | 2.920E-03 | -0.069  |
| CF-249  | 1.735E-02                          |              | 3.474E-02 | 5.951E-02         | 3.421E-03 | 0.292   |
| CF-251  | 6.413E-02                          |              | 1.119E-01 | 1.918E-01         | 1.013E-02 | 0.334   |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                               GEL Laboratories LLC                      *
*                               2040 Savage Road                        *
*                               Charleston, SC 29414                   *
*****
*                               DETECTOR DATA                          *
*
* Configuration      : SYS$SYSROOT:[ALPHA.ARCHIVE.GAMMA]G244630016
* Acquisition date   : 23-JAN-2010 14:06:56 Detector SN#      :
* Detector ID        : GAM18 Sensitivity      : 5.000
* Geometry           : CAN Energy tolerance: 1.500
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 02:00:02.06 Half life ratio : 8.000
*****
*                               SAMPLE DATA                             *
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID
* Sample ID          : G244630016 Analyst initials: MXR1
* Batch Number       : 941639 Sample Quantity : 1.3328E+02 GRAM
* Recovery           : 1.00000 Carrier Weight : 0.00000
*****
*                               QC DATA                                *
*
* CALIB. DATE/TIME  : 23-APR-2009 11:59:23 MS Isotope      :
* MSD DPM           : 0.000 MSD Isotope      :
* LCS DPM           : 0.000 LCS Isotope      :
* LCSD DPM          : 0.000 LCSD Isotope     :
*****

```

## Combined Activity-MDA Report

### ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act Error | DLC<br>(pCi/GRAM ) | TPU       |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 3.760E+01               | 3.198E+00 | 2.293E-01          | 1.632E+00 |
| CD-109  | 3.097E+00               | 1.105E+00 | 6.254E-01          | 5.635E-01 |
| SN-126  | 3.044E-01               | 1.086E-01 | 7.461E-02          | 5.539E-02 |
| TL-208  | 6.972E-01               | 8.723E-02 | 2.397E-02          | 4.450E-02 |
| BI-211  | 5.252E+00               | 5.138E-01 | 1.336E-01          | 2.621E-01 |
| PB-212  | 2.190E+00               | 1.842E-01 | 4.014E-02          | 9.398E-02 |
| PO-212  | 2.190E+00               | 1.842E-01 | 4.014E-02          | 9.398E-02 |
| BI-214  | 1.441E+00               | 1.842E-01 | 4.919E-02          | 9.397E-02 |
| PB-214  | 1.827E+00               | 2.017E-01 | 4.654E-02          | 1.029E-01 |
| PO-214  | 1.827E+00               | 2.017E-01 | 4.654E-02          | 1.029E-01 |
| PO-216  | 2.190E+00               | 1.842E-01 | 4.014E-02          | 9.398E-02 |
| PO-218  | 1.827E+00               | 2.017E-01 | 4.654E-02          | 1.029E-01 |
| RA-224  | 6.440E+00               | 1.238E+00 | 4.562E-01          | 6.317E-01 |
| RA-226  | 1.441E+00               | 1.842E-01 | 4.919E-02          | 9.397E-02 |
| AC-228  | 1.886E+00               | 3.636E-01 | 9.652E-02          | 1.855E-01 |
| RA-228  | 1.886E+00               | 3.636E-01 | 9.652E-02          | 1.855E-01 |
| TH-228  | 2.223E+00               | 1.870E-01 | 4.075E-02          | 9.540E-02 |
| TH-230  | 1.441E+00               | 1.842E-01 | 4.919E-02          | 9.397E-02 |
| TH-232  | 1.886E+00               | 3.636E-01 | 9.652E-02          | 1.855E-01 |
| TH-234  | 1.410E+00               | 1.898E+00 | 1.293E+00          | 9.686E-01 |
| U-234   | 1.441E+00               | 1.842E-01 | 4.919E-02          | 9.397E-02 |
| NP-237  | 8.938E-01               | 3.665E-01 | 2.098E-01          | 1.870E-01 |
| U-238   | 1.410E+00               | 1.898E+00 | 1.293E+00          | 9.686E-01 |
| AM-243  | 4.710E-01               | 8.300E-02 | 4.717E-02          | 4.235E-02 |
| ANH-511 | 1.661E-01               | 5.965E-02 | 2.121E-02          | 3.043E-02 |

### ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L Act error | DLC<br>(pCi/GRAM ) | TPU                  |
|---------|-------------------------------------|---------------|--------------------|----------------------|
| BE-7    | -1.834E-01                          | 2.602E-01     | 2.150E-01          | 1.327E-01 NOT IDENT. |
| NA-22   | -4.635E-02                          | 3.956E-02     | 3.050E-02          | 2.019E-02 NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| NA-24   | -5.302E+05 | 6.236E+05 | 0.000E+00 | 3.182E+05 | SHORT HLIF |
| AL-26   | -3.027E-03 | 2.258E-02 | 1.850E-02 | 1.152E-02 | NOT IDENT. |
| TI-44   | 4.859E-01  | 6.464E-02 | 4.532E-02 | 3.298E-02 | FAIL ABUN  |
| SC-46   | -2.649E-02 | 3.215E-02 | 2.541E-02 | 1.640E-02 | FAIL ABUN  |
| V-48    | 4.924E-02  | 5.969E-02 | 5.246E-02 | 3.045E-02 | NOT IDENT. |
| CR-51   | 1.829E-01  | 3.174E-01 | 2.756E-01 | 1.619E-01 | NOT IDENT. |
| MN-52   | -2.373E-02 | 2.025E-01 | 1.662E-01 | 1.033E-01 | FAIL ABUN  |
| MN-54   | 2.468E-02  | 3.338E-02 | 2.942E-02 | 1.703E-02 | NOT IDENT. |
| CO-56   | -1.151E-02 | 3.195E-02 | 2.642E-02 | 1.630E-02 | FAIL ABUN  |
| CO-57   | 1.814E-02  | 2.407E-02 | 2.117E-02 | 1.228E-02 | NOT IDENT. |
| CO-58   | -1.146E-02 | 3.325E-02 | 2.770E-02 | 1.696E-02 | NOT IDENT. |
| FE-59   | -5.356E-04 | 7.828E-02 | 6.697E-02 | 3.994E-02 | NOT IDENT. |
| CO-60   | -1.357E-02 | 3.184E-02 | 2.565E-02 | 1.624E-02 | NOT IDENT. |
| ZN-65   | 4.258E-02  | 9.327E-02 | 7.075E-02 | 4.759E-02 | NOT IDENT. |
| GE-68   | 1.047E+00  | 1.043E+00 | 9.479E-01 | 5.323E-01 | NOT IDENT. |
| AS-73   | 1.155E+00  | 1.065E+00 | 1.001E+00 | 5.434E-01 | NOT IDENT. |
| AS-74   | 1.555E-03  | 7.593E-02 | 6.392E-02 | 3.874E-02 | NOT IDENT. |
| SE-75   | 1.976E-02  | 4.019E-02 | 3.284E-02 | 2.050E-02 | NOT IDENT. |
| BR-77   | -5.380E+00 | 8.305E+00 | 6.809E+00 | 4.237E+00 | FAIL ABUN  |
| SR-82   | -3.012E-01 | 3.747E-01 | 2.553E-01 | 1.912E-01 | NOT IDENT. |
| RB-83   | -3.663E-02 | 5.531E-02 | 4.531E-02 | 2.822E-02 | NOT IDENT. |
| RB-84   | 3.174E-02  | 5.993E-02 | 5.224E-02 | 3.058E-02 | NOT IDENT. |
| KR-85   | 1.874E+01  | 7.211E+00 | 6.136E+00 | 3.679E+00 | NOT IDENT. |
| SR-85   | 9.603E-02  | 3.696E-02 | 3.145E-02 | 1.886E-02 | NOT IDENT. |
| RB-86   | 2.946E-01  | 6.659E-01 | 5.867E-01 | 3.398E-01 | NOT IDENT. |
| Y-88    | 3.401E-03  | 2.568E-02 | 2.182E-02 | 1.310E-02 | NOT IDENT. |
| ZR-88   | -1.969E-02 | 2.599E-02 | 2.200E-02 | 1.326E-02 | NOT IDENT. |
| Y-91    | 3.076E+00  | 1.596E+01 | 1.368E+01 | 8.145E+00 | NOT IDENT. |
| NB-94   | 4.253E-02  | 2.901E-02 | 2.674E-02 | 1.480E-02 | NOT IDENT. |
| NB-95   | 5.894E-02  | 4.221E-02 | 3.414E-02 | 2.153E-02 | NOT IDENT. |
| NB-95M  | 1.028E-01  | 1.177E-01 | 9.367E-02 | 6.007E-02 | NOT IDENT. |
| ZR-95   | 7.002E-02  | 5.830E-02 | 5.315E-02 | 2.974E-02 | NOT IDENT. |
| NB-97   | -2.223E+03 | 7.294E+04 | 0.000E+00 | 3.721E+04 | SHORT HLIF |
| ZR-97   | 4.796E+06  | 1.773E+06 | 0.000E+00 | 9.044E+05 | SHORT HLIF |
| MO-99   | 2.440E+00  | 9.652E+00 | 8.417E+00 | 4.924E+00 | NOT IDENT. |
| TC-99M  | -7.028E+15 | 3.405E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | 5.426E-03  | 2.869E-02 | 2.528E-02 | 1.464E-02 | NOT IDENT. |
| RH-102  | -1.535E-02 | 2.390E-02 | 1.986E-02 | 1.220E-02 | NOT IDENT. |
| RU-103  | -1.274E-02 | 3.369E-02 | 2.824E-02 | 1.719E-02 | FAIL ABUN  |
| RH-106  | 2.162E-01  | 2.623E-01 | 2.295E-01 | 1.338E-01 | FAIL ABUN  |
| RU-106  | 2.162E-01  | 2.614E-01 | 2.295E-01 | 1.334E-01 | FAIL ABUN  |
| AG-108M | -8.795E-03 | 2.632E-02 | 2.247E-02 | 1.343E-02 | NOT IDENT. |
| AG-110M | 9.958E-04  | 2.702E-02 | 2.358E-02 | 1.379E-02 | NOT IDENT. |
| IN-111  | 2.798E-01  | 9.943E-01 | 7.686E-01 | 5.073E-01 | NOT IDENT. |
| IN-113M | -8.296E-03 | 3.777E-02 | 3.281E-02 | 1.927E-02 | NOT IDENT. |
| SN-113  | -8.296E-03 | 3.777E-02 | 3.281E-02 | 1.927E-02 | NOT IDENT. |
| IN-114M | 1.222E-01  | 1.748E-01 | 1.410E-01 | 8.917E-02 | NOT IDENT. |
| CD-115  | -1.081E+00 | 8.799E+00 | 7.371E+00 | 4.489E+00 | NOT IDENT. |
| SN-117M | 1.008E-03  | 4.687E-02 | 4.225E-02 | 2.391E-02 | NOT IDENT. |
| SB-122  | 1.548E+00  | 1.676E+00 | 1.489E+00 | 8.552E-01 | NOT IDENT. |
| I-123   | -3.616E+06 | 4.770E+06 | 0.000E+00 | 2.433E+06 | SHORT HLIF |
| TE-123M | -1.853E-02 | 2.443E-02 | 2.146E-02 | 1.247E-02 | NOT IDENT. |
| I-124   | 5.767E-01  | 6.314E-01 | 4.859E-01 | 3.221E-01 | FAIL ABUN  |
| SB-124  | 8.313E-03  | 5.933E-02 | 5.084E-02 | 3.027E-02 | FAIL ABUN  |
| SB-125  | 1.869E-02  | 7.447E-02 | 6.557E-02 | 3.800E-02 | FAIL ABUN  |
| TE-125M | -5.567E+00 | 8.862E+00 | 7.480E+00 | 4.521E+00 | NOT IDENT. |
| I-126   | 1.099E-01  | 1.493E-01 | 1.346E-01 | 7.617E-02 | NOT IDENT. |
| SB-126  | -4.253E-02 | 1.389E-01 | 1.006E-01 | 7.086E-02 | FAIL ABUN  |
| SB-127  | 1.031E+00  | 1.083E+00 | 9.838E-01 | 5.524E-01 | NOT IDENT. |
| XE-127  | -2.637E-02 | 4.024E-02 | 3.470E-02 | 2.053E-02 | NOT IDENT. |
| I-131   | -1.611E-02 | 9.174E-02 | 8.038E-02 | 4.681E-02 | NOT IDENT. |
| TE-132  | 1.812E-01  | 5.999E-01 | 5.292E-01 | 3.061E-01 | NOT IDENT. |
| BA-133  | -2.407E-03 | 4.081E-02 | 2.964E-02 | 2.082E-02 | FAIL ABUN  |
| I-133   | 2.056E+03  | 4.892E+03 | 0.000E+00 | 2.496E+03 | SHORT HLIF |
| CS-134  | 1.207E-01  | 6.131E-02 | 3.819E-02 | 3.128E-02 | FAIL ABUN  |
| CS-135  | 2.094E-01  | 1.522E-01 | 1.229E-01 | 7.767E-02 | NOT IDENT. |
| I-135   | 1.166E+15  | 4.557E+15 | 0.000E+00 | 2.325E+15 | SHORT HLIF |
| CS-136  | 2.292E-02  | 9.052E-02 | 7.910E-02 | 4.619E-02 | FAIL ABUN  |
| BA-137M | -3.205E-02 | 2.864E-02 | 2.328E-02 | 1.461E-02 | NOT IDENT. |
| CS-137  | -3.388E-02 | 3.027E-02 | 2.460E-02 | 1.544E-02 | NOT IDENT. |
| CE-139  | -2.653E-03 | 2.587E-02 | 2.315E-02 | 1.320E-02 | NOT IDENT. |
| BA-140  | 1.662E-01  | 2.116E-01 | 1.823E-01 | 1.080E-01 | NOT IDENT. |
| LA-140  | 8.145E-02  | 6.477E-02 | 5.667E-02 | 3.305E-02 | FAIL ABUN  |
| CE-141  | 4.422E-02  | 6.072E-02 | 5.208E-02 | 3.098E-02 | NOT IDENT. |
| CE-143  | 7.960E+02  | 2.279E+02 | 0.000E+00 | 1.163E+02 | SHORT HLIF |
| CE-144  | 6.668E-02  | 2.145E-01 | 1.645E-01 | 1.095E-01 | NOT IDENT. |
| PM-144  | 1.166E-02  | 2.915E-02 | 2.574E-02 | 1.487E-02 | NOT IDENT. |
| PR-144  | 7.899E-01  | 1.975E+00 | 1.744E+00 | 1.008E+00 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PM-146  | 4.857E-02  | 3.553E-02 | 3.259E-02 | 1.813E-02 | NOT IDENT. |
| ND-147  | -2.098E-03 | 4.518E-01 | 3.845E-01 | 2.305E-01 | FAIL ABUN  |
| PM-149  | -8.398E+00 | 7.961E+01 | 6.778E+01 | 4.062E+01 | NOT IDENT. |
| EU-152  | 2.680E-02  | 1.021E-01 | 6.403E-02 | 5.208E-02 | FAIL ABUN  |
| GD-153  | -8.808E-02 | 8.341E-02 | 6.148E-02 | 4.256E-02 | NOT IDENT. |
| EU-154  | -9.856E-02 | 1.086E-01 | 8.525E-02 | 5.540E-02 | NOT IDENT. |
| EU-155  | 1.620E-01  | 1.043E-01 | 9.464E-02 | 5.319E-02 | FAIL ABUN  |
| TB-160  | 1.004E-01  | 1.194E-01 | 1.058E-01 | 6.092E-02 | FAIL ABUN  |
| HO-166M | 1.951E-02  | 5.203E-02 | 4.582E-02 | 2.655E-02 | NOT IDENT. |
| TM-171  | -1.435E+01 | 3.450E+01 | 2.700E+01 | 1.760E+01 | NOT IDENT. |
| LU-176  | -1.431E-02 | 2.244E-02 | 1.779E-02 | 1.145E-02 | FAIL ABUN  |
| LU-177  | 4.122E+00  | 1.457E+00 | 9.877E-01 | 7.435E-01 | FAIL ABUN  |
| LU-177M | 2.902E-02  | 1.545E-01 | 1.188E-01 | 7.885E-02 | FAIL ABUN  |
| HF-181  | 1.478E-02  | 3.508E-02 | 3.081E-02 | 1.790E-02 | FAIL ABUN  |
| W-181   | 4.236E-01  | 5.663E-01 | 3.583E-01 | 2.889E-01 | FAIL ABUN  |
| TA-182  | 2.616E-02  | 1.652E-01 | 1.411E-01 | 8.430E-02 | NOT IDENT. |
| RE-183  | 1.279E-02  | 9.302E-02 | 8.400E-02 | 4.746E-02 | FAIL ABUN  |
| RE-184  | -2.528E-02 | 1.941E-01 | 1.671E-01 | 9.905E-02 | NOT IDENT. |
| OS-185  | -3.987E-02 | 3.450E-02 | 2.638E-02 | 1.760E-02 | NOT IDENT. |
| RE-188  | 1.596E-01  | 1.533E-01 | 1.424E-01 | 7.824E-02 | NOT IDENT. |
| W-188   | -1.466E+00 | 7.089E+00 | 5.227E+00 | 3.617E+00 | FAIL ABUN  |
| IR-192  | -8.151E-03 | 2.979E-02 | 2.490E-02 | 1.520E-02 | FAIL ABUN  |
| AU-195  | 2.898E-01  | 2.085E-01 | 1.895E-01 | 1.064E-01 | FAIL ABUN  |
| TL-200  | 2.982E+02  | 3.605E+02 | 0.000E+00 | 1.839E+02 | SHORT HLIF |
| TL-201  | 1.492E+00  | 6.029E+00 | 5.449E+00 | 3.076E+00 | NOT IDENT. |
| TL-202  | 5.654E-02  | 5.953E-02 | 5.383E-02 | 3.037E-02 | NOT IDENT. |
| HG-203  | 2.704E-02  | 3.954E-02 | 3.082E-02 | 2.017E-02 | NOT IDENT. |
| BI-207  | 4.691E-02  | 4.404E-02 | 4.016E-02 | 2.247E-02 | FAIL ABUN  |
| TL-207  | -4.799E-01 | 6.378E-01 | 4.426E-01 | 3.254E-01 | FAIL ABUN  |
| PO-209  | 1.031E+00  | 6.407E+00 | 5.453E+00 | 3.269E+00 | NOT IDENT. |
| BI-210  | -3.113E+00 | 5.335E+00 | 4.801E+00 | 2.722E+00 | NOT IDENT. |
| PB-210  | -3.113E+00 | 5.335E+00 | 4.801E+00 | 2.722E+00 | NOT IDENT. |
| PO-210  | -3.113E+00 | 5.333E+00 | 4.801E+00 | 2.721E+00 | NOT IDENT. |
| PB-211  | -3.289E-01 | 8.579E-01 | 6.167E-01 | 4.377E-01 | NOT IDENT. |
| BI-212  | 1.337E+00  | 4.392E-01 | 2.948E-01 | 2.241E-01 | FAIL ABUN  |
| PO-215  | -4.799E-01 | 6.378E-01 | 4.426E-01 | 3.254E-01 | FAIL ABUN  |
| RN-219  | -1.714E-01 | 3.292E-01 | 2.803E-01 | 1.680E-01 | FAIL ABUN  |
| RN-220  | -8.043E+00 | 2.191E+01 | 1.818E+01 | 1.118E+01 | NOT IDENT. |
| RA-223  | -4.799E-01 | 6.378E-01 | 4.426E-01 | 3.254E-01 | FAIL ABUN  |
| AC-227  | 9.676E-02  | 3.326E-01 | 2.906E-01 | 1.697E-01 | FAIL ABUN  |
| TH-227  | 9.676E-02  | 3.327E-01 | 2.906E-01 | 1.698E-01 | FAIL ABUN  |
| TH-229  | 1.391E-01  | 4.390E-01 | 3.930E-01 | 2.240E-01 | FAIL ABUN  |
| PA-231  | 8.790E-02  | 1.340E+00 | 1.111E+00 | 6.838E-01 | FAIL ABUN  |
| TH-231  | -4.799E-01 | 6.378E-01 | 4.426E-01 | 3.254E-01 | FAIL ABUN  |
| U-231   | -2.525E-01 | 1.080E+00 | 8.332E-01 | 5.512E-01 | FAIL ABUN  |
| PA-233  | 6.729E-03  | 5.493E-02 | 4.686E-02 | 2.803E-02 | FAIL ABUN  |
| PA-234  | 9.888E-02  | 2.525E-01 | 2.165E-01 | 1.288E-01 | FAIL ABUN  |
| PA-234M | 3.373E+00  | 4.012E+00 | 3.432E+00 | 2.047E+00 | NOT IDENT. |
| U-235   | 2.332E-02  | 2.052E-01 | 1.725E-01 | 1.047E-01 | FAIL ABUN  |
| NP-236  | -8.915E-02 | 6.754E-02 | 5.802E-02 | 3.446E-02 | NOT IDENT. |
| NP-239  | 1.275E-02  | 1.753E-01 | 1.511E-01 | 8.944E-02 | FAIL ABUN  |
| AM-241  | -1.816E-02 | 1.866E-01 | 1.605E-01 | 9.519E-02 | NOT IDENT. |
| CM-243  | -3.546E-02 | 9.348E-02 | 8.005E-02 | 4.769E-02 | FAIL ABUN  |
| AM-246  | 9.659E-02  | 1.191E-01 | 1.071E-01 | 6.077E-02 | NOT IDENT. |
| CM-247  | -3.484E-03 | 3.130E-02 | 2.571E-02 | 1.597E-02 | FAIL ABUN  |
| CF-249  | 1.735E-02  | 3.405E-02 | 3.054E-02 | 1.737E-02 | NOT IDENT. |
| CF-251  | 6.413E-02  | 1.097E-01 | 9.974E-02 | 5.597E-02 | NOT IDENT. |

```

*****
*                                     *
*               GEL Laboratories LLC   *
*               2040 SAVAGE ROAD      *
*               CHARLESTON, SC 29417  *
*               GAMMA SPECTROSCOPY BACKGROUND REPORT *
*****

```

| ENERGY | MDA COUNTS |
|--------|------------|
| 46.50  | 388.0865   |
| 46.50  | 388.0865   |
| 46.50  | 388.0865   |
| 48.70  | 347.8025   |
| 49.72  | 340.2534   |
| 51.35  | 399.3710   |
| 52.39  | 375.5813   |
| 52.97  | 349.1396   |
| 53.15  | 343.9199   |
| 53.44  | 335.1911   |
| 54.07  | 343.2935   |
| 56.28  | 394.9018   |
| 56.28  | 394.9062   |
| 57.37  | 0.0000     |
| 57.53  | 393.0020   |
| 57.53  | 393.0042   |
| 57.60  | 377.3763   |
| 57.98  | 398.2686   |
| 57.98  | 398.2686   |
| 59.32  | 423.2475   |
| 59.32  | 423.2475   |
| 59.40  | 423.3667   |
| 59.54  | 423.5749   |
| 59.72  | 423.8420   |
| 60.01  | 426.7910   |
| 61.10  | 442.4557   |
| 61.14  | 442.5169   |
| 61.30  | 442.7609   |
| 63.00  | 475.0225   |
| 63.29  | 476.9016   |
| 63.29  | 476.9016   |
| 63.58  | 477.3657   |
| 64.28  | 519.6593   |
| 65.12  | 495.4782   |
| 65.20  | 495.6090   |
| 65.20  | 495.6090   |
| 66.05  | 461.2888   |
| 66.72  | 478.0355   |
| 66.83  | 499.6852   |
| 66.91  | 499.8130   |
| 67.20  | 483.0800   |
| 67.20  | 483.0800   |
| 67.75  | 501.1656   |
| 67.85  | 505.6375   |
| 68.90  | 505.8881   |
| 68.90  | 505.8881   |
| 69.30  | 529.6177   |
| 69.67  | 504.2330   |
| 70.82  | 477.0415   |
| 70.82  | 477.0415   |
| 70.83  | 477.0565   |
| 72.80  | 482.3845   |
| 72.87  | 482.4879   |
| 72.87  | 482.4879   |
| 74.67  | 485.1116   |
| 74.81  | 485.3147   |
| 74.81  | 485.3147   |
| 74.81  | 485.3147   |
| 74.81  | 485.3147   |
| 74.81  | 485.3147   |
| 74.81  | 485.3147   |
| 74.97  | 485.5456   |
| 75.28  | 485.9946   |
| 75.70  | 486.6001   |
| 77.11  | 488.6183   |
| 77.11  | 488.6183   |

|        |          |
|--------|----------|
| 77.11  | 488.6183 |
| 77.11  | 488.6183 |
| 77.11  | 488.6183 |
| 77.11  | 488.6183 |
| 77.11  | 488.6183 |
| 78.38  | 455.3214 |
| 79.62  | 448.0140 |
| 79.80  | 458.6679 |
| 79.80  | 458.6679 |
| 80.11  | 459.0721 |
| 80.18  | 459.1637 |
| 80.30  | 483.1795 |
| 80.30  | 483.1795 |
| 80.57  | 483.5503 |
| 81.00  | 548.3888 |
| 81.07  | 548.4980 |
| 81.07  | 548.4980 |
| 81.07  | 548.4980 |
| 81.07  | 548.4980 |
| 82.60  | 543.9428 |
| 83.37  | 466.2819 |
| 83.78  | 468.3199 |
| 83.78  | 468.3199 |
| 83.78  | 468.3199 |
| 83.78  | 468.3199 |
| 84.21  | 458.3193 |
| 84.90  | 469.7554 |
| 85.43  | 494.6339 |
| 86.29  | 595.8505 |
| 86.50  | 596.1863 |
| 86.54  | 596.2493 |
| 86.59  | 596.3303 |
| 86.72  | 629.9311 |
| 86.79  | 630.0450 |
| 86.94  | 630.3015 |
| 87.30  | 671.9565 |
| 87.30  | 671.9565 |
| 87.30  | 671.9565 |
| 87.30  | 671.9565 |
| 87.30  | 671.9565 |
| 87.30  | 671.9565 |
| 87.57  | 672.4388 |
| 87.88  | 462.8722 |
| 88.03  | 463.0577 |
| 88.36  | 463.4613 |
| 88.47  | 463.5958 |
| 89.95  | 465.4003 |
| 91.11  | 385.4200 |
| 92.29  | 386.5919 |
| 92.38  | 386.6819 |
| 92.38  | 386.6819 |
| 93.35  | 387.6375 |
| 94.00  | 388.2771 |
| 94.67  | 361.0352 |
| 94.67  | 361.0405 |
| 94.90  | 361.2485 |
| 94.90  | 361.2485 |
| 94.90  | 361.2485 |
| 94.90  | 361.2485 |
| 95.87  | 416.5213 |
| 95.87  | 416.5213 |
| 96.73  | 440.7776 |
| 97.43  | 449.3364 |
| 98.44  | 366.6148 |
| 98.44  | 366.6148 |
| 98.88  | 360.1190 |
| 99.55  | 348.1588 |
| 99.55  | 348.1588 |
| 99.86  | 376.6699 |
| 100.00 | 376.7981 |
| 100.10 | 376.8915 |
| 103.18 | 485.1281 |
| 103.76 | 441.4355 |
| 105.00 | 373.8721 |
| 105.31 | 387.9219 |
| 108.00 | 438.3181 |
| 109.28 | 448.1498 |

|        |          |
|--------|----------|
| 111.00 | 419.8206 |
| 111.00 | 419.8206 |
| 111.76 | 442.0412 |
| 112.95 | 420.5600 |
| 115.19 | 393.3663 |
| 116.30 | 369.3286 |
| 117.00 | 388.3788 |
| 117.00 | 388.3788 |
| 117.66 | 458.6529 |
| 121.11 | 354.4625 |
| 121.62 | 360.3332 |
| 121.78 | 360.4533 |
| 122.06 | 389.2527 |
| 122.32 | 389.4616 |
| 122.32 | 389.4616 |
| 122.32 | 389.4616 |
| 122.32 | 389.4616 |
| 123.07 | 450.6722 |
| 127.23 | 393.3913 |
| 129.76 | 440.0627 |
| 131.20 | 408.2753 |
| 133.02 | 379.3820 |
| 133.54 | 406.7684 |
| 135.34 | 424.5605 |
| 136.00 | 429.6183 |
| 136.25 | 425.2988 |
| 136.48 | 411.9068 |
| 140.51 | 443.5607 |
| 140.51 | 0.0000   |
| 142.18 | 441.5103 |
| 142.65 | 462.5016 |
| 143.76 | 455.4168 |
| 144.24 | 423.6683 |
| 144.24 | 423.6683 |
| 144.24 | 423.6683 |
| 144.24 | 423.6683 |
| 145.22 | 423.2764 |
| 145.44 | 423.4485 |
| 147.16 | 481.3248 |
| 152.43 | 468.3825 |
| 152.70 | 434.7986 |
| 153.22 | 432.2802 |
| 154.21 | 415.4950 |
| 154.21 | 415.4950 |
| 154.21 | 415.4950 |
| 154.21 | 415.4950 |
| 155.03 | 416.9659 |
| 156.02 | 416.8005 |
| 158.56 | 397.4236 |
| 159.00 | 0.0000   |
| 159.00 | 422.4658 |
| 160.31 | 426.9461 |
| 161.27 | 425.8630 |
| 162.32 | 388.3963 |
| 162.64 | 383.2675 |
| 163.35 | 358.7928 |
| 163.89 | 370.7000 |
| 165.85 | 411.2387 |
| 167.43 | 397.0682 |
| 171.28 | 393.2356 |
| 171.86 | 387.2822 |
| 172.10 | 398.2667 |
| 176.55 | 377.4362 |
| 176.60 | 377.4647 |
| 181.06 | 423.4986 |
| 184.41 | 422.7224 |
| 185.71 | 434.4367 |
| 186.00 | 434.6272 |
| 190.27 | 365.5256 |
| 192.34 | 414.5190 |
| 193.63 | 380.7724 |
| 197.04 | 387.3451 |
| 198.01 | 369.1001 |
| 198.60 | 372.2319 |
| 200.40 | 392.9800 |
| 201.83 | 419.2716 |
| 202.84 | 403.7918 |
| 205.31 | 332.5020 |



|        |          |
|--------|----------|
| 208.36 | 410.1462 |
| 208.81 | 391.9006 |
| 209.75 | 392.4054 |
| 209.75 | 392.4054 |
| 210.97 | 330.5154 |
| 215.65 | 367.3686 |
| 216.55 | 356.5236 |
| 218.09 | 329.2563 |
| 222.10 | 373.7119 |
| 223.80 | 354.1107 |
| 226.40 | 346.5199 |
| 227.00 | 337.9962 |
| 227.08 | 338.0305 |
| 227.20 | 348.8316 |
| 228.16 | 349.2620 |
| 228.18 | 349.2702 |
| 228.18 | 349.2702 |
| 231.56 | 0.0000   |
| 235.69 | 349.2458 |
| 236.00 | 360.4471 |
| 236.00 | 360.4471 |
| 238.63 | 322.1733 |
| 238.63 | 322.1733 |
| 238.63 | 322.1733 |
| 238.63 | 322.1733 |
| 239.00 | 322.3196 |
| 240.98 | 323.1056 |
| 241.98 | 323.5023 |
| 241.98 | 323.5023 |
| 241.98 | 323.5023 |
| 244.69 | 316.3818 |
| 245.39 | 292.6615 |
| 247.94 | 271.1035 |
| 248.90 | 279.9039 |
| 249.79 | 301.4465 |
| 252.40 | 284.2397 |
| 252.85 | 283.3818 |
| 252.85 | 283.3818 |
| 254.15 | 0.0000   |
| 256.20 | 298.6742 |
| 256.20 | 298.6742 |
| 260.50 | 311.3602 |
| 260.90 | 316.5949 |
| 262.80 | 311.1665 |
| 264.65 | 267.1792 |
| 268.24 | 267.7203 |
| 268.79 | 269.5309 |
| 269.46 | 281.2441 |
| 269.46 | 281.2441 |
| 269.46 | 281.2441 |
| 269.46 | 281.2441 |
| 271.23 | 291.1420 |
| 273.65 | 272.6488 |
| 276.40 | 287.9813 |
| 277.35 | 259.2468 |
| 277.60 | 259.3155 |
| 277.60 | 259.3155 |
| 278.00 | 235.7699 |
| 278.60 | 239.2488 |
| 279.20 | 270.9915 |
| 279.53 | 271.0870 |
| 280.46 | 281.3545 |
| 281.68 | 290.0609 |
| 283.67 | 261.3304 |
| 284.30 | 275.8352 |
| 285.00 | 276.0447 |
| 285.90 | 283.6370 |
| 286.10 | 283.6949 |
| 286.10 | 283.6949 |
| 287.40 | 264.1740 |
| 288.45 | 0.0000   |
| 290.67 | 272.6631 |
| 290.80 | 272.7026 |
| 291.72 | 299.9274 |
| 293.26 | 0.0000   |
| 293.70 | 253.2715 |
| 295.21 | 228.3069 |
| 295.21 | 228.3069 |

|        |          |
|--------|----------|
| 295.21 | 228.3069 |
| 295.96 | 228.4849 |
| 296.50 | 198.9783 |
| 297.23 | 199.1275 |
| 298.57 | 199.4058 |
| 299.80 | 199.6582 |
| 299.80 | 199.6582 |
| 300.09 | 208.2171 |
| 300.09 | 208.2171 |
| 300.09 | 208.2171 |
| 300.09 | 208.2171 |
| 300.12 | 208.2231 |
| 301.29 | 260.3764 |
| 302.84 | 240.3369 |
| 303.76 | 257.6253 |
| 303.91 | 257.6622 |
| 304.40 | 266.3274 |
| 304.40 | 266.3274 |
| 304.84 | 266.4492 |
| 306.84 | 272.6096 |
| 308.46 | 232.4962 |
| 311.98 | 240.8438 |
| 316.51 | 249.4875 |
| 318.01 | 258.5107 |
| 319.02 | 230.6157 |
| 319.41 | 224.2047 |
| 320.08 | 226.5177 |
| 323.87 | 250.6359 |
| 323.87 | 250.6359 |
| 323.87 | 250.6359 |
| 323.87 | 250.6359 |
| 325.23 | 235.2777 |
| 328.77 | 248.3197 |
| 333.44 | 250.3039 |
| 334.20 | 269.5237 |
| 334.20 | 269.5237 |
| 334.30 | 269.5500 |
| 338.28 | 217.2543 |
| 338.28 | 217.2543 |
| 338.28 | 217.2543 |
| 338.28 | 217.2543 |
| 338.32 | 217.2633 |
| 338.32 | 217.2633 |
| 338.32 | 217.2633 |
| 340.50 | 203.3389 |
| 340.57 | 203.3529 |
| 344.27 | 174.4768 |
| 345.85 | 171.7674 |
| 350.59 | 0.0000   |
| 351.07 | 196.3914 |
| 351.92 | 196.5444 |
| 351.92 | 196.5444 |
| 351.92 | 196.5444 |
| 355.39 | 0.0000   |
| 356.01 | 206.2335 |
| 364.48 | 204.1752 |
| 366.43 | 200.9057 |
| 367.43 | 197.4587 |
| 367.94 | 0.0000   |
| 369.80 | 199.6812 |
| 374.96 | 181.4272 |
| 383.85 | 203.9300 |
| 387.95 | 216.6148 |
| 388.63 | 210.2821 |
| 391.69 | 227.4599 |
| 391.69 | 227.4599 |
| 392.90 | 236.0182 |
| 398.62 | 194.3532 |
| 400.65 | 218.8896 |
| 401.10 | 224.5636 |
| 401.81 | 206.0450 |
| 402.60 | 199.4122 |
| 404.84 | 194.7123 |
| 410.95 | 173.7514 |
| 411.60 | 153.4819 |
| 413.65 | 172.5553 |
| 414.70 | 197.8184 |
| 415.30 | 195.2205 |

|        |          |
|--------|----------|
| 415.76 | 194.4495 |
| 417.63 | 0.0000   |
| 418.52 | 207.8613 |
| 423.70 | 192.5774 |
| 427.08 | 201.6407 |
| 427.89 | 178.9259 |
| 432.53 | 175.7411 |
| 433.93 | 183.5789 |
| 439.47 | 182.4297 |
| 439.56 | 182.4413 |
| 439.89 | 177.6854 |
| 443.98 | 184.9734 |
| 444.90 | 181.2437 |
| 445.03 | 186.0829 |
| 445.03 | 186.0829 |
| 445.03 | 186.0829 |
| 445.03 | 186.0829 |
| 453.90 | 149.4563 |
| 463.38 | 174.2668 |
| 468.07 | 179.7571 |
| 473.00 | 157.4297 |
| 475.06 | 182.2923 |
| 475.35 | 177.4028 |
| 476.78 | 182.5136 |
| 477.59 | 178.6690 |
| 477.96 | 178.7154 |
| 482.03 | 162.3924 |
| 484.57 | 164.6626 |
| 487.03 | 160.9697 |
| 490.36 | 0.0000   |
| 492.35 | 155.5753 |
| 497.08 | 173.0866 |
| 507.63 | 0.0000   |
| 510.53 | 0.0000   |
| 510.84 | 186.8112 |
| 511.00 | 186.8304 |
| 511.85 | 186.9365 |
| 511.85 | 186.9365 |
| 513.99 | 166.9618 |
| 513.99 | 166.9618 |
| 520.41 | 160.5536 |
| 520.65 | 160.5806 |
| 527.90 | 149.0833 |
| 528.96 | 0.0000   |
| 529.64 | 143.1172 |
| 529.87 | 0.0000   |
| 531.02 | 148.3595 |
| 537.32 | 129.4422 |
| 543.00 | 158.7749 |
| 546.56 | 0.0000   |
| 549.76 | 163.5933 |
| 552.65 | 157.6629 |
| 555.20 | 137.1337 |
| 563.23 | 143.0339 |
| 563.90 | 137.8685 |
| 568.70 | 141.4171 |
| 569.32 | 145.6615 |
| 569.50 | 148.8192 |
| 569.67 | 148.8365 |
| 573.80 | 150.6085 |
| 574.00 | 155.2966 |
| 574.64 | 153.7517 |
| 578.91 | 144.0439 |
| 579.30 | 0.0000   |
| 583.14 | 141.5898 |
| 585.48 | 134.0267 |
| 591.81 | 136.8878 |
| 592.07 | 142.3390 |
| 593.00 | 138.1631 |
| 595.88 | 151.1731 |
| 600.56 | 148.2612 |
| 602.52 | 0.0000   |
| 602.71 | 137.1656 |
| 602.71 | 137.1656 |
| 603.60 | 144.3636 |
| 604.41 | 151.5654 |
| 604.70 | 167.6402 |
| 609.31 | 169.5144 |

|        |          |
|--------|----------|
| 609.31 | 169.5144 |
| 609.31 | 169.5144 |
| 609.31 | 169.5144 |
| 610.33 | 144.9240 |
| 612.46 | 116.4372 |
| 614.37 | 136.2904 |
| 618.01 | 156.3387 |
| 621.84 | 124.2595 |
| 621.84 | 124.2595 |
| 631.29 | 144.4719 |
| 633.02 | 148.9574 |
| 633.10 | 154.4007 |
| 634.78 | 126.2491 |
| 635.90 | 131.7707 |
| 636.97 | 131.8504 |
| 645.85 | 142.3462 |
| 646.12 | 144.5587 |
| 656.30 | 137.6465 |
| 657.75 | 132.2432 |
| 657.90 | 0.0000   |
| 661.65 | 163.8113 |
| 661.65 | 163.8113 |
| 664.57 | 0.0000   |
| 666.33 | 141.1527 |
| 666.33 | 141.1527 |
| 675.00 | 132.5322 |
| 677.61 | 128.0723 |
| 685.20 | 116.4678 |
| 692.80 | 147.7907 |
| 695.00 | 132.0383 |
| 696.49 | 152.7561 |
| 696.49 | 152.7561 |
| 697.00 | 162.1699 |
| 697.49 | 172.5262 |
| 698.33 | 181.0396 |
| 698.50 | 181.0553 |
| 699.00 | 190.4860 |
| 702.63 | 138.1923 |
| 706.10 | 170.4534 |
| 706.58 | 0.0000   |
| 706.67 | 178.0411 |
| 709.31 | 166.9566 |
| 711.68 | 147.3228 |
| 713.82 | 161.6624 |
| 717.42 | 139.2241 |
| 720.50 | 149.5995 |
| 721.93 | 0.0000   |
| 722.20 | 159.4893 |
| 722.78 | 159.5371 |
| 722.78 | 159.5371 |
| 722.89 | 159.5439 |
| 722.95 | 159.5474 |
| 723.30 | 154.6931 |
| 724.18 | 146.6141 |
| 727.18 | 136.0903 |
| 733.00 | 119.4372 |
| 735.90 | 145.2739 |
| 739.58 | 131.1718 |
| 742.81 | 137.1319 |
| 744.21 | 134.3433 |
| 747.13 | 118.1978 |
| 751.79 | 152.1689 |
| 752.31 | 139.6840 |
| 753.82 | 125.3239 |
| 755.35 | 120.5928 |
| 756.15 | 110.0223 |
| 756.87 | 116.8175 |
| 763.93 | 139.4883 |
| 765.79 | 137.9493 |
| 766.42 | 156.2776 |
| 766.84 | 146.3301 |
| 776.49 | 146.9930 |
| 778.00 | 157.9592 |
| 778.57 | 152.1501 |
| 778.89 | 151.1969 |
| 783.80 | 123.1879 |
| 785.46 | 117.4121 |
| 792.07 | 151.4167 |

|         |          |
|---------|----------|
| 795.84  | 105.1910 |
| 796.30  | 105.2128 |
| 798.80  | 116.4423 |
| 801.93  | 150.4079 |
| 805.60  | 119.4811 |
| 810.29  | 136.5541 |
| 810.76  | 130.6465 |
| 815.85  | 107.1343 |
| 817.79  | 120.1359 |
| 818.51  | 124.1455 |
| 819.60  | 113.2764 |
| 826.30  | 123.5787 |
| 828.27  | 0.0000   |
| 831.60  | 140.8480 |
| 831.96  | 135.8755 |
| 834.83  | 139.0452 |
| 836.80  | 0.0000   |
| 846.75  | 116.6396 |
| 848.13  | 126.7716 |
| 856.28  | 0.0000   |
| 856.80  | 103.8721 |
| 860.37  | 102.2973 |
| 867.32  | 100.8587 |
| 867.82  | 102.6203 |
| 871.10  | 105.6652 |
| 873.19  | 107.7921 |
| 874.81  | 120.0766 |
| 875.33  | 0.0000   |
| 876.40  | 110.9914 |
| 879.36  | 101.9531 |
| 880.27  | 97.9121  |
| 880.51  | 103.0220 |
| 881.50  | 107.1469 |
| 883.24  | 113.3509 |
| 884.67  | 109.3315 |
| 889.25  | 115.6829 |
| 896.60  | 113.9787 |
| 898.02  | 118.1562 |
| 899.00  | 131.5651 |
| 903.28  | 125.3222 |
| 911.07  | 126.0160 |
| 911.07  | 126.0160 |
| 911.07  | 126.0160 |
| 919.63  | 117.4676 |
| 920.93  | 107.4738 |
| 925.00  | 93.4845  |
| 925.24  | 93.4937  |
| 926.50  | 98.5301  |
| 935.52  | 110.5655 |
| 937.48  | 105.5814 |
| 944.10  | 110.9407 |
| 946.00  | 100.5488 |
| 949.00  | 95.4249  |
| 962.29  | 113.8359 |
| 964.01  | 113.9128 |
| 966.15  | 114.0073 |
| 968.20  | 114.0952 |
| 969.11  | 112.3253 |
| 969.11  | 112.3253 |
| 969.11  | 112.3253 |
| 977.42  | 117.0439 |
| 980.50  | 113.5721 |
| 983.50  | 91.3855  |
| 989.30  | 94.7816  |
| 996.32  | 131.3356 |
| 1001.03 | 91.9909  |
| 1001.68 | 97.3614  |
| 1004.76 | 121.0396 |
| 1021.30 | 0.0000   |
| 1024.50 | 0.0000   |
| 1034.80 | 80.1426  |
| 1036.00 | 90.0850  |
| 1037.82 | 98.5062  |
| 1038.57 | 99.4616  |
| 1038.76 | 0.0000   |
| 1045.16 | 97.8369  |
| 1046.59 | 114.6690 |
| 1048.07 | 105.4015 |

|         |          |
|---------|----------|
| 1050.47 | 104.5586 |
| 1050.47 | 104.5586 |
| 1062.04 | 98.4265  |
| 1063.62 | 92.8539  |
| 1076.63 | 102.7045 |
| 1077.35 | 92.3604  |
| 1078.86 | 95.2405  |
| 1085.78 | 105.8672 |
| 1099.22 | 115.8558 |
| 1112.02 | 100.1477 |
| 1112.84 | 103.5162 |
| 1115.52 | 132.0203 |
| 1120.29 | 110.9509 |
| 1120.29 | 110.9509 |
| 1120.29 | 110.9509 |
| 1120.29 | 110.9509 |
| 1120.51 | 110.9590 |
| 1121.28 | 110.9873 |
| 1124.00 | 0.0000   |
| 1129.67 | 120.8979 |
| 1131.51 | 0.0000   |
| 1147.95 | 0.0000   |
| 1167.94 | 107.8603 |
| 1173.22 | 117.7800 |
| 1175.09 | 110.0599 |
| 1177.93 | 116.0117 |
| 1189.05 | 130.1240 |
| 1204.90 | 124.8827 |
| 1205.75 | 0.0000   |
| 1213.00 | 135.0648 |
| 1221.42 | 127.5108 |
| 1230.97 | 130.1239 |
| 1235.34 | 163.3124 |
| 1236.41 | 0.0000   |
| 1238.25 | 146.0669 |
| 1246.25 | 127.0617 |
| 1260.41 | 0.0000   |
| 1271.85 | 96.3783  |
| 1274.45 | 118.5556 |
| 1274.54 | 126.5977 |
| 1291.56 | 85.8390  |
| 1298.22 | 0.0000   |
| 1312.09 | 76.2033  |
| 1325.50 | 67.3213  |
| 1325.50 | 67.3213  |
| 1332.49 | 71.5479  |
| 1333.61 | 64.4128  |
| 1360.21 | 46.3623  |
| 1362.66 | 0.0000   |
| 1365.15 | 60.8726  |
| 1368.21 | 72.2827  |
| 1368.53 | 0.0000   |
| 1376.25 | 63.3926  |
| 1384.27 | 45.3827  |
| 1394.10 | 59.2902  |
| 1395.20 | 68.6725  |
| 1407.95 | 45.6818  |
| 1434.06 | 57.8409  |
| 1436.60 | 52.6193  |
| 1457.56 | 0.0000   |
| 1460.81 | 49.7851  |
| 1489.15 | 50.1604  |
| 1509.49 | 52.5735  |
| 1596.49 | 20.4740  |
| 1620.62 | 32.8244  |
| 1678.03 | 0.0000   |
| 1691.02 | 28.4725  |
| 1691.02 | 28.4725  |
| 1706.46 | 0.0000   |
| 1750.46 | 0.0000   |
| 1764.49 | 15.9766  |
| 1764.49 | 15.9766  |
| 1764.49 | 15.9766  |
| 1764.49 | 15.9766  |
| 1770.23 | 23.1069  |
| 1771.40 | 24.8912  |
| 1791.20 | 0.0000   |
| 1808.65 | 24.2021  |

1836.01

23.3334

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G244630016

|                             |            |      |
|-----------------------------|------------|------|
| Total Uranium Activity      | 4.2069E+00 | ug/g |
| Total Uranium Counting Unc. | 5.6485E+00 | ug/g |
| Total Uranium Tpu           | 2.8819E-06 | ug/g |
| Total Uranium Mda           | 3.8464E+00 | ug/g |



```

*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON ,SC 29417               *
*               GROSS GAMMA REPORT                 *
*
*****
*
*  BATCH ID      : 941639                      SAMPLE ID : G244630016
*  ANALYST       : MXR1                        DETECTOR  : GAM18
*  SAMPLE DATE   : 8-JAN-2010 12:00:00.00    COUNT TIME : 0 02:00:00.00
*  ANALYSIS DATE: 23-JAN-2010 14:06:56.22    SAMPLE ALQT: 133.280 GRAM
*
*****

```

```

GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.223E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.525E+00
GROSS GAMMA MDA     (pCi/GRAM ) : 2.929E+00
GROSS GAMMA DLC     (pCi/GRAM ) : 1.425E+00

```

VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 16:09:50.74

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202015449.CNF;1
Sample date        : 15-JAN-2010 00:00:00 Acquisition date : 23-JAN-2010 14:07:28
Sample ID          : G1202015449      Sample quantity   : 1.46160E+02 GRAM
Detector name      : GAM04            Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00    Elapsed real time: 0 02:00:00.43  0.0%
Energy tolerance   : 1.50000 keV      Analyst Initials : MXR1
Abundance limit    : 75.00000         Sensitivity      : 5.00000
Batch ID           : 941639           Detector SN#     :
Matrix Spike ID    :                  LCS ID           : 1032-A
*****

```

| Pk | It | Energy  | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err  | Fit |
|----|----|---------|------|-------|------|---------|------|----|----------|-------|-----|
| 1  | 0  | 93.10*  | 0    | 95    | 1.37 | 186.23  | 181  | 11 | 2.94E-05 | ***** |     |
| 2  | 0  | 510.86* | 24   | 38    | 3.12 | 1021.82 | 1015 | 17 | 3.39E-03 | 82.4  |     |
| 3  | 0  | 663.35  | 14   | 35    | 1.25 | 1326.79 | 1320 | 14 | 1.94E-03 | 93.5  |     |

Flag: "\*" = Peak area was modified by background subtraction

## VMS Nuclide Identification Report V3.1 Generated 23-JAN-2010 16:09:53

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202015449.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 15-JAN-2010 00:00:00 Acquisition date : 23-JAN-2010 14:07:28
Sample ID        : G1202015449 Sample quantity : 146.16 GRAM
Sample type      : SOLID Sample geometry :
Detector name    : GAMMA4 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:00.43 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 0.00 %
Efficiency type  : Empirical Efficiencies at : Peak Energy
Abundance limit  : 75.00 WTM error limit : 3.00

```

## Full Combined Activity-MDA Report

## ---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|------------|-----------|----------------|-----------|---------|
| ANH-511 | +         | 511.00       | *            | 2.294E-02  | 3.784E-02 | 2.057E-02      | 1.151E-03 | 1.115   |

## ---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|------------|-----------|---------------------|-----------|---------|
| BE-7    |           | 477.59       | *            | 1.332E-01  | 1.324E-01 | 2.458E-01           | 1.628E-02 | 0.542   |
| NA-22   |           | 1274.54      | *            | 5.903E-03  | 1.867E-02 | 3.328E-02           | 2.176E-03 | 0.177   |
| NA-24   |           | 1368.53      | *            | 7.928E-05  | 1.867E-02 | Half-Life too short |           |         |
| AL-26   |           | 1129.67      |              | 2.227E-01  | 6.560E-01 | 1.145E+00           | 7.389E-02 | 0.194   |
|         |           | 1808.65      | *            | 2.324E-03  | 1.476E-02 | 2.540E-02           | 1.506E-03 | 0.092   |
| K-40    |           | 1460.81      | *            | -6.241E-02 | 2.270E-01 | 3.755E-01           | 2.669E-02 | -0.166  |
| TI-44   |           | 67.85        |              | -4.421E-03 | 2.060E-02 | 3.402E-02           | 3.956E-03 | -0.130  |
|         |           | 78.38        | *            | -5.407E-03 | 1.444E-02 | 2.260E-02           | 2.598E-03 | -0.239  |
| SC-46   |           | 889.25       | *            | -2.380E-04 | 1.293E-02 | 2.119E-02           | 1.714E-03 | -0.011  |
|         |           | 1120.51      |              | 1.239E-02  | 1.792E-02 | 3.344E-02           | 2.190E-03 | 0.371   |
| V-48    |           | 944.10       |              | 8.246E-02  | 3.370E-01 | 5.761E-01           | 4.605E-02 | 0.143   |
|         |           | 983.50       | *            | -4.018E-03 | 2.007E-02 | 3.111E-02           | 2.410E-03 | -0.129  |
|         |           | 1312.09      |              | 2.423E-03  | 2.553E-02 | 4.359E-02           | 2.937E-03 | 0.056   |
| CR-51   |           | 320.08       | *            | -7.152E-02 | 1.468E-01 | 2.326E-01           | 1.638E-02 | -0.307  |
| MN-52   |           | 744.21       |              | -2.678E-02 | 4.298E-02 | 6.298E-02           | 3.738E-03 | -0.425  |
|         |           | 848.13       |              | 6.643E-01  | 1.452E+00 | 2.580E+00           | 1.919E-01 | 0.257   |
|         |           | 935.52       |              | -2.206E-02 | 4.811E-02 | 7.099E-02           | 5.709E-03 | -0.311  |
|         |           | 1246.25      |              | -1.296E-01 | 9.825E-01 | 1.587E+00           | 1.010E-01 | -0.082  |
|         |           | 1333.61      |              | -5.742E-01 | 8.855E-01 | 1.186E+00           | 8.126E-02 | -0.484  |
|         |           | 1434.06      | *            | -4.432E-02 | 4.084E-02 | 3.631E-02           | 2.478E-03 | -1.221  |
| MN-54   |           | 834.83       | *            | 2.501E-03  | 1.509E-02 | 2.574E-02           | 1.863E-03 | 0.097   |
| CO-56   |           | 846.75       | *            | -1.828E-03 | 1.765E-02 | 2.864E-02           | 2.124E-03 | -0.064  |
|         |           | 977.42       |              | 1.943E-01  | 1.075E+00 | 1.831E+00           | 1.426E-01 | 0.106   |
|         |           | 1037.82      |              | 5.588E-02  | 1.182E-01 | 2.127E-01           | 1.674E-02 | 0.263   |
|         |           | 1175.09      |              | 3.134E-01  | 7.713E-01 | 1.368E+00           | 8.148E-02 | 0.229   |
|         |           | 1238.25      |              | 1.228E-03  | 2.979E-02 | 5.039E-02           | 3.354E-03 | 0.024   |
|         |           | 1360.21      |              | 7.335E-02  | 3.999E-01 | 6.978E-01           | 4.783E-02 | 0.105   |
|         |           | 1771.40      |              | 7.907E-02  | 1.643E-01 | 2.962E-01           | 1.798E-02 | 0.267   |

## ---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| CO-57   | 122.06    | *            |     | 1.119E-03           | 1.039E-02 | 1.725E-02      | 1.197E-03 | 0.065   |
|         | 136.48    |              |     | -5.494E-02          | 8.259E-02 | 1.260E-01      | 9.374E-03 | -0.436  |
| CO-58   | 810.76    | *            |     | 1.739E-03           | 1.550E-02 | 2.625E-02      | 1.812E-03 | 0.066   |
| FE-59   | 142.65    |              |     | 3.699E-01           | 9.289E-01 | 1.573E+00      | 1.028E-01 | 0.235   |
|         | 192.34    |              |     | 8.965E-02           | 3.537E-01 | 5.823E-01      | 7.082E-02 | 0.154   |
|         | 1099.22   | *            |     | 1.290E-02           | 3.622E-02 | 6.304E-02      | 4.817E-03 | 0.205   |
|         | 1291.56   |              |     | 1.309E-02           | 3.525E-02 | 6.518E-02      | 5.267E-03 | 0.201   |
| CO-60   | 1173.22   |              |     | -4.190E-03          | 1.866E-02 | 3.020E-02      | 1.796E-03 | -0.139  |
|         | 1332.49   | *            |     | -1.210E-02          | 1.600E-02 | 2.067E-02      | 1.417E-03 | -0.586  |
| ZN-65   | 1115.52   | *            |     | 1.154E-02           | 3.464E-02 | 6.021E-02      | 3.983E-03 | 0.192   |
| GE-68   | 1077.35   | *            |     | 5.283E-01           | 4.818E-01 | 9.688E-01      | 6.767E-02 | 0.545   |
| AS-73   | 53.44     | *            |     | 6.130E-01           | 6.347E-01 | 1.156E+00      | 1.513E-01 | 0.530   |
| AS-74   | 595.88    | *            |     | -1.528E-02          | 3.498E-02 | 5.212E-02      | 2.752E-03 | -0.293  |
|         | 634.78    |              |     | -7.943E-02          | 1.468E-01 | 2.136E-01      | 1.080E-02 | -0.372  |
| SE-75   | 66.05     |              |     | -5.215E-01          | 2.488E+00 | 3.951E+00      | 5.185E-01 | -0.132  |
|         | 96.73     |              |     | 5.459E-02           | 3.153E-01 | 4.795E-01      | 6.954E-02 | 0.114   |
|         | 121.11    |              |     | 2.725E-02           | 5.400E-02 | 9.273E-02      | 9.306E-03 | 0.294   |
|         | 136.00    |              |     | -9.716E-03          | 1.549E-02 | 2.377E-02      | 1.593E-03 | -0.409  |
|         | 198.60    |              |     | -4.544E-01          | 8.945E-01 | 1.226E+00      | 9.462E-02 | -0.371  |
|         | 264.65    | *            |     | -6.598E-03          | 1.791E-02 | 2.917E-02      | 1.962E-03 | -0.226  |
|         | 279.53    |              |     | 2.116E-02           | 4.650E-02 | 8.178E-02      | 5.774E-03 | 0.259   |
|         | 303.91    |              |     | 6.307E-01           | 9.613E-01 | 1.710E+00      | 1.712E-01 | 0.369   |
|         | 400.65    |              |     | -8.495E-03          | 1.128E-01 | 1.844E-01      | 1.660E-02 | -0.046  |
| BR-77   | 87.88     |              |     | -1.925E+00          | 9.618E+00 | 1.400E+01      | 1.683E+00 | -0.137  |
|         | 200.40    |              |     | -2.312E+00          | 1.014E+01 | 1.584E+01      | 1.033E+00 | -0.146  |
|         | 239.00    |              |     | -4.560E-01          | 7.476E-01 | 1.126E+00      | 7.504E-02 | -0.405  |
|         | 249.79    |              |     | 2.759E-01           | 4.787E+00 | 8.166E+00      | 5.452E-01 | 0.034   |
|         | 281.68    |              |     | -5.707E+00          | 5.825E+00 | 8.780E+00      | 5.831E-01 | -0.650  |
|         | 297.23    |              |     | -1.129E-01          | 3.212E+00 | 5.379E+00      | 3.539E-01 | -0.021  |
|         | 303.76    |              |     | 8.219E+00           | 1.264E+01 | 2.251E+01      | 1.473E+00 | 0.365   |
|         | 439.47    |              |     | 2.635E-01           | 9.882E+00 | 1.626E+01      | 9.226E-01 | 0.016   |
|         | 484.57    |              |     | 5.657E+00           | 1.469E+01 | 2.533E+01      | 1.429E+00 | 0.223   |
|         | 520.65    | *            |     | -4.380E-01          | 6.471E-01 | 9.170E-01      | 5.106E-02 | -0.478  |
|         | 574.64    |              |     | 8.334E+00           | 1.503E+01 | 2.617E+01      | 1.408E+00 | 0.318   |
|         | 578.91    |              |     | -2.818E+00          | 6.332E+00 | 9.473E+00      | 5.078E-01 | -0.297  |
|         | 585.48    |              |     | 4.921E+00           | 1.193E+01 | 2.032E+01      | 1.083E+00 | 0.242   |
|         | 755.35    |              |     | 1.055E+01           | 1.051E+01 | 2.032E+01      | 1.237E+00 | 0.519   |
|         | 817.79    |              |     | -9.441E-01          | 9.068E+00 | 1.475E+01      | 1.029E+00 | -0.064  |
| SR-82   | 698.33    |              |     | -3.961E+00          | 1.314E+01 | 2.105E+01      | 1.122E+00 | -0.188  |
|         | 776.49    | *            |     | 5.819E-02           | 9.413E-02 | 1.795E-01      | 1.146E-02 | 0.324   |
|         | 1395.20   |              |     | 1.398E-01           | 3.896E+00 | 6.536E+00      | 4.474E-01 | 0.021   |
| RB-83   | 520.41    | *            |     | -1.296E-02          | 2.654E-02 | 3.909E-02      | 2.177E-03 | -0.331  |
|         | 529.64    |              |     | -1.577E-02          | 4.047E-02 | 6.071E-02      | 3.366E-03 | -0.260  |
|         | 552.65    |              |     | 3.488E-02           | 8.621E-02 | 1.480E-01      | 8.091E-03 | 0.236   |
| RB-84   | 881.50    | *            |     | -6.825E-03          | 2.729E-02 | 3.906E-02      | 3.111E-03 | -0.175  |
| KR-85   | 513.99    | *            |     | 8.047E+00           | 4.394E+00 | 7.890E+00      | 4.407E-01 | 1.020   |
| SR-85   | 513.99    | *            |     | 3.852E-02           | 2.104E-02 | 3.777E-02      | 2.110E-03 | 1.020   |
| RB-86   | 1076.63   | *            |     | 2.528E-01           | 2.401E-01 | 4.806E-01      | 3.360E-02 | 0.526   |
| Y-88    | 898.02    |              |     | 7.986E-03           | 1.918E-02 | 3.382E-02      | 2.799E-03 | 0.236   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
|         | 1836.01   | *            |     | -8.058E-04          | 1.896E-02 | 3.032E-02           | 1.769E-03 | -0.027  |
| ZR-88   | 392.90    | *            |     | 6.290E-03           | 1.356E-02 | 2.364E-02           | 1.330E-03 | 0.266   |
| Y-91    | 1204.90   | *            |     | -1.926E+00          | 5.007E+00 | 6.953E+00           | 4.261E-01 | -0.277  |
| NB-94   | 702.63    | *            |     | 8.024E-03           | 1.522E-02 | 2.744E-02           | 1.478E-03 | 0.292   |
|         | 871.10    |              |     | 5.978E-03           | 1.508E-02 | 2.671E-02           | 2.083E-03 | 0.224   |
| NB-95   | 765.79    | *            |     | 3.738E-04           | 1.540E-02 | 2.576E-02           | 1.605E-03 | 0.015   |
| NB-95M  | 235.69    | *            |     | -1.316E-02          | 5.090E-02 | 7.846E-02           | 6.439E-03 | -0.168  |
| ZR-95   | 724.18    |              |     | 7.879E-03           | 3.330E-02 | 5.798E-02           | 3.912E-03 | 0.136   |
|         | 756.15    | *            |     | 1.736E-02           | 2.875E-02 | 5.259E-02           | 3.830E-03 | 0.330   |
| NB-97   | 657.90    | *            |     | 4.970E-06           | 2.875E-02 | Half-Life too short |           |         |
|         | 1024.50   |              |     | -5.661E-03          | 2.875E-02 | Half-Life too short |           |         |
| ZR-97   | 254.15    |              |     | 2.362E-04           | 2.875E-02 | Half-Life too short |           |         |
|         | 355.39    |              |     | -4.578E-03          | 2.875E-02 | Half-Life too short |           |         |
|         | 507.63    | *            |     | 1.256E-03           | 2.875E-02 | Half-Life too short |           |         |
|         | 602.52    |              |     | 3.781E-04           | 2.875E-02 | Half-Life too short |           |         |
|         | 1021.30   |              |     | 6.149E-03           | 2.875E-02 | Half-Life too short |           |         |
|         | 1147.95   |              |     | -6.259E-04          | 2.875E-02 | Half-Life too short |           |         |
|         | 1362.66   |              |     | -3.805E-03          | 2.875E-02 | Half-Life too short |           |         |
|         | 1750.46   |              |     | 1.873E-03           | 2.875E-02 | Half-Life too short |           |         |
| MO-99   | 140.51    |              |     | -6.569E-01          | 1.982E+00 | 3.116E+00           | 8.452E-01 | -0.211  |
|         | 181.06    |              |     | 6.848E-01           | 1.382E+00 | 2.324E+00           | 4.035E-01 | 0.295   |
|         | 366.43    |              |     | -2.400E+00          | 7.210E+00 | 1.145E+01           | 6.846E-01 | -0.210  |
|         | 739.58    | *            |     | -2.033E-01          | 8.817E-01 | 1.406E+00           | 1.942E-01 | -0.145  |
|         | 778.00    |              |     | -9.024E-01          | 2.283E+00 | 3.451E+00           | 2.210E-01 | -0.261  |
| TC-99M  | 140.51    | *            |     | -7.235E+01          | 2.283E+00 | Half-Life too short |           |         |
| RH-101  | 127.23    |              |     | 3.629E-03           | 1.211E-02 | 2.043E-02           | 1.387E-03 | 0.178   |
|         | 198.01    | *            |     | -1.186E-03          | 1.646E-02 | 2.353E-02           | 1.532E-03 | -0.050  |
|         | 325.23    |              |     | 6.276E-02           | 1.135E-01 | 1.993E-01           | 1.276E-02 | 0.315   |
| RH-102  | 418.52    |              |     | 8.355E-02           | 1.418E-01 | 2.493E-01           | 1.412E-02 | 0.335   |
|         | 475.06    | *            |     | -3.408E-03          | 1.343E-02 | 2.108E-02           | 1.192E-03 | -0.162  |
|         | 631.29    |              |     | 3.904E-03           | 2.752E-02 | 4.496E-02           | 2.284E-03 | 0.087   |
|         | 697.49    |              |     | -1.550E-02          | 3.465E-02 | 5.411E-02           | 2.879E-03 | -0.286  |
|         | 766.84    |              |     | 1.016E-02           | 3.902E-02 | 6.812E-02           | 4.255E-03 | 0.149   |
|         | 1046.59   |              |     | -4.029E-02          | 4.463E-02 | 5.386E-02           | 3.911E-03 | -0.748  |
|         | 1112.84   |              |     | 6.583E-02           | 7.833E-02 | 1.527E-01           | 1.012E-02 | 0.431   |
| RU-103  | 497.08    | *            |     | 1.415E-03           | 1.709E-02 | 2.812E-02           | 3.533E-03 | 0.050   |
|         | 610.33    |              |     | 9.373E-02           | 3.639E-01 | 5.921E-01           | 9.003E-02 | 0.158   |
| RH-106  | 511.85    | +            |     | 1.132E-01           | 1.867E-01 | 2.666E-01           | 1.490E-02 | 0.425   |
|         | 621.84    | *            |     | 4.708E-02           | 1.439E-01 | 2.429E-01           | 2.775E-02 | 0.194   |
|         | 1050.47   |              |     | 7.762E-01           | 9.437E-01 | 1.800E+00           | 1.301E-01 | 0.431   |
| RU-106  | 511.85    | +            |     | 1.132E-01           | 1.867E-01 | 2.666E-01           | 1.490E-02 | 0.425   |
|         | 621.84    | *            |     | 4.708E-02           | 1.438E-01 | 2.429E-01           | 1.248E-02 | 0.194   |
|         | 1050.47   |              |     | 7.762E-01           | 9.437E-01 | 1.800E+00           | 1.301E-01 | 0.431   |
| AG-108M | 433.93    | *            |     | -8.293E-03          | 1.502E-02 | 2.270E-02           | 1.403E-03 | -0.365  |
|         | 614.37    |              |     | 7.497E-04           | 2.129E-02 | 3.424E-02           | 1.961E-03 | 0.022   |
|         | 722.95    |              |     | -5.273E-03          | 1.543E-02 | 2.411E-02           | 1.484E-03 | -0.219  |
| CD-109  | 88.03     | *            |     | -5.086E-02          | 2.960E-01 | 4.326E-01           | 5.199E-02 | -0.118  |
| AG-110M | 657.75    | *            |     | 7.052E-04           | 1.704E-02 | 2.524E-02           | 1.348E-03 | 0.028   |
|         | 677.61    |              |     | 5.440E-02           | 1.405E-01 | 2.492E-01           | 1.364E-02 | 0.218   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
|         |           | 706.67       |     | 1.740E-02           | 9.319E-02 | 1.604E-01           | 9.319E-03 | 0.108   |
|         |           | 763.93       |     | 2.491E-02           | 6.222E-02 | 1.110E-01           | 7.262E-03 | 0.224   |
|         |           | 884.67       |     | 8.290E-03           | 1.694E-02 | 3.110E-02           | 2.585E-03 | 0.267   |
|         |           | 937.48       |     | 1.235E-02           | 4.966E-02 | 8.527E-02           | 7.133E-03 | 0.145   |
|         |           | 1384.27      |     | 4.702E-02           | 8.200E-02 | 1.528E-01           | 1.093E-02 | 0.308   |
| IN-111  |           | 171.28       |     | -2.123E-02          | 8.546E-02 | 1.346E-01           | 8.578E-03 | -0.158  |
|         |           | 245.39       | *   | -4.756E-02          | 1.018E-01 | 1.525E-01           | 1.017E-02 | -0.312  |
| IN-113M |           | 391.69       | *   | 1.463E-02           | 1.996E-02 | 3.579E-02           | 2.156E-03 | 0.409   |
| SN-113  |           | 391.69       | *   | 1.463E-02           | 1.996E-02 | 3.579E-02           | 2.156E-03 | 0.409   |
| IN-114M |           | 190.27       | *   | 2.028E-03           | 7.046E-02 | 1.135E-01           | 7.343E-03 | 0.018   |
| CD-115  |           | 260.90       |     | -4.890E-01          | 6.863E+00 | 1.154E+01           | 7.704E-01 | -0.042  |
|         |           | 492.35       |     | -4.689E-02          | 2.339E+00 | 3.795E+00           | 2.137E-01 | -0.012  |
|         |           | 527.90       | *   | -8.930E-02          | 6.140E-01 | 9.693E-01           | 5.379E-02 | -0.092  |
| SN-117M |           | 156.02       |     | 3.614E-02           | 6.212E-01 | 1.014E+00           | 6.506E-02 | 0.036   |
|         |           | 158.56       | *   | 4.584E-03           | 1.567E-02 | 2.614E-02           | 1.672E-03 | 0.175   |
| SB-122  |           | 563.90       | *   | -5.203E-04          | 1.684E-01 | 2.711E-01           | 1.470E-02 | -0.002  |
|         |           | 692.80       |     | 9.660E-01           | 3.550E+00 | 6.202E+00           | 3.264E-01 | 0.156   |
| I-123   |           | 159.00       | *   | -9.779E-05          | 3.550E+00 | Half-Life too short |           |         |
|         |           | 528.96       |     | -1.117E-02          | 3.550E+00 | Half-Life too short |           |         |
| TE-123M |           | 159.00       | *   | -1.819E-03          | 1.119E-02 | 1.785E-02           | 1.154E-03 | -0.102  |
| I-124   |           | 602.71       | *   | 7.622E-03           | 1.148E-01 | 1.859E-01           | 9.747E-03 | 0.041   |
|         |           | 722.78       |     | -2.555E-01          | 5.517E-01 | 8.405E-01           | 4.748E-02 | -0.304  |
|         |           | 1325.50      |     | 1.714E+00           | 4.522E+00 | 8.289E+00           | 5.648E-01 | 0.207   |
|         |           | 1376.25      |     | -2.201E+00          | 4.547E+00 | 6.591E+00           | 4.516E-01 | -0.334  |
|         |           | 1509.49      |     | 1.021E+00           | 2.509E+00 | 4.582E+00           | 3.089E-01 | 0.223   |
|         |           | 1691.02      |     | -3.470E-01          | 7.366E-01 | 1.016E+00           | 6.439E-02 | -0.342  |
| SB-124  |           | 602.71       |     | 1.213E-03           | 1.828E-02 | 2.958E-02           | 1.552E-03 | 0.041   |
|         |           | 645.85       |     | 7.955E-02           | 2.064E-01 | 3.677E-01           | 2.146E-02 | 0.216   |
|         |           | 709.31       |     | 2.592E-01           | 1.135E+00 | 1.967E+00           | 1.077E-01 | 0.132   |
|         |           | 713.82       |     | 3.304E-01           | 6.409E-01 | 1.160E+00           | 1.167E-01 | 0.285   |
|         |           | 722.78       |     | -5.895E-02          | 1.273E-01 | 1.939E-01           | 1.150E-02 | -0.304  |
|         |           | 968.20       |     | -5.653E-01          | 1.017E+00 | 1.478E+00           | 1.160E-01 | -0.382  |
|         |           | 1045.16      |     | -9.092E-01          | 9.734E-01 | 1.198E+00           | 8.713E-02 | -0.759  |
|         |           | 1325.50      |     | 4.223E-01           | 1.114E+00 | 2.043E+00           | 1.392E-01 | 0.207   |
|         |           | 1368.21      |     | 4.086E-02           | 6.787E-01 | 1.148E+00           | 1.426E-01 | 0.036   |
|         |           | 1436.60      |     | -1.065E-01          | 1.223E+00 | 1.962E+00           | 1.339E-01 | -0.054  |
|         |           | 1691.02      | *   | -1.888E-02          | 4.009E-02 | 5.529E-02           | 3.757E-03 | -0.342  |
| SB-125  |           | 427.89       | *   | -2.317E-02          | 4.289E-02 | 6.523E-02           | 3.861E-03 | -0.355  |
|         |           | 463.38       |     | 2.188E-02           | 1.152E-01 | 1.934E-01           | 1.286E-02 | 0.113   |
|         |           | 600.56       |     | 5.055E-02           | 9.156E-02 | 1.581E-01           | 9.872E-03 | 0.320   |
|         |           | 635.90       |     | 3.394E-02           | 1.359E-01 | 2.256E-01           | 1.391E-02 | 0.150   |
| TE-125M |           | 109.28       | *   | 9.540E-01           | 3.959E+00 | 6.085E+00           | 6.031E-01 | 0.157   |
| I-126   |           | 388.63       |     | -2.265E-02          | 6.671E-02 | 1.056E-01           | 5.989E-03 | -0.214  |
|         |           | 666.33       | *   | -2.474E-02          | 6.661E-02 | 8.966E-02           | 4.423E-03 | -0.276  |
|         |           | 753.82       |     | 9.717E-02           | 4.579E-01 | 7.901E-01           | 4.793E-02 | 0.123   |
| SB-126  |           | 223.80       |     | 6.882E-02           | 1.205E+00 | 1.929E+00           | 1.277E-01 | 0.036   |
|         |           | 278.60       |     | 2.284E-01           | 7.952E-01 | 1.376E+00           | 9.151E-02 | 0.166   |
|         |           | 296.50       |     | 4.491E-02           | 4.028E-01 | 6.849E-01           | 4.509E-02 | 0.066   |
|         |           | 414.70       |     | -1.483E-03          | 2.217E-02 | 3.615E-02           | 2.046E-03 | -0.041  |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 415.30       |     | -1.049E+00          | 1.901E+00 | 2.883E+00      | 1.631E-01 | -0.364  |
|         |           | 555.20       |     | -6.241E-02          | 1.248E+00 | 1.996E+00      | 1.089E-01 | -0.031  |
|         |           | 573.80       |     | -7.376E-02          | 3.665E-01 | 5.717E-01      | 3.078E-02 | -0.129  |
|         |           | 593.00       |     | -2.677E-01          | 2.950E-01 | 3.928E-01      | 2.079E-02 | -0.681  |
|         |           | 656.30       |     | -1.093E-01          | 1.084E+00 | 1.630E+00      | 8.012E-02 | -0.067  |
|         |           | 666.33       |     | -1.018E-02          | 2.742E-02 | 3.691E-02      | 1.821E-03 | -0.276  |
|         |           | 675.00       |     | -2.987E-01          | 6.081E-01 | 9.405E-01      | 4.739E-02 | -0.318  |
|         |           | 695.00       |     | 1.579E-02           | 2.322E-02 | 4.288E-02      | 2.268E-03 | 0.368   |
|         |           | 697.00       |     | -3.134E-02          | 8.566E-02 | 1.357E-01      | 7.214E-03 | -0.231  |
|         |           | 720.50       | *   | -4.242E-02          | 3.893E-02 | 5.057E-02      | 2.842E-03 | -0.839  |
|         |           | 856.80       |     | -3.973E-02          | 1.332E-01 | 2.064E-01      | 1.563E-02 | -0.193  |
|         |           | 989.30       |     | -7.229E-02          | 4.027E-01 | 6.328E-01      | 4.877E-02 | -0.114  |
|         |           | 1034.80      |     | -7.531E-01          | 2.455E+00 | 3.685E+00      | 2.713E-01 | -0.204  |
|         |           | 1213.00      |     | 2.940E-02           | 1.193E+00 | 1.927E+00      | 1.190E-01 | 0.015   |
| SN-126  |           | 64.28        |     | -8.834E-02          | 2.835E-01 | 4.469E-01      | 7.697E-02 | -0.198  |
|         |           | 86.94        |     | -4.216E-02          | 1.109E-01 | 1.755E-01      | 7.402E-02 | -0.240  |
|         |           | 87.57        | *   | -1.510E-02          | 2.820E-02 | 4.208E-02      | 5.047E-03 | -0.359  |
| SB-127  |           | 61.10        |     | -4.532E+00          | 9.732E+00 | 1.575E+01      | 2.005E+00 | -0.288  |
|         |           | 252.40       |     | 4.348E-02           | 6.048E-01 | 1.032E+00      | 4.261E-01 | 0.042   |
|         |           | 290.80       |     | 9.857E-01           | 2.991E+00 | 5.191E+00      | 4.019E-01 | 0.190   |
|         |           | 411.60       |     | -1.564E-02          | 1.413E+00 | 2.323E+00      | 3.038E-01 | -0.007  |
|         |           | 444.90       |     | -1.083E+00          | 1.640E+00 | 2.354E+00      | 2.118E-01 | -0.460  |
|         |           | 473.00       |     | -2.310E-01          | 2.356E-01 | 3.225E-01      | 3.047E-02 | -0.716  |
|         |           | 543.00       |     | -9.646E-01          | 2.146E+00 | 3.175E+00      | 3.609E-01 | -0.304  |
|         |           | 603.60       |     | 4.786E-01           | 1.779E+00 | 2.963E+00      | 2.576E-01 | 0.162   |
|         |           | 685.20       | *   | 1.019E-01           | 1.868E-01 | 3.392E-01      | 2.350E-02 | 0.301   |
|         |           | 698.50       |     | -5.493E-01          | 2.182E+00 | 3.522E+00      | 4.597E-01 | -0.156  |
|         |           | 722.20       |     | -3.212E+00          | 3.382E+00 | 4.528E+00      | 3.141E-01 | -0.709  |
|         |           | 783.80       |     | 3.083E-01           | 4.879E-01 | 8.929E-01      | 8.375E-02 | 0.345   |
| XE-127  |           | 57.60        |     | 9.940E-01           | 2.886E+00 | 5.064E+00      | 6.340E-01 | 0.196   |
|         |           | 145.22       |     | -1.036E-01          | 2.446E-01 | 3.821E-01      | 2.486E-02 | -0.271  |
|         |           | 172.10       |     | 1.651E-03           | 4.274E-02 | 6.929E-02      | 4.419E-03 | 0.024   |
|         |           | 202.84       | *   | 1.323E-03           | 1.650E-02 | 2.663E-02      | 1.741E-03 | 0.050   |
|         |           | 374.96       |     | -8.697E-03          | 7.362E-02 | 1.201E-01      | 7.043E-03 | -0.072  |
| I-131   |           | 80.18        |     | 3.253E-01           | 1.011E+00 | 1.740E+00      | 2.013E-01 | 0.187   |
|         |           | 284.30       |     | 8.352E-02           | 3.544E-01 | 6.121E-01      | 4.384E-02 | 0.136   |
|         |           | 364.48       | *   | 1.957E-03           | 2.997E-02 | 5.015E-02      | 3.313E-03 | 0.039   |
|         |           | 636.97       |     | 2.646E-02           | 4.195E-01 | 6.768E-01      | 3.908E-02 | 0.039   |
|         |           | 722.89       |     | -5.235E-01          | 1.477E+00 | 2.301E+00      | 1.307E-01 | -0.227  |
| TE-132  |           | 49.72        |     | -2.767E+00          | 4.166E+00 | 6.606E+00      | 8.512E-01 | -0.419  |
|         |           | 111.76       |     | -1.419E+00          | 3.067E+00 | 4.846E+00      | 4.223E-01 | -0.293  |
|         |           | 116.30       |     | 5.448E-01           | 2.648E+00 | 4.447E+00      | 3.699E-01 | 0.122   |
|         |           | 228.16       | *   | -3.393E-02          | 8.322E-02 | 1.264E-01      | 1.730E-02 | -0.268  |
| BA-133  |           | 53.15        |     | 3.225E+00           | 2.913E+00 | 5.355E+00      | 7.010E-01 | 0.602   |
|         |           | 79.62        |     | 3.848E-02           | 4.936E-01 | 8.325E-01      | 1.419E-01 | 0.046   |
|         |           | 81.00        |     | 1.196E-02           | 3.718E-02 | 6.388E-02      | 1.129E-02 | 0.187   |
|         |           | 276.40       |     | 2.539E-02           | 1.762E-01 | 3.011E-01      | 4.025E-02 | 0.084   |
|         |           | 302.84       |     | 3.324E-02           | 6.782E-02 | 1.190E-01      | 1.433E-02 | 0.279   |
|         |           | 356.01       | *   | -2.947E-02          | 1.953E-02 | 2.550E-02      | 2.987E-03 | -1.156  |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| I-133   | +         | 383.85       |     | -4.978E-04          | 1.299E-01 | 2.148E-01      | 2.329E-02 | -0.002  |
|         |           | 510.53       |     | 1.260E-03           | 1.299E-01 | Half-Life      | too short |         |
|         |           | 529.87       | *   | -1.268E-05          | 1.299E-01 | Half-Life      | too short |         |
|         |           | 706.58       |     | 1.743E-04           | 1.299E-01 | Half-Life      | too short |         |
|         |           | 856.28       |     | -7.203E-04          | 1.299E-01 | Half-Life      | too short |         |
|         |           | 875.33       |     | 1.294E-04           | 1.299E-01 | Half-Life      | too short |         |
|         |           | 1236.41      |     | 7.866E-04           | 1.299E-01 | Half-Life      | too short |         |
| CS-134  |           | 1298.22      |     | 9.840E-06           | 1.299E-01 | Half-Life      | too short |         |
|         |           | 475.35       |     | 3.371E-01           | 8.269E-01 | 1.430E+00      | 8.086E-02 | 0.236   |
|         |           | 563.23       |     | -1.053E-02          | 1.498E-01 | 2.382E-01      | 1.324E-02 | -0.044  |
|         |           | 569.32       |     | 1.643E-02           | 1.050E-01 | 1.726E-01      | 9.646E-03 | 0.095   |
|         |           | 604.70       |     | -4.570E-03          | 1.637E-02 | 2.511E-02      | 1.323E-03 | -0.182  |
|         |           | 795.84       | *   | 2.837E-03           | 1.466E-02 | 2.542E-02      | 1.713E-03 | 0.112   |
|         |           | 801.93       |     | -1.096E-01          | 2.113E-01 | 3.323E-01      | 2.263E-02 | -0.330  |
| CS-135  |           | 1038.57      |     | 4.249E-01           | 1.650E+00 | 2.833E+00      | 2.077E-01 | 0.150   |
|         |           | 1167.94      |     | -7.351E-01          | 8.161E-01 | 9.004E-01      | 5.412E-02 | -0.816  |
|         |           | 1365.15      |     | -3.134E-01          | 4.912E-01 | 6.470E-01      | 4.750E-02 | -0.484  |
|         |           | 268.24       | *   | 2.459E-02           | 6.843E-02 | 1.195E-01      | 9.964E-03 | 0.206   |
|         |           | 288.45       |     | 5.657E+02           | 6.843E-02 | Half-Life      | too short |         |
|         |           | 417.63       |     | 7.670E+01           | 6.843E-02 | Half-Life      | too short |         |
|         |           | 546.56       |     | -1.186E+02          | 6.843E-02 | Half-Life      | too short |         |
| I-135   |           | 836.80       |     | 1.018E+02           | 6.843E-02 | Half-Life      | too short |         |
|         |           | 1038.76      |     | 1.901E+02           | 6.843E-02 | Half-Life      | too short |         |
|         |           | 1124.00      |     | -7.552E+02          | 6.843E-02 | Half-Life      | too short |         |
|         |           | 1131.51      |     | -8.975E+01          | 6.843E-02 | Half-Life      | too short |         |
|         |           | 1260.41      | *   | 1.735E+02           | 6.843E-02 | Half-Life      | too short |         |
|         |           | 1457.56      |     | 2.152E+02           | 6.843E-02 | Half-Life      | too short |         |
|         |           | 1678.03      |     | 1.428E+02           | 6.843E-02 | Half-Life      | too short |         |
| CS-136  |           | 1706.46      |     | -9.259E+02          | 6.843E-02 | Half-Life      | too short |         |
|         |           | 1791.20      |     | -2.753E+02          | 6.843E-02 | Half-Life      | too short |         |
|         |           | 66.91        |     | -7.783E-02          | 2.610E-01 | 4.279E-01      | 7.415E-02 | -0.182  |
|         |           | 86.29        |     | -1.597E-01          | 2.432E-01 | 3.759E-01      | 5.729E-02 | -0.425  |
|         |           | 153.22       |     | 4.699E-02           | 1.691E-01 | 2.828E-01      | 2.188E-02 | 0.166   |
|         |           | 163.89       |     | -7.185E-02          | 3.211E-01 | 5.086E-01      | 3.918E-02 | -0.141  |
|         |           | 176.55       |     | 3.665E-02           | 1.212E-01 | 2.006E-01      | 1.414E-02 | 0.183   |
| BA-137M |           | 273.65       |     | 6.450E-02           | 1.377E-01 | 2.426E-01      | 1.789E-02 | 0.266   |
|         |           | 340.57       |     | -2.383E-02          | 3.814E-02 | 5.896E-02      | 3.890E-03 | -0.404  |
|         |           | 818.51       |     | 7.851E-03           | 2.365E-02 | 4.148E-02      | 2.901E-03 | 0.189   |
|         |           | 1048.07      | *   | -1.636E-02          | 3.228E-02 | 4.596E-02      | 3.527E-03 | -0.356  |
|         |           | 1235.34      |     | 5.838E-02           | 1.527E-01 | 2.749E-01      | 2.827E-02 | 0.212   |
|         |           | 661.65       | *   | -9.436E-04          | 2.393E-02 | 3.698E-02      | 1.803E-03 | -0.026  |
|         |           | 661.65       | *   | -9.975E-04          | 2.530E-02 | 3.909E-02      | 1.918E-03 | -0.026  |
| CE-139  |           | 165.85       | *   | 2.982E-03           | 1.228E-02 | 2.032E-02      | 1.291E-03 | 0.147   |
| BA-140  |           | 162.64       |     | -7.248E-02          | 2.267E-01 | 3.559E-01      | 2.503E-02 | -0.204  |
|         |           | 304.84       |     | 2.830E-01           | 4.438E-01 | 7.772E-01      | 2.134E-01 | 0.364   |
| LA-140  |           | 423.70       |     | 3.954E-02           | 7.036E-01 | 1.164E+00      | 3.697E-01 | 0.034   |
|         |           | 537.32       | *   | -2.540E-03          | 9.457E-02 | 1.485E-01      | 4.823E-02 | -0.017  |
|         |           | 328.77       |     | -2.489E-02          | 9.921E-02 | 1.616E-01      | 1.133E-02 | -0.154  |
|         |           | 432.53       |     | 2.406E-01           | 6.336E-01 | 1.095E+00      | 6.886E-02 | 0.220   |



----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 487.03       |     | -2.861E-02          | 4.117E-02 | 5.901E-02      | 3.791E-03 | -0.485  |
|         |           | 751.79       |     | -4.227E-01          | 5.742E-01 | 8.396E-01      | 6.124E-02 | -0.503  |
|         |           | 815.85       |     | -1.105E-01          | 1.051E-01 | 1.377E-01      | 1.122E-02 | -0.803  |
|         |           | 867.82       |     | -1.436E-01          | 3.775E-01 | 5.680E-01      | 4.686E-02 | -0.253  |
|         |           | 919.63       |     | -3.920E-02          | 8.461E-01 | 1.376E+00      | 1.411E-01 | -0.028  |
|         |           | 925.24       |     | 1.394E-01           | 3.769E-01 | 6.604E-01      | 5.726E-02 | 0.211   |
|         |           | 1596.49      | *   | -3.122E-02          | 3.704E-02 | 4.741E-02      | 3.122E-03 | -0.659  |
| CE-141  |           | 145.44       | *   | -1.109E-02          | 2.228E-02 | 3.456E-02      | 2.320E-03 | -0.321  |
| CE-143  |           | 57.37        |     | 1.319E+00           | 2.204E+01 | 3.761E+01      | 5.124E+00 | 0.035   |
|         |           | 231.56       |     | -1.453E+01          | 4.416E+01 | 6.723E+01      | 2.096E+01 | -0.216  |
|         |           | 293.26       | *   | -6.617E-01          | 2.125E+00 | 3.458E+00      | 7.204E-01 | -0.191  |
|         |           | 350.59       |     | 3.456E+01           | 3.647E+01 | 6.202E+01      | 1.892E+01 | 0.557   |
|         |           | 490.36       |     | 2.780E+01           | 4.872E+01 | 8.469E+01      | 2.623E+01 | 0.328   |
|         | +         | 664.57       |     | 2.433E+01           | 4.616E+01 | 4.015E+01      | 1.269E+01 | 0.606   |
|         |           | 721.93       |     | -2.201E+01          | 1.922E+01 | 2.203E+01      | 6.282E+00 | -0.999  |
| CE-144  |           | 80.11        |     | 1.009E-01           | 8.156E-01 | 1.380E+00      | 1.595E-01 | 0.073   |
|         |           | 133.54       | *   | 3.772E-02           | 8.327E-02 | 1.415E-01      | 2.063E-02 | 0.267   |
| PM-144  |           | 476.78       |     | 2.942E-02           | 2.838E-02 | 5.317E-02      | 3.625E-03 | 0.553   |
|         |           | 618.01       |     | -9.447E-03          | 1.716E-02 | 2.513E-02      | 1.394E-03 | -0.376  |
|         |           | 696.49       | *   | -5.852E-03          | 1.598E-02 | 2.535E-02      | 1.346E-03 | -0.231  |
|         |           | 778.57       |     | -4.369E-01          | 8.697E-01 | 1.294E+00      | 8.297E-02 | -0.338  |
| PR-144  |           | 696.49       | *   | -3.952E-01          | 1.079E+00 | 1.712E+00      | 9.090E-02 | -0.231  |
|         |           | 1489.15      |     | -7.156E-01          | 5.893E+00 | 9.404E+00      | 6.366E-01 | -0.076  |
| PM-146  |           | 453.90       | *   | -1.612E-03          | 2.094E-02 | 3.263E-02      | 2.785E-03 | -0.049  |
|         |           | 633.02       |     | 2.805E-01           | 7.168E-01 | 1.203E+00      | 4.416E-01 | 0.233   |
|         |           | 735.90       |     | 2.240E-02           | 6.328E-02 | 1.115E-01      | 3.109E-02 | 0.201   |
|         |           | 747.13       |     | 3.046E-02           | 3.863E-02 | 7.254E-02      | 9.132E-03 | 0.420   |
| ND-147  |           | 91.11        |     | 4.456E-02           | 7.503E-02 | 1.191E-01      | 1.396E-02 | 0.374   |
|         |           | 319.41       |     | -3.912E-01          | 1.009E+00 | 1.617E+00      | 1.043E-01 | -0.242  |
|         |           | 439.89       |     | -1.091E+00          | 1.931E+00 | 2.859E+00      | 1.622E-01 | -0.381  |
|         |           | 531.02       | *   | -8.471E-02          | 1.564E-01 | 2.273E-01      | 3.048E-02 | -0.373  |
| PM-149  |           | 285.90       | *   | -2.442E-01          | 5.126E+00 | 8.594E+00      | 1.247E+00 | -0.028  |
| EU-152  |           | 121.78       |     | -2.966E-03          | 3.007E-02 | 4.897E-02      | 4.174E-03 | -0.061  |
|         |           | 244.69       |     | -1.200E-01          | 1.565E-01 | 2.259E-01      | 1.507E-02 | -0.531  |
|         |           | 344.27       | *   | -2.592E-03          | 4.318E-02 | 7.144E-02      | 4.944E-03 | -0.036  |
|         |           | 443.98       |     | -9.035E-02          | 4.898E-01 | 7.489E-01      | 4.248E-02 | -0.121  |
|         |           | 778.89       |     | -4.985E-02          | 1.058E-01 | 1.594E-01      | 1.022E-02 | -0.313  |
|         |           | 867.32       |     | -2.826E-01          | 3.462E-01 | 4.655E-01      | 3.602E-02 | -0.607  |
|         |           | 964.01       |     | 1.595E-02           | 1.018E-01 | 1.724E-01      | 1.357E-02 | 0.093   |
|         |           | 1085.78      |     | 7.477E-03           | 1.456E-01 | 2.391E-01      | 1.651E-02 | 0.031   |
|         |           | 1112.02      |     | 2.009E-02           | 1.162E-01 | 1.961E-01      | 1.302E-02 | 0.102   |
|         |           | 1407.95      |     | -7.846E-03          | 8.523E-02 | 1.381E-01      | 9.447E-03 | -0.057  |
| GD-153  |           | 69.67        |     | 4.444E-01           | 6.815E-01 | 1.212E+00      | 1.399E-01 | 0.367   |
|         |           | 83.37        |     | -1.113E+00          | 5.079E+00 | 8.310E+00      | 9.727E-01 | -0.134  |
|         |           | 97.43        | *   | 3.742E-02           | 3.174E-02 | 5.383E-02      | 5.284E-03 | 0.695   |
|         |           | 103.18       |     | 3.472E-03           | 4.045E-02 | 6.755E-02      | 6.010E-03 | 0.051   |
| EU-154  |           | 123.07       |     | -9.119E-03          | 2.244E-02 | 3.550E-02      | 3.593E-03 | -0.257  |
|         |           | 247.94       |     | 4.167E-03           | 1.793E-01 | 2.840E-01      | 2.867E-02 | 0.015   |
|         |           | 591.81       |     | -1.069E-01          | 3.050E-01 | 4.613E-01      | 4.376E-02 | -0.232  |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| EU-155  |           | 723.30       |     | -1.755E-02          | 6.531E-02 | 1.037E-01      | 7.222E-03 | -0.169  |
|         |           | 756.87       |     | -5.329E-02          | 3.392E-01 | 5.501E-01      | 5.676E-02 | -0.097  |
|         |           | 873.19       |     | 1.206E-02           | 1.387E-01 | 2.324E-01      | 2.719E-02 | 0.052   |
|         |           | 996.32       |     | -3.036E-02          | 1.851E-01 | 2.928E-01      | 5.070E-02 | -0.104  |
|         |           | 1004.76      |     | -4.060E-02          | 9.975E-02 | 1.488E-01      | 1.623E-02 | -0.273  |
|         |           | 1274.45      | *   | 2.073E-02           | 5.081E-02 | 9.228E-02      | 9.053E-03 | 0.225   |
|         |           | 48.70        |     | -1.408E+00          | 2.168E+00 | 3.444E+00      | 3.968E-01 | -0.409  |
|         |           | 60.01        |     | -1.777E+00          | 2.801E+00 | 4.448E+00      | 5.404E-01 | -0.399  |
|         |           | 86.54        |     | -6.939E-03          | 3.144E-02 | 5.128E-02      | 6.142E-03 | -0.135  |
|         |           | 105.31       | *   | -1.758E-02          | 4.071E-02 | 6.444E-02      | 5.617E-03 | -0.273  |
| TB-160  |           | 86.79        |     | -4.278E-03          | 7.847E-02 | 1.302E-01      | 1.554E-02 | -0.033  |
|         |           | 197.04       |     | -1.623E-02          | 2.644E-01 | 3.784E-01      | 2.462E-02 | -0.043  |
|         |           | 215.65       |     | -7.943E-02          | 2.689E-01 | 4.128E-01      | 2.722E-02 | -0.192  |
|         |           | 298.57       |     | -3.431E-02          | 4.423E-02 | 6.799E-02      | 4.469E-03 | -0.505  |
|         |           | 879.36       | *   | -1.929E-02          | 5.640E-02 | 8.629E-02      | 6.842E-03 | -0.224  |
|         |           | 962.29       |     | 5.033E-03           | 1.711E-01 | 2.820E-01      | 2.224E-02 | 0.018   |
|         |           | 966.15       |     | -1.505E-02          | 7.026E-02 | 1.095E-01      | 8.610E-03 | -0.137  |
|         |           | 1177.93      |     | 2.316E-02           | 1.165E-01 | 1.977E-01      | 1.181E-02 | 0.117   |
|         |           | 1271.85      |     | -7.356E-02          | 2.763E-01 | 4.341E-01      | 2.826E-02 | -0.169  |
|         |           | 80.57        |     | 5.885E-02           | 1.034E-01 | 1.812E-01      | 2.097E-02 | 0.325   |
| HO-166M |           | 184.41       |     | -1.421E-02          | 1.704E-02 | 2.482E-02      | 1.599E-03 | -0.572  |
|         |           | 280.46       |     | -1.079E-02          | 3.767E-02 | 6.173E-02      | 4.101E-03 | -0.175  |
|         |           | 410.95       |     | -1.835E-02          | 8.864E-02 | 1.411E-01      | 7.979E-03 | -0.130  |
|         |           | 711.68       | *   | -1.419E-02          | 2.709E-02 | 4.145E-02      | 2.281E-03 | -0.342  |
|         |           | 752.31       |     | -6.847E-02          | 1.321E-01 | 2.019E-01      | 1.221E-02 | -0.339  |
|         |           | 810.29       |     | -1.087E-02          | 2.583E-02 | 3.938E-02      | 2.706E-03 | -0.276  |
|         |           | 51.35        |     | 5.557E+00           | 2.623E+01 | 4.547E+01      | 5.887E+00 | 0.122   |
|         |           | 52.39        |     | 8.730E+00           | 1.317E+01 | 2.357E+01      | 3.082E+00 | 0.370   |
|         |           | 59.40        |     | -1.455E+01          | 1.426E+01 | 2.141E+01      | 2.611E+00 | -0.679  |
|         |           | 66.72        | *   | -1.601E+00          | 1.346E+01 | 2.246E+01      | 2.626E+00 | -0.071  |
| LU-176  |           | 88.36        |     | 3.873E-03           | 6.974E-02 | 1.051E-01      | 1.253E-02 | 0.037   |
|         |           | 201.83       |     | -2.032E-03          | 1.177E-02 | 1.848E-02      | 1.207E-03 | -0.110  |
|         |           | 306.84       | *   | -3.467E-03          | 1.237E-02 | 2.019E-02      | 1.318E-03 | -0.172  |
|         |           | 401.10       |     | 3.397E-02           | 2.896E+00 | 4.786E+00      | 2.700E-01 | 0.007   |
|         |           | 112.95       |     | -2.344E-01          | 3.232E-01 | 4.947E-01      | 3.830E-02 | -0.474  |
|         |           | 208.36       | *   | 1.821E-01           | 2.275E-01 | 3.924E-01      | 2.575E-02 | 0.464   |
|         |           | 52.97        |     | 1.599E+00           | 1.283E+00 | 2.379E+00      | 3.115E-01 | 0.672   |
|         |           | 54.07        |     | 2.494E-01           | 6.358E-01 | 1.116E+00      | 1.455E-01 | 0.224   |
|         |           | 61.30        |     | -2.260E-01          | 7.997E-01 | 1.319E+00      | 1.591E-01 | -0.171  |
|         |           | 121.62       |     | -1.753E-02          | 1.511E-01 | 2.457E-01      | 1.711E-02 | -0.071  |
| LU-177  |           | 147.16       |     | 2.121E-01           | 2.577E-01 | 4.504E-01      | 2.922E-02 | 0.471   |
|         |           | 171.86       |     | 1.605E-02           | 1.904E-01 | 3.102E-01      | 1.978E-02 | 0.052   |
|         |           | 218.09       |     | 2.230E-01           | 3.195E-01 | 5.502E-01      | 3.633E-02 | 0.405   |
|         |           | 268.79       |     | -1.280E-01          | 3.338E-01 | 5.435E-01      | 3.624E-02 | -0.236  |
|         |           | 319.02       |     | -3.296E-03          | 1.134E-01 | 1.892E-01      | 1.220E-02 | -0.017  |
|         |           | 367.43       |     | -1.761E-01          | 3.959E-01 | 6.196E-01      | 3.695E-02 | -0.284  |
|         |           | 413.65       | *   | 9.910E-03           | 6.978E-02 | 1.172E-01      | 6.632E-03 | 0.085   |
|         |           | 56.28        |     | -2.067E-01          | 5.266E-01 | 8.574E-01      | 1.093E-01 | -0.241  |
|         |           | 57.53        |     | 3.278E-02           | 2.531E-01 | 4.348E-01      | 5.449E-02 | 0.075   |
| HF-181  |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| W-181   | 65.20     |              |     | -1.779E-01          | 4.562E-01 | 7.111E-01      | 8.382E-02 | -0.250  |
|         | 133.02    |              |     | 1.405E-02           | 2.351E-02 | 4.057E-02      | 2.707E-03 | 0.346   |
|         | 136.25    |              |     | -1.370E-01          | 1.673E-01 | 2.512E-01      | 1.663E-02 | -0.545  |
|         | 345.85    |              |     | -9.298E-04          | 8.137E-02 | 1.354E-01      | 8.409E-03 | -0.007  |
|         | 482.03    | *            |     | 5.869E-03           | 1.788E-02 | 3.048E-02      | 1.721E-03 | 0.193   |
|         | 56.28     |              |     | -8.640E-02          | 2.209E-01 | 3.598E-01      | 4.586E-02 | -0.240  |
|         | 57.53     |              |     | 1.371E-02           | 1.063E-01 | 1.826E-01      | 2.288E-02 | 0.075   |
|         | 65.20     | *            |     | -7.409E-02          | 1.900E-01 | 2.962E-01      | 3.491E-02 | -0.250  |
|         | 67.75     |              |     | -6.815E-03          | 4.771E-02 | 7.936E-02      | 9.232E-03 | -0.086  |
|         | 100.10    |              |     | -4.182E-02          | 6.704E-02 | 1.043E-01      | 9.765E-03 | -0.401  |
| TA-182  | 152.43    |              |     | 4.715E-02           | 1.201E-01 | 2.031E-01      | 1.308E-02 | 0.232   |
|         | 222.10    |              |     | -9.141E-02          | 1.509E-01 | 2.240E-01      | 1.482E-02 | -0.408  |
|         | 1001.68   |              |     | 5.417E-01           | 8.249E-01 | 1.522E+00      | 1.159E-01 | 0.356   |
|         | 1121.28   |              |     | 2.198E-02           | 4.723E-02 | 8.496E-02      | 5.558E-03 | 0.259   |
|         | 1189.05   |              |     | 1.584E-02           | 1.072E-01 | 1.790E-01      | 1.081E-02 | 0.089   |
|         | 1221.42   | *            |     | 1.463E-02           | 7.027E-02 | 1.230E-01      | 7.654E-03 | 0.119   |
|         | 1230.97   |              |     | -1.367E-01          | 1.979E-01 | 2.773E-01      | 1.741E-02 | -0.493  |
|         | 57.98     |              |     | 4.128E-03           | 1.010E-01 | 1.720E-01      | 2.141E-02 | 0.024   |
|         | 59.32     |              |     | -5.758E-02          | 5.539E-02 | 8.293E-02      | 1.012E-02 | -0.694  |
|         | 67.20     |              |     | -1.535E-02          | 8.592E-02 | 1.425E-01      | 1.662E-02 | -0.108  |
| RE-183  | 162.32    | *            |     | -7.522E-03          | 4.290E-02 | 6.830E-02      | 4.352E-03 | -0.110  |
|         | 208.81    |              |     | 2.431E-01           | 3.910E-01 | 6.622E-01      | 4.347E-02 | 0.367   |
|         | 291.72    |              |     | -2.941E-02          | 4.029E-01 | 6.732E-01      | 4.446E-02 | -0.044  |
|         | 57.98     |              |     | 1.580E-02           | 3.866E-01 | 6.581E-01      | 8.194E-02 | 0.024   |
|         | 59.32     |              |     | -2.202E-01          | 2.118E-01 | 3.171E-01      | 3.871E-02 | -0.694  |
|         | 67.20     |              |     | -5.874E-02          | 3.287E-01 | 5.453E-01      | 6.360E-02 | -0.108  |
|         | 161.27    |              |     | -1.893E-02          | 1.380E-01 | 2.205E-01      | 1.407E-02 | -0.086  |
|         | 216.55    |              |     | -1.015E-01          | 1.082E-01 | 1.529E-01      | 1.009E-02 | -0.664  |
|         | 252.85    | *            |     | 1.817E-02           | 1.023E-01 | 1.764E-01      | 1.178E-02 | 0.103   |
|         | 318.01    |              |     | -1.737E-02          | 2.004E-01 | 3.324E-01      | 2.146E-02 | -0.052  |
| RE-184  | 792.07    |              |     | 2.067E-01           | 3.697E-01 | 6.774E-01      | 4.474E-02 | 0.305   |
|         | 903.28    |              |     | -1.202E-01          | 4.350E-01 | 6.762E-01      | 5.549E-02 | -0.178  |
|         | 920.93    |              |     | -1.151E-01          | 2.089E-01 | 3.050E-01      | 2.476E-02 | -0.377  |
|         | 59.72     |              |     | -7.398E-02          | 1.507E-01 | 2.424E-01      | 2.948E-02 | -0.305  |
|         | 61.14     |              |     | -3.669E-02          | 8.559E-02 | 1.391E-01      | 1.679E-02 | -0.264  |
|         | 69.30     |              |     | -4.455E-02          | 1.249E-01 | 2.034E-01      | 2.352E-02 | -0.219  |
|         | 592.07    |              |     | -2.581E-01          | 1.123E+00 | 1.732E+00      | 9.176E-02 | -0.149  |
|         | 646.12    | *            |     | 1.652E-02           | 1.702E-02 | 3.283E-02      | 1.637E-03 | 0.503   |
|         | 717.42    |              |     | 2.193E-01           | 3.470E-01 | 6.413E-01      | 3.578E-02 | 0.342   |
|         | 874.81    |              |     | 2.803E-02           | 2.520E-01 | 4.242E-01      | 3.333E-02 | 0.066   |
| OS-185  | 880.27    |              |     | 3.944E-02           | 3.424E-01 | 5.366E-01      | 4.263E-02 | 0.073   |
|         | 155.03    | *            |     | -3.622E-02          | 6.169E-02 | 9.392E-02      | 6.031E-03 | -0.386  |
|         | 477.96    |              |     | 6.238E-01           | 1.335E+00 | 2.318E+00      | 1.310E-01 | 0.269   |
|         | 633.10    |              |     | 5.013E-01           | 1.342E+00 | 2.268E+00      | 1.150E-01 | 0.221   |
|         | 63.58     |              |     | -6.228E+00          | 2.795E+01 | 4.672E+01      | 5.560E+00 | -0.133  |
|         | 227.08    |              |     | 1.259E+00           | 5.401E+00 | 8.793E+00      | 5.834E-01 | 0.143   |
|         | 290.67    | *            |     | 1.036E+00           | 3.143E+00 | 5.455E+00      | 3.605E-01 | 0.190   |
|         | 295.96    |              |     | 1.032E-03           | 4.133E-02 | 6.967E-02      | 4.645E-03 | 0.015   |
|         | 308.46    |              |     | -7.398E-03          | 4.197E-02 | 6.911E-02      | 4.546E-03 | -0.107  |
|         |           |              |     |                     |           |                |           |         |
| RE-188  |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |
| W-188   |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |
| IR-192  |           |              |     |                     |           |                |           |         |
|         |           |              |     |                     |           |                |           |         |

## ---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| AU-195  | 316.51    | *            |     | 2.233E-03           | 1.474E-02 | 2.509E-02      | 1.629E-03 | 0.089   |
|         | 468.07    |              |     | -1.397E-02          | 2.721E-02 | 4.084E-02      | 2.682E-03 | -0.342  |
|         | 604.41    |              |     | -4.118E-03          | 2.033E-01 | 3.247E-01      | 3.595E-02 | -0.013  |
|         | 612.46    |              |     | -2.430E-01          | 3.604E-01 | 5.207E-01      | 3.706E-02 | -0.467  |
|         | 65.12     |              |     | -3.675E-02          | 8.918E-02 | 1.387E-01      | 1.635E-02 | -0.265  |
|         | 66.83     |              |     | -8.936E-03          | 4.322E-02 | 7.153E-02      | 8.358E-03 | -0.125  |
|         | 75.70     |              |     | -1.230E-02          | 7.437E-02 | 1.157E-01      | 1.325E-02 | -0.106  |
|         | 98.88     | *            |     | -2.675E-03          | 8.755E-02 | 1.449E-01      | 1.385E-02 | -0.018  |
| TL-200  | 129.76    |              |     | 7.164E-02           | 1.074E+00 | 1.771E+00      | 1.193E-01 | 0.040   |
|         | 367.94    | *            |     | 1.645E-01           | 3.167E+00 | 5.288E+00      | 3.150E-01 | 0.031   |
|         | 579.30    |              |     | -1.681E+01          | 2.737E+01 | 3.980E+01      | 2.133E+00 | -0.422  |
|         | 828.27    |              |     | -1.261E+01          | 3.086E+01 | 4.665E+01      | 3.330E+00 | -0.270  |
| TL-201  | 1205.75   |              |     | -2.225E-02          | 1.123E+01 | 1.802E+01      | 1.105E+00 | -0.001  |
|         | 68.90     |              |     | -2.510E-01          | 4.785E-01 | 7.659E-01      | 8.869E-02 | -0.328  |
|         | 70.82     |              |     | 8.690E-02           | 2.433E-01 | 4.227E-01      | 4.865E-02 | 0.206   |
|         | 80.30     |              |     | 1.554E-01           | 4.384E-01 | 7.560E-01      | 8.740E-02 | 0.206   |
|         | 135.34    |              |     | -5.160E-01          | 2.330E+00 | 3.730E+00      | 2.475E-01 | -0.138  |
| TL-202  | 167.43    | *            |     | -1.806E-01          | 6.650E-01 | 1.046E+00      | 6.652E-02 | -0.173  |
|         | 68.90     |              |     | -6.893E-02          | 1.314E-01 | 2.104E-01      | 2.436E-02 | -0.328  |
|         | 70.82     |              |     | 2.381E-02           | 6.665E-02 | 1.158E-01      | 1.333E-02 | 0.206   |
|         | 80.30     |              |     | 4.259E-02           | 1.201E-01 | 2.072E-01      | 2.395E-02 | 0.206   |
| HG-203  | 439.56    | *            |     | 3.222E-04           | 2.214E-02 | 3.639E-02      | 2.064E-03 | 0.009   |
|         | 70.83     |              |     | 1.331E-01           | 3.794E-01 | 6.584E-01      | 1.027E-01 | 0.202   |
|         | 72.87     |              |     | -1.375E-01          | 2.362E-01 | 3.489E-01      | 5.308E-02 | -0.394  |
|         | 82.60     |              |     | -1.231E-01          | 3.638E-01 | 5.881E-01      | 9.311E-02 | -0.209  |
| BI-207  | 279.20    | *            |     | 6.312E-03           | 1.673E-02 | 2.921E-02      | 2.033E-03 | 0.216   |
|         | 72.80     |              |     | -1.059E-02          | 6.803E-02 | 1.126E-01      | 1.292E-02 | -0.094  |
|         | 74.97     |              |     | -2.027E-02          | 4.309E-02 | 6.492E-02      | 7.435E-03 | -0.312  |
|         | 84.90     |              |     | -8.309E-03          | 6.241E-02 | 1.029E-01      | 1.214E-02 | -0.081  |
| TL-207  | 569.67    |              |     | 2.573E-03           | 1.646E-02 | 2.707E-02      | 1.462E-03 | 0.095   |
|         | 1063.62   | *            |     | -1.167E-02          | 2.623E-02 | 3.872E-02      | 2.754E-03 | -0.301  |
|         | 1770.23   |              |     | 1.830E-01           | 3.491E-01 | 6.340E-01      | 3.852E-02 | 0.289   |
|         | 81.07     |              |     | 2.366E-02           | 8.172E-02 | 1.402E-01      | 1.625E-02 | 0.169   |
|         | 83.78     |              |     | -2.283E-02          | 4.329E-02 | 6.846E-02      | 8.030E-03 | -0.333  |
|         | 94.90     |              |     | -4.138E-02          | 9.545E-02 | 1.343E-01      | 1.384E-02 | -0.308  |
|         | 122.32    |              |     | 2.955E-02           | 7.442E-01 | 1.227E+00      | 9.442E-02 | 0.024   |
|         | 144.24    |              |     | -1.014E-01          | 2.720E-01 | 4.273E-01      | 3.342E-02 | -0.237  |
| TL-208  | 154.21    |              |     | -8.386E-02          | 1.522E-01 | 2.328E-01      | 1.756E-02 | -0.360  |
|         | 269.46    |              |     | -5.349E-02          | 8.130E-02 | 1.285E-01      | 8.867E-03 | -0.416  |
|         | 323.87    | *            |     | -1.715E-01          | 3.349E-01 | 5.298E-01      | 8.870E-02 | -0.324  |
|         | 338.28    |              |     | 9.201E-02           | 4.955E-01 | 7.848E-01      | 8.482E-02 | 0.117   |
|         | 445.03    |              |     | -8.547E-01          | 1.234E+00 | 1.760E+00      | 1.794E-01 | -0.486  |
|         | 277.35    |              |     | -2.140E-02          | 1.714E-01 | 2.859E-01      | 3.159E-02 | -0.075  |
|         | 510.84    | +            |     | 1.062E-01           | 1.754E-01 | 2.626E-01      | 2.636E-02 | 0.404   |
|         | 583.14    | *            |     | -1.880E-02          | 2.235E-02 | 3.016E-02      | 1.898E-03 | -0.623  |
| PO-209  | 860.37    |              |     | 1.226E-01           | 1.253E-01 | 2.410E-01      | 2.010E-02 | 0.509   |
|         | 260.50    |              |     | 8.816E-02           | 3.894E+00 | 6.611E+00      | 4.415E-01 | 0.013   |
|         | 262.80    |              |     | -5.201E+00          | 1.113E+01 | 1.793E+01      | 1.197E+00 | -0.290  |
|         | 896.60    | *            |     | 3.019E+00           | 3.278E+00 | 6.289E+00      | 5.161E-01 | 0.480   |

## ----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| BI-210  | 46.50     | *            |     | 1.648E+00           | 3.904E+00 | 6.828E+00      | 5.950E-01 | 0.241   |
| PB-210  | 46.50     | *            |     | 1.648E+00           | 3.904E+00 | 6.828E+00      | 5.950E-01 | 0.241   |
| PO-210  | 46.50     | *            |     | 1.648E+00           | 3.903E+00 | 6.828E+00      | 5.304E-01 | 0.241   |
| BI-211  | 72.87     |              |     | -7.615E-01          | 1.307E+00 | 1.933E+00      | 2.216E-01 | -0.394  |
|         | 351.07    | *            |     | 1.709E-01           | 1.146E-01 | 2.109E-01      | 1.425E-02 | 0.810   |
| PB-211  | 404.84    | *            |     | 2.375E-01           | 4.041E-01 | 6.736E-01      | 4.198E-01 | 0.353   |
|         | 427.08    |              |     | -8.062E-01          | 1.149E+00 | 1.531E+00      | 9.461E-01 | -0.527  |
|         | 831.96    |              |     | 1.978E-01           | 5.088E-01 | 8.781E-01      | 5.487E-01 | 0.225   |
| BI-212  | 727.18    | *            |     | 5.677E-02           | 1.149E-01 | 2.079E-01      | 1.589E-02 | 0.273   |
|         | 785.46    |              |     | 4.770E-01           | 8.136E-01 | 1.474E+00      | 9.596E-02 | 0.324   |
|         | 1620.62   |              |     | 1.908E-01           | 7.999E-01 | 1.384E+00      | 9.033E-02 | 0.138   |
| PB-212  | 74.81     |              |     | -6.160E-02          | 1.477E-01 | 2.232E-01      | 3.300E-02 | -0.276  |
|         | 77.11     |              |     | 1.329E-04           | 8.210E-02 | 1.333E-01      | 1.529E-02 | 0.001   |
|         | 87.30     |              |     | -8.008E-02          | 1.231E-01 | 1.907E-01      | 2.974E-02 | -0.420  |
|         | 238.63    | *            |     | -6.283E-03          | 3.033E-02 | 4.749E-02      | 3.814E-03 | -0.132  |
|         | 300.09    |              |     | -1.163E-01          | 3.220E-01 | 5.197E-01      | 4.576E-02 | -0.224  |
| PO-212  | 74.81     |              |     | -6.160E-02          | 1.477E-01 | 2.232E-01      | 3.300E-02 | -0.276  |
|         | 77.11     |              |     | 1.329E-04           | 8.210E-02 | 1.333E-01      | 1.529E-02 | 0.001   |
|         | 87.30     |              |     | -8.008E-02          | 1.231E-01 | 1.907E-01      | 2.974E-02 | -0.420  |
|         | 115.19    |              |     | 2.998E-01           | 1.365E+00 | 2.296E+00      | 1.728E-01 | 0.131   |
|         | 238.63    | *            |     | -6.283E-03          | 3.033E-02 | 4.749E-02      | 3.814E-03 | -0.132  |
|         | 300.09    |              |     | -1.163E-01          | 3.220E-01 | 5.197E-01      | 4.576E-02 | -0.224  |
| BI-214  | 609.31    | *            |     | -1.158E-02          | 3.847E-02 | 5.789E-02      | 4.254E-03 | -0.200  |
|         | 1120.29   |              |     | 4.865E-02           | 1.165E-01 | 2.055E-01      | 1.914E-02 | 0.237   |
|         | 1764.49   |              |     | -1.746E-01          | 1.645E-01 | 2.228E-01      | 1.358E-02 | -0.784  |
| PB-214  | 74.81     |              |     | -1.061E-01          | 2.544E-01 | 3.846E-01      | 5.246E-02 | -0.276  |
|         | 77.11     |              |     | 2.279E-04           | 1.407E-01 | 2.285E-01      | 3.147E-02 | 0.001   |
|         | 87.30     |              |     | -1.372E-01          | 2.106E-01 | 3.266E-01      | 4.651E-02 | -0.420  |
|         | 241.98    |              |     | 1.865E-02           | 1.621E-01 | 2.596E-01      | 2.262E-02 | 0.072   |
|         | 295.21    |              |     | 2.124E-02           | 5.847E-02 | 1.018E-01      | 9.247E-03 | 0.209   |
|         | 351.92    | *            |     | 3.383E-02           | 3.975E-02 | 6.976E-02      | 5.951E-03 | 0.485   |
| PO-214  | 74.81     |              |     | -1.061E-01          | 2.544E-01 | 3.846E-01      | 5.246E-02 | -0.276  |
|         | 77.11     |              |     | 2.279E-04           | 1.407E-01 | 2.285E-01      | 3.147E-02 | 0.001   |
|         | 87.30     |              |     | -1.372E-01          | 2.106E-01 | 3.266E-01      | 4.651E-02 | -0.420  |
|         | 241.98    |              |     | 1.865E-02           | 1.621E-01 | 2.596E-01      | 2.262E-02 | 0.072   |
|         | 295.21    |              |     | 2.124E-02           | 5.847E-02 | 1.018E-01      | 9.247E-03 | 0.209   |
|         | 351.92    | *            |     | 3.383E-02           | 3.975E-02 | 6.976E-02      | 5.951E-03 | 0.485   |
| PO-215  | 81.07     |              |     | 2.366E-02           | 8.172E-02 | 1.402E-01      | 1.625E-02 | 0.169   |
|         | 83.78     |              |     | -2.283E-02          | 4.329E-02 | 6.846E-02      | 8.030E-03 | -0.333  |
|         | 94.90     |              |     | -4.138E-02          | 9.545E-02 | 1.343E-01      | 1.384E-02 | -0.308  |
|         | 122.32    |              |     | 2.955E-02           | 7.442E-01 | 1.227E+00      | 9.442E-02 | 0.024   |
|         | 144.24    |              |     | -1.014E-01          | 2.720E-01 | 4.273E-01      | 3.342E-02 | -0.237  |
|         | 154.21    |              |     | -8.386E-02          | 1.522E-01 | 2.328E-01      | 1.756E-02 | -0.360  |
|         | 269.46    |              |     | -5.349E-02          | 8.130E-02 | 1.285E-01      | 8.867E-03 | -0.416  |
|         | 323.87    | *            |     | -1.715E-01          | 3.349E-01 | 5.298E-01      | 8.870E-02 | -0.324  |
|         | 338.28    |              |     | 9.201E-02           | 4.955E-01 | 7.848E-01      | 8.482E-02 | 0.117   |
|         | 445.03    |              |     | -8.547E-01          | 1.234E+00 | 1.760E+00      | 1.794E-01 | -0.486  |
| PO-216  | 74.81     |              |     | -6.160E-02          | 1.477E-01 | 2.232E-01      | 3.300E-02 | -0.276  |
|         | 77.11     |              |     | 1.329E-04           | 8.210E-02 | 1.333E-01      | 1.529E-02 | 0.001   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PO-218  | 87.30     |              |     | -8.008E-02          | 1.231E-01 | 1.907E-01      | 2.974E-02 | -0.420  |
|         | 238.63    | *            |     | -6.283E-03          | 3.033E-02 | 4.749E-02      | 3.814E-03 | -0.132  |
|         | 300.09    |              |     | -1.163E-01          | 3.220E-01 | 5.197E-01      | 4.576E-02 | -0.224  |
|         | 74.81     |              |     | -1.061E-01          | 2.544E-01 | 3.846E-01      | 5.246E-02 | -0.276  |
|         | 77.11     |              |     | 2.279E-04           | 1.407E-01 | 2.285E-01      | 3.147E-02 | 0.001   |
|         | 87.30     |              |     | -1.372E-01          | 2.106E-01 | 3.266E-01      | 4.651E-02 | -0.420  |
| RN-219  | 241.98    |              |     | 1.865E-02           | 1.621E-01 | 2.596E-01      | 2.262E-02 | 0.072   |
|         | 295.21    |              |     | 2.124E-02           | 5.847E-02 | 1.018E-01      | 9.247E-03 | 0.209   |
|         | 351.92    | *            |     | 3.383E-02           | 3.975E-02 | 6.976E-02      | 5.951E-03 | 0.485   |
|         | 271.23    |              |     | -5.528E-02          | 1.024E-01 | 1.637E-01      | 1.432E-02 | -0.338  |
| RN-220  | 401.81    | *            |     | 8.514E-03           | 1.856E-01 | 3.080E-01      | 4.170E-02 | 0.028   |
|         | 549.76    | *            |     | -8.773E+00          | 1.232E+01 | 1.748E+01      | 9.579E-01 | -0.502  |
| RA-223  | 81.07     |              |     | 2.366E-02           | 8.172E-02 | 1.402E-01      | 1.625E-02 | 0.169   |
|         | 83.78     |              |     | -2.283E-02          | 4.329E-02 | 6.846E-02      | 8.030E-03 | -0.333  |
| RA-224  | 94.90     |              |     | -4.138E-02          | 9.545E-02 | 1.343E-01      | 1.384E-02 | -0.308  |
|         | 122.32    |              |     | 2.955E-02           | 7.442E-01 | 1.227E+00      | 9.442E-02 | 0.024   |
|         | 144.24    |              |     | -1.014E-01          | 2.720E-01 | 4.273E-01      | 3.342E-02 | -0.237  |
|         | 154.21    |              |     | -8.386E-02          | 1.522E-01 | 2.328E-01      | 1.756E-02 | -0.360  |
|         | 269.46    |              |     | -5.349E-02          | 8.130E-02 | 1.285E-01      | 8.867E-03 | -0.416  |
|         | 323.87    | *            |     | -1.715E-01          | 3.349E-01 | 5.298E-01      | 8.870E-02 | -0.324  |
|         | 338.28    |              |     | 9.201E-02           | 4.955E-01 | 7.848E-01      | 8.482E-02 | 0.117   |
|         | 445.03    |              |     | -8.547E-01          | 1.234E+00 | 1.760E+00      | 1.794E-01 | -0.486  |
|         | 240.98    | *            |     | 2.423E-01           | 3.159E-01 | 5.363E-01      | 3.575E-02 | 0.452   |
|         | 609.31    | *            |     | -1.158E-02          | 3.847E-02 | 5.789E-02      | 4.254E-03 | -0.200  |
| RA-226  | 1120.29   |              |     | 4.865E-02           | 1.165E-01 | 2.055E-01      | 1.914E-02 | 0.237   |
|         | 1764.49   |              |     | -1.746E-01          | 1.645E-01 | 2.228E-01      | 1.358E-02 | -0.784  |
| AC-227  | 79.80     |              |     | 4.674E-02           | 6.357E-01 | 1.071E+00      | 2.446E-01 | 0.044   |
|         | 236.00    |              |     | -5.764E-02          | 1.044E-01 | 1.556E-01      | 1.704E-02 | -0.371  |
|         | 256.20    | *            |     | -6.447E-02          | 1.598E-01 | 2.596E-01      | 3.724E-02 | -0.248  |
|         | 286.10    |              |     | -2.803E-01          | 6.890E-01 | 1.111E+00      | 1.333E-01 | -0.252  |
| TH-227  | 299.80    |              |     | -7.891E-02          | 5.770E-01 | 9.548E-01      | 1.582E-01 | -0.083  |
|         | 304.40    |              |     | 6.922E-01           | 9.040E-01 | 1.612E+00      | 2.831E-01 | 0.429   |
|         | 334.20    |              |     | -5.759E-01          | 1.051E+00 | 1.640E+00      | 3.034E-01 | -0.351  |
|         | 79.80     |              |     | 4.674E-02           | 6.357E-01 | 1.071E+00      | 2.474E-01 | 0.044   |
|         | 94.00     | +            |     | 7.063E-03           | 1.420E+00 | 1.289E+00      | 2.910E-01 | 0.005   |
|         | 236.00    |              |     | -5.764E-02          | 1.043E-01 | 1.556E-01      | 1.498E-02 | -0.371  |
|         | 256.20    | *            |     | -6.447E-02          | 1.599E-01 | 2.596E-01      | 4.470E-02 | -0.248  |
|         | 286.10    |              |     | -2.803E-01          | 7.433E-01 | 1.111E+00      | 1.114E+00 | -0.252  |
|         | 299.80    |              |     | -7.891E-02          | 5.770E-01 | 9.548E-01      | 1.582E-01 | -0.083  |
|         | 304.40    |              |     | 6.922E-01           | 9.040E-01 | 1.612E+00      | 2.831E-01 | 0.429   |
| AC-228  | 334.20    |              |     | -5.759E-01          | 1.051E+00 | 1.640E+00      | 3.034E-01 | -0.351  |
|         | 338.32    |              |     | 2.107E-02           | 1.189E-01 | 1.876E-01      | 7.662E-02 | 0.112   |
|         | 911.07    | *            |     | -2.283E-03          | 7.232E-02 | 1.235E-01      | 1.347E-02 | -0.018  |
|         | 969.11    |              |     | -4.449E-02          | 1.097E-01 | 1.648E-01      | 3.801E-02 | -0.270  |
| RA-228  | 338.32    |              |     | 2.107E-02           | 1.189E-01 | 1.876E-01      | 7.662E-02 | 0.112   |
|         | 911.07    | *            |     | -2.283E-03          | 7.232E-02 | 1.235E-01      | 1.347E-02 | -0.018  |
| TH-228  | 969.11    |              |     | -4.449E-02          | 1.097E-01 | 1.648E-01      | 3.801E-02 | -0.270  |
|         | 74.81     |              |     | -6.213E-02          | 1.488E-01 | 2.252E-01      | 2.591E-02 | -0.276  |
|         | 77.11     |              |     | 1.341E-04           | 8.281E-02 | 1.344E-01      | 1.542E-02 | 0.001   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|---------------------|-----------|----------------|-----------|---------|
| TH-229  |           | 87.30        |              | -8.077E-02          | 1.238E-01 | 1.923E-01      | 2.302E-02 | -0.420  |
|         |           | 238.63       | *            | -6.337E-03          | 3.060E-02 | 4.790E-02      | 3.847E-03 | -0.132  |
|         |           | 300.09       |              | -1.173E-01          | 3.319E-01 | 5.242E-01      | 3.094E-01 | -0.224  |
|         |           | 85.43        |              | -2.295E-02          | 6.073E-02 | 9.744E-02      | 1.153E-02 | -0.235  |
|         |           | 88.47        |              | 6.698E-03           | 4.050E-02 | 6.185E-02      | 7.352E-03 | 0.108   |
|         |           | 100.00       |              | -4.227E-02          | 7.268E-02 | 1.137E-01      | 1.066E-02 | -0.372  |
| TH-230  |           | 193.63       | *            | -2.306E-02          | 2.100E-01 | 3.329E-01      | 2.160E-02 | -0.069  |
|         |           | 210.97       |              | 1.618E-01           | 3.414E-01 | 5.694E-01      | 3.743E-02 | 0.284   |
|         |           | 609.31       | *            | -1.158E-02          | 3.847E-02 | 5.789E-02      | 4.254E-03 | -0.200  |
|         |           | 1120.29      |              | 4.865E-02           | 1.165E-01 | 2.055E-01      | 1.914E-02 | 0.237   |
| PA-231  |           | 1764.49      |              | -1.746E-01          | 1.645E-01 | 2.228E-01      | 1.358E-02 | -0.784  |
|         |           | 283.67       | *            | 8.983E-02           | 6.587E-01 | 1.126E+00      | 1.593E-01 | 0.080   |
| TH-231  |           | 301.29       |              | -1.238E-01          | 2.491E-01 | 3.963E-01      | 4.317E-02 | -0.312  |
|         |           | 81.07        |              | 2.366E-02           | 8.172E-02 | 1.402E-01      | 1.625E-02 | 0.169   |
|         |           | 83.78        |              | -2.283E-02          | 4.329E-02 | 6.846E-02      | 8.030E-03 | -0.333  |
|         |           | 94.90        |              | -4.138E-02          | 9.545E-02 | 1.343E-01      | 1.384E-02 | -0.308  |
|         |           | 122.32       |              | 2.955E-02           | 7.442E-01 | 1.227E+00      | 9.442E-02 | 0.024   |
|         |           | 144.24       |              | -1.014E-01          | 2.720E-01 | 4.273E-01      | 3.342E-02 | -0.237  |
|         |           | 154.21       |              | -8.386E-02          | 1.522E-01 | 2.328E-01      | 1.756E-02 | -0.360  |
|         |           | 269.46       |              | -5.349E-02          | 8.130E-02 | 1.285E-01      | 8.867E-03 | -0.416  |
|         |           | 323.87       | *            | -1.715E-01          | 3.349E-01 | 5.298E-01      | 8.870E-02 | -0.324  |
|         |           | 338.28       |              | 9.201E-02           | 4.955E-01 | 7.848E-01      | 8.482E-02 | 0.117   |
| U-231   |           | 445.03       |              | -8.547E-01          | 1.234E+00 | 1.760E+00      | 1.794E-01 | -0.486  |
|         |           | 84.21        |              | 4.004E-01           | 5.898E-01 | 1.049E+00      | 1.233E-01 | 0.382   |
|         | +         | 92.29        |              | 2.375E-03           | 4.774E-01 | 5.037E-01      | 5.480E-02 | 0.005   |
|         |           | 95.87        | *            | -9.533E-02          | 1.609E-01 | 2.216E-01      | 2.240E-02 | -0.430  |
| TH-232  |           | 108.00       |              | -3.850E-01          | 3.311E-01 | 4.405E-01      | 3.646E-02 | -0.874  |
|         |           | 338.32       |              | 2.107E-02           | 1.186E-01 | 1.876E-01      | 1.179E-02 | 0.112   |
|         |           | 911.07       | *            | -2.283E-03          | 7.232E-02 | 1.235E-01      | 1.347E-02 | -0.018  |
| PA-233  |           | 969.11       |              | -4.449E-02          | 1.097E-01 | 1.648E-01      | 3.801E-02 | -0.270  |
|         |           | 75.28        |              | -5.486E-01          | 1.258E+00 | 1.903E+00      | 3.254E-01 | -0.288  |
|         |           | 86.59        |              | -8.831E-02          | 5.149E-01 | 8.436E-01      | 2.367E-01 | -0.105  |
|         |           | 300.12       |              | -5.954E-02          | 1.665E-01 | 2.688E-01      | 3.705E-02 | -0.222  |
|         |           | 311.98       | *            | -1.473E-02          | 2.971E-02 | 4.712E-02      | 3.213E-03 | -0.313  |
| PA-234  |           | 340.50       |              | -1.587E-01          | 2.637E-01 | 4.050E-01      | 9.351E-02 | -0.392  |
|         |           | 398.62       |              | 2.677E-01           | 9.118E-01 | 1.558E+00      | 4.023E-01 | 0.172   |
|         |           | 415.76       |              | -3.482E-01          | 7.739E-01 | 1.193E+00      | 2.451E-01 | -0.292  |
|         |           | 63.00        |              | 4.176E-01           | 8.687E-01 | 1.529E+00      | 2.686E-01 | 0.273   |
|         |           | 94.67        |              | -1.557E-02          | 6.679E-02 | 9.656E-02      | 1.319E-02 | -0.161  |
|         |           | 98.44        |              | 6.267E-03           | 3.823E-02 | 6.134E-02      | 3.432E-02 | 0.102   |
|         |           | 99.86        |              | -9.714E-02          | 1.850E-01 | 2.912E-01      | 2.737E-02 | -0.334  |
|         |           | 111.00       |              | 5.267E-02           | 7.526E-02 | 1.315E-01      | 1.527E-02 | 0.401   |
|         |           | 131.20       |              | -1.618E-02          | 4.291E-02 | 6.778E-02      | 4.546E-03 | -0.239  |
|         |           | 152.70       |              | 2.545E-02           | 1.208E-01 | 2.004E-01      | 3.218E-02 | 0.127   |
|         |           | 186.00       |              | -6.702E-02          | 6.305E-01 | 9.828E-01      | 3.016E-01 | -0.068  |
|         |           | 226.40       |              | -1.128E-02          | 1.840E-01 | 2.905E-01      | 3.486E-02 | -0.039  |
|         |           | 227.20       |              | 3.889E-02           | 1.941E-01 | 3.150E-01      | 2.090E-02 | 0.123   |
|         |           | 248.90       |              | 4.085E-02           | 4.288E-01 | 6.839E-01      | 1.487E-01 | 0.060   |
|         |           | 293.70       |              | 2.807E-02           | 2.859E-01 | 4.856E-01      | 7.957E-02 | 0.058   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 369.80       |     | 1.659E-01           | 3.623E-01 | 6.332E-01      | 1.321E-01 | 0.262   |
|         |           | 568.70       |     | 2.572E-01           | 5.176E-01 | 8.904E-01      | 4.813E-02 | 0.289   |
|         |           | 569.50       |     | 5.325E-02           | 1.419E-01 | 2.403E-01      | 1.298E-02 | 0.222   |
|         |           | 574.00       |     | -1.320E-01          | 7.609E-01 | 1.192E+00      | 6.418E-02 | -0.111  |
|         |           | 699.00       |     | 1.138E-01           | 3.284E-01 | 5.768E-01      | 1.029E-01 | 0.197   |
|         |           | 706.10       |     | 1.092E-01           | 4.796E-01 | 8.263E-01      | 3.643E-01 | 0.132   |
|         |           | 733.00       |     | 2.546E-02           | 1.556E-01 | 2.672E-01      | 5.680E-02 | 0.095   |
|         |           | 742.81       |     | -1.227E-01          | 5.433E-01 | 8.572E-01      | 5.737E-01 | -0.143  |
|         |           | 796.30       |     | 1.350E-01           | 2.922E-01 | 5.312E-01      | 1.407E-01 | 0.254   |
|         |           | 805.60       |     | 2.834E-02           | 4.805E-01 | 8.048E-01      | 2.430E-01 | 0.035   |
|         |           | 819.60       |     | 1.793E-01           | 5.764E-01 | 9.996E-01      | 3.768E-01 | 0.179   |
|         |           | 826.30       |     | -1.108E-01          | 3.259E-01 | 4.937E-01      | 2.196E-01 | -0.224  |
|         |           | 831.60       |     | 1.198E-01           | 2.415E-01 | 4.346E-01      | 1.280E-01 | 0.276   |
|         |           | 876.40       |     | 1.827E-01           | 4.087E-01 | 6.557E-01      | 6.737E-01 | 0.279   |
|         |           | 880.51       |     | 3.168E-03           | 1.277E-01 | 1.958E-01      | 1.556E-02 | 0.016   |
|         |           | 883.24       |     | 8.540E-02           | 1.228E-01 | 2.087E-01      | 1.401E-01 | 0.409   |
|         |           | 899.00       |     | -1.077E-01          | 4.089E-01 | 6.357E-01      | 2.774E-01 | -0.169  |
|         |           | 925.00       |     | 2.656E-01           | 5.491E-01 | 9.811E-01      | 7.945E-02 | 0.271   |
|         |           | 926.50       |     | 9.965E-02           | 8.187E-02 | 1.575E-01      | 3.955E-02 | 0.633   |
|         |           | 946.00       | *   | -2.239E-02          | 1.444E-01 | 2.295E-01      | 4.242E-02 | -0.098  |
|         |           | 949.00       |     | -5.832E-02          | 2.006E-01 | 3.088E-01      | 2.460E-02 | -0.189  |
|         |           | 980.50       |     | -5.168E-02          | 2.759E-01 | 4.293E-01      | 3.334E-02 | -0.120  |
|         |           | 1394.10      |     | 6.339E-02           | 4.773E-01 | 8.208E-01      | 5.325E-01 | 0.077   |
| PA-234M |           | 766.42       |     | 1.368E+00           | 4.382E+00 | 7.609E+00      | 3.834E+00 | 0.180   |
|         |           | 1001.03      | *   | 9.695E-01           | 2.055E+00 | 3.657E+00      | 3.334E-01 | 0.265   |
| TH-234  |           | 63.29        | *   | 2.162E-01           | 7.327E-01 | 1.274E+00      | 2.520E-01 | 0.170   |
|         | +         | 92.38        |     | 1.828E-03           | 3.675E-01 | 3.869E-01      | 7.449E-02 | 0.005   |
| U-234   |           | 609.31       | *   | -1.158E-02          | 3.847E-02 | 5.789E-02      | 4.254E-03 | -0.200  |
|         |           | 1120.29      |     | 4.865E-02           | 1.165E-01 | 2.055E-01      | 1.914E-02 | 0.237   |
|         |           | 1764.49      |     | -1.746E-01          | 1.645E-01 | 2.228E-01      | 1.358E-02 | -0.784  |
| U-235   |           | 89.95        |     | 5.475E-02           | 4.137E-01 | 6.279E-01      | 1.995E-01 | 0.087   |
|         | +         | 93.35        |     | 2.197E-03           | 4.418E-01 | 4.393E-01      | 1.261E-01 | 0.005   |
|         |           | 105.00       |     | -1.352E-01          | 4.097E-01 | 6.533E-01      | 1.950E-01 | -0.207  |
|         |           | 143.76       | *   | -6.288E-03          | 8.164E-02 | 1.321E-01      | 2.189E-02 | -0.048  |
|         |           | 163.35       |     | -8.993E-02          | 1.978E-01 | 3.049E-01      | 5.541E-02 | -0.295  |
|         |           | 185.71       |     | -4.628E-03          | 2.384E-02 | 3.695E-02      | 2.383E-03 | -0.125  |
|         |           | 205.31       |     | -1.655E-01          | 2.197E-01 | 3.189E-01      | 5.817E-02 | -0.519  |
| NP-236  |           | 94.67        |     | -1.177E-02          | 5.065E-02 | 7.325E-02      | 7.584E-03 | -0.161  |
|         |           | 98.44        |     | 4.740E-03           | 2.878E-02 | 4.637E-02      | 4.469E-03 | 0.102   |
|         |           | 111.00       |     | 3.984E-02           | 5.682E-02 | 9.943E-02      | 7.898E-03 | 0.401   |
|         |           | 160.31       | *   | 1.691E-03           | 3.231E-02 | 5.265E-02      | 3.362E-03 | 0.032   |
| NP-237  |           | 86.50        | *   | -1.994E-02          | 7.670E-02 | 1.244E-01      | 2.963E-02 | -0.160  |
|         |           | 95.87        |     | -2.471E-01          | 4.209E-01 | 5.743E-01      | 1.447E-01 | -0.430  |
| U-238   |           | 63.29        | *   | 2.162E-01           | 7.327E-01 | 1.274E+00      | 2.520E-01 | 0.170   |
|         | +         | 92.38        |     | 1.828E-03           | 3.675E-01 | 3.869E-01      | 4.202E-02 | 0.005   |
| NP-239  |           | 99.55        |     | -9.247E-03          | 6.073E-02 | 9.929E-02      | 9.383E-03 | -0.093  |
|         |           | 117.00       | *   | -5.280E-02          | 7.817E-02 | 1.204E-01      | 8.857E-03 | -0.439  |
|         |           | 209.75       |     | 2.166E-01           | 3.345E-01 | 5.674E-01      | 3.727E-02 | 0.382   |
|         |           | 228.18       |     | -4.508E-02          | 1.090E-01 | 1.656E-01      | 1.099E-02 | -0.272  |



---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         | 277.60    |              |     | -7.002E-04          | 8.222E-02 | 1.387E-01      | 9.224E-03 | -0.005  |
|         | 334.30    |              |     | -3.599E-01          | 5.891E-01 | 9.159E-01      | 5.792E-02 | -0.393  |
| AM-241  | 59.54     | *            |     | -7.355E-02          | 8.404E-02 | 1.289E-01      | 1.627E-02 | -0.571  |
| AM-243  | 74.67     | *            |     | -1.034E-02          | 2.401E-02 | 3.627E-02      | 4.154E-03 | -0.285  |
|         | 86.72     |              |     | -1.148E-01          | 2.867E+00 | 4.766E+00      | 5.685E-01 | -0.024  |
|         | 117.66    |              |     | -4.321E-01          | 1.529E+00 | 2.450E+00      | 1.788E-01 | -0.176  |
|         | 142.18    |              |     | 1.248E+00           | 6.741E+00 | 1.119E+01      | 7.321E-01 | 0.112   |
| CM-243  | 99.55     |              |     | -9.511E-03          | 6.246E-02 | 1.021E-01      | 9.651E-03 | -0.093  |
|         | 103.76    | *            |     | -8.187E-03          | 3.757E-02 | 6.090E-02      | 5.370E-03 | -0.134  |
|         | 117.00    |              |     | -5.430E-02          | 8.039E-02 | 1.238E-01      | 9.108E-03 | -0.439  |
|         | 209.75    |              |     | 2.135E-01           | 3.296E-01 | 5.591E-01      | 3.672E-02 | 0.382   |
|         | 228.18    |              |     | -4.553E-02          | 1.101E-01 | 1.673E-01      | 1.110E-02 | -0.272  |
|         | 277.60    |              |     | -7.056E-04          | 8.286E-02 | 1.397E-01      | 9.295E-03 | -0.005  |
| AM-246  | 798.80    |              |     | -7.285E-02          | 5.920E-02 | 7.291E-02      | 4.886E-03 | -0.999  |
|         | 1036.00   |              |     | -8.192E-02          | 1.354E-01 | 1.894E-01      | 1.393E-02 | -0.432  |
|         | 1062.04   |              |     | 7.718E-02           | 9.488E-02 | 1.807E-01      | 1.287E-02 | 0.427   |
|         | 1078.86   | *            |     | -3.818E-02          | 6.803E-02 | 9.674E-02      | 6.743E-03 | -0.395  |
| CM-247  | 278.00    |              |     | 2.085E-01           | 3.358E-01 | 5.983E-01      | 3.979E-02 | 0.348   |
|         | 287.40    |              |     | -2.660E-01          | 5.715E-01 | 9.178E-01      | 6.078E-02 | -0.290  |
|         | 402.60    | *            |     | 2.010E-04           | 1.657E-02 | 2.738E-02      | 1.545E-03 | 0.007   |
| CF-249  | 252.85    |              |     | 7.002E-02           | 3.943E-01 | 6.797E-01      | 4.539E-02 | 0.103   |
|         | 333.44    |              |     | 3.101E-02           | 7.101E-02 | 1.244E-01      | 7.874E-03 | 0.249   |
|         | 387.95    | *            |     | -5.313E-03          | 1.804E-02 | 2.871E-02      | 1.632E-03 | -0.185  |
| CF-251  | 176.60    | *            |     | 1.733E-02           | 5.888E-02 | 9.742E-02      | 6.235E-03 | 0.178   |
|         | 227.00    |              |     | 7.180E-02           | 1.703E-01 | 2.827E-01      | 1.876E-02 | 0.254   |
|         | 285.00    |              |     | -7.286E-02          | 7.613E-01 | 1.270E+00      | 8.422E-02 | -0.057  |

## VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202015449      *
* Acquisition date   : 23-JAN-2010 14:07:28 Detector SN#      :              *
* Detector ID        : GAM04                      Sensitivity   : 5.000        *
* Geometry           : CAN                      Energy tolerance: 1.500        *
* Elapsed live time  : 0 02:00:00.00           Abundance limit : 75.000        *
* Elapsed real time  : 0 02:00:00.43           Half life ratio : 8.000        *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 15-JAN-2010 00:00:00 Nuclide Library : SOLID          *
* Sample ID          : G1202015449           Analyst initials: MXR1          *
* Batch Number       : 941639                Sample Quantity : 1.4616E+02 GRAM *
* Recovery           : 1.00000               Carrier Weight  : 0.00000        *
*****
*                                     QC DATA                               *
*
* Standard Weight    : 0.00000
* CALIB. DATE/TIME   : 5-MAY-2009 14:25:41 MS Isotope         :
* MSD DPM            : 0.000                  MSD Isotope      :
* LCS DPM            : 0.000                  LCS Isotope       :
* LCSD DPM           : 0.000                  LCSD Isotope      :
*****

```

## Combined Activity-MDA Report

## ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act error | MDA<br>(pCi/GRAM ) |           |
|---------|-------------------------|-----------|--------------------|-----------|
| ANH-511 | 2.294E-02               | 3.709E-02 | 2.121E-02          | 0.000E+00 |

## ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L. Act error<br>) Ided | MDA<br>(pCi/GRAM ) |                      |
|---------|-------------------------------------|--------------------------|--------------------|----------------------|
| BE-7    | 1.332E-01                           | 1.297E-01                | 2.537E-01          | 0.000E+00 NOT IDENT. |
| NA-22   | 5.903E-03                           | 1.830E-02                | 3.358E-02          | 0.000E+00 NOT IDENT. |
| NA-24   | 0.000E+00                           | 2.185E+02                | 0.000E+00          | 0.000E+00 SHORT HLIF |
| AL-26   | 2.324E-03                           | 1.447E-02                | 2.541E-02          | 0.000E+00 NOT IDENT. |
| K-40    | -6.241E-02                          | 2.225E-01                | 3.777E-01          | 0.000E+00 NOT IDENT. |
| TI-44   | -5.407E-03                          | 1.415E-02                | 2.427E-02          | 0.000E+00 NOT IDENT. |
| SC-46   | -2.380E-04                          | 1.267E-02                | 2.157E-02          | 0.000E+00 NOT IDENT. |
| V-48    | -7.018E-03                          | 1.967E-02                | 3.159E-02          | 0.000E+00 NOT IDENT. |
| CR-51   | -4.152E-02                          | 1.439E-01                | 2.424E-01          | 0.000E+00 NOT IDENT. |
| MN-52   | -4.432E-02                          | 4.002E-02                | 3.653E-02          | 0.000E+00 NOT IDENT. |
| MN-54   | 2.501E-03                           | 1.479E-02                | 2.623E-02          | 0.000E+00 NOT IDENT. |
| CO-56   | -1.828E-03                          | 1.729E-02                | 2.918E-02          | 0.000E+00 NOT IDENT. |
| CO-57   | 1.119E-03                           | 1.019E-02                | 1.836E-02          | 0.000E+00 NOT IDENT. |
| CO-58   | 1.739E-03                           | 1.519E-02                | 2.677E-02          | 0.000E+00 NOT IDENT. |
| FE-59   | 1.290E-02                           | 3.549E-02                | 6.383E-02          | 0.000E+00 NOT IDENT. |
| CO-60   | -1.210E-02                          | 1.568E-02                | 2.084E-02          | 0.000E+00 NOT IDENT. |
| ZN-65   | 1.154E-02                           | 3.395E-02                | 6.094E-02          | 0.000E+00 NOT IDENT. |
| GE-68   | 5.283E-01                           | 4.722E-01                | 9.814E-01          | 0.000E+00 NOT IDENT. |
| AS-73   | 6.130E-01                           | 6.220E-01                | 1.252E+00          | 0.000E+00 NOT IDENT. |
| AS-74   | -1.528E-02                          | 3.428E-02                | 5.353E-02          | 0.000E+00 NOT IDENT. |
| SE-75   | -6.598E-03                          | 1.756E-02                | 3.052E-02          | 0.000E+00 NOT IDENT. |
| BR-77   | -4.380E-01                          | 6.342E-01                | 9.448E-01          | 0.000E+00 NOT IDENT. |
| SR-82   | 5.819E-02                           | 9.225E-02                | 1.833E-01          | 0.000E+00 NOT IDENT. |
| RB-83   | -1.296E-02                          | 2.601E-02                | 4.028E-02          | 0.000E+00 NOT IDENT. |
| RB-84   | -6.825E-03                          | 2.674E-02                | 3.976E-02          | 0.000E+00 NOT IDENT. |
| KR-85   | 8.047E+00                           | 4.306E+00                | 8.132E+00          | 0.000E+00 NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| SR-85   | 3.852E-02  | 2.061E-02 | 3.893E-02 | 0.000E+00 | NOT IDENT. |
| RB-86   | 2.528E-01  | 2.353E-01 | 4.868E-01 | 0.000E+00 | NOT IDENT. |
| Y-88    | -8.058E-04 | 1.858E-02 | 3.033E-02 | 0.000E+00 | NOT IDENT. |
| ZR-88   | 6.290E-03  | 1.329E-02 | 2.451E-02 | 0.000E+00 | NOT IDENT. |
| Y-91    | -1.926E+00 | 4.907E+00 | 7.025E+00 | 0.000E+00 | NOT IDENT. |
| NB-94   | 8.024E-03  | 1.492E-02 | 2.807E-02 | 0.000E+00 | NOT IDENT. |
| NB-95   | 3.738E-04  | 1.509E-02 | 2.630E-02 | 0.000E+00 | NOT IDENT. |
| NB-95M  | -1.316E-02 | 4.988E-02 | 8.230E-02 | 0.000E+00 | NOT IDENT. |
| ZR-95   | 1.736E-02  | 2.817E-02 | 5.373E-02 | 0.000E+00 | NOT IDENT. |
| NB-97   | 0.000E+00  | 7.700E+01 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| ZR-97   | 0.000E+00  | 1.618E+03 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| MO-99   | -2.033E-01 | 8.640E-01 | 1.437E+00 | 0.000E+00 | NOT IDENT. |
| TC-99M  | 0.000E+00  | 2.134E+08 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | -1.186E-03 | 1.613E-02 | 2.477E-02 | 0.000E+00 | NOT IDENT. |
| RH-102  | -3.408E-03 | 1.316E-02 | 2.176E-02 | 0.000E+00 | NOT IDENT. |
| RU-103  | 1.415E-03  | 1.675E-02 | 2.900E-02 | 0.000E+00 | NOT IDENT. |
| RH-106  | 4.708E-02  | 1.410E-01 | 2.492E-01 | 0.000E+00 | FAIL ABUN  |
| RU-106  | 4.708E-02  | 1.409E-01 | 2.492E-01 | 0.000E+00 | FAIL ABUN  |
| AG-108M | -8.293E-03 | 1.472E-02 | 2.349E-02 | 0.000E+00 | NOT IDENT. |
| CD-109  | -5.086E-02 | 2.900E-01 | 4.636E-01 | 0.000E+00 | NOT IDENT. |
| AG-110M | 7.052E-04  | 1.670E-02 | 2.587E-02 | 0.000E+00 | NOT IDENT. |
| IN-111  | -4.756E-02 | 9.977E-02 | 1.598E-01 | 0.000E+00 | NOT IDENT. |
| IN-113M | 1.463E-02  | 1.956E-02 | 3.712E-02 | 0.000E+00 | NOT IDENT. |
| SN-113  | 1.463E-02  | 1.956E-02 | 3.712E-02 | 0.000E+00 | NOT IDENT. |
| IN-114M | 2.028E-03  | 6.905E-02 | 1.196E-01 | 0.000E+00 | NOT IDENT. |
| CD-115  | -8.930E-02 | 6.018E-01 | 9.985E-01 | 0.000E+00 | NOT IDENT. |
| SN-117M | 4.584E-03  | 1.535E-02 | 2.766E-02 | 0.000E+00 | NOT IDENT. |
| SB-122  | -5.203E-04 | 1.650E-01 | 2.788E-01 | 0.000E+00 | NOT IDENT. |
| I-123   | 0.000E+00  | 5.893E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TE-123M | -1.819E-03 | 1.096E-02 | 1.889E-02 | 0.000E+00 | NOT IDENT. |
| I-124   | 7.622E-03  | 1.126E-01 | 1.909E-01 | 0.000E+00 | NOT IDENT. |
| SB-124  | -1.888E-02 | 3.929E-02 | 5.541E-02 | 0.000E+00 | NOT IDENT. |
| SB-125  | -2.317E-02 | 4.204E-02 | 6.751E-02 | 0.000E+00 | NOT IDENT. |
| TE-125M | 9.540E-01  | 3.880E+00 | 6.491E+00 | 0.000E+00 | NOT IDENT. |
| I-126   | -2.474E-02 | 6.528E-02 | 9.186E-02 | 0.000E+00 | NOT IDENT. |
| SB-126  | -4.242E-02 | 3.815E-02 | 5.172E-02 | 0.000E+00 | NOT IDENT. |
| SN-126  | -1.510E-02 | 2.763E-02 | 4.510E-02 | 0.000E+00 | NOT IDENT. |
| SB-127  | 1.019E-01  | 1.831E-01 | 3.473E-01 | 0.000E+00 | NOT IDENT. |
| XE-127  | 1.323E-03  | 1.617E-02 | 2.803E-02 | 0.000E+00 | NOT IDENT. |
| I-131   | 1.957E-03  | 2.937E-02 | 5.209E-02 | 0.000E+00 | NOT IDENT. |
| TE-132  | -3.393E-02 | 8.155E-02 | 1.327E-01 | 0.000E+00 | NOT IDENT. |
| BA-133  | -2.947E-02 | 1.914E-02 | 2.650E-02 | 0.000E+00 | NOT IDENT. |
| I-133   | 0.000E+00  | 1.372E+01 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-134  | 2.837E-03  | 1.436E-02 | 2.594E-02 | 0.000E+00 | NOT IDENT. |
| CS-135  | 2.459E-02  | 6.707E-02 | 1.250E-01 | 0.000E+00 | NOT IDENT. |
| I-135   | 0.000E+00  | 1.379E+08 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-136  | -1.636E-02 | 3.164E-02 | 4.659E-02 | 0.000E+00 | NOT IDENT. |
| BA-137M | -9.436E-04 | 2.345E-02 | 3.789E-02 | 0.000E+00 | NOT IDENT. |
| CS-137  | -9.975E-04 | 2.479E-02 | 4.005E-02 | 0.000E+00 | NOT IDENT. |
| CE-139  | 2.982E-03  | 1.203E-02 | 2.148E-02 | 0.000E+00 | NOT IDENT. |
| BA-140  | -2.540E-03 | 9.267E-02 | 1.529E-01 | 0.000E+00 | NOT IDENT. |
| LA-140  | -3.122E-02 | 3.630E-02 | 4.757E-02 | 0.000E+00 | NOT IDENT. |
| CE-141  | -1.109E-02 | 2.184E-02 | 3.664E-02 | 0.000E+00 | NOT IDENT. |
| CE-143  | -6.617E-01 | 2.083E+00 | 3.609E+00 | 0.000E+00 | FAIL ABUN  |
| CE-144  | 3.772E-02  | 8.160E-02 | 1.503E-01 | 0.000E+00 | NOT IDENT. |
| PM-144  | -5.852E-03 | 1.566E-02 | 2.595E-02 | 0.000E+00 | NOT IDENT. |
| PR-144  | -3.952E-01 | 1.058E+00 | 1.752E+00 | 0.000E+00 | NOT IDENT. |
| PM-146  | -1.612E-03 | 2.052E-02 | 3.373E-02 | 0.000E+00 | NOT IDENT. |
| ND-147  | -8.471E-02 | 1.533E-01 | 2.341E-01 | 0.000E+00 | NOT IDENT. |
| PM-149  | -2.442E-01 | 5.023E+00 | 8.976E+00 | 0.000E+00 | NOT IDENT. |
| EU-152  | -2.592E-03 | 4.231E-02 | 7.431E-02 | 0.000E+00 | NOT IDENT. |
| GD-153  | 3.742E-02  | 3.110E-02 | 5.756E-02 | 0.000E+00 | NOT IDENT. |
| EU-154  | 2.073E-02  | 4.979E-02 | 9.311E-02 | 0.000E+00 | NOT IDENT. |
| EU-155  | -1.758E-02 | 3.989E-02 | 6.880E-02 | 0.000E+00 | NOT IDENT. |
| TB-160  | -1.929E-02 | 5.527E-02 | 8.783E-02 | 0.000E+00 | NOT IDENT. |
| HO-166M | -1.419E-02 | 2.655E-02 | 4.240E-02 | 0.000E+00 | NOT IDENT. |
| TM-171  | -1.601E+00 | 1.319E+01 | 2.421E+01 | 0.000E+00 | NOT IDENT. |
| LU-176  | -3.467E-03 | 1.212E-02 | 2.106E-02 | 0.000E+00 | NOT IDENT. |
| LU-177  | 1.821E-01  | 2.230E-01 | 4.128E-01 | 0.000E+00 | NOT IDENT. |
| LU-177M | 9.910E-03  | 6.839E-02 | 1.214E-01 | 0.000E+00 | NOT IDENT. |
| HF-181  | 5.869E-03  | 1.752E-02 | 3.146E-02 | 0.000E+00 | NOT IDENT. |
| W-181   | -7.409E-02 | 1.862E-01 | 3.195E-01 | 0.000E+00 | NOT IDENT. |
| TA-182  | 1.463E-02  | 6.887E-02 | 1.242E-01 | 0.000E+00 | NOT IDENT. |
| RE-183  | -7.522E-03 | 4.204E-02 | 7.224E-02 | 0.000E+00 | NOT IDENT. |
| RE-184  | 1.817E-02  | 1.003E-01 | 1.847E-01 | 0.000E+00 | NOT IDENT. |
| OS-185  | 1.652E-02  | 1.668E-02 | 3.366E-02 | 0.000E+00 | NOT IDENT. |
| RE-188  | -3.622E-02 | 6.046E-02 | 9.943E-02 | 0.000E+00 | NOT IDENT. |
| W-188   | 1.036E+00  | 3.080E+00 | 5.696E+00 | 0.000E+00 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| IR-192  | 2.233E-03  | 1.445E-02 | 2.615E-02 | 0.000E+00 | NOT IDENT. |
| AU-195  | -2.675E-03 | 8.580E-02 | 1.549E-01 | 0.000E+00 | NOT IDENT. |
| TL-200  | 1.645E-01  | 3.103E+00 | 5.492E+00 | 0.000E+00 | NOT IDENT. |
| TL-201  | -1.806E-01 | 6.517E-01 | 1.106E+00 | 0.000E+00 | NOT IDENT. |
| TL-202  | 3.222E-04  | 2.170E-02 | 3.764E-02 | 0.000E+00 | NOT IDENT. |
| HG-203  | 6.312E-03  | 1.640E-02 | 3.052E-02 | 0.000E+00 | NOT IDENT. |
| BI-207  | -1.167E-02 | 2.570E-02 | 3.924E-02 | 0.000E+00 | NOT IDENT. |
| TL-207  | -1.715E-01 | 3.282E-01 | 5.519E-01 | 0.000E+00 | NOT IDENT. |
| TL-208  | -1.880E-02 | 2.190E-02 | 3.099E-02 | 0.000E+00 | FAIL ABUN  |
| PO-209  | 3.019E+00  | 3.213E+00 | 6.398E+00 | 0.000E+00 | NOT IDENT. |
| BI-210  | 1.648E+00  | 3.826E+00 | 7.416E+00 | 0.000E+00 | NOT IDENT. |
| PB-210  | 1.648E+00  | 3.826E+00 | 7.416E+00 | 0.000E+00 | NOT IDENT. |
| PO-210  | 1.648E+00  | 3.825E+00 | 7.416E+00 | 0.000E+00 | NOT IDENT. |
| BI-211  | 1.709E-01  | 1.123E-01 | 2.193E-01 | 0.000E+00 | NOT IDENT. |
| PB-211  | 2.375E-01  | 3.960E-01 | 6.980E-01 | 0.000E+00 | NOT IDENT. |
| BI-212  | 5.677E-02  | 1.126E-01 | 2.126E-01 | 0.000E+00 | NOT IDENT. |
| PB-212  | -6.283E-03 | 2.973E-02 | 4.980E-02 | 0.000E+00 | NOT IDENT. |
| PO-212  | -6.283E-03 | 2.973E-02 | 4.980E-02 | 0.000E+00 | NOT IDENT. |
| BI-214  | -1.158E-02 | 3.770E-02 | 5.943E-02 | 0.000E+00 | NOT IDENT. |
| PB-214  | 3.383E-02  | 3.895E-02 | 7.253E-02 | 0.000E+00 | NOT IDENT. |
| PO-214  | 3.383E-02  | 3.895E-02 | 7.253E-02 | 0.000E+00 | NOT IDENT. |
| PO-215  | -1.715E-01 | 3.282E-01 | 5.519E-01 | 0.000E+00 | NOT IDENT. |
| PO-216  | -6.283E-03 | 2.973E-02 | 4.980E-02 | 0.000E+00 | NOT IDENT. |
| PO-218  | 3.383E-02  | 3.895E-02 | 7.253E-02 | 0.000E+00 | NOT IDENT. |
| RN-219  | 8.514E-03  | 1.819E-01 | 3.192E-01 | 0.000E+00 | NOT IDENT. |
| RN-220  | -8.773E+00 | 1.207E+01 | 1.799E+01 | 0.000E+00 | NOT IDENT. |
| RA-223  | -1.715E-01 | 3.282E-01 | 5.519E-01 | 0.000E+00 | NOT IDENT. |
| RA-224  | 2.423E-01  | 3.096E-01 | 5.623E-01 | 0.000E+00 | NOT IDENT. |
| RA-226  | -1.158E-02 | 3.770E-02 | 5.943E-02 | 0.000E+00 | NOT IDENT. |
| AC-227  | -6.447E-02 | 1.566E-01 | 2.718E-01 | 0.000E+00 | NOT IDENT. |
| TH-227  | -6.447E-02 | 1.567E-01 | 2.718E-01 | 0.000E+00 | FAIL ABUN  |
| AC-228  | -2.283E-03 | 7.087E-02 | 1.257E-01 | 0.000E+00 | NOT IDENT. |
| RA-228  | -2.283E-03 | 7.087E-02 | 1.257E-01 | 0.000E+00 | NOT IDENT. |
| TH-228  | -6.337E-03 | 2.998E-02 | 5.023E-02 | 0.000E+00 | NOT IDENT. |
| TH-229  | -2.306E-02 | 2.058E-01 | 3.507E-01 | 0.000E+00 | NOT IDENT. |
| TH-230  | -1.158E-02 | 3.770E-02 | 5.943E-02 | 0.000E+00 | NOT IDENT. |
| PA-231  | 8.983E-02  | 6.455E-01 | 1.176E+00 | 0.000E+00 | NOT IDENT. |
| TH-231  | -1.715E-01 | 3.282E-01 | 5.519E-01 | 0.000E+00 | NOT IDENT. |
| U-231   | -9.533E-02 | 1.577E-01 | 2.370E-01 | 0.000E+00 | FAIL ABUN  |
| TH-232  | -2.283E-03 | 7.087E-02 | 1.257E-01 | 0.000E+00 | NOT IDENT. |
| PA-233  | -1.473E-02 | 2.911E-02 | 4.912E-02 | 0.000E+00 | NOT IDENT. |
| PA-234  | -2.239E-02 | 1.415E-01 | 2.332E-01 | 0.000E+00 | NOT IDENT. |
| PA-234M | 9.695E-01  | 2.014E+00 | 3.711E+00 | 0.000E+00 | NOT IDENT. |
| TH-234  | 2.162E-01  | 7.180E-01 | 1.375E+00 | 0.000E+00 | FAIL ABUN  |
| U-234   | -1.158E-02 | 3.770E-02 | 5.943E-02 | 0.000E+00 | NOT IDENT. |
| U-235   | -6.288E-03 | 8.000E-02 | 1.401E-01 | 0.000E+00 | FAIL ABUN  |
| NP-236  | 1.691E-03  | 3.167E-02 | 5.570E-02 | 0.000E+00 | NOT IDENT. |
| NP-237  | -1.994E-02 | 7.517E-02 | 1.333E-01 | 0.000E+00 | NOT IDENT. |
| U-238   | 2.162E-01  | 7.180E-01 | 1.375E+00 | 0.000E+00 | FAIL ABUN  |
| NP-239  | -5.280E-02 | 7.661E-02 | 1.282E-01 | 0.000E+00 | NOT IDENT. |
| AM-241  | -7.355E-02 | 8.236E-02 | 1.392E-01 | 0.000E+00 | NOT IDENT. |
| AM-243  | -1.034E-02 | 2.353E-02 | 3.900E-02 | 0.000E+00 | NOT IDENT. |
| CM-243  | -8.187E-03 | 3.681E-02 | 6.504E-02 | 0.000E+00 | NOT IDENT. |
| AM-246  | -3.818E-02 | 6.667E-02 | 9.800E-02 | 0.000E+00 | NOT IDENT. |
| CM-247  | 2.010E-04  | 1.624E-02 | 2.838E-02 | 0.000E+00 | NOT IDENT. |
| CF-249  | -5.313E-03 | 1.768E-02 | 2.979E-02 | 0.000E+00 | NOT IDENT. |
| CF-251  | 1.733E-02  | 5.770E-02 | 1.028E-01 | 0.000E+00 | NOT IDENT. |

```

*****
*                               GEL Laboratories LLC                      *
*                               2040 Savage Road                        *
*                               Charleston, SC 29414                    *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202015449.CNF;1
Sample date        : 15-JAN-2010 00:00:00 Acquisition date : 23-JAN-2010 14:07:28
Sample ID          : G1202015449 Sample quantity : 1.46160E+02 GRAM
Detector name      : GAM04 Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00 Elapsed real time: 0 02:00:00.43 0.0%
Energy tolerance   : 1.50000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 941639 Detector SN# :
Matrix Spike ID    : LCS ID : 1032-A
*****

```

## Nuclide Line Activity Report

## Nuclide Type:

| Nuclide | Energy | Area | %Abn    | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|--------|------|---------|-----------|-------------------------|------------------------|-------------------|
| ANH-511 | 511.00 | 24   | 100.00* | 2.730E+00 | 2.294E-02               | 2.294E-02              | 164.94            |

Flag: "\*" = Keyline

Summary of Nuclide Activity  
Sample ID : G1202015449

Page : 2  
Acquisition date : 23-JAN-2010 14:07:28

Total number of lines in spectrum 3  
Number of unidentified lines 0  
Number of lines tentatively identified by NID 3 100.00%

Nuclide Type :

| Nuclide          | Hlife     | Decay | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | Decay Corr<br>2-Sigma Error | 2-Sigma<br>%Error | Flags |
|------------------|-----------|-------|-------------------------|------------------------|-----------------------------|-------------------|-------|
| ANH-511          | 1.00E+09Y | 1.00  | 2.294E-02               | 2.294E-02              | 3.784E-02                   | 164.94            |       |
| Total Activity : |           |       | 2.294E-02               | 2.294E-02              |                             |                   |       |

Grand Total Activity : 2.294E-02 2.294E-02

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

Unidentified Energy Lines  
Sample ID : G1202015449

Page : 3  
Acquisition date : 23-JAN-2010 14:07:28

| It | Energy | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | %Eff     | Flags |
|----|--------|------|-------|------|---------|------|----|----------|------|----------|-------|
| 0  | 663.35 | 14   | 35    | 1.25 | 1326.79 | 1320 | 14 | 1.94E-03 | **** | 2.20E+00 | T     |

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202015449.CNF;1
* Acquisition date   : 23-JAN-2010 14:07:28  Detector SN#      :
* Detector ID        : GAM04                  Sensitivity       : 5.00000
* Geometry           : CAN                    Energy tolerance: 1.50000
* Elapsed live time  : 0 02:00:00.00          Abundance limit  : 75.00000
* Elapsed real time  : 0 02:00:00.43          Half life ratio  : 8.00000
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 15-JAN-2010 00:00:00  Nuclide Library : SOLID
* Sample ID          : G1202015449          Analyst initials: MXR1
* Batch Number       : 941639               Sample Quantity : 1.46160E+02 GRAM
*****
*                                     QC DATA                              *
*
* CALIB. DATE/TIME   : 5-MAY-2009 14:25:41.36MS Isotope       :
* MSD ID             :                      MSD Isotope       :
* LCS ID             : 1032-A               LCS Isotope       :
*****

```

## Combined Activity-MDA Report

## ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| ANH-511 | 2.294E-02              | 3.784E-02 | 2.057E-02         | 1.151E-03 | 1.115   |

## ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| BE-7    | 1.332E-01                          |              | 1.324E-01 | 2.458E-01           | 1.628E-02 | 0.542   |
| NA-22   | 5.903E-03                          |              | 1.867E-02 | 3.328E-02           | 2.176E-03 | 0.177   |
| NA-24   | 7.928E-05                          |              | 1.115E-04 | Half-Life too short |           |         |
| AL-26   | 2.324E-03                          |              | 1.476E-02 | 2.540E-02           | 1.506E-03 | 0.092   |
| K-40    | -6.241E-02                         |              | 2.270E-01 | 3.755E-01           | 2.669E-02 | -0.166  |
| TI-44   | -5.407E-03                         |              | 1.444E-02 | 2.260E-02           | 2.598E-03 | -0.239  |
| SC-46   | -2.380E-04                         |              | 1.293E-02 | 2.119E-02           | 1.714E-03 | -0.011  |
| V-48    | -4.018E-03                         |              | 2.007E-02 | 3.111E-02           | 2.410E-03 | -0.129  |
| CR-51   | -7.152E-02                         |              | 1.468E-01 | 2.326E-01           | 1.638E-02 | -0.307  |
| MN-52   | -4.432E-02                         |              | 4.084E-02 | 3.631E-02           | 2.478E-03 | -1.221  |
| MN-54   | 2.501E-03                          |              | 1.509E-02 | 2.574E-02           | 1.863E-03 | 0.097   |



---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| CO-56   | -1.828E-03                         |              | 1.765E-02 | 2.864E-02           | 2.124E-03 | -0.064  |
| CO-57   | 1.119E-03                          |              | 1.039E-02 | 1.725E-02           | 1.197E-03 | 0.065   |
| CO-58   | 1.739E-03                          |              | 1.550E-02 | 2.625E-02           | 1.812E-03 | 0.066   |
| FE-59   | 1.290E-02                          |              | 3.622E-02 | 6.304E-02           | 4.817E-03 | 0.205   |
| CO-60   | -1.210E-02                         |              | 1.600E-02 | 2.067E-02           | 1.417E-03 | -0.586  |
| ZN-65   | 1.154E-02                          |              | 3.464E-02 | 6.021E-02           | 3.983E-03 | 0.192   |
| GE-68   | 5.283E-01                          |              | 4.818E-01 | 9.688E-01           | 6.767E-02 | 0.545   |
| AS-73   | 6.130E-01                          |              | 6.347E-01 | 1.156E+00           | 1.513E-01 | 0.530   |
| AS-74   | -1.528E-02                         |              | 3.498E-02 | 5.212E-02           | 2.752E-03 | -0.293  |
| SE-75   | -6.598E-03                         |              | 1.791E-02 | 2.917E-02           | 1.962E-03 | -0.226  |
| BR-77   | -4.380E-01                         |              | 6.471E-01 | 9.170E-01           | 5.106E-02 | -0.478  |
| SR-82   | 5.819E-02                          |              | 9.413E-02 | 1.795E-01           | 1.146E-02 | 0.324   |
| RB-83   | -1.296E-02                         |              | 2.654E-02 | 3.909E-02           | 2.177E-03 | -0.331  |
| RB-84   | -6.825E-03                         |              | 2.729E-02 | 3.906E-02           | 3.111E-03 | -0.175  |
| KR-85   | 8.047E+00                          |              | 4.394E+00 | 7.890E+00           | 4.407E-01 | 1.020   |
| SR-85   | 3.852E-02                          |              | 2.104E-02 | 3.777E-02           | 2.110E-03 | 1.020   |
| RB-86   | 2.528E-01                          |              | 2.401E-01 | 4.806E-01           | 3.360E-02 | 0.526   |
| Y-88    | -8.058E-04                         |              | 1.896E-02 | 3.032E-02           | 1.769E-03 | -0.027  |
| ZR-88   | 6.290E-03                          |              | 1.356E-02 | 2.364E-02           | 1.330E-03 | 0.266   |
| Y-91    | -1.926E+00                         |              | 5.007E+00 | 6.953E+00           | 4.261E-01 | -0.277  |
| NB-94   | 8.024E-03                          |              | 1.522E-02 | 2.744E-02           | 1.478E-03 | 0.292   |
| NB-95   | 3.738E-04                          |              | 1.540E-02 | 2.576E-02           | 1.605E-03 | 0.015   |
| NB-95M  | -1.316E-02                         |              | 5.090E-02 | 7.846E-02           | 6.439E-03 | -0.168  |
| ZR-95   | 1.736E-02                          |              | 2.875E-02 | 5.259E-02           | 3.830E-03 | 0.330   |
| NB-97   | 4.970E-06                          |              | 3.929E-05 | Half-Life too short |           |         |
| ZR-97   | 1.256E-03                          |              | 8.255E-04 | Half-Life too short |           |         |
| MO-99   | -2.033E-01                         |              | 8.817E-01 | 1.406E+00           | 1.942E-01 | -0.145  |
| TC-99M  | -7.235E+01                         |              | 1.089E+02 | Half-Life too short |           |         |
| RH-101  | -1.186E-03                         |              | 1.646E-02 | 2.353E-02           | 1.532E-03 | -0.050  |
| RH-102  | -3.408E-03                         |              | 1.343E-02 | 2.108E-02           | 1.192E-03 | -0.162  |
| RU-103  | 1.415E-03                          |              | 1.709E-02 | 2.812E-02           | 3.533E-03 | 0.050   |
| RH-106  | 4.708E-02                          |              | 1.439E-01 | 2.429E-01           | 2.775E-02 | 0.194   |
| RU-106  | 4.708E-02                          |              | 1.438E-01 | 2.429E-01           | 1.248E-02 | 0.194   |
| AG-108M | -8.293E-03                         |              | 1.502E-02 | 2.270E-02           | 1.403E-03 | -0.365  |
| CD-109  | -5.086E-02                         |              | 2.960E-01 | 4.326E-01           | 5.199E-02 | -0.118  |
| AG-110M | 7.052E-04                          |              | 1.704E-02 | 2.524E-02           | 1.348E-03 | 0.028   |
| IN-111  | -4.756E-02                         |              | 1.018E-01 | 1.525E-01           | 1.017E-02 | -0.312  |
| IN-113M | 1.463E-02                          |              | 1.996E-02 | 3.579E-02           | 2.156E-03 | 0.409   |
| SN-113  | 1.463E-02                          |              | 1.996E-02 | 3.579E-02           | 2.156E-03 | 0.409   |
| IN-114M | 2.028E-03                          |              | 7.046E-02 | 1.135E-01           | 7.343E-03 | 0.018   |
| CD-115  | -8.930E-02                         |              | 6.140E-01 | 9.693E-01           | 5.379E-02 | -0.092  |
| SN-117M | 4.584E-03                          |              | 1.567E-02 | 2.614E-02           | 1.672E-03 | 0.175   |
| SB-122  | -5.203E-04                         |              | 1.684E-01 | 2.711E-01           | 1.470E-02 | -0.002  |
| I-123   | -9.779E-05                         |              | 3.007E-04 | Half-Life too short |           |         |
| TE-123M | -1.819E-03                         |              | 1.119E-02 | 1.785E-02           | 1.154E-03 | -0.102  |
| I-124   | 7.622E-03                          |              | 1.148E-01 | 1.859E-01           | 9.747E-03 | 0.041   |
| SB-124  | -1.888E-02                         |              | 4.009E-02 | 5.529E-02           | 3.757E-03 | -0.342  |
| SB-125  | -2.317E-02                         |              | 4.289E-02 | 6.523E-02           | 3.861E-03 | -0.355  |

----- Non-Identified Nuclides -----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| TE-125M | 9.540E-01                          |              | 3.959E+00 | 6.085E+00           | 6.031E-01 | 0.157   |
| I-126   | -2.474E-02                         |              | 6.661E-02 | 8.966E-02           | 4.423E-03 | -0.276  |
| SB-126  | -4.242E-02                         |              | 3.893E-02 | 5.057E-02           | 2.842E-03 | -0.839  |
| SN-126  | -1.510E-02                         |              | 2.820E-02 | 4.208E-02           | 5.047E-03 | -0.359  |
| SB-127  | 1.019E-01                          |              | 1.868E-01 | 3.392E-01           | 2.350E-02 | 0.301   |
| XE-127  | 1.323E-03                          |              | 1.650E-02 | 2.663E-02           | 1.741E-03 | 0.050   |
| I-131   | 1.957E-03                          |              | 2.997E-02 | 5.015E-02           | 3.313E-03 | 0.039   |
| TE-132  | -3.393E-02                         |              | 8.322E-02 | 1.264E-01           | 1.730E-02 | -0.268  |
| BA-133  | -2.947E-02                         |              | 1.953E-02 | 2.550E-02           | 2.987E-03 | -1.156  |
| I-133   | -1.268E-05                         |              | 7.001E-06 | Half-Life too short |           |         |
| CS-134  | 2.837E-03                          |              | 1.466E-02 | 2.542E-02           | 1.713E-03 | 0.112   |
| CS-135  | 2.459E-02                          |              | 6.843E-02 | 1.195E-01           | 9.964E-03 | 0.206   |
| I-135   | 1.735E+02                          |              | 7.037E+01 | Half-Life too short |           |         |
| CS-136  | -1.636E-02                         |              | 3.228E-02 | 4.596E-02           | 3.527E-03 | -0.356  |
| BA-137M | -9.436E-04                         |              | 2.393E-02 | 3.698E-02           | 1.803E-03 | -0.026  |
| CS-137  | -9.975E-04                         |              | 2.530E-02 | 3.909E-02           | 1.918E-03 | -0.026  |
| CE-139  | 2.982E-03                          |              | 1.228E-02 | 2.032E-02           | 1.291E-03 | 0.147   |
| BA-140  | -2.540E-03                         |              | 9.457E-02 | 1.485E-01           | 4.823E-02 | -0.017  |
| LA-140  | -3.122E-02                         |              | 3.704E-02 | 4.741E-02           | 3.122E-03 | -0.659  |
| CE-141  | -1.109E-02                         |              | 2.228E-02 | 3.456E-02           | 2.320E-03 | -0.321  |
| CE-143  | -6.617E-01                         |              | 2.125E+00 | 3.458E+00           | 7.204E-01 | -0.191  |
| CE-144  | 3.772E-02                          |              | 8.327E-02 | 1.415E-01           | 2.063E-02 | 0.267   |
| PM-144  | -5.852E-03                         |              | 1.598E-02 | 2.535E-02           | 1.346E-03 | -0.231  |
| PR-144  | -3.952E-01                         |              | 1.079E+00 | 1.712E+00           | 9.090E-02 | -0.231  |
| PM-146  | -1.612E-03                         |              | 2.094E-02 | 3.263E-02           | 2.785E-03 | -0.049  |
| ND-147  | -8.471E-02                         |              | 1.564E-01 | 2.273E-01           | 3.048E-02 | -0.373  |
| PM-149  | -2.442E-01                         |              | 5.126E+00 | 8.594E+00           | 1.247E+00 | -0.028  |
| EU-152  | -2.592E-03                         |              | 4.318E-02 | 7.144E-02           | 4.944E-03 | -0.036  |
| GD-153  | 3.742E-02                          |              | 3.174E-02 | 5.383E-02           | 5.284E-03 | 0.695   |
| EU-154  | 2.073E-02                          |              | 5.081E-02 | 9.228E-02           | 9.053E-03 | 0.225   |
| EU-155  | -1.758E-02                         |              | 4.071E-02 | 6.444E-02           | 5.617E-03 | -0.273  |
| TB-160  | -1.929E-02                         |              | 5.640E-02 | 8.629E-02           | 6.842E-03 | -0.224  |
| HO-166M | -1.419E-02                         |              | 2.709E-02 | 4.145E-02           | 2.281E-03 | -0.342  |
| TM-171  | -1.601E+00                         |              | 1.346E+01 | 2.246E+01           | 2.626E+00 | -0.071  |
| LU-176  | -3.467E-03                         |              | 1.237E-02 | 2.019E-02           | 1.318E-03 | -0.172  |
| LU-177  | 1.821E-01                          |              | 2.275E-01 | 3.924E-01           | 2.575E-02 | 0.464   |
| LU-177M | 9.910E-03                          |              | 6.978E-02 | 1.172E-01           | 6.632E-03 | 0.085   |
| HF-181  | 5.869E-03                          |              | 1.788E-02 | 3.048E-02           | 1.721E-03 | 0.193   |
| W-181   | -7.409E-02                         |              | 1.900E-01 | 2.962E-01           | 3.491E-02 | -0.250  |
| TA-182  | 1.463E-02                          |              | 7.027E-02 | 1.230E-01           | 7.654E-03 | 0.119   |
| RE-183  | -7.522E-03                         |              | 4.290E-02 | 6.830E-02           | 4.352E-03 | -0.110  |
| RE-184  | 1.817E-02                          |              | 1.023E-01 | 1.764E-01           | 1.178E-02 | 0.103   |
| OS-185  | 1.652E-02                          |              | 1.702E-02 | 3.283E-02           | 1.637E-03 | 0.503   |
| RE-188  | -3.622E-02                         |              | 6.169E-02 | 9.392E-02           | 6.031E-03 | -0.386  |
| W-188   | 1.036E+00                          |              | 3.143E+00 | 5.455E+00           | 3.605E-01 | 0.190   |
| IR-192  | 2.233E-03                          |              | 1.474E-02 | 2.509E-02           | 1.629E-03 | 0.089   |
| AU-195  | -2.675E-03                         |              | 8.755E-02 | 1.449E-01           | 1.385E-02 | -0.018  |
| TL-200  | 1.645E-01                          |              | 3.167E+00 | 5.288E+00           | 3.150E-01 | 0.031   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| TL-201  | -1.806E-01                         |              | 6.650E-01 | 1.046E+00         | 6.652E-02 | -0.173  |
| TL-202  | 3.222E-04                          |              | 2.214E-02 | 3.639E-02         | 2.064E-03 | 0.009   |
| HG-203  | 6.312E-03                          |              | 1.673E-02 | 2.921E-02         | 2.033E-03 | 0.216   |
| BI-207  | -1.167E-02                         |              | 2.623E-02 | 3.872E-02         | 2.754E-03 | -0.301  |
| TL-207  | -1.715E-01                         |              | 3.349E-01 | 5.298E-01         | 8.870E-02 | -0.324  |
| TL-208  | -1.880E-02                         |              | 2.235E-02 | 3.016E-02         | 1.898E-03 | -0.623  |
| PO-209  | 3.019E+00                          |              | 3.278E+00 | 6.289E+00         | 5.161E-01 | 0.480   |
| BI-210  | 1.648E+00                          |              | 3.904E+00 | 6.828E+00         | 5.950E-01 | 0.241   |
| PB-210  | 1.648E+00                          |              | 3.904E+00 | 6.828E+00         | 5.950E-01 | 0.241   |
| PO-210  | 1.648E+00                          |              | 3.903E+00 | 6.828E+00         | 5.304E-01 | 0.241   |
| BI-211  | 1.709E-01                          |              | 1.146E-01 | 2.109E-01         | 1.425E-02 | 0.810   |
| PB-211  | 2.375E-01                          |              | 4.041E-01 | 6.736E-01         | 4.198E-01 | 0.353   |
| BI-212  | 5.677E-02                          |              | 1.149E-01 | 2.079E-01         | 1.589E-02 | 0.273   |
| PB-212  | -6.283E-03                         |              | 3.033E-02 | 4.749E-02         | 3.814E-03 | -0.132  |
| PO-212  | -6.283E-03                         |              | 3.033E-02 | 4.749E-02         | 3.814E-03 | -0.132  |
| BI-214  | -1.158E-02                         |              | 3.847E-02 | 5.789E-02         | 4.254E-03 | -0.200  |
| PB-214  | 3.383E-02                          |              | 3.975E-02 | 6.976E-02         | 5.951E-03 | 0.485   |
| PO-214  | 3.383E-02                          |              | 3.975E-02 | 6.976E-02         | 5.951E-03 | 0.485   |
| PO-215  | -1.715E-01                         |              | 3.349E-01 | 5.298E-01         | 8.870E-02 | -0.324  |
| PO-216  | -6.283E-03                         |              | 3.033E-02 | 4.749E-02         | 3.814E-03 | -0.132  |
| PO-218  | 3.383E-02                          |              | 3.975E-02 | 6.976E-02         | 5.951E-03 | 0.485   |
| RN-219  | 8.514E-03                          |              | 1.856E-01 | 3.080E-01         | 4.170E-02 | 0.028   |
| RN-220  | -8.773E+00                         |              | 1.232E+01 | 1.748E+01         | 9.579E-01 | -0.502  |
| RA-223  | -1.715E-01                         |              | 3.349E-01 | 5.298E-01         | 8.870E-02 | -0.324  |
| RA-224  | 2.423E-01                          |              | 3.159E-01 | 5.363E-01         | 3.575E-02 | 0.452   |
| RA-226  | -1.158E-02                         |              | 3.847E-02 | 5.789E-02         | 4.254E-03 | -0.200  |
| AC-227  | -6.447E-02                         |              | 1.598E-01 | 2.596E-01         | 3.724E-02 | -0.248  |
| TH-227  | -6.447E-02                         |              | 1.599E-01 | 2.596E-01         | 4.470E-02 | -0.248  |
| AC-228  | -2.283E-03                         |              | 7.232E-02 | 1.235E-01         | 1.347E-02 | -0.018  |
| RA-228  | -2.283E-03                         |              | 7.232E-02 | 1.235E-01         | 1.347E-02 | -0.018  |
| TH-228  | -6.337E-03                         |              | 3.060E-02 | 4.790E-02         | 3.847E-03 | -0.132  |
| TH-229  | -2.306E-02                         |              | 2.100E-01 | 3.329E-01         | 2.160E-02 | -0.069  |
| TH-230  | -1.158E-02                         |              | 3.847E-02 | 5.789E-02         | 4.254E-03 | -0.200  |
| PA-231  | 8.983E-02                          |              | 6.587E-01 | 1.126E+00         | 1.593E-01 | 0.080   |
| TH-231  | -1.715E-01                         |              | 3.349E-01 | 5.298E-01         | 8.870E-02 | -0.324  |
| U-231   | -9.533E-02                         |              | 1.609E-01 | 2.216E-01         | 2.240E-02 | -0.430  |
| TH-232  | -2.283E-03                         |              | 7.232E-02 | 1.235E-01         | 1.347E-02 | -0.018  |
| PA-233  | -1.473E-02                         |              | 2.971E-02 | 4.712E-02         | 3.213E-03 | -0.313  |
| PA-234  | -2.239E-02                         |              | 1.444E-01 | 2.295E-01         | 4.242E-02 | -0.098  |
| PA-234M | 9.695E-01                          |              | 2.055E+00 | 3.657E+00         | 3.334E-01 | 0.265   |
| TH-234  | 2.162E-01                          |              | 7.327E-01 | 1.274E+00         | 2.520E-01 | 0.170   |
| U-234   | -1.158E-02                         |              | 3.847E-02 | 5.789E-02         | 4.254E-03 | -0.200  |
| U-235   | -6.288E-03                         |              | 8.164E-02 | 1.321E-01         | 2.189E-02 | -0.048  |
| NP-236  | 1.691E-03                          |              | 3.231E-02 | 5.265E-02         | 3.362E-03 | 0.032   |
| NP-237  | -1.994E-02                         |              | 7.670E-02 | 1.244E-01         | 2.963E-02 | -0.160  |
| U-238   | 2.162E-01                          |              | 7.327E-01 | 1.274E+00         | 2.520E-01 | 0.170   |
| NP-239  | -5.280E-02                         |              | 7.817E-02 | 1.204E-01         | 8.857E-03 | -0.439  |
| AM-241  | -7.355E-02                         |              | 8.404E-02 | 1.289E-01         | 1.627E-02 | -0.571  |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| AM-243  | -1.034E-02                         |              | 2.401E-02 | 3.627E-02         | 4.154E-03 | -0.285  |
| CM-243  | -8.187E-03                         |              | 3.757E-02 | 6.090E-02         | 5.370E-03 | -0.134  |
| AM-246  | -3.818E-02                         |              | 6.803E-02 | 9.674E-02         | 6.743E-03 | -0.395  |
| CM-247  | 2.010E-04                          |              | 1.657E-02 | 2.738E-02         | 1.545E-03 | 0.007   |
| CF-249  | -5.313E-03                         |              | 1.804E-02 | 2.871E-02         | 1.632E-03 | -0.185  |
| CF-251  | 1.733E-02                          |              | 5.888E-02 | 9.742E-02         | 6.235E-03 | 0.178   |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*
*                                     DETECTOR DATA                          *
*
* Configuration      : SYSSYSROOT:[ALPHA.ARCHIVE.GAMMA]G1202015449          *
* Acquisition date   : 23-JAN-2010 14:07:28 Detector SN# :                  *
* Detector ID        : GAM04 Sensitivity : 5.000                          *
* Geometry           : CAN Energy tolerance: 1.500                        *
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000             *
* Elapsed real time  : 0 02:00:00.43 Half life ratio : 8.000              *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date        : 15-JAN-2010 00:00:00 Nuclide Library : SOLID          *
* Sample ID          : G1202015449 Analyst initials: MXR1                *
* Batch Number       : 941639 Sample Quantity : 1.4616E+02 GRAM          *
* Recovery           : 1.00000 Carrier Weight : 0.00000                  *
*****
*
*                                     QC DATA                                *
*
* CALIB. DATE/TIME  : 5-MAY-2009 14:25:41 MS Isotope :                    *
* MSD DPM           : 0.000 MSD Isotope :                                *
* LCS DPM           : 0.000 LCS Isotope :                                *
* LCSD DPM          : 0.000 LCSD Isotope :                                *
*****

```

## Combined Activity-MDA Report

### ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act Error | DLC<br>(pCi/GRAM ) | TPU       |
|---------|-------------------------|-----------|--------------------|-----------|
| ANH-511 | 2.294E-02               | 3.709E-02 | 1.061E-02          | 1.892E-02 |

### ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L Act error | DLC<br>(pCi/GRAM ) | TPU       |            |
|---------|-------------------------------------|---------------|--------------------|-----------|------------|
| BE-7    | 1.332E-01                           | 1.297E-01     | 1.269E-01          | 6.619E-02 | NOT IDENT. |
| NA-22   | 5.903E-03                           | 1.830E-02     | 1.680E-02          | 9.335E-03 | NOT IDENT. |
| NA-24   | 7.928E+01                           | 2.185E+02     | 0.000E+00          | 1.115E+02 | SHORT HLIF |
| AL-26   | 2.324E-03                           | 1.447E-02     | 1.271E-02          | 7.381E-03 | NOT IDENT. |
| K-40    | -6.241E-02                          | 2.225E-01     | 1.889E-01          | 1.135E-01 | NOT IDENT. |
| TI-44   | -5.407E-03                          | 1.415E-02     | 1.214E-02          | 7.219E-03 | NOT IDENT. |
| SC-46   | -2.380E-04                          | 1.267E-02     | 1.079E-02          | 6.465E-03 | NOT IDENT. |
| V-48    | -4.018E-03                          | 1.967E-02     | 1.580E-02          | 1.004E-02 | NOT IDENT. |
| CR-51   | -7.152E-02                          | 1.439E-01     | 1.213E-01          | 7.342E-02 | NOT IDENT. |
| MN-52   | -4.432E-02                          | 4.002E-02     | 1.828E-02          | 2.042E-02 | NOT IDENT. |
| MN-54   | 2.501E-03                           | 1.479E-02     | 1.312E-02          | 7.546E-03 | NOT IDENT. |
| CO-56   | -1.828E-03                          | 1.729E-02     | 1.460E-02          | 8.823E-03 | NOT IDENT. |
| CO-57   | 1.119E-03                           | 1.019E-02     | 9.184E-03          | 5.197E-03 | NOT IDENT. |
| CO-58   | 1.739E-03                           | 1.519E-02     | 1.339E-02          | 7.751E-03 | NOT IDENT. |
| FE-59   | 1.290E-02                           | 3.549E-02     | 3.194E-02          | 1.811E-02 | NOT IDENT. |
| CO-60   | -1.210E-02                          | 1.568E-02     | 1.042E-02          | 8.001E-03 | NOT IDENT. |
| ZN-65   | 1.154E-02                           | 3.395E-02     | 3.049E-02          | 1.732E-02 | NOT IDENT. |
| GE-68   | 5.283E-01                           | 4.722E-01     | 4.910E-01          | 2.409E-01 | NOT IDENT. |
| AS-73   | 6.130E-01                           | 6.220E-01     | 6.265E-01          | 3.174E-01 | NOT IDENT. |
| AS-74   | -1.528E-02                          | 3.428E-02     | 2.678E-02          | 1.749E-02 | NOT IDENT. |
| SE-75   | -6.598E-03                          | 1.756E-02     | 1.527E-02          | 8.957E-03 | NOT IDENT. |
| BR-77   | -4.380E-01                          | 6.342E-01     | 4.727E-01          | 3.236E-01 | NOT IDENT. |
| SR-82   | 5.819E-02                           | 9.225E-02     | 9.170E-02          | 4.707E-02 | NOT IDENT. |
| RB-83   | -1.296E-02                          | 2.601E-02     | 2.015E-02          | 1.327E-02 | NOT IDENT. |
| RB-84   | -6.825E-03                          | 2.674E-02     | 1.989E-02          | 1.365E-02 | NOT IDENT. |
| KR-85   | 8.047E+00                           | 4.306E+00     | 4.069E+00          | 2.197E+00 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| SR-85   | 3.852E-02  | 2.061E-02 | 1.948E-02 | 1.052E-02 | NOT IDENT. |
| RB-86   | 2.528E-01  | 2.353E-01 | 2.436E-01 | 1.200E-01 | NOT IDENT. |
| Y-88    | -8.058E-04 | 1.858E-02 | 1.517E-02 | 9.481E-03 | NOT IDENT. |
| ZR-88   | 6.290E-03  | 1.329E-02 | 1.226E-02 | 6.779E-03 | NOT IDENT. |
| Y-91    | -1.926E+00 | 4.907E+00 | 3.514E+00 | 2.503E+00 | NOT IDENT. |
| NB-94   | 8.024E-03  | 1.492E-02 | 1.405E-02 | 7.612E-03 | NOT IDENT. |
| NB-95   | 3.738E-04  | 1.509E-02 | 1.316E-02 | 7.699E-03 | NOT IDENT. |
| NB-95M  | -1.316E-02 | 4.988E-02 | 4.117E-02 | 2.545E-02 | NOT IDENT. |
| ZR-95   | 1.736E-02  | 2.817E-02 | 2.688E-02 | 1.437E-02 | NOT IDENT. |
| NB-97   | 4.970E+00  | 7.700E+01 | 0.000E+00 | 3.929E+01 | SHORT HLIF |
| ZR-97   | 1.256E+03  | 1.618E+03 | 0.000E+00 | 8.255E+02 | SHORT HLIF |
| MO-99   | -2.033E-01 | 8.640E-01 | 7.191E-01 | 4.408E-01 | NOT IDENT. |
| TC-99M  | -7.235E+07 | 2.134E+08 | 0.000E+00 | 1.089E+08 | SHORT HLIF |
| RH-101  | -1.186E-03 | 1.613E-02 | 1.239E-02 | 8.231E-03 | NOT IDENT. |
| RH-102  | -3.408E-03 | 1.316E-02 | 1.089E-02 | 6.713E-03 | NOT IDENT. |
| RU-103  | 1.415E-03  | 1.675E-02 | 1.451E-02 | 8.544E-03 | NOT IDENT. |
| RH-106  | 4.708E-02  | 1.410E-01 | 1.247E-01 | 7.193E-02 | FAIL ABUN  |
| RU-106  | 4.708E-02  | 1.409E-01 | 1.247E-01 | 7.189E-02 | FAIL ABUN  |
| AG-108M | -8.293E-03 | 1.472E-02 | 1.175E-02 | 7.510E-03 | NOT IDENT. |
| CD-109  | -5.086E-02 | 2.900E-01 | 2.320E-01 | 1.480E-01 | NOT IDENT. |
| AG-110M | 7.052E-04  | 1.670E-02 | 1.294E-02 | 8.522E-03 | NOT IDENT. |
| IN-111  | -4.756E-02 | 9.977E-02 | 7.994E-02 | 5.090E-02 | NOT IDENT. |
| IN-113M | 1.463E-02  | 1.956E-02 | 1.857E-02 | 9.981E-03 | NOT IDENT. |
| SN-113  | 1.463E-02  | 1.956E-02 | 1.857E-02 | 9.981E-03 | NOT IDENT. |
| IN-114M | 2.028E-03  | 6.905E-02 | 5.983E-02 | 3.523E-02 | NOT IDENT. |
| CD-115  | -8.930E-02 | 6.018E-01 | 4.995E-01 | 3.070E-01 | NOT IDENT. |
| SN-117M | 4.584E-03  | 1.535E-02 | 1.384E-02 | 7.834E-03 | NOT IDENT. |
| SB-122  | -5.203E-04 | 1.650E-01 | 1.395E-01 | 8.418E-02 | NOT IDENT. |
| I-123   | -9.779E+01 | 5.893E+02 | 0.000E+00 | 3.007E+02 | SHORT HLIF |
| TE-123M | -1.819E-03 | 1.096E-02 | 9.448E-03 | 5.593E-03 | NOT IDENT. |
| I-124   | 7.622E-03  | 1.126E-01 | 9.549E-02 | 5.742E-02 | NOT IDENT. |
| SB-124  | -1.888E-02 | 3.929E-02 | 2.772E-02 | 2.004E-02 | NOT IDENT. |
| SB-125  | -2.317E-02 | 4.204E-02 | 3.378E-02 | 2.145E-02 | NOT IDENT. |
| TE-125M | 9.540E-01  | 3.880E+00 | 3.248E+00 | 1.980E+00 | NOT IDENT. |
| I-126   | -2.474E-02 | 6.528E-02 | 4.596E-02 | 3.330E-02 | NOT IDENT. |
| SB-126  | -4.242E-02 | 3.815E-02 | 2.588E-02 | 1.946E-02 | NOT IDENT. |
| SN-126  | -1.510E-02 | 2.763E-02 | 2.256E-02 | 1.410E-02 | NOT IDENT. |
| SB-127  | 1.019E-01  | 1.831E-01 | 1.737E-01 | 9.342E-02 | NOT IDENT. |
| XE-127  | 1.323E-03  | 1.617E-02 | 1.402E-02 | 8.251E-03 | NOT IDENT. |
| I-131   | 1.957E-03  | 2.937E-02 | 2.606E-02 | 1.499E-02 | NOT IDENT. |
| TE-132  | -3.393E-02 | 8.155E-02 | 6.639E-02 | 4.161E-02 | NOT IDENT. |
| BA-133  | -2.947E-02 | 1.914E-02 | 1.326E-02 | 9.765E-03 | NOT IDENT. |
| I-133   | -1.268E+01 | 1.372E+01 | 0.000E+00 | 7.001E+00 | SHORT HLIF |
| CS-134  | 2.837E-03  | 1.436E-02 | 1.298E-02 | 7.328E-03 | NOT IDENT. |
| CS-135  | 2.459E-02  | 6.707E-02 | 6.255E-02 | 3.422E-02 | NOT IDENT. |
| I-135   | 1.735E+08  | 1.379E+08 | 0.000E+00 | 7.037E+07 | SHORT HLIF |
| CS-136  | -1.636E-02 | 3.164E-02 | 2.331E-02 | 1.614E-02 | NOT IDENT. |
| BA-137M | -9.436E-04 | 2.345E-02 | 1.896E-02 | 1.197E-02 | NOT IDENT. |
| CS-137  | -9.975E-04 | 2.479E-02 | 2.004E-02 | 1.265E-02 | NOT IDENT. |
| CE-139  | 2.982E-03  | 1.203E-02 | 1.075E-02 | 6.139E-03 | NOT IDENT. |
| BA-140  | -2.540E-03 | 9.267E-02 | 7.652E-02 | 4.728E-02 | NOT IDENT. |
| LA-140  | -3.122E-02 | 3.630E-02 | 2.380E-02 | 1.852E-02 | NOT IDENT. |
| CE-141  | -1.109E-02 | 2.184E-02 | 1.833E-02 | 1.114E-02 | NOT IDENT. |
| CE-143  | -6.617E-01 | 2.083E+00 | 1.806E+00 | 1.063E+00 | FAIL ABUN  |
| CE-144  | 3.772E-02  | 8.160E-02 | 7.519E-02 | 4.163E-02 | NOT IDENT. |
| PM-144  | -5.852E-03 | 1.566E-02 | 1.298E-02 | 7.992E-03 | NOT IDENT. |
| PR-144  | -3.952E-01 | 1.058E+00 | 8.767E-01 | 5.397E-01 | NOT IDENT. |
| PM-146  | -1.612E-03 | 2.052E-02 | 1.688E-02 | 1.047E-02 | NOT IDENT. |
| ND-147  | -8.471E-02 | 1.533E-01 | 1.171E-01 | 7.820E-02 | NOT IDENT. |
| PM-149  | -2.442E-01 | 5.023E+00 | 4.491E+00 | 2.563E+00 | NOT IDENT. |
| EU-152  | -2.592E-02 | 4.231E-02 | 3.717E-02 | 2.159E-02 | NOT IDENT. |
| GD-153  | 3.742E-02  | 3.110E-02 | 2.880E-02 | 1.587E-02 | NOT IDENT. |
| EU-154  | 2.073E-02  | 4.979E-02 | 4.658E-02 | 2.540E-02 | NOT IDENT. |
| EU-155  | -1.758E-02 | 3.989E-02 | 3.442E-02 | 2.035E-02 | NOT IDENT. |
| TB-160  | -1.929E-02 | 5.527E-02 | 4.394E-02 | 2.820E-02 | NOT IDENT. |
| HO-166M | -1.419E-02 | 2.655E-02 | 2.121E-02 | 1.355E-02 | NOT IDENT. |
| TM-171  | -1.601E+00 | 1.319E+01 | 1.211E+01 | 6.729E+00 | NOT IDENT. |
| LU-176  | -3.467E-03 | 1.212E-02 | 1.054E-02 | 6.186E-03 | NOT IDENT. |
| LU-177  | 1.821E-01  | 2.230E-01 | 2.065E-01 | 1.138E-01 | NOT IDENT. |
| LU-177M | 9.910E-03  | 6.839E-02 | 6.075E-02 | 3.489E-02 | NOT IDENT. |
| HF-181  | 5.869E-03  | 1.752E-02 | 1.574E-02 | 8.938E-03 | NOT IDENT. |
| W-181   | -7.409E-02 | 1.862E-01 | 1.598E-01 | 9.502E-02 | NOT IDENT. |
| TA-182  | 1.463E-02  | 6.887E-02 | 6.214E-02 | 3.514E-02 | NOT IDENT. |
| RE-183  | -7.522E-03 | 4.204E-02 | 3.614E-02 | 2.145E-02 | NOT IDENT. |
| RE-184  | 1.817E-02  | 1.003E-01 | 9.241E-02 | 5.116E-02 | NOT IDENT. |
| OS-185  | 1.652E-02  | 1.668E-02 | 1.684E-02 | 8.509E-03 | NOT IDENT. |
| RE-188  | -3.622E-02 | 6.046E-02 | 4.975E-02 | 3.085E-02 | NOT IDENT. |
| W-188   | 1.036E+00  | 3.080E+00 | 2.850E+00 | 1.571E+00 | NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| IR-192  | 2.233E-03  | 1.445E-02 | 1.308E-02 | 7.372E-03 | NOT IDENT. |
| AU-195  | -2.675E-03 | 8.580E-02 | 7.749E-02 | 4.377E-02 | NOT IDENT. |
| TL-200  | 1.645E-01  | 3.103E+00 | 2.748E+00 | 1.583E+00 | NOT IDENT. |
| TL-201  | -1.806E-01 | 6.517E-01 | 5.533E-01 | 3.325E-01 | NOT IDENT. |
| TL-202  | 3.222E-04  | 2.170E-02 | 1.883E-02 | 1.107E-02 | NOT IDENT. |
| HG-203  | 6.312E-03  | 1.640E-02 | 1.527E-02 | 8.365E-03 | NOT IDENT. |
| BI-207  | -1.167E-02 | 2.570E-02 | 1.963E-02 | 1.311E-02 | NOT IDENT. |
| TL-207  | -1.715E-01 | 3.282E-01 | 2.761E-01 | 1.675E-01 | NOT IDENT. |
| TL-208  | -1.880E-02 | 2.190E-02 | 1.551E-02 | 1.118E-02 | FAIL ABUN  |
| PO-209  | 3.019E+00  | 3.213E+00 | 3.201E+00 | 1.639E+00 | NOT IDENT. |
| BI-210  | 1.648E+00  | 3.826E+00 | 3.710E+00 | 1.952E+00 | NOT IDENT. |
| PB-210  | 1.648E+00  | 3.826E+00 | 3.710E+00 | 1.952E+00 | NOT IDENT. |
| PO-210  | 1.648E+00  | 3.825E+00 | 3.710E+00 | 1.952E+00 | NOT IDENT. |
| BI-211  | 1.709E-01  | 1.123E-01 | 1.097E-01 | 5.729E-02 | NOT IDENT. |
| PB-211  | 2.375E-01  | 3.960E-01 | 3.492E-01 | 2.021E-01 | NOT IDENT. |
| BI-212  | 5.677E-02  | 1.126E-01 | 1.063E-01 | 5.747E-02 | NOT IDENT. |
| PB-212  | -6.283E-03 | 2.973E-02 | 2.492E-02 | 1.517E-02 | NOT IDENT. |
| PO-212  | -6.283E-03 | 2.973E-02 | 2.492E-02 | 1.517E-02 | NOT IDENT. |
| BI-214  | -1.158E-02 | 3.770E-02 | 2.973E-02 | 1.923E-02 | NOT IDENT. |
| PB-214  | 3.383E-02  | 3.895E-02 | 3.629E-02 | 1.987E-02 | NOT IDENT. |
| PO-214  | 3.383E-02  | 3.895E-02 | 3.629E-02 | 1.987E-02 | NOT IDENT. |
| PO-215  | -1.715E-01 | 3.282E-01 | 2.761E-01 | 1.675E-01 | NOT IDENT. |
| PO-216  | -6.283E-03 | 2.973E-02 | 2.492E-02 | 1.517E-02 | NOT IDENT. |
| PO-218  | 3.383E-02  | 3.895E-02 | 3.629E-02 | 1.987E-02 | NOT IDENT. |
| RN-219  | 8.514E-03  | 1.819E-01 | 1.597E-01 | 9.280E-02 | NOT IDENT. |
| RN-220  | -8.773E+00 | 1.207E+01 | 9.002E+00 | 6.160E+00 | NOT IDENT. |
| RA-223  | -1.715E-01 | 3.282E-01 | 2.761E-01 | 1.675E-01 | NOT IDENT. |
| RA-224  | 2.423E-01  | 3.096E-01 | 2.813E-01 | 1.580E-01 | NOT IDENT. |
| RA-226  | -1.158E-02 | 3.770E-02 | 2.973E-02 | 1.923E-02 | NOT IDENT. |
| AC-227  | -6.447E-02 | 1.566E-01 | 1.360E-01 | 7.991E-02 | NOT IDENT. |
| TH-227  | -6.447E-02 | 1.567E-01 | 1.360E-01 | 7.997E-02 | FAIL ABUN  |
| AC-228  | -2.283E-03 | 7.087E-02 | 6.286E-02 | 3.616E-02 | NOT IDENT. |
| RA-228  | -2.283E-03 | 7.087E-02 | 6.286E-02 | 3.616E-02 | NOT IDENT. |
| TH-228  | -6.337E-03 | 2.998E-02 | 2.513E-02 | 1.530E-02 | NOT IDENT. |
| TH-229  | -2.306E-02 | 2.058E-01 | 1.755E-01 | 1.050E-01 | NOT IDENT. |
| TH-230  | -1.158E-02 | 3.770E-02 | 2.973E-02 | 1.923E-02 | NOT IDENT. |
| PA-231  | 8.983E-02  | 6.455E-01 | 5.883E-01 | 3.293E-01 | NOT IDENT. |
| TH-231  | -1.715E-01 | 3.282E-01 | 2.761E-01 | 1.675E-01 | NOT IDENT. |
| U-231   | -9.533E-02 | 1.577E-01 | 1.186E-01 | 8.045E-02 | FAIL ABUN  |
| TH-232  | -2.283E-03 | 7.087E-02 | 6.286E-02 | 3.616E-02 | NOT IDENT. |
| PA-233  | -1.473E-02 | 2.911E-02 | 2.458E-02 | 1.485E-02 | NOT IDENT. |
| PA-234  | -2.239E-02 | 1.415E-01 | 1.167E-01 | 7.221E-02 | NOT IDENT. |
| PA-234M | 9.695E-01  | 2.014E+00 | 1.857E+00 | 1.028E+00 | NOT IDENT. |
| TH-234  | 2.162E-01  | 7.180E-01 | 6.877E-01 | 3.663E-01 | FAIL ABUN  |
| U-234   | -1.158E-02 | 3.770E-02 | 2.973E-02 | 1.923E-02 | NOT IDENT. |
| U-235   | -6.288E-03 | 8.000E-02 | 7.007E-02 | 4.082E-02 | FAIL ABUN  |
| NP-236  | 1.691E-03  | 3.167E-02 | 2.787E-02 | 1.616E-02 | NOT IDENT. |
| NP-237  | -1.994E-02 | 7.517E-02 | 6.671E-02 | 3.835E-02 | NOT IDENT. |
| U-238   | 2.162E-01  | 7.180E-01 | 6.877E-01 | 3.663E-01 | FAIL ABUN  |
| NP-239  | -5.280E-02 | 7.661E-02 | 6.414E-02 | 3.909E-02 | NOT IDENT. |
| AM-241  | -7.355E-02 | 8.236E-02 | 6.966E-02 | 4.202E-02 | NOT IDENT. |
| AM-243  | -1.034E-02 | 2.353E-02 | 1.951E-02 | 1.201E-02 | NOT IDENT. |
| CM-243  | -8.187E-03 | 3.681E-02 | 3.254E-02 | 1.878E-02 | NOT IDENT. |
| AM-246  | -3.818E-02 | 6.667E-02 | 4.903E-02 | 3.401E-02 | NOT IDENT. |
| CM-247  | 2.010E-04  | 1.624E-02 | 1.420E-02 | 8.287E-03 | NOT IDENT. |
| CF-249  | -5.313E-03 | 1.768E-02 | 1.490E-02 | 9.022E-03 | NOT IDENT. |
| CF-251  | 1.733E-02  | 5.770E-02 | 5.145E-02 | 2.944E-02 | NOT IDENT. |

\*\*\*\*\*  
 \* GEL Laboratories LLC \*  
 \* 2040 SAVAGE ROAD \*  
 \* CHARLESTON , SC 29417 \*  
 \* GAMMA SPECTROSCOPY BACKGROUND REPORT \*  
 \*\*\*\*\*

| ENERGY | MDA COUNTS |
|--------|------------|
|--------|------------|

|       |         |
|-------|---------|
| 46.50 | 34.1388 |
| 46.50 | 34.1388 |
| 46.50 | 34.1388 |
| 48.70 | 48.1058 |
| 49.72 | 49.9710 |
| 51.35 | 49.3375 |
| 52.39 | 46.8767 |
| 52.97 | 39.1267 |
| 53.15 | 41.7559 |
| 53.44 | 44.4009 |
| 54.07 | 48.8379 |
| 56.28 | 46.4963 |
| 56.28 | 46.4967 |
| 57.37 | 37.8322 |
| 57.53 | 36.9678 |
| 57.53 | 36.9680 |
| 57.60 | 33.4532 |
| 57.98 | 37.8924 |
| 57.98 | 37.8924 |
| 59.32 | 53.0563 |
| 59.32 | 53.0563 |
| 59.40 | 53.0672 |
| 59.54 | 53.0861 |
| 59.72 | 49.5698 |
| 60.01 | 57.5789 |
| 61.10 | 58.6260 |
| 61.14 | 58.6319 |
| 61.30 | 58.6555 |
| 63.00 | 48.1939 |
| 63.29 | 50.9077 |
| 63.29 | 50.9077 |
| 63.58 | 61.6690 |
| 64.28 | 63.5648 |
| 65.12 | 60.1058 |
| 65.20 | 60.1174 |
| 65.20 | 60.1174 |
| 66.05 | 60.2400 |
| 66.72 | 58.5346 |
| 66.83 | 58.5502 |
| 66.91 | 59.4624 |
| 67.20 | 55.8967 |
| 67.20 | 55.8967 |
| 67.75 | 54.1638 |
| 67.85 | 54.1766 |
| 68.90 | 59.7403 |
| 68.90 | 59.7403 |
| 69.30 | 58.8897 |
| 69.67 | 43.5254 |
| 70.82 | 44.5491 |
| 70.82 | 44.5491 |
| 70.83 | 44.5501 |
| 72.80 | 51.1416 |
| 72.87 | 52.9764 |
| 72.87 | 52.9764 |
| 74.67 | 54.1052 |
| 74.81 | 54.1220 |
| 74.81 | 54.1220 |
| 74.81 | 54.1220 |
| 74.81 | 54.1220 |
| 74.81 | 54.1220 |
| 74.81 | 54.1220 |
| 74.97 | 55.9762 |
| 75.28 | 56.9327 |
| 75.70 | 53.3086 |
| 77.11 | 56.2375 |
| 77.11 | 56.2375 |



|        |         |
|--------|---------|
| 77.11  | 56.2375 |
| 77.11  | 56.2375 |
| 77.11  | 56.2375 |
| 77.11  | 56.2375 |
| 77.11  | 56.2375 |
| 78.38  | 59.1641 |
| 79.62  | 54.6856 |
| 79.80  | 56.5608 |
| 79.80  | 56.5608 |
| 80.11  | 57.5255 |
| 80.18  | 53.8220 |
| 80.30  | 53.8354 |
| 80.30  | 53.8354 |
| 80.57  | 50.1512 |
| 81.00  | 52.9849 |
| 81.07  | 52.9925 |
| 81.07  | 52.9925 |
| 81.07  | 52.9925 |
| 81.07  | 52.9925 |
| 82.60  | 55.9589 |
| 83.37  | 52.3103 |
| 83.78  | 54.2243 |
| 83.78  | 54.2243 |
| 83.78  | 54.2243 |
| 83.78  | 54.2243 |
| 84.21  | 36.4931 |
| 84.90  | 47.7886 |
| 85.43  | 49.7155 |
| 86.29  | 50.7412 |
| 86.50  | 47.0022 |
| 86.54  | 47.0060 |
| 86.59  | 47.0105 |
| 86.72  | 45.1418 |
| 86.79  | 45.1479 |
| 86.94  | 49.8660 |
| 87.30  | 53.6680 |
| 87.30  | 53.6680 |
| 87.30  | 53.6680 |
| 87.30  | 53.6680 |
| 87.30  | 53.6680 |
| 87.30  | 53.6680 |
| 87.57  | 54.2619 |
| 87.88  | 49.4876 |
| 88.03  | 49.5023 |
| 88.36  | 48.1194 |
| 88.47  | 48.1297 |
| 89.95  | 52.5281 |
| 91.11  | 59.7604 |
| 92.29  | 55.1423 |
| 92.38  | 55.1517 |
| 92.38  | 55.1517 |
| 93.35  | 55.2535 |
| 94.00  | 55.3217 |
| 94.67  | 55.8682 |
| 94.67  | 55.8688 |
| 94.90  | 60.1924 |
| 94.90  | 60.1924 |
| 94.90  | 60.1924 |
| 94.90  | 60.1924 |
| 95.87  | 64.6089 |
| 95.87  | 64.6089 |
| 96.73  | 51.7698 |
| 97.43  | 37.4375 |
| 98.44  | 54.2408 |
| 98.44  | 54.2408 |
| 98.88  | 56.7868 |
| 99.55  | 54.9288 |
| 99.55  | 54.9288 |
| 99.86  | 60.7448 |
| 100.00 | 60.7602 |
| 100.10 | 60.7717 |
| 103.18 | 53.3473 |
| 103.76 | 55.3440 |
| 105.00 | 56.4377 |
| 105.31 | 55.4948 |
| 108.00 | 68.4694 |
| 109.28 | 47.0532 |

|        |         |
|--------|---------|
| 111.00 | 52.1064 |
| 111.00 | 52.1064 |
| 111.76 | 67.9229 |
| 112.95 | 63.1266 |
| 115.19 | 50.4905 |
| 116.30 | 50.5824 |
| 117.00 | 66.5270 |
| 117.00 | 66.5270 |
| 117.66 | 59.6402 |
| 121.11 | 52.9741 |
| 121.62 | 60.0192 |
| 121.78 | 59.0336 |
| 122.06 | 59.0597 |
| 122.32 | 62.0883 |
| 122.32 | 62.0883 |
| 122.32 | 62.0883 |
| 122.32 | 62.0883 |
| 123.07 | 70.1823 |
| 127.23 | 50.4546 |
| 129.76 | 55.7145 |
| 131.20 | 64.9720 |
| 133.02 | 50.8972 |
| 133.54 | 56.0306 |
| 135.34 | 61.2866 |
| 136.00 | 66.4580 |
| 136.25 | 67.5052 |
| 136.48 | 64.4583 |
| 140.51 | 59.6892 |
| 140.51 | 0.0000  |
| 142.18 | 52.6104 |
| 142.65 | 49.5483 |
| 143.76 | 56.8631 |
| 144.24 | 63.1092 |
| 144.24 | 63.1092 |
| 144.24 | 63.1092 |
| 144.24 | 63.1092 |
| 145.22 | 63.1960 |
| 145.44 | 66.3242 |
| 147.16 | 50.9011 |
| 152.43 | 44.9911 |
| 152.70 | 47.1011 |
| 153.22 | 43.9918 |
| 154.21 | 57.6844 |
| 154.21 | 57.6844 |
| 154.21 | 57.6844 |
| 154.21 | 57.6844 |
| 155.03 | 57.7482 |
| 156.02 | 50.4648 |
| 158.56 | 50.6343 |
| 159.00 | 0.0000  |
| 159.00 | 58.0520 |
| 160.31 | 54.9797 |
| 161.27 | 55.0485 |
| 162.32 | 60.4233 |
| 162.64 | 65.7507 |
| 163.35 | 63.6884 |
| 163.89 | 62.6701 |
| 165.85 | 57.5030 |
| 167.43 | 60.8194 |
| 171.28 | 58.9690 |
| 171.86 | 51.5010 |
| 172.10 | 51.5161 |
| 176.55 | 64.7479 |
| 176.60 | 64.7522 |
| 181.06 | 52.0811 |
| 184.41 | 67.5394 |
| 185.71 | 67.6428 |
| 186.00 | 62.2086 |
| 190.27 | 55.9374 |
| 192.34 | 49.4742 |
| 193.63 | 52.8501 |
| 197.04 | 45.3171 |
| 198.01 | 45.3668 |
| 198.60 | 55.3614 |
| 200.40 | 54.3634 |
| 201.83 | 52.2272 |
| 202.84 | 46.7232 |
| 205.31 | 61.3508 |

|        |         |
|--------|---------|
| 208.36 | 44.7668 |
| 208.81 | 50.3870 |
| 209.75 | 51.5591 |
| 209.75 | 51.5591 |
| 210.97 | 56.1157 |
| 215.65 | 42.8602 |
| 216.55 | 56.4484 |
| 218.09 | 33.9240 |
| 222.10 | 60.1819 |
| 223.80 | 47.7747 |
| 226.40 | 54.7451 |
| 227.00 | 46.7898 |
| 227.08 | 50.2175 |
| 227.20 | 50.2238 |
| 228.16 | 63.9832 |
| 228.18 | 63.9844 |
| 228.18 | 63.9844 |
| 231.56 | 58.4697 |
| 235.69 | 58.7104 |
| 236.00 | 65.6372 |
| 236.00 | 65.6372 |
| 238.63 | 56.5710 |
| 238.63 | 56.5710 |
| 238.63 | 56.5710 |
| 238.63 | 56.5710 |
| 239.00 | 65.8309 |
| 240.98 | 54.3863 |
| 241.98 | 57.9142 |
| 241.98 | 57.9142 |
| 241.98 | 57.9142 |
| 244.69 | 61.5497 |
| 245.39 | 56.9424 |
| 247.94 | 53.5866 |
| 248.90 | 58.2993 |
| 249.79 | 57.7651 |
| 252.40 | 49.1333 |
| 252.85 | 48.2765 |
| 252.85 | 48.2765 |
| 254.15 | 0.0000  |
| 256.20 | 46.6663 |
| 256.20 | 46.6663 |
| 260.50 | 38.8961 |
| 260.90 | 38.9102 |
| 262.80 | 45.1791 |
| 264.65 | 45.2546 |
| 268.24 | 43.6212 |
| 268.79 | 50.7682 |
| 269.46 | 54.3635 |
| 269.46 | 54.3635 |
| 269.46 | 54.3635 |
| 269.46 | 54.3635 |
| 271.23 | 50.8787 |
| 273.65 | 42.0430 |
| 276.40 | 53.8019 |
| 277.35 | 52.0518 |
| 277.60 | 50.2681 |
| 277.60 | 50.2681 |
| 278.00 | 42.2036 |
| 278.60 | 48.5148 |
| 279.20 | 44.0459 |
| 279.53 | 41.3611 |
| 280.46 | 47.6940 |
| 281.68 | 51.3475 |
| 283.67 | 38.8021 |
| 284.30 | 35.2122 |
| 285.00 | 41.5569 |
| 285.90 | 40.6851 |
| 286.10 | 47.0219 |
| 286.10 | 47.0219 |
| 287.40 | 50.6953 |
| 288.45 | 0.0000  |
| 290.67 | 42.6662 |
| 290.80 | 42.6705 |
| 291.72 | 48.1550 |
| 293.26 | 48.2181 |
| 293.70 | 43.6853 |
| 295.21 | 39.1840 |
| 295.21 | 39.1840 |

|        |         |
|--------|---------|
| 295.21 | 39.1840 |
| 295.96 | 41.0326 |
| 296.50 | 41.0504 |
| 297.23 | 39.2502 |
| 298.57 | 47.5178 |
| 299.80 | 38.4188 |
| 299.80 | 38.4188 |
| 300.09 | 43.0033 |
| 300.09 | 43.0033 |
| 300.09 | 43.0033 |
| 300.09 | 43.0033 |
| 300.12 | 43.0040 |
| 301.29 | 47.6249 |
| 302.84 | 42.1830 |
| 303.76 | 40.3799 |
| 303.91 | 40.3846 |
| 304.40 | 39.4825 |
| 304.40 | 39.4825 |
| 304.84 | 42.2525 |
| 306.84 | 51.5216 |
| 308.46 | 43.2980 |
| 311.98 | 45.2683 |
| 316.51 | 37.0880 |
| 318.01 | 39.9169 |
| 319.02 | 38.0903 |
| 319.41 | 42.7488 |
| 320.08 | 44.6309 |
| 323.87 | 54.0891 |
| 323.87 | 54.0891 |
| 323.87 | 54.0891 |
| 323.87 | 54.0891 |
| 325.23 | 45.7446 |
| 328.77 | 48.6786 |
| 333.44 | 30.0635 |
| 334.20 | 45.1216 |
| 334.20 | 45.1216 |
| 334.30 | 45.1245 |
| 338.28 | 27.3450 |
| 338.28 | 27.3450 |
| 338.28 | 27.3450 |
| 338.28 | 27.3450 |
| 338.32 | 27.3459 |
| 338.32 | 27.3459 |
| 338.32 | 27.3459 |
| 340.50 | 42.5034 |
| 340.57 | 42.5054 |
| 344.27 | 35.0454 |
| 345.85 | 38.8798 |
| 350.59 | 35.2097 |
| 351.07 | 25.7027 |
| 351.92 | 32.3865 |
| 351.92 | 32.3865 |
| 351.92 | 32.3865 |
| 355.39 | 0.0000  |
| 356.01 | 45.8584 |
| 364.48 | 31.7205 |
| 366.43 | 32.7269 |
| 367.43 | 34.6767 |
| 367.94 | 29.8714 |
| 369.80 | 24.1215 |
| 374.96 | 28.0822 |
| 383.85 | 28.2557 |
| 387.95 | 33.2202 |
| 388.63 | 35.1903 |
| 391.69 | 26.4475 |
| 391.69 | 26.4475 |
| 392.90 | 28.4296 |
| 398.62 | 25.5866 |
| 400.65 | 31.5337 |
| 401.10 | 27.6001 |
| 401.81 | 29.5857 |
| 402.60 | 29.6008 |
| 404.84 | 19.7632 |
| 410.95 | 20.8343 |
| 411.60 | 20.8433 |
| 413.65 | 22.8586 |
| 414.70 | 25.8580 |
| 415.30 | 30.8425 |

|        |         |
|--------|---------|
| 415.76 | 33.8371 |
| 417.63 | 0.0000  |
| 418.52 | 28.9124 |
| 423.70 | 37.0107 |
| 427.08 | 40.0970 |
| 427.89 | 33.0972 |
| 432.53 | 22.1292 |
| 433.93 | 31.2091 |
| 439.47 | 27.2756 |
| 439.56 | 27.2773 |
| 439.89 | 26.2726 |
| 443.98 | 28.3644 |
| 444.90 | 36.4894 |
| 445.03 | 36.4922 |
| 445.03 | 36.4922 |
| 445.03 | 36.4922 |
| 445.03 | 36.4922 |
| 453.90 | 23.4404 |
| 463.38 | 21.5236 |
| 468.07 | 26.7224 |
| 473.00 | 30.9229 |
| 475.06 | 26.8319 |
| 475.35 | 19.6111 |
| 476.78 | 14.4623 |
| 477.59 | 16.5361 |
| 477.96 | 21.7085 |
| 482.03 | 22.7956 |
| 484.57 | 18.6781 |
| 487.03 | 24.9393 |
| 490.36 | 18.7399 |
| 492.35 | 27.0993 |
| 497.08 | 24.0364 |
| 507.63 | 0.0000  |
| 510.53 | 0.0000  |
| 510.84 | 22.1146 |
| 511.00 | 22.1167 |
| 511.85 | 22.1270 |
| 511.85 | 22.1270 |
| 513.99 | 23.6298 |
| 513.99 | 23.6298 |
| 520.41 | 20.1133 |
| 520.65 | 22.2337 |
| 527.90 | 20.1945 |
| 528.96 | 0.0000  |
| 529.64 | 19.1497 |
| 529.87 | 0.0000  |
| 531.02 | 21.2927 |
| 537.32 | 22.4323 |
| 543.00 | 20.3568 |
| 546.56 | 0.0000  |
| 549.76 | 26.8799 |
| 552.65 | 18.3058 |
| 555.20 | 20.4861 |
| 563.23 | 18.4054 |
| 563.90 | 19.4947 |
| 568.70 | 23.8846 |
| 569.32 | 28.2368 |
| 569.50 | 24.9808 |
| 569.67 | 28.2415 |
| 573.80 | 27.2118 |
| 574.00 | 27.2148 |
| 574.64 | 19.6007 |
| 578.91 | 28.3724 |
| 579.30 | 30.5609 |
| 583.14 | 29.5255 |
| 585.48 | 21.8964 |
| 591.81 | 25.2594 |
| 592.07 | 21.9672 |
| 593.00 | 25.2742 |
| 595.88 | 26.4097 |
| 600.56 | 23.1610 |
| 602.52 | 0.0000  |
| 602.71 | 26.4976 |
| 602.71 | 26.4976 |
| 603.60 | 24.3002 |
| 604.41 | 24.3096 |
| 604.70 | 27.6283 |
| 609.31 | 23.2591 |

|        |         |
|--------|---------|
| 609.31 | 23.2591 |
| 609.31 | 23.2591 |
| 609.31 | 23.2591 |
| 610.33 | 17.7300 |
| 612.46 | 36.6053 |
| 614.37 | 29.9770 |
| 618.01 | 31.1411 |
| 621.84 | 16.7125 |
| 621.84 | 16.7125 |
| 631.29 | 21.2631 |
| 633.02 | 20.1605 |
| 633.10 | 20.1610 |
| 634.78 | 28.0235 |
| 635.90 | 20.1874 |
| 636.97 | 19.0752 |
| 645.85 | 16.2237 |
| 646.12 | 10.8173 |
| 656.30 | 18.1123 |
| 657.75 | 18.1240 |
| 657.90 | 0.0000  |
| 661.65 | 22.6947 |
| 661.65 | 22.6947 |
| 664.57 | 12.1198 |
| 666.33 | 22.7423 |
| 666.33 | 22.7423 |
| 675.00 | 21.0038 |
| 677.61 | 17.3709 |
| 685.20 | 14.6766 |
| 692.80 | 16.5656 |
| 695.00 | 13.8179 |
| 696.49 | 23.9665 |
| 696.49 | 23.9665 |
| 697.00 | 23.0499 |
| 697.49 | 23.0548 |
| 698.33 | 23.0627 |
| 698.50 | 23.0646 |
| 699.00 | 18.4556 |
| 702.63 | 16.6359 |
| 706.10 | 18.5117 |
| 706.58 | 0.0000  |
| 706.67 | 18.5161 |
| 709.31 | 16.6834 |
| 711.68 | 21.3390 |
| 713.82 | 13.0006 |
| 717.42 | 11.1604 |
| 720.50 | 19.5557 |
| 721.93 | 17.7040 |
| 722.20 | 17.7058 |
| 722.78 | 15.8462 |
| 722.78 | 15.8462 |
| 722.89 | 14.9145 |
| 722.95 | 14.9148 |
| 723.30 | 14.9172 |
| 724.18 | 13.0573 |
| 727.18 | 12.1399 |
| 733.00 | 14.0413 |
| 735.90 | 13.1209 |
| 739.58 | 14.0793 |
| 742.81 | 14.0980 |
| 744.21 | 16.9273 |
| 747.13 | 10.3568 |
| 751.79 | 23.5828 |
| 752.31 | 22.6441 |
| 753.82 | 15.1051 |
| 755.35 | 9.4465  |
| 756.15 | 12.2846 |
| 756.87 | 17.0143 |
| 763.93 | 11.3751 |
| 765.79 | 14.2295 |
| 766.42 | 12.3351 |
| 766.84 | 11.3883 |
| 776.49 | 4.7633  |
| 778.00 | 11.4387 |
| 778.57 | 14.3016 |
| 778.89 | 15.2570 |
| 783.80 | 12.4201 |
| 785.46 | 14.3401 |
| 792.07 | 9.5847  |

|         |         |
|---------|---------|
| 795.84  | 7.6791  |
| 796.30  | 6.7204  |
| 798.80  | 21.1417 |
| 801.93  | 13.4699 |
| 805.60  | 17.3428 |
| 810.29  | 16.4086 |
| 810.76  | 12.5500 |
| 815.85  | 21.2797 |
| 817.79  | 15.4875 |
| 818.51  | 12.5871 |
| 819.60  | 13.5608 |
| 826.30  | 12.6239 |
| 828.27  | 13.6052 |
| 831.60  | 8.7570  |
| 831.96  | 10.7043 |
| 834.83  | 12.6642 |
| 836.80  | 0.0000  |
| 846.75  | 16.6339 |
| 848.13  | 13.7057 |
| 856.28  | 0.0000  |
| 856.80  | 13.7491 |
| 860.37  | 8.8501  |
| 867.32  | 15.7734 |
| 867.82  | 11.8321 |
| 871.10  | 10.8590 |
| 873.19  | 13.8308 |
| 874.81  | 12.8502 |
| 875.33  | 0.0000  |
| 876.40  | 9.8904  |
| 879.36  | 13.8612 |
| 880.27  | 9.9041  |
| 880.51  | 9.9050  |
| 881.50  | 10.8993 |
| 883.24  | 5.9487  |
| 884.67  | 5.9518  |
| 889.25  | 7.9486  |
| 896.60  | 7.9691  |
| 898.02  | 12.9565 |
| 899.00  | 16.9489 |
| 903.28  | 14.9773 |
| 911.07  | 14.0167 |
| 911.07  | 14.0167 |
| 911.07  | 14.0167 |
| 919.63  | 12.0498 |
| 920.93  | 17.0780 |
| 925.00  | 11.0661 |
| 925.24  | 12.0729 |
| 926.50  | 6.0391  |
| 935.52  | 14.1347 |
| 937.48  | 12.1233 |
| 944.10  | 14.1757 |
| 946.00  | 15.1978 |
| 949.00  | 14.1989 |
| 962.29  | 9.1683  |
| 964.01  | 9.1736  |
| 966.15  | 12.2399 |
| 968.20  | 12.2484 |
| 969.11  | 12.2520 |
| 969.11  | 12.2520 |
| 969.11  | 12.2520 |
| 977.42  | 8.1902  |
| 980.50  | 9.2235  |
| 983.50  | 9.2325  |
| 989.30  | 13.3609 |
| 996.32  | 16.4813 |
| 1001.03 | 10.3164 |
| 1001.68 | 8.2549  |
| 1004.76 | 15.4933 |
| 1021.30 | 0.0000  |
| 1024.50 | 0.0000  |
| 1034.80 | 10.4272 |
| 1036.00 | 14.6036 |
| 1037.82 | 7.3059  |
| 1038.57 | 9.3955  |
| 1038.76 | 0.0000  |
| 1045.16 | 14.6453 |
| 1046.59 | 12.5584 |
| 1048.07 | 12.5643 |

|         |         |
|---------|---------|
| 1050.47 | 6.2868  |
| 1050.47 | 6.2868  |
| 1062.04 | 6.3091  |
| 1063.62 | 16.8328 |
| 1076.63 | 4.2248  |
| 1077.35 | 4.2258  |
| 1078.86 | 15.8540 |
| 1085.78 | 7.4139  |
| 1099.22 | 9.5704  |
| 1112.02 | 7.4717  |
| 1112.84 | 4.2707  |
| 1115.52 | 8.5480  |
| 1120.29 | 8.5598  |
| 1120.29 | 8.5598  |
| 1120.29 | 8.5598  |
| 1120.29 | 8.5598  |
| 1120.51 | 6.4204  |
| 1121.28 | 6.4219  |
| 1124.00 | 0.0000  |
| 1129.67 | 7.5103  |
| 1131.51 | 0.0000  |
| 1147.95 | 0.0000  |
| 1167.94 | 9.7625  |
| 1173.22 | 6.5180  |
| 1175.09 | 6.5215  |
| 1177.93 | 6.5268  |
| 1189.05 | 7.6381  |
| 1204.90 | 6.5757  |
| 1205.75 | 5.4812  |
| 1213.00 | 8.7871  |
| 1221.42 | 9.1744  |
| 1230.97 | 11.9579 |
| 1235.34 | 9.2090  |
| 1236.41 | 0.0000  |
| 1238.25 | 10.1379 |
| 1246.25 | 6.4654  |
| 1260.41 | 0.0000  |
| 1271.85 | 10.2288 |
| 1274.45 | 7.4443  |
| 1274.54 | 8.3749  |
| 1291.56 | 3.7388  |
| 1298.22 | 0.0000  |
| 1312.09 | 7.5173  |
| 1325.50 | 4.7144  |
| 1325.50 | 4.7144  |
| 1332.49 | 9.4456  |
| 1333.61 | 8.5034  |
| 1360.21 | 5.7068  |
| 1362.66 | 0.0000  |
| 1365.15 | 7.6185  |
| 1368.21 | 5.7183  |
| 1368.53 | 0.0000  |
| 1376.25 | 9.5492  |
| 1384.27 | 6.6978  |
| 1394.10 | 4.7955  |
| 1395.20 | 5.7563  |
| 1407.95 | 7.6989  |
| 1434.06 | 7.7471  |
| 1436.60 | 3.8758  |
| 1457.56 | 0.0000  |
| 1460.81 | 7.7962  |
| 1489.15 | 6.8667  |
| 1509.49 | 4.9276  |
| 1596.49 | 13.0624 |
| 1620.62 | 8.0804  |
| 1678.03 | 0.0000  |
| 1691.02 | 7.1760  |
| 1691.02 | 7.1760  |
| 1706.46 | 0.0000  |
| 1750.46 | 0.0000  |
| 1764.49 | 9.3651  |
| 1764.49 | 9.3651  |
| 1764.49 | 9.3651  |
| 1764.49 | 9.3651  |
| 1770.23 | 7.2922  |
| 1771.40 | 7.2939  |
| 1791.20 | 0.0000  |
| 1808.65 | 3.1489  |



1836.01

5.2763

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G1202015449

|                             |            |      |
|-----------------------------|------------|------|
| Total Uranium Activity      | 6.4040E-01 | ug/g |
| Total Uranium Counting Unc. | 2.1364E+00 | ug/g |
| Total Uranium Tpu           | 1.0900E-06 | ug/g |
| Total Uranium Mda           | 2.0461E+00 | ug/g |

```

*****
*
*               GEL Laboratories LLC
*               2040 SAVAGE ROAD
*               CHARLESTON ,SC 29417
*               GROSS GAMMA REPORT
*
*****
*
*  BATCH ID      : 941639          SAMPLE ID   : G1202015449
*  ANALYST       : MXR1           DETECTOR    : GAM04
*  SAMPLE DATE   : 15-JAN-2010 00:00:00.00  COUNT TIME : 0 02:00:00.00
*  ANALYSIS DATE : 23-JAN-2010 14:07:28.81  SAMPLE ALQT: 146.160 GRAM
*
*****

```

```

GROSS GAMMA ACTIVITY (pCi/GRAM ) : 3.936E-02
GROSS GAMMA ERROR   (pCi/GRAM ) : 2.948E-01
GROSS GAMMA MDA      (pCi/GRAM ) : 7.691E-02
GROSS GAMMA DLC      (pCi/GRAM ) : 3.499E-02

```

## VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 16:10:49.38

```

*****
*                               GEL Laboratories LLC                      *
*                               2040 Savage Road                        *
*                               Charleston, SC 29414                   *
*****
Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202015450.CNF;1
Sample date   : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 14:07:57
Sample ID     : G1202015450      Sample quantity  : 1.36730E+02 GRAM
Detector name : GAM06            Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:01.39 0.0%
Energy tolerance: 1.50000 keV    Analyst Initials : MXR1
Abundance limit : 75.00000       Sensitivity     : 5.00000
Batch ID       : 941639          Detector SN#    :
Matrix Spike ID :                LCS ID         : 1032-A
*****

```

| Pk | It | Energy   | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | Fit      |
|----|----|----------|------|-------|------|---------|------|----|----------|------|----------|
| 1  | 4  | 74.63*   | 427  | 560   | 1.26 | 149.26  | 145  | 14 | 5.93E-02 | 10.8 | 1.92E+00 |
| 2  | 4  | 76.89*   | 597  | 400   | 0.92 | 153.78  | 145  | 14 | 8.29E-02 | 6.9  |          |
| 3  | 0  | 83.61    | 65   | 500   | 1.37 | 167.22  | 164  | 8  | 9.09E-03 | 60.2 |          |
| 4  | 1  | 86.98    | 237  | 335   | 1.32 | 173.96  | 171  | 23 | 3.29E-02 | 13.5 | 2.48E+00 |
| 5  | 1  | 89.87    | 184  | 419   | 1.41 | 179.74  | 171  | 23 | 2.56E-02 | 20.5 |          |
| 6  | 1  | 92.58*   | 266  | 342   | 1.19 | 185.16  | 171  | 23 | 3.70E-02 | 14.0 |          |
| 7  | 0  | 128.86   | 48   | 345   | 0.91 | 257.72  | 255  | 7  | 6.60E-03 | 66.3 |          |
| 8  | 0  | 185.76*  | 181  | 432   | 1.24 | 371.53  | 366  | 11 | 2.52E-02 | 24.0 |          |
| 9  | 0  | 209.33   | 107  | 287   | 1.18 | 418.66  | 414  | 9  | 1.49E-02 | 30.2 |          |
| 10 | 3  | 238.41*  | 1233 | 201   | 1.09 | 476.82  | 472  | 17 | 1.71E-01 | 3.5  | 1.33E+00 |
| 11 | 3  | 241.41   | 311  | 278   | 1.95 | 482.83  | 472  | 17 | 4.33E-02 | 15.8 |          |
| 12 | 0  | 270.08   | 83   | 214   | 0.87 | 540.16  | 536  | 9  | 1.16E-02 | 33.4 |          |
| 13 | 0  | 295.14   | 317  | 256   | 1.16 | 590.28  | 584  | 11 | 4.40E-02 | 11.3 |          |
| 14 | 0  | 300.20*  | 104  | 179   | 1.06 | 600.40  | 595  | 11 | 1.44E-02 | 27.6 |          |
| 15 | 0  | 328.47   | 152  | 214   | 1.72 | 656.94  | 651  | 16 | 2.12E-02 | 22.9 |          |
| 16 | 0  | 338.06*  | 195  | 228   | 1.10 | 676.11  | 670  | 13 | 2.71E-02 | 17.9 |          |
| 17 | 0  | 351.63*  | 681  | 196   | 1.31 | 703.26  | 696  | 14 | 9.45E-02 | 5.9  |          |
| 18 | 0  | 463.17   | 65   | 93    | 1.35 | 926.34  | 922  | 9  | 8.99E-03 | 29.9 |          |
| 19 | 0  | 510.68*  | 123  | 124   | 1.84 | 1021.36 | 1014 | 16 | 1.71E-02 | 25.2 |          |
| 20 | 0  | 582.96*  | 282  | 112   | 1.34 | 1165.92 | 1160 | 13 | 3.91E-02 | 9.9  |          |
| 21 | 0  | 609.18*  | 401  | 117   | 1.61 | 1218.35 | 1212 | 12 | 5.56E-02 | 7.4  |          |
| 22 | 0  | 727.07   | 92   | 96    | 1.53 | 1454.15 | 1445 | 14 | 1.28E-02 | 25.1 |          |
| 23 | 0  | 860.37   | 79   | 67    | 1.79 | 1720.75 | 1712 | 18 | 1.10E-02 | 26.9 |          |
| 24 | 0  | 911.13*  | 262  | 54    | 1.88 | 1822.26 | 1816 | 15 | 3.64E-02 | 9.0  |          |
| 25 | 0  | 934.37   | 36   | 41    | 1.13 | 1868.74 | 1864 | 10 | 4.95E-03 | 38.0 |          |
| 26 | 0  | 969.07   | 121  | 146   | 1.59 | 1938.15 | 1928 | 17 | 1.68E-02 | 25.0 |          |
| 27 | 0  | 1120.25  | 108  | 86    | 2.35 | 2240.51 | 2229 | 23 | 1.49E-02 | 24.4 |          |
| 28 | 0  | 1238.26  | 41   | 56    | 1.13 | 2476.51 | 2470 | 14 | 5.69E-03 | 41.7 |          |
| 29 | 0  | 1377.97  | 44   | 7     | 2.13 | 2755.94 | 2749 | 13 | 6.04E-03 | 19.4 |          |
| 30 | 0  | 1460.56* | 1061 | 16    | 2.24 | 2921.12 | 2913 | 16 | 1.47E-01 | 3.2  |          |
| 31 | 0  | 1502.16  | 12   | 7     | 1.63 | 3004.32 | 2998 | 10 | 1.62E-03 | 52.8 |          |
| 32 | 0  | 1764.32  | 68   | 0     | 1.16 | 3528.65 | 3522 | 14 | 9.44E-03 | 12.1 |          |

Flag: "\*" = Peak area was modified by background subtraction

## VMS Nuclide Identification Report V3.1 Generated 23-JAN-2010 16:10:52

Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202015450.CNF;1  
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8  
 Sample title : MXR1  
 Sample date : 8-JAN-2010 12:00:00 Acquisition date : 23-JAN-2010 14:07:57  
 Sample ID : G1202015450 Sample quantity : 136.73 GRAM  
 Sample type : SOLID Sample geometry :  
 Detector name : GAMMA6 Detector geometry: CAN  
 Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:01.39 0.0%  
 Peak Width (FWHM): 3.00 Confidence level : 5.00 %  
 Energy tolerance : 1.50 keV Half life ratio : 8.00  
 Errors propagated: Yes Systematic Error : 0.00 %  
 Efficiency type : Empirical Efficiencies at : Peak Energy  
 Abundance limit : 75.00 WTM error limit : 3.00

## Full Combined Activity-MDA Report

## ---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| K-40    | +         | 1460.81      | *   | 2.837E+01           | 2.614E+00 | 5.311E-01      | 3.513E-02 | 53.422  |
| CD-109  | +         | 88.03        | *   | 3.477E+00           | 1.002E+00 | 1.391E+00      | 1.373E-01 | 2.501   |
| SN-126  | +         | 64.28        |     | 8.557E-01           | 6.502E-01 | 1.098E+00      | 1.690E-01 | 0.779   |
|         | +         | 86.94        |     | 1.421E+00           | 7.057E-01 | 5.467E-01      | 2.275E-01 | 2.599   |
|         | +         | 87.57        | *   | 3.418E-01           | 9.848E-02 | 1.374E-01      | 1.352E-02 | 2.488   |
| TL-208  |           | 277.35       |     | 4.081E-01           | 4.666E-01 | 7.621E-01      | 8.116E-02 | 0.536   |
|         | +         | 510.84       |     | 6.515E-01           | 3.347E-01 | 2.364E-01      | 2.372E-02 | 2.756   |
|         | +         | 583.14       | *   | 4.254E-01           | 8.833E-02 | 6.629E-02      | 4.190E-03 | 6.417   |
|         | +         | 860.37       |     | 1.130E+00           | 6.134E-01 | 5.477E-01      | 4.188E-02 | 2.063   |
| BI-211  |           | 72.87        |     | 1.539E+01           | 4.619E+00 | 7.259E+00      | 6.517E-01 | 2.120   |
|         | +         | 351.07       | *   | 4.453E+00           | 5.962E-01 | 3.554E-01      | 2.294E-02 | 12.527  |
| PB-212  | +         | 74.81        |     | 2.673E+00           | 6.722E-01 | 6.577E-01      | 8.551E-02 | 4.064   |
|         | +         | 77.11        |     | 2.104E+00           | 3.474E-01 | 3.709E-01      | 3.387E-02 | 5.673   |
|         | +         | 87.30        |     | 1.581E+00           | 4.821E-01 | 6.375E-01      | 8.934E-02 | 2.480   |
|         | +         | 238.63       | *   | 1.737E+00           | 1.768E-01 | 1.031E-01      | 7.598E-03 | 16.856  |
|         | +         | 300.09       |     | 2.277E+00           | 1.271E+00 | 1.219E+00      | 1.021E-01 | 1.867   |
| PO-212  | +         | 74.81        |     | 2.673E+00           | 6.722E-01 | 6.577E-01      | 8.551E-02 | 4.064   |
|         | +         | 77.11        |     | 2.104E+00           | 3.474E-01 | 3.709E-01      | 3.387E-02 | 5.673   |
|         | +         | 87.30        |     | 1.581E+00           | 4.821E-01 | 6.375E-01      | 8.934E-02 | 2.480   |
|         |           | 115.19       |     | 1.594E+00           | 4.010E+00 | 6.702E+00      | 4.423E-01 | 0.238   |
|         | +         | 238.63       | *   | 1.737E+00           | 1.768E-01 | 1.031E-01      | 7.598E-03 | 16.856  |
|         | +         | 300.09       |     | 2.277E+00           | 1.271E+00 | 1.219E+00      | 1.021E-01 | 1.867   |
| BI-214  | +         | 609.31       | *   | 1.142E+00           | 1.895E-01 | 1.186E-01      | 8.756E-03 | 9.627   |
|         | +         | 1120.29      |     | 1.614E+00           | 8.024E-01 | 5.889E-01      | 5.379E-02 | 2.741   |
|         | +         | 1764.49      |     | 1.406E+00           | 3.508E-01 | 3.278E-01      | 1.919E-02 | 4.289   |
| PB-214  | +         | 74.81        |     | 4.606E+00           | 1.128E+00 | 1.133E+00      | 1.324E-01 | 4.064   |
|         | +         | 77.11        |     | 3.608E+00           | 6.559E-01 | 6.359E-01      | 7.562E-02 | 5.673   |
|         | +         | 87.30        |     | 2.708E+00           | 8.077E-01 | 1.092E+00      | 1.363E-01 | 2.480   |
|         | +         | 241.98       |     | 2.638E+00           | 8.620E-01 | 6.208E-01      | 5.037E-02 | 4.250   |
|         | +         | 295.21       |     | 1.219E+00           | 2.944E-01 | 2.559E-01      | 2.213E-02 | 4.765   |
|         | +         | 351.92       | *   | 1.549E+00           | 2.226E-01 | 1.239E-01      | 1.028E-02 | 12.501  |
| PO-214  | +         | 74.81        |     | 4.606E+00           | 1.128E+00 | 1.133E+00      | 1.324E-01 | 4.064   |
|         | +         | 77.11        |     | 3.608E+00           | 6.559E-01 | 6.359E-01      | 7.562E-02 | 5.673   |
|         | +         | 87.30        |     | 2.708E+00           | 8.077E-01 | 1.092E+00      | 1.363E-01 | 2.480   |

---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PO-216  | +         | 241.98       |     | 2.638E+00           | 8.620E-01 | 6.208E-01      | 5.037E-02 | 4.250   |
|         | +         | 295.21       |     | 1.219E+00           | 2.944E-01 | 2.559E-01      | 2.213E-02 | 4.765   |
|         | +         | 351.92       | *   | 1.549E+00           | 2.226E-01 | 1.239E-01      | 1.028E-02 | 12.501  |
|         | +         | 74.81        |     | 2.673E+00           | 6.722E-01 | 6.577E-01      | 8.551E-02 | 4.064   |
|         | +         | 77.11        |     | 2.104E+00           | 3.474E-01 | 3.709E-01      | 3.387E-02 | 5.673   |
|         | +         | 87.30        |     | 1.581E+00           | 4.821E-01 | 6.375E-01      | 8.934E-02 | 2.480   |
| PO-218  | +         | 238.63       | *   | 1.737E+00           | 1.768E-01 | 1.031E-01      | 7.598E-03 | 16.856  |
|         | +         | 300.09       |     | 2.277E+00           | 1.271E+00 | 1.219E+00      | 1.021E-01 | 1.867   |
|         | +         | 74.81        |     | 4.606E+00           | 1.128E+00 | 1.133E+00      | 1.324E-01 | 4.064   |
|         | +         | 77.11        |     | 3.608E+00           | 6.559E-01 | 6.359E-01      | 7.562E-02 | 5.673   |
|         | +         | 87.30        |     | 2.708E+00           | 8.077E-01 | 1.092E+00      | 1.363E-01 | 2.480   |
|         | +         | 241.98       |     | 2.638E+00           | 8.620E-01 | 6.208E-01      | 5.037E-02 | 4.250   |
| RA-224  | +         | 295.21       |     | 1.219E+00           | 2.944E-01 | 2.559E-01      | 2.213E-02 | 4.765   |
|         | +         | 351.92       | *   | 1.549E+00           | 2.226E-01 | 1.239E-01      | 1.028E-02 | 12.501  |
|         | +         | 240.98       | *   | 5.002E+00           | 1.610E+00 | 1.173E+00      | 6.875E-02 | 4.264   |
| RA-226  | +         | 609.31       | *   | 1.142E+00           | 1.895E-01 | 1.186E-01      | 8.756E-03 | 9.627   |
|         | +         | 1120.29      |     | 1.614E+00           | 8.024E-01 | 5.889E-01      | 5.379E-02 | 2.741   |
|         | +         | 1764.49      |     | 1.406E+00           | 3.508E-01 | 3.278E-01      | 1.919E-02 | 4.289   |
| AC-228  | +         | 338.32       |     | 1.402E+00           | 7.614E-01 | 3.992E-01      | 1.628E-02 | 3.513   |
|         | +         | 911.07       | *   | 1.777E+00           | 3.690E-01 | 2.198E-01      | 2.246E-02 | 8.081   |
|         | +         | 969.11       |     | 1.452E+00           | 7.970E-01 | 4.513E-01      | 1.029E-01 | 3.216   |
| RA-228  | +         | 338.32       |     | 1.402E+00           | 7.614E-01 | 3.992E-01      | 1.628E-01 | 3.513   |
|         | +         | 911.07       | *   | 1.777E+00           | 3.690E-01 | 2.198E-01      | 2.246E-02 | 8.081   |
|         | +         | 969.11       |     | 1.452E+00           | 7.970E-01 | 4.513E-01      | 1.029E-01 | 3.216   |
| TH-228  | +         | 74.81        |     | 2.714E+00           | 6.342E-01 | 6.677E-01      | 6.080E-02 | 4.064   |
|         | +         | 77.11        |     | 2.136E+00           | 3.526E-01 | 3.766E-01      | 3.438E-02 | 5.673   |
|         | +         | 87.30        |     | 1.605E+00           | 4.624E-01 | 6.472E-01      | 6.353E-02 | 2.480   |
| TH-230  | +         | 238.63       | *   | 1.764E+00           | 1.795E-01 | 1.046E-01      | 7.713E-03 | 16.856  |
|         | +         | 300.09       |     | 2.311E+00           | 1.867E+00 | 1.238E+00      | 7.298E-01 | 1.867   |
|         | +         | 609.31       | *   | 1.142E+00           | 1.895E-01 | 1.186E-01      | 8.755E-03 | 9.627   |
| TH-232  | +         | 1120.29      |     | 1.614E+00           | 8.024E-01 | 5.889E-01      | 5.379E-02 | 2.741   |
|         | +         | 1764.49      |     | 1.406E+00           | 3.508E-01 | 3.278E-01      | 1.919E-02 | 4.289   |
|         | +         | 338.32       |     | 1.402E+00           | 5.094E-01 | 3.992E-01      | 2.348E-02 | 3.513   |
| U-234   | +         | 911.07       | *   | 1.777E+00           | 3.690E-01 | 2.198E-01      | 2.246E-02 | 8.081   |
|         | +         | 969.11       |     | 1.452E+00           | 7.970E-01 | 4.513E-01      | 1.029E-01 | 3.216   |
|         | +         | 609.31       | *   | 1.142E+00           | 1.895E-01 | 1.186E-01      | 8.755E-03 | 9.627   |
| NP-237  | +         | 1120.29      |     | 1.614E+00           | 8.024E-01 | 5.889E-01      | 5.379E-02 | 2.741   |
|         | +         | 1764.49      |     | 1.406E+00           | 3.508E-01 | 3.278E-01      | 1.919E-02 | 4.289   |
|         | +         | 86.50        | *   | 1.004E+00           | 3.557E-01 | 3.883E-01      | 8.861E-02 | 2.585   |
| AM-243  | +         | 95.87        |     | -1.493E+00          | 1.317E+00 | 1.737E+00      | 4.277E-01 | -0.859  |
|         | +         | 74.67        | *   | 4.334E-01           | 1.012E-01 | 1.070E-01      | 9.664E-03 | 4.050   |
|         | +         | 86.72        |     | 3.764E+01           | 1.084E+01 | 1.452E+01      | 1.418E+00 | 2.592   |
| ANH-511 | +         | 117.66       |     | -1.982E+00          | 4.321E+00 | 6.988E+00      | 4.480E-01 | -0.284  |
|         | +         | 142.18       |     | 1.912E+01           | 2.052E+01 | 3.423E+01      | 1.954E+00 | 0.559   |
|         | +         | 511.00       | *   | 1.407E-01           | 7.133E-02 | 5.107E-02      | 2.855E-03 | 2.755   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| BE-7    |           | 477.59       | *   | -1.387E-01          | 3.469E-01 | 5.544E-01      | 3.662E-02 | -0.250  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| NA-22   | 1274.54   | *            |     | 1.234E-02           | 5.138E-02 | 8.578E-02           | 5.297E-03 | 0.144   |
| NA-24   | 1368.53   | *            |     | 5.773E-01           | 5.138E-02 | Half-Life too short |           |         |
| AL-26   | 1129.67   |              |     | -3.824E-01          | 2.536E+00 | 3.506E+00           | 2.184E-01 | -0.109  |
|         | 1808.65   | *            |     | -3.829E-02          | 2.929E-02 | 3.122E-02           | 1.793E-03 | -1.226  |
| TI-44   | 67.85     |              |     | -4.300E-02          | 5.699E-02 | 9.289E-02           | 8.289E-03 | -0.463  |
|         | 78.38     | *            | +   | 3.884E-01           | 6.410E-02 | 9.156E-02           | 8.416E-03 | 4.242   |
| SC-46   | 889.25    | *            |     | 1.086E-02           | 4.229E-02 | 7.211E-02           | 5.168E-03 | 0.151   |
|         | 1120.51   | *            | +   | 2.762E-01           | 1.361E-01 | 1.439E-01           | 9.053E-03 | 1.919   |
| V-48    | 944.10    |              |     | 3.816E-02           | 1.071E+00 | 1.783E+00           | 1.273E-01 | 0.021   |
|         | 983.50    | *            |     | -2.063E-02          | 8.055E-02 | 1.302E-01           | 9.113E-03 | -0.158  |
|         | 1312.09   |              |     | 4.564E-02           | 8.808E-02 | 1.520E-01           | 9.487E-03 | 0.300   |
| CR-51   | 320.08    | *            |     | -5.460E-01          | 4.129E-01 | 6.319E-01           | 4.163E-02 | -0.864  |
| MN-52   | 744.21    |              |     | -1.039E-01          | 2.571E-01 | 3.968E-01           | 2.263E-02 | -0.262  |
|         | 848.13    |              |     | 1.966E+00           | 7.811E+00 | 1.332E+01           | 8.972E-01 | 0.148   |
|         | 935.52    | *            | +   | 4.730E-01           | 3.610E-01 | 5.675E-01           | 4.065E-02 | 0.833   |
|         | 1246.25   |              |     | 5.691E+00           | 1.003E+01 | 1.556E+01           | 9.490E-01 | 0.366   |
|         | 1333.61   |              |     | 2.645E+00           | 5.913E+00 | 1.005E+01           | 6.313E-01 | 0.263   |
|         | 1434.06   | *            |     | 1.085E-02           | 2.330E-01 | 3.797E-01           | 2.390E-02 | 0.029   |
| MN-54   | 834.83    | *            |     | -8.768E-03          | 4.188E-02 | 6.883E-02           | 4.543E-03 | -0.127  |
| CO-56   | 846.75    | *            |     | 3.388E-02           | 4.512E-02 | 7.987E-02           | 5.370E-03 | 0.424   |
|         | 977.42    |              |     | 1.212E+00           | 3.466E+00 | 5.682E+00           | 3.992E-01 | 0.213   |
|         | 1037.82   |              |     | 3.232E-02           | 3.598E-01 | 5.990E-01           | 4.397E-02 | 0.054   |
|         | 1175.09   |              |     | -2.982E+00          | 3.374E+00 | 4.539E+00           | 2.688E-01 | -0.657  |
|         | 1238.25   | *            | +   | 1.734E-01           | 1.452E-01 | 1.886E-01           | 1.212E-02 | 0.919   |
|         | 1360.21   |              |     | -7.212E-01          | 9.034E-01 | 1.253E+00           | 7.885E-02 | -0.576  |
|         | 1771.40   |              |     | -5.505E-01          | 3.285E-01 | 3.900E-01           | 2.277E-02 | -1.412  |
| CO-57   | 122.06    | *            |     | 1.280E-02           | 2.958E-02 | 4.941E-02           | 3.018E-03 | 0.259   |
|         | 136.48    |              |     | -1.315E-01          | 2.443E-01 | 3.920E-01           | 2.634E-02 | -0.335  |
| CO-58   | 810.76    | *            |     | -1.563E-02          | 4.587E-02 | 7.469E-02           | 4.769E-03 | -0.209  |
| FE-59   | 142.65    |              |     | 1.320E+00           | 3.194E+00 | 5.235E+00           | 2.986E-01 | 0.252   |
|         | 192.34    |              |     | -1.806E-01          | 1.150E+00 | 1.783E+00           | 2.087E-01 | -0.101  |
|         | 1099.22   | *            |     | 2.497E-02           | 1.166E-01 | 1.952E-01           | 1.432E-02 | 0.128   |
|         | 1291.56   |              |     | -5.321E-02          | 1.466E-01 | 2.292E-01           | 1.774E-02 | -0.232  |
| CO-60   | 1173.22   |              |     | -6.527E-03          | 5.867E-02 | 9.525E-02           | 5.635E-03 | -0.069  |
|         | 1332.49   | *            |     | 3.432E-02           | 4.579E-02 | 8.036E-02           | 5.048E-03 | 0.427   |
| ZN-65   | 1115.52   | *            |     | -3.005E-03          | 1.114E-01 | 1.566E-01           | 9.918E-03 | -0.019  |
| GE-68   | 1077.35   | *            |     | 3.094E-01           | 1.567E+00 | 2.625E+00           | 1.721E-01 | 0.118   |
| AS-73   | 53.44     | *            |     | -3.603E-01          | 1.134E+00 | 1.884E+00           | 1.723E-01 | -0.191  |
| AS-74   | 595.88    | *            |     | 5.597E-03           | 9.756E-02 | 1.596E-01           | 8.486E-03 | 0.035   |
|         | 634.78    |              |     | -4.900E-02          | 4.041E-01 | 6.490E-01           | 3.317E-02 | -0.076  |
| SE-75   | 66.05     |              |     | -3.195E+00          | 6.116E+00 | 9.994E+00           | 1.070E+00 | -0.320  |
|         | 96.73     |              |     | -9.157E-01          | 1.040E+00 | 1.439E+00           | 1.945E-01 | -0.637  |
|         | 121.11    |              |     | 6.958E-02           | 1.590E-01 | 2.656E-01           | 2.514E-02 | 0.262   |
|         | 136.00    |              |     | -4.106E-03          | 4.578E-02 | 7.478E-02           | 4.408E-03 | -0.055  |
|         | 198.60    |              |     | -2.110E+00          | 2.172E+00 | 3.235E+00           | 2.258E-01 | -0.652  |
|         | 264.65    | *            |     | 1.879E-02           | 6.088E-02 | 8.668E-02           | 5.200E-03 | 0.217   |
|         | 279.53    |              |     | -4.324E-02          | 1.310E-01 | 2.136E-01           | 1.372E-02 | -0.202  |
|         | 303.91    |              |     | 1.107E+00           | 2.469E+00 | 3.653E+00           | 3.523E-01 | 0.303   |
|         | 400.65    |              |     | -1.324E-01          | 2.973E-01 | 4.804E-01           | 4.303E-02 | -0.276  |

---- Non-Identified Nuclides ----

| Nuclide  | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|----------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| BR-77    | +         | 87.88        |     | 7.452E+02           | 2.147E+02 | 3.875E+02      | 3.824E+01 | 1.923   |
|          |           | 200.40       |     | 1.756E+02           | 1.853E+02 | 3.113E+02      | 1.754E+01 | 0.564   |
| + 239.00 |           | 239.00       |     | 2.767E+02           | 2.528E+01 | 4.234E+01      | 2.478E+00 | 6.536   |
|          |           | 249.79       |     | 9.940E+00           | 7.723E+01 | 1.246E+02      | 7.343E+00 | 0.080   |
|          |           | 281.68       |     | 1.792E+01           | 1.051E+02 | 1.784E+02      | 1.065E+01 | 0.100   |
|          |           | 297.23       |     | 3.023E+02           | 1.094E+02 | 1.387E+02      | 8.284E+00 | 2.180   |
|          |           | 303.76       |     | 8.239E+01           | 2.079E+02 | 3.067E+02      | 1.830E+01 | 0.269   |
|          |           | 439.47       |     | -1.518E+01          | 1.597E+02 | 2.623E+02      | 1.476E+01 | -0.058  |
|          |           | 484.57       |     | 2.203E+02           | 2.498E+02 | 4.359E+02      | 2.452E+01 | 0.505   |
|          |           | 520.65       | *   | 3.516E+00           | 1.180E+01 | 1.976E+01      | 1.101E+00 | 0.178   |
|          |           | 574.64       |     | -8.009E+01          | 2.335E+02 | 3.706E+02      | 2.005E+01 | -0.216  |
|          |           | 578.91       |     | 6.299E+00           | 1.062E+02 | 1.506E+02      | 8.121E+00 | 0.042   |
|          |           | 585.48       |     | 9.383E+02           | 2.757E+02 | 4.815E+02      | 2.583E+01 | 1.949   |
|          |           | 755.35       |     | 4.114E+01           | 1.993E+02 | 3.257E+02      | 1.893E+01 | 0.126   |
|          |           | 817.79       |     | -2.462E+00          | 1.555E+02 | 2.600E+02      | 1.671E+01 | -0.009  |
| SR-82    |           | 698.33       |     | 1.271E+01           | 4.066E+01 | 6.722E+01      | 3.544E+00 | 0.189   |
|          |           | 776.49       | *   | -1.128E-01          | 4.341E-01 | 7.138E-01      | 4.294E-02 | -0.158  |
| RB-83    |           | 1395.20      |     | -1.130E+01          | 1.050E+01 | 1.359E+01      | 8.561E-01 | -0.831  |
|          |           | 520.41       | *   | 1.934E-02           | 7.834E-02 | 1.307E-01      | 7.285E-03 | 0.148   |
|          |           | 529.64       |     | 1.811E-02           | 1.208E-01 | 2.000E-01      | 1.110E-02 | 0.091   |
| RB-84    |           | 552.65       |     | 3.597E-02           | 2.327E-01 | 3.846E-01      | 2.110E-02 | 0.094   |
|          |           | 881.50       | *   | -8.290E-02          | 7.794E-02 | 1.164E-01      | 8.250E-03 | -0.712  |
| KR-85    |           | 513.99       | *   | 1.336E+01           | 9.039E+00 | 1.455E+01      | 8.125E-01 | 0.919   |
| SR-85    |           | 513.99       | *   | 6.851E-02           | 4.633E-02 | 7.457E-02      | 4.165E-03 | 0.919   |
| RB-86    |           | 1076.63      | *   | -1.012E-01          | 1.012E+00 | 1.652E+00      | 1.084E-01 | -0.061  |
| Y-88     |           | 898.02       |     | 9.362E-04           | 4.509E-02 | 7.523E-02      | 5.500E-03 | 0.012   |
|          |           | 1836.01      | *   | 6.130E-03           | 3.559E-02 | 6.085E-02      | 3.458E-03 | 0.101   |
| ZR-88    |           | 392.90       | *   | -2.774E-02          | 3.554E-02 | 5.628E-02      | 3.123E-03 | -0.493  |
| Y-91     |           | 1204.90      | *   | -2.213E+01          | 2.338E+01 | 3.499E+01      | 2.098E+00 | -0.632  |
| NB-94    |           | 702.63       | *   | -5.832E-03          | 3.972E-02 | 6.331E-02      | 3.362E-03 | -0.092  |
|          |           | 871.10       |     | -4.117E-03          | 4.078E-02 | 6.745E-02      | 4.705E-03 | -0.061  |
| NB-95    |           | 765.79       | *   | 3.189E-02           | 5.166E-02 | 8.690E-02      | 5.137E-03 | 0.367   |
| NB-95M   |           | 235.69       | *   | 5.521E-01           | 1.849E-01 | 2.934E-01      | 2.217E-02 | 1.882   |
| ZR-95    |           | 724.18       |     | 1.545E-01           | 1.257E-01 | 1.977E-01      | 1.308E-02 | 0.782   |
|          |           | 756.15       | *   | 4.727E-02           | 8.718E-02 | 1.463E-01      | 1.031E-02 | 0.323   |
| NB-97    |           | 657.90       | *   | -1.812E-02          | 8.718E-02 | Half-Life      | too short |         |
|          |           | 1024.50      |     | 5.527E+00           | 8.718E-02 | Half-Life      | too short |         |
| ZR-97    |           | 254.15       |     | -1.932E+00          | 8.718E-02 | Half-Life      | too short |         |
|          |           | 355.39       |     | -9.911E-01          | 8.718E-02 | Half-Life      | too short |         |
|          |           | 507.63       | *   | 4.514E+00           | 8.718E-02 | Half-Life      | too short |         |
|          |           | 602.52       |     | -1.258E+01          | 8.718E-02 | Half-Life      | too short |         |
|          |           | 1021.30      |     | 3.949E+00           | 8.718E-02 | Half-Life      | too short |         |
|          |           | 1147.95      |     | 2.397E+00           | 8.718E-02 | Half-Life      | too short |         |
|          |           | 1362.66      |     | -4.694E+00          | 8.718E-02 | Half-Life      | too short |         |
|          |           | 1750.46      |     | 1.028E+00           | 8.718E-02 | Half-Life      | too short |         |
|          |           | 140.51       |     | -1.651E+01          | 3.046E+01 | 4.832E+01      | 1.301E+01 | -0.342  |
|          |           | 181.06       |     | -1.464E+00          | 2.294E+01 | 3.244E+01      | 5.528E+00 | -0.045  |
| MO-99    |           | 366.43       |     | -2.826E+01          | 9.356E+01 | 1.532E+02      | 8.788E+00 | -0.184  |
|          |           | 739.58       | *   | 3.845E+00           | 1.190E+01 | 1.974E+01      | 2.709E+00 | 0.195   |



## ---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
|         | 778.00    |              |     | -2.777E+01          | 3.784E+01 | 5.963E+01           | 3.597E+00 | -0.466  |
| TC-99M  | 140.51    | *            |     | -2.236E+10          | 3.784E+01 | Half-Life too short |           |         |
| RH-101  | 127.23    |              |     | 5.506E-02           | 4.368E-02 | 6.656E-02           | 3.975E-03 | 0.827   |
|         | 198.01    | *            |     | -2.245E-02          | 3.923E-02 | 5.959E-02           | 3.347E-03 | -0.377  |
|         | 325.23    |              |     | 3.809E-01           | 2.735E-01 | 4.382E-01           | 2.597E-02 | 0.869   |
| RH-102  | 418.52    |              |     | -2.897E-02          | 3.331E-01 | 5.490E-01           | 3.075E-02 | -0.053  |
|         | 475.06    | *            |     | 1.073E-02           | 3.244E-02 | 5.464E-02           | 3.077E-03 | 0.196   |
|         | 631.29    |              |     | 3.962E-02           | 6.143E-02 | 1.049E-01           | 5.383E-03 | 0.378   |
|         | 697.49    |              |     | -3.454E-03          | 9.289E-02 | 1.495E-01           | 7.868E-03 | -0.023  |
|         | 766.84    |              |     | 3.409E-02           | 1.340E-01 | 2.192E-01           | 1.298E-02 | 0.156   |
|         | 1046.59   |              |     | -2.797E-02          | 1.298E-01 | 2.097E-01           | 1.409E-02 | -0.133  |
|         | 1112.84   |              |     | -2.267E-02          | 3.127E-01 | 4.370E-01           | 2.770E-02 | -0.052  |
| RU-103  | 497.08    | *            |     | 2.419E-02           | 4.629E-02 | 7.868E-02           | 9.882E-03 | 0.307   |
|         | 610.33    |              |     | 1.233E+01           | 2.623E+00 | 3.214E+00           | 4.892E-01 | 3.835   |
| RH-106  | 511.85    | +            |     | 7.028E-01           | 3.563E-01 | 4.754E-01           | 2.657E-02 | 1.478   |
|         | 621.84    | *            |     | -1.760E-01          | 3.685E-01 | 5.742E-01           | 6.572E-02 | -0.307  |
|         | 1050.47   |              |     | 8.461E-01           | 2.650E+00 | 4.501E+00           | 3.016E-01 | 0.188   |
| RU-106  | 511.85    | +            |     | 7.028E-01           | 3.563E-01 | 4.754E-01           | 2.657E-02 | 1.478   |
|         | 621.84    | *            |     | -1.760E-01          | 3.680E-01 | 5.742E-01           | 2.977E-02 | -0.307  |
|         | 1050.47   |              |     | 8.461E-01           | 2.650E+00 | 4.501E+00           | 3.016E-01 | 0.188   |
| AG-108M | 433.93    | *            |     | -5.347E-03          | 3.678E-02 | 6.028E-02           | 3.697E-03 | -0.089  |
|         | 614.37    |              |     | -6.370E-03          | 4.976E-02 | 6.882E-02           | 3.969E-03 | -0.093  |
|         | 722.95    |              |     | -2.644E-02          | 5.580E-02 | 7.285E-02           | 4.383E-03 | -0.363  |
| AG-110M | 657.75    | *            |     | -1.042E-02          | 4.416E-02 | 7.023E-02           | 3.791E-03 | -0.148  |
|         | 677.61    |              |     | -1.381E-01          | 3.551E-01 | 5.546E-01           | 3.041E-02 | -0.249  |
|         | 706.67    |              |     | -1.626E-01          | 2.420E-01 | 3.674E-01           | 2.103E-02 | -0.443  |
|         | 763.93    |              |     | -1.813E-01          | 2.135E-01 | 3.190E-01           | 1.992E-02 | -0.569  |
|         | 884.67    |              |     | -1.071E-02          | 5.327E-02 | 8.709E-02           | 6.490E-03 | -0.123  |
|         | 937.48    |              |     | -1.670E-02          | 1.498E-01 | 2.111E-01           | 1.590E-02 | -0.079  |
|         | 1384.27   |              |     | 2.599E-01           | 1.944E-01 | 3.385E-01           | 2.242E-02 | 0.768   |
| IN-111  | 171.28    |              |     | 3.316E-01           | 1.147E+00 | 1.888E+00           | 1.026E-01 | 0.176   |
|         | 245.39    | *            |     | -4.550E-01          | 1.398E+00 | 1.909E+00           | 1.122E-01 | -0.238  |
| IN-113M | 391.69    | *            |     | -3.109E-02          | 5.221E-02 | 8.374E-02           | 4.983E-03 | -0.371  |
| SN-113  | 391.69    | *            |     | -3.109E-02          | 5.221E-02 | 8.374E-02           | 4.983E-03 | -0.371  |
| IN-114M | 190.27    | *            |     | -3.406E-02          | 2.443E-01 | 3.430E-01           | 1.909E-02 | -0.099  |
| CD-115  | 260.90    |              |     | -5.995E+01          | 1.605E+02 | 2.517E+02           | 1.493E+01 | -0.238  |
|         | 492.35    |              |     | -1.096E+01          | 4.187E+01 | 6.759E+01           | 3.797E+00 | -0.162  |
|         | 527.90    | *            |     | 8.379E+00           | 1.206E+01 | 2.074E+01           | 1.153E+00 | 0.404   |
| SN-117M | 156.02    |              |     | -1.324E+00          | 2.533E+00 | 4.042E+00           | 2.233E-01 | -0.327  |
|         | 158.56    | *            |     | 3.602E-03           | 6.109E-02 | 9.985E-02           | 5.485E-03 | 0.036   |
| SB-122  | 563.90    | *            |     | 1.792E+00           | 2.338E+00 | 4.027E+00           | 2.195E-01 | 0.445   |
|         | 692.80    |              |     | -6.699E+00          | 5.053E+01 | 8.069E+01           | 4.212E+00 | -0.083  |
| I-123   | 159.00    | *            |     | 2.823E+00           | 5.053E+01 | Half-Life too short |           |         |
|         | 528.96    |              |     | 1.433E+02           | 5.053E+01 | Half-Life too short |           |         |
| TE-123M | 159.00    | *            |     | 1.445E-02           | 3.150E-02 | 5.231E-02           | 2.914E-03 | 0.276   |
| I-124   | 602.71    | *            |     | -1.065E+00          | 9.128E-01 | 1.114E+00           | 5.888E-02 | -0.956  |
|         | 722.78    |              |     | -3.408E+00          | 5.758E+00 | 7.390E+00           | 4.064E-01 | -0.461  |
|         | 1325.50   |              |     | -3.280E+01          | 3.792E+01 | 5.431E+01           | 3.404E+00 | -0.604  |
|         | 1376.25   |              |     | 5.044E+01           | 3.938E+01 | 6.642E+01           | 4.181E+00 | 0.759   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| SB-124  |           | 1509.49      |     | 1.284E+01           | 1.684E+01 | 2.931E+01      | 1.834E+00 | 0.438   |
|         |           | 1691.02      |     | -1.374E+00          | 4.118E+00 | 6.418E+00      | 3.860E-01 | -0.214  |
|         |           | 602.71       |     | -6.218E-02          | 5.328E-02 | 6.503E-02      | 3.439E-03 | -0.956  |
|         |           | 645.85       |     | 2.430E-01           | 5.885E-01 | 9.854E-01      | 5.797E-02 | 0.247   |
|         |           | 709.31       |     | 1.611E+00           | 3.243E+00 | 5.441E+00      | 2.924E-01 | 0.296   |
|         |           | 713.82       |     | -3.520E-01          | 2.091E+00 | 3.324E+00      | 3.323E-01 | -0.106  |
|         |           | 722.78       |     | -2.884E-01          | 4.873E-01 | 6.253E-01      | 3.619E-02 | -0.461  |
|         | +         | 968.20       |     | 1.494E+01           | 7.536E+00 | 8.302E+00      | 5.860E-01 | 1.800   |
|         |           | 1045.16      |     | 7.134E-01           | 2.658E+00 | 4.503E+00      | 3.029E-01 | 0.158   |
|         |           | 1325.50      |     | -2.965E+00          | 3.427E+00 | 4.908E+00      | 3.076E-01 | -0.604  |
| SB-125  |           | 1368.21      |     | 1.642E+00           | 1.823E+00 | 3.269E+00      | 3.962E-01 | 0.502   |
|         |           | 1436.60      |     | -2.226E+00          | 3.768E+00 | 5.455E+00      | 3.433E-01 | -0.408  |
|         |           | 1691.02      | *   | -2.742E-02          | 8.219E-02 | 1.281E-01      | 8.318E-03 | -0.214  |
|         |           | 427.89       | *   | 3.680E-02           | 1.019E-01 | 1.726E-01      | 1.013E-02 | 0.213   |
|         | +         | 463.38       |     | 6.659E-01           | 4.012E-01 | 6.104E-01      | 4.042E-02 | 1.091   |
|         |           | 600.56       |     | 7.673E-02           | 1.954E-01 | 3.276E-01      | 2.056E-02 | 0.234   |
|         |           | 635.90       |     | -6.684E-05          | 3.072E-01 | 4.983E-01      | 3.094E-02 | 0.000   |
|         |           | 109.28       | *   | -3.015E-01          | 1.058E+01 | 1.744E+01      | 1.585E+00 | -0.017  |
|         | TE-125M   | 388.63       |     | 8.373E-02           | 2.467E-01 | 4.177E-01      | 2.327E-02 | 0.200   |
|         | I-126     | 666.33       | *   | -2.907E-02          | 2.185E-01 | 3.498E-01      | 1.742E-02 | -0.083  |
| SB-126  |           | 753.82       |     | -4.878E-01          | 1.759E+00 | 2.757E+00      | 1.598E-01 | -0.177  |
|         |           | 223.80       |     | 3.445E+00           | 4.692E+00 | 7.799E+00      | 4.505E-01 | 0.442   |
|         |           | 278.60       |     | 2.240E+00           | 2.964E+00 | 5.061E+00      | 3.019E-01 | 0.443   |
|         | +         | 296.50       |     | 1.212E+01           | 2.827E+00 | 4.080E+00      | 2.437E-01 | 2.971   |
|         |           | 414.70       |     | -2.381E-02          | 9.000E-02 | 1.469E-01      | 8.219E-03 | -0.162  |
|         |           | 415.30       |     | 1.389E+00           | 7.348E+00 | 1.232E+01      | 6.893E-01 | 0.113   |
|         |           | 555.20       |     | 7.178E-01           | 4.653E+00 | 7.690E+00      | 4.213E-01 | 0.093   |
|         |           | 573.80       |     | -3.129E-01          | 1.176E+00 | 1.879E+00      | 1.017E-01 | -0.167  |
|         |           | 593.00       |     | 2.342E-01           | 9.950E-01 | 1.652E+00      | 8.806E-02 | 0.142   |
|         |           | 656.30       |     | -7.878E-01          | 4.094E+00 | 6.530E+00      | 3.249E-01 | -0.121  |
| SB-127  |           | 666.33       |     | -1.215E-02          | 9.129E-02 | 1.462E-01      | 7.279E-03 | -0.083  |
|         |           | 675.00       |     | 6.008E-01           | 2.239E+00 | 3.703E+00      | 1.873E-01 | 0.162   |
|         |           | 695.00       |     | -1.400E-02          | 9.066E-02 | 1.445E-01      | 7.571E-03 | -0.097  |
|         |           | 697.00       |     | -3.269E-02          | 3.253E-01 | 5.209E-01      | 2.740E-02 | -0.063  |
|         |           | 720.50       | *   | -1.360E-01          | 1.948E-01 | 2.460E-01      | 1.348E-02 | -0.553  |
|         |           | 856.80       |     | 5.514E-01           | 5.924E-01 | 9.471E-01      | 6.465E-02 | 0.582   |
|         |           | 989.30       |     | 9.477E-01           | 1.427E+00 | 2.505E+00      | 1.748E-01 | 0.378   |
|         |           | 1034.80      |     | 8.324E+00           | 1.007E+01 | 1.787E+01      | 1.211E+00 | 0.466   |
|         |           | 1213.00      |     | -3.867E+00          | 5.999E+00 | 9.274E+00      | 5.581E-01 | -0.417  |
|         |           | 61.10        |     | -3.751E+01          | 7.205E+01 | 1.185E+02      | 1.367E+01 | -0.316  |
| SB-127  |           | 252.40       |     | -5.306E+00          | 5.670E+00 | 7.925E+00      | 3.293E+00 | -0.670  |
|         |           | 290.80       |     | -1.125E+00          | 2.702E+01 | 3.952E+01      | 3.660E+00 | -0.028  |
|         |           | 411.60       |     | 9.143E+00           | 1.464E+01 | 2.502E+01      | 3.574E+00 | 0.365   |
|         |           | 444.90       |     | 4.675E+00           | 1.078E+01 | 1.830E+01      | 1.956E+00 | 0.255   |
|         |           | 473.00       |     | 5.034E-01           | 1.952E+00 | 3.269E+00      | 3.622E-01 | 0.154   |
|         |           | 543.00       |     | -2.415E+01          | 1.890E+01 | 2.735E+01      | 3.494E+00 | -0.883  |
|         |           | 603.60       |     | -6.650E+00          | 1.549E+01 | 2.073E+01      | 2.173E+00 | -0.321  |
|         |           | 685.20       | *   | 8.665E-01           | 1.467E+00 | 2.490E+00      | 2.250E-01 | 0.348   |
|         |           | 698.50       |     | 5.387E+00           | 1.814E+01 | 2.992E+01      | 4.269E+00 | 0.180   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| XE-127  |           | 722.20       |     | -3.751E+01          | 3.962E+01 | 4.804E+01      | 4.303E+00 | -0.781  |
|         |           | 783.80       |     | 5.616E+00           | 4.033E+00 | 7.393E+00      | 7.988E-01 | 0.760   |
|         |           | 57.60        |     | 1.437E+00           | 7.756E+00 | 1.309E+01      | 1.205E+00 | 0.110   |
|         |           | 145.22       |     | 4.686E-01           | 8.039E-01 | 1.342E+00      | 7.607E-02 | 0.349   |
|         |           | 172.10       |     | -1.394E-02          | 1.373E-01 | 2.222E-01      | 1.209E-02 | -0.063  |
| I-131   |           | 202.84       | *   | -2.581E-03          | 5.791E-02 | 9.010E-02      | 5.090E-03 | -0.029  |
|         |           | 374.96       |     | 3.619E-02           | 2.295E-01 | 3.856E-01      | 2.189E-02 | 0.094   |
|         |           | 80.18        |     | 2.570E-01           | 7.888E+00 | 8.387E+00      | 7.837E-01 | 0.031   |
|         |           | 284.30       |     | -9.132E-01          | 1.732E+00 | 2.846E+00      | 1.879E-01 | -0.321  |
|         |           | 364.48       | *   | -3.902E-02          | 1.288E-01 | 2.109E-01      | 1.356E-02 | -0.185  |
| TE-132  |           | 636.97       |     | -1.090E+00          | 1.784E+00 | 2.743E+00      | 1.612E-01 | -0.397  |
|         |           | 722.89       |     | -4.818E+00          | 9.350E+00 | 1.214E+01      | 6.779E-01 | -0.397  |
|         |           | 49.72        |     | -1.043E+01          | 2.771E+01 | 4.602E+01      | 5.011E+00 | -0.227  |
|         |           | 111.76       |     | -2.315E+01          | 3.366E+01 | 5.399E+01      | 5.140E+00 | -0.429  |
|         |           | 116.30       |     | 7.165E+00           | 3.129E+01 | 5.196E+01      | 4.813E+00 | 0.138   |
| BA-133  |           | 228.16       | *   | -5.092E-01          | 8.337E-01 | 1.298E+00      | 1.864E-01 | -0.392  |
|         |           | 53.15        |     | -1.635E+00          | 4.906E+00 | 8.148E+00      | 7.438E-01 | -0.201  |
|         |           | 79.62        |     | 1.198E+00           | 2.176E+00 | 2.403E+00      | 3.747E-01 | 0.499   |
|         |           | 81.00        |     | -2.718E-02          | 1.674E-01 | 1.750E-01      | 2.850E-02 | -0.155  |
|         |           | 276.40       |     | 6.971E-02           | 4.658E-01 | 7.224E-01      | 9.418E-02 | 0.097   |
| I-133   |           | 302.84       |     | 1.060E-01           | 1.655E-01 | 2.535E-01      | 2.977E-02 | 0.418   |
|         |           | 356.01       | *   | -3.071E-02          | 5.465E-02 | 7.541E-02      | 8.717E-03 | -0.407  |
|         |           | 383.85       |     | -2.496E-01          | 3.697E-01 | 5.907E-01      | 6.363E-02 | -0.423  |
|         | +         | 510.53       |     | 1.400E+00           | 3.697E-01 | Half-Life      | too short |         |
|         |           | 529.87       | *   | 8.441E-04           | 3.697E-01 | Half-Life      | too short |         |
| CS-134  |           | 706.58       |     | -3.305E-01          | 3.697E-01 | Half-Life      | too short |         |
|         |           | 856.28       |     | 5.638E-01           | 3.697E-01 | Half-Life      | too short |         |
|         |           | 875.33       |     | 3.625E-02           | 3.697E-01 | Half-Life      | too short |         |
|         |           | 1236.41      |     | 2.807E-01           | 3.697E-01 | Half-Life      | too short |         |
|         |           | 1298.22      |     | -1.101E-01          | 3.697E-01 | Half-Life      | too short |         |
| I-135   |           | 475.35       |     | 1.216E+00           | 2.105E+00 | 3.604E+00      | 2.030E-01 | 0.337   |
|         |           | 563.23       |     | 4.462E-01           | 4.200E-01 | 7.362E-01      | 4.108E-02 | 0.606   |
|         |           | 569.32       |     | -3.690E-02          | 2.213E-01 | 3.501E-01      | 1.965E-02 | -0.105  |
|         |           | 604.70       |     | 1.517E-02           | 4.177E-02 | 6.106E-02      | 3.243E-03 | 0.248   |
|         |           | 795.84       | *   | 8.042E-02           | 5.309E-02 | 9.841E-02      | 6.193E-03 | 0.817   |
| CS-135  |           | 801.93       |     | -5.353E-02          | 4.383E-01 | 7.214E-01      | 4.569E-02 | -0.074  |
|         |           | 1038.57      |     | -1.111E+00          | 4.500E+00 | 7.254E+00      | 4.904E-01 | -0.153  |
|         |           | 1167.94      |     | 1.806E+00           | 3.185E+00 | 5.461E+00      | 3.252E-01 | 0.331   |
|         |           | 1365.15      |     | 1.909E-01           | 1.184E+00 | 1.970E+00      | 1.344E-01 | 0.097   |
|         |           | 268.24       | *   | 3.610E-01           | 2.203E-01 | 3.376E-01      | 2.624E-02 | 1.069   |
| I-135   |           | 288.45       |     | 1.338E+10           | 2.203E-01 | Half-Life      | too short |         |
|         |           | 417.63       |     | -2.498E+10          | 2.203E-01 | Half-Life      | too short |         |
|         |           | 546.56       |     | 1.092E+10           | 2.203E-01 | Half-Life      | too short |         |
|         |           | 836.80       |     | 9.188E+09           | 2.203E-01 | Half-Life      | too short |         |
|         |           | 1038.76      |     | -6.866E+09          | 2.203E-01 | Half-Life      | too short |         |
|         |           | 1124.00      |     | -1.562E+10          | 2.203E-01 | Half-Life      | too short |         |
|         |           | 1131.51      |     | 2.513E+09           | 2.203E-01 | Half-Life      | too short |         |
|         |           | 1260.41      | *   | 9.588E+08           | 2.203E-01 | Half-Life      | too short |         |
|         |           | 1457.56      |     | 7.107E+11           | 2.203E-01 | Half-Life      | too short |         |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|---------------------|-----------|----------------|-----------|---------|
| CS-136  |           | 1678.03      |              | -2.977E+09          | 2.203E-01 | Half-Life      | too short |         |
|         |           | 1706.46      |              | 7.599E+09           | 2.203E-01 | Half-Life      | too short |         |
|         |           | 1791.20      |              | 2.787E+09           | 2.203E-01 | Half-Life      | too short |         |
|         |           | 66.91        |              | -1.205E+00          | 1.007E+00 | 1.586E+00      | 2.476E-01 | -0.760  |
|         | +         | 86.29        |              | 4.454E+00           | 1.352E+00 | 2.331E+00      | 3.175E-01 | 1.911   |
|         |           | 153.22       |              | 6.348E-01           | 7.476E-01 | 1.258E+00      | 8.848E-02 | 0.504   |
|         |           | 163.89       |              | 6.084E-01           | 1.253E+00 | 2.078E+00      | 1.446E-01 | 0.293   |
|         |           | 176.55       |              | 1.703E-01           | 4.309E-01 | 7.109E-01      | 4.426E-02 | 0.240   |
|         |           | 273.65       |              | -9.023E-01          | 6.592E-01 | 8.065E-01      | 5.447E-02 | -1.119  |
|         |           | 340.57       |              | 2.537E-01           | 1.642E-01 | 2.629E-01      | 1.639E-02 | 0.965   |
| BA-137M |           | 818.51       |              | 9.002E-03           | 8.525E-02 | 1.439E-01      | 9.276E-03 | 0.063   |
|         |           | 1048.07      | *            | -4.378E-02          | 1.237E-01 | 1.971E-01      | 1.415E-02 | -0.222  |
|         |           | 1235.34      |              | -3.702E-01          | 8.722E-01 | 1.159E+00      | 1.177E-01 | -0.319  |
|         |           | 661.65       | *            | 2.112E-02           | 4.527E-02 | 7.575E-02      | 3.741E-03 | 0.279   |
|         |           | 661.65       | *            | 2.233E-02           | 4.786E-02 | 8.008E-02      | 3.978E-03 | 0.279   |
|         |           | 165.85       | *            | 2.584E-02           | 3.490E-02 | 5.843E-02      | 3.159E-03 | 0.442   |
|         |           | 162.64       |              | -3.810E-04          | 8.760E-01 | 1.427E+00      | 8.860E-02 | 0.000   |
|         |           | 304.84       |              | 3.140E-01           | 1.508E+00 | 2.189E+00      | 5.981E-01 | 0.143   |
|         |           | 423.70       |              | -1.564E+00          | 2.261E+00 | 3.491E+00      | 1.108E+00 | -0.448  |
|         |           | 537.32       | *            | 3.008E-01           | 3.024E-01 | 5.049E-01      | 1.640E-01 | 0.596   |
| LA-140  | +         | 328.77       |              | 1.355E+00           | 6.259E-01 | 6.541E-01      | 4.318E-02 | 2.071   |
|         |           | 432.53       |              | -6.686E-01          | 2.336E+00 | 3.793E+00      | 2.368E-01 | -0.176  |
|         |           | 487.03       |              | 1.093E-01           | 1.547E-01 | 2.667E-01      | 1.709E-02 | 0.410   |
|         |           | 751.79       |              | -1.443E+00          | 1.983E+00 | 2.966E+00      | 2.099E-01 | -0.486  |
|         |           | 815.85       |              | 1.362E-01           | 3.950E-01 | 6.786E-01      | 5.219E-02 | 0.201   |
|         |           | 867.82       |              | -5.143E-01          | 1.892E+00 | 2.627E+00      | 1.971E-01 | -0.196  |
|         |           | 919.63       |              | -5.304E-01          | 3.165E+00 | 4.781E+00      | 4.561E-01 | -0.111  |
|         |           | 925.24       |              | -1.328E+00          | 1.212E+00 | 1.781E+00      | 1.395E-01 | -0.746  |
|         |           | 1596.49      | *            | -3.297E-02          | 9.531E-02 | 1.509E-01      | 9.307E-03 | -0.219  |
|         |           | 145.44       | *            | 3.583E-02           | 7.280E-02 | 1.212E-01      | 7.150E-03 | 0.296   |
| CE-141  |           | 57.37        |              | -9.836E-06          | 7.280E-02 | Half-Life      | too short |         |
|         |           | 231.56       |              | 1.379E-03           | 7.280E-02 | Half-Life      | too short |         |
|         |           | 293.26       | *            | 9.495E-04           | 7.280E-02 | Half-Life      | too short |         |
|         | +         | 350.59       |              | 3.480E-02           | 7.280E-02 | Half-Life      | too short |         |
|         |           | 490.36       |              | -4.008E-03          | 7.280E-02 | Half-Life      | too short |         |
|         |           | 664.57       |              | -7.203E-04          | 7.280E-02 | Half-Life      | too short |         |
|         |           | 721.93       |              | -1.024E-03          | 7.280E-02 | Half-Life      | too short |         |
|         |           | 80.11        |              | 1.944E-01           | 3.642E+00 | 3.879E+00      | 3.603E-01 | 0.050   |
|         |           | 133.54       | *            | 3.156E-02           | 2.759E-01 | 3.989E-01      | 5.673E-02 | 0.079   |
|         |           | 476.78       |              | -3.979E-03          | 7.410E-02 | 1.216E-01      | 8.268E-03 | -0.033  |
| PM-144  |           | 618.01       |              | 3.314E-02           | 3.545E-02 | 6.181E-02      | 3.456E-03 | 0.536   |
|         |           | 696.49       | *            | -7.940E-03          | 4.184E-02 | 6.651E-02      | 3.498E-03 | -0.119  |
|         |           | 778.57       |              | -9.588E-01          | 2.543E+00 | 4.136E+00      | 2.498E-01 | -0.232  |
|         |           | 696.49       | *            | -5.380E-01          | 2.835E+00 | 4.507E+00      | 2.368E-01 | -0.119  |
|         |           | 1489.15      |              | -1.353E+01          | 1.344E+01 | 1.777E+01      | 1.114E+00 | -0.761  |
|         |           | 453.90       | *            | 1.784E-02           | 5.099E-02 | 8.601E-02      | 7.320E-03 | 0.207   |
|         |           | 633.02       |              | 2.925E-01           | 1.571E+00 | 2.582E+00      | 9.483E-01 | 0.113   |
|         |           | 735.90       |              | 1.673E-04           | 1.684E-01 | 2.710E-01      | 7.547E-02 | 0.001   |
|         |           | 747.13       |              | 7.816E-03           | 1.015E-01 | 1.644E-01      | 2.051E-02 | 0.048   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Activity Key | (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|------------|-----------|----------------|-----------|---------|
| ND-147  | +         | 91.11        |              | 8.838E-01  | 3.741E-01 | 6.199E-01      | 6.178E-02 | 1.426   |
|         |           | 319.41       |              | -3.111E+00 | 3.633E+00 | 5.731E+00      | 3.407E-01 | -0.543  |
|         |           | 439.89       |              | -1.259E+00 | 6.559E+00 | 1.071E+01      | 6.027E-01 | -0.118  |
|         |           | 531.02       | *            | -1.288E-01 | 6.387E-01 | 1.030E+00      | 1.382E-01 | -0.125  |
| PM-149  |           | 285.90       | *            | -8.756E+01 | 1.047E+02 | 1.682E+02      | 2.397E+01 | -0.520  |
| EU-152  |           | 121.78       |              | 2.818E-02  | 8.551E-02 | 1.423E-01      | 1.118E-02 | 0.198   |
|         |           | 244.69       |              | 5.001E-02  | 4.302E-01 | 6.066E-01      | 3.565E-02 | 0.082   |
|         |           | 344.27       | *            | -1.260E-02 | 1.572E-01 | 1.785E-01      | 1.176E-02 | -0.071  |
|         |           | 443.98       |              | 2.329E-01  | 1.062E+00 | 1.781E+00      | 1.003E-01 | 0.131   |
|         |           | 778.89       |              | -1.271E-01 | 2.921E-01 | 4.727E-01      | 2.854E-02 | -0.269  |
|         |           | 867.32       |              | -5.487E-01 | 1.153E+00 | 1.559E+00      | 1.081E-01 | -0.352  |
|         |           | 964.01       |              | 4.686E-01  | 4.124E-01 | 6.565E-01      | 4.643E-02 | 0.714   |
|         |           | 1085.78      |              | -3.580E-01 | 4.307E-01 | 6.451E-01      | 4.197E-02 | -0.555  |
|         |           | 1112.02      |              | -1.177E-01 | 4.485E-01 | 6.108E-01      | 3.875E-02 | -0.193  |
|         |           | 1407.95      |              | 2.559E-02  | 2.169E-01 | 3.566E-01      | 2.245E-02 | 0.072   |
|         |           | 69.67        |              | 2.024E-02  | 2.292E+00 | 3.357E+00      | 2.997E-01 | 0.006   |
|         |           | 83.37        | +            | 1.738E+01  | 2.100E+01 | 2.914E+01      | 2.769E+00 | 0.596   |
| EU-154  |           | 97.43        | *            | 1.227E-02  | 1.036E-01 | 1.516E-01      | 1.267E-02 | 0.081   |
|         |           | 103.18       |              | -1.110E-01 | 1.241E-01 | 1.981E-01      | 1.522E-02 | -0.560  |
|         |           | 123.07       |              | -9.710E-03 | 6.133E-02 | 1.002E-01      | 9.598E-03 | -0.097  |
|         |           | 247.94       |              | 2.513E-01  | 4.573E-01 | 6.984E-01      | 6.702E-02 | 0.360   |
|         |           | 591.81       |              | 1.858E-01  | 7.020E-01 | 1.167E+00      | 1.109E-01 | 0.159   |
|         |           | 723.30       |              | 2.199E-02  | 2.206E-01 | 3.101E-01      | 2.121E-02 | 0.071   |
|         |           | 756.87       |              | 1.008E+00  | 9.463E-01 | 1.644E+00      | 1.669E-01 | 0.613   |
|         |           | 873.19       |              | 1.945E-01  | 3.547E-01 | 6.172E-01      | 6.889E-02 | 0.315   |
|         |           | 996.32       |              | -3.945E-01 | 4.123E-01 | 6.081E-01      | 1.035E-01 | -0.649  |
|         |           | 1004.76      |              | -1.244E-01 | 2.338E-01 | 3.659E-01      | 3.820E-02 | -0.340  |
|         |           | 1274.45      | *            | 2.798E-02  | 1.429E-01 | 2.375E-01      | 2.273E-02 | 0.118   |
|         |           | 48.70        |              | -5.113E-01 | 3.550E+00 | 5.948E+00      | 4.981E-01 | -0.086  |
| EU-155  |           | 60.01        |              | -4.648E+00 | 6.365E+00 | 1.040E+01      | 9.526E-01 | -0.447  |
|         |           | 86.54        | +            | 4.117E-01  | 1.187E-01 | 2.119E-01      | 2.083E-02 | 1.942   |
|         |           | 105.31       | *            | 1.088E-01  | 1.252E-01 | 2.127E-01      | 1.613E-02 | 0.512   |
|         |           | 86.79        | +            | 1.099E+00  | 3.167E-01 | 5.589E-01      | 5.462E-02 | 1.967   |
| TB-160  |           | 197.04       |              | -5.143E-01 | 6.703E-01 | 1.009E+00      | 5.660E-02 | -0.510  |
|         |           | 215.65       |              | 8.663E-01  | 8.729E-01 | 1.467E+00      | 8.403E-02 | 0.591   |
|         |           | 298.57       |              | 1.326E-01  | 2.208E-01 | 2.339E-01      | 1.397E-02 | 0.567   |
|         |           | 879.36       | *            | 3.649E-02  | 1.466E-01 | 2.501E-01      | 1.767E-02 | 0.146   |
|         |           | 962.29       |              | 3.026E-01  | 7.795E-01 | 1.157E+00      | 8.194E-02 | 0.261   |
|         |           | 966.15       |              | 1.219E+00  | 3.596E-01 | 6.353E-01      | 4.489E-02 | 1.919   |
|         |           | 1177.93      |              | 1.826E-01  | 4.515E-01 | 7.645E-01      | 4.532E-02 | 0.239   |
|         |           | 1271.85      |              | -7.743E-02 | 8.084E-01 | 1.304E+00      | 8.027E-02 | -0.059  |
|         |           | 80.57        |              | -4.283E-02 | 4.641E-01 | 4.884E-01      | 4.550E-02 | -0.088  |
|         |           | 184.41       | +            | 1.336E-01  | 6.456E-02 | 7.879E-02      | 4.353E-03 | 1.696   |
|         |           | 280.46       |              | -3.826E-02 | 1.007E-01 | 1.670E-01      | 9.965E-03 | -0.229  |
|         |           | 410.95       |              | 3.106E-01  | 2.957E-01 | 5.176E-01      | 2.893E-02 | 0.600   |
| HO-166M |           | 711.68       | *            | 5.027E-02  | 7.292E-02 | 1.240E-01      | 6.689E-03 | 0.405   |
|         |           | 752.31       |              | -2.602E-01 | 3.276E-01 | 4.879E-01      | 2.820E-02 | -0.533  |
|         |           | 810.29       |              | -4.054E-02 | 6.900E-02 | 1.099E-01      | 6.981E-03 | -0.369  |
|         |           | 51.35        |              | 1.906E+01  | 4.303E+01 | 7.337E+01      | 6.580E+00 | 0.260   |
| TM-171  |           |              |              |            |           |                |           |         |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| LU-176  | +         | 52.39        |     | 9.473E+00           | 2.161E+01 | 3.684E+01      | 3.343E+00 | 0.257   |
|         |           | 59.40        |     | -1.144E+01          | 3.386E+01 | 5.613E+01      | 5.159E+00 | -0.204  |
|         |           | 66.72        | *   | -3.322E+01          | 3.586E+01 | 5.775E+01      | 5.159E+00 | -0.575  |
|         |           | 88.36        |     | 8.107E-01           | 2.336E-01 | 4.252E-01      | 4.170E-02 | 1.907   |
|         |           | 201.83       |     | -1.245E-03          | 3.332E-02 | 5.376E-02      | 3.034E-03 | -0.023  |
|         |           | 306.84       | *   | 2.544E-02           | 2.655E-02 | 4.467E-02      | 2.665E-03 | 0.570   |
| LU-177  | +         | 401.10       |     | -2.815E+00          | 7.671E+00 | 1.246E+01      | 6.937E-01 | -0.226  |
|         |           | 112.95       |     | -1.760E-01          | 1.811E+00 | 2.975E+00      | 2.016E-01 | -0.059  |
| LU-177M | +         | 208.36       | *   | 2.667E+00           | 1.617E+00 | 2.269E+00      | 1.290E-01 | 1.176   |
|         |           | 52.97        |     | -2.628E-01          | 2.208E+00 | 3.696E+00      | 3.370E-01 | -0.071  |
|         |           | 54.07        |     | -3.550E-01          | 1.143E+00 | 1.899E+00      | 1.741E-01 | -0.187  |
|         |           | 61.30        |     | -6.199E-01          | 1.879E+00 | 3.115E+00      | 2.832E-01 | -0.199  |
|         |           | 121.62       |     | 2.256E-01           | 4.360E-01 | 7.307E-01      | 4.475E-02 | 0.309   |
|         |           | 147.16       |     | -2.543E-01          | 7.631E-01 | 1.232E+00      | 6.945E-02 | -0.207  |
|         |           | 171.86       |     | -4.019E-02          | 5.540E-01 | 8.980E-01      | 4.885E-02 | -0.045  |
|         |           | 218.09       |     | -6.284E-01          | 1.034E+00 | 1.619E+00      | 9.301E-02 | -0.388  |
|         |           | 268.79       |     | 1.809E+00           | 1.214E+00 | 1.730E+00      | 1.029E-01 | 1.046   |
|         |           | 319.02       |     | -2.423E-01          | 2.862E-01 | 4.520E-01      | 2.686E-02 | -0.536  |
|         |           | 367.43       |     | -2.577E-01          | 1.003E+00 | 1.646E+00      | 9.429E-02 | -0.157  |
|         |           | 413.65       | *   | -3.305E-02          | 2.166E-01 | 3.561E-01      | 1.992E-02 | -0.093  |
| HF-181  |           | 56.28        |     | -7.936E-01          | 1.238E+00 | 2.030E+00      | 1.868E-01 | -0.391  |
|         |           | 57.53        |     | 2.456E-02           | 6.556E-01 | 1.101E+00      | 1.014E-01 | 0.022   |
|         |           | 65.20        |     | 5.777E-01           | 1.194E+00 | 2.012E+00      | 1.802E-01 | 0.287   |
|         |           | 133.02       |     | 4.600E-02           | 8.660E-02 | 1.279E-01      | 7.491E-03 | 0.360   |
|         |           | 136.25       |     | -1.775E-01          | 5.315E-01 | 8.598E-01      | 4.988E-02 | -0.206  |
|         |           | 345.85       |     | 8.122E-02           | 2.537E-01 | 3.582E-01      | 2.095E-02 | 0.227   |
| W-181   |           | 482.03       | *   | -5.926E-02          | 4.785E-02 | 7.140E-02      | 4.018E-03 | -0.830  |
|         |           | 56.28        |     | -3.104E-01          | 4.847E-01 | 7.947E-01      | 7.316E-02 | -0.391  |
|         |           | 57.53        |     | 9.495E-03           | 2.569E-01 | 4.315E-01      | 3.972E-02 | 0.022   |
| TA-182  |           | 65.20        | *   | 2.246E-01           | 4.644E-01 | 7.822E-01      | 7.007E-02 | 0.287   |
|         |           | 67.75        |     | -9.536E-02          | 1.363E-01 | 2.226E-01      | 1.987E-02 | -0.428  |
|         |           | 100.10       |     | 4.222E-01           | 2.203E-01 | 3.612E-01      | 2.899E-02 | 1.169   |
|         |           | 152.43       |     | 4.920E-01           | 3.845E-01 | 6.569E-01      | 3.659E-02 | 0.749   |
|         |           | 222.10       |     | 1.377E-01           | 4.090E-01 | 6.685E-01      | 3.855E-02 | 0.206   |
|         |           | 1001.68      |     | 5.420E-02           | 2.202E+00 | 3.604E+00      | 2.497E-01 | 0.015   |
| RE-183  | +         | 1121.28      |     | 7.630E-01           | 3.759E-01 | 4.005E-01      | 2.517E-02 | 1.905   |
|         |           | 1189.05      |     | 3.564E-02           | 3.571E-01 | 5.898E-01      | 3.514E-02 | 0.060   |
|         |           | 1221.42      | *   | 5.446E-02           | 2.546E-01 | 4.231E-01      | 2.555E-02 | 0.129   |
|         |           | 1230.97      |     | 2.363E-01           | 6.877E-01 | 1.001E+00      | 6.070E-02 | 0.236   |
|         |           | 57.98        |     | 4.077E-02           | 2.535E-01 | 4.274E-01      | 3.933E-02 | 0.095   |
|         |           | 59.32        |     | -4.901E-02          | 1.393E-01 | 2.308E-01      | 2.121E-02 | -0.212  |
| RE-184  | +         | 67.20        |     | -2.368E-01          | 2.516E-01 | 4.049E-01      | 3.615E-02 | -0.585  |
|         |           | 162.32       | *   | -1.601E-02          | 1.280E-01 | 2.074E-01      | 1.130E-02 | -0.077  |
|         |           | 208.81       |     | 2.404E+00           | 1.457E+00 | 2.039E+00      | 1.159E-01 | 1.179   |
|         |           | 291.72       |     | -5.041E-01          | 1.225E+00 | 1.746E+00      | 1.043E-01 | -0.289  |
|         |           | 57.98        |     | 1.503E-01           | 9.342E-01 | 1.575E+00      | 1.449E-01 | 0.095   |
|         |           | 59.32        |     | -1.805E-01          | 5.130E-01 | 8.499E-01      | 7.812E-02 | -0.212  |
|         |           | 67.20        |     | -8.723E-01          | 9.270E-01 | 1.492E+00      | 1.332E-01 | -0.585  |
|         |           | 161.27       |     | -2.416E-01          | 4.108E-01 | 6.531E-01      | 3.566E-02 | -0.370  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| OS-185  |           | 216.55       |     | 2.714E-01           | 3.080E-01 | 5.154E-01      | 2.956E-02 | 0.527   |
|         |           | 252.85       | *   | -3.165E-01          | 2.830E-01 | 4.260E-01      | 2.516E-02 | -0.743  |
|         |           | 318.01       |     | -2.497E-01          | 4.972E-01 | 8.021E-01      | 4.769E-02 | -0.311  |
|         |           | 792.07       |     | 8.724E-01           | 1.119E+00 | 1.983E+00      | 1.224E-01 | 0.440   |
|         |           | 903.28       |     | -3.942E-02          | 1.124E+00 | 1.728E+00      | 1.252E-01 | -0.023  |
|         |           | 920.93       |     | 3.826E-01           | 4.735E-01 | 8.332E-01      | 6.003E-02 | 0.459   |
|         |           | 59.72        |     | -3.214E-01          | 3.799E-01 | 6.178E-01      | 5.670E-02 | -0.520  |
|         |           | 61.14        |     | -1.045E-01          | 2.062E-01 | 3.396E-01      | 3.091E-02 | -0.308  |
|         |           | 69.30        |     | -1.949E-01          | 3.938E-01 | 5.955E-01      | 5.315E-02 | -0.327  |
|         |           | 592.07       |     | 1.044E+00           | 2.761E+00 | 4.634E+00      | 2.472E-01 | 0.225   |
|         |           | 646.12       | *   | 4.615E-02           | 4.882E-02 | 8.509E-02      | 4.290E-03 | 0.542   |
|         |           | 717.42       |     | 4.403E-01           | 1.067E+00 | 1.735E+00      | 9.454E-02 | 0.254   |
|         |           | 874.81       |     | 1.271E-01           | 6.880E-01 | 1.165E+00      | 8.173E-02 | 0.109   |
|         |           | 880.27       |     | -1.408E-01          | 8.361E-01 | 1.372E+00      | 9.702E-02 | -0.103  |
| RE-188  |           | 155.03       | *   | -8.186E-03          | 1.945E-01 | 3.168E-01      | 1.754E-02 | -0.026  |
|         |           | 477.96       |     | -1.822E+00          | 3.342E+00 | 5.280E+00      | 2.973E-01 | -0.345  |
| W-188   |           | 633.10       |     | 6.110E-01           | 3.168E+00 | 5.223E+00      | 2.675E-01 | 0.117   |
|         |           | 63.58        |     | 5.703E+01           | 6.686E+01 | 1.134E+02      | 1.021E+01 | 0.503   |
| IR-192  |           | 227.08       |     | -9.510E+00          | 1.531E+01 | 2.391E+01      | 1.385E+00 | -0.398  |
|         |           | 290.67       | *   | -8.053E-04          | 9.418E+00 | 1.382E+01      | 8.254E-01 | 0.000   |
|         | +         | 295.96       |     | 9.296E-01           | 2.170E-01 | 3.203E-01      | 1.942E-02 | 2.902   |
|         |           | 308.46       |     | -7.808E-02          | 1.014E-01 | 1.630E-01      | 9.822E-03 | -0.479  |
|         |           | 316.51       | *   | -1.857E-02          | 3.742E-02 | 6.107E-02      | 3.650E-03 | -0.304  |
|         |           | 468.07       |     | 1.950E-02           | 8.695E-02 | 1.269E-01      | 8.300E-03 | 0.154   |
| AU-195  |           | 604.41       |     | 2.115E-01           | 5.655E-01 | 8.269E-01      | 9.172E-02 | 0.256   |
|         |           | 612.46       |     | 7.143E-01           | 9.881E-01 | 1.483E+00      | 1.061E-01 | 0.482   |
|         |           | 65.12        |     | 1.159E-01           | 2.157E-01 | 3.638E-01      | 3.260E-02 | 0.319   |
|         |           | 66.83        |     | -1.081E-01          | 1.185E-01 | 1.909E-01      | 1.705E-02 | -0.566  |
|         | +         | 75.70        |     | 1.402E+00           | 3.274E-01 | 5.737E-01      | 5.203E-02 | 2.444   |
|         |           | 98.88        | *   | 5.859E-01           | 2.871E-01 | 4.532E-01      | 3.704E-02 | 1.293   |
| TL-200  | +         | 129.76       |     | 2.832E+00           | 3.759E+00 | 5.945E+00      | 3.519E-01 | 0.476   |
|         |           | 367.94       | *   | -2.239E-04          | 3.759E+00 | Half-Life      | too short |         |
|         |           | 579.30       |     | 1.828E-03           | 3.759E+00 | Half-Life      | too short |         |
|         |           | 828.27       |     | 1.771E-03           | 3.759E+00 | Half-Life      | too short |         |
|         |           | 1205.75      |     | -2.716E-03          | 3.759E+00 | Half-Life      | too short |         |
| TL-201  |           | 68.90        |     | -3.645E+00          | 6.217E+00 | 9.417E+00      | 8.402E-01 | -0.387  |
|         |           | 70.82        |     | 1.398E+00           | 3.667E+00 | 5.448E+00      | 4.870E-01 | 0.257   |
|         |           | 80.30        |     | -1.991E-01          | 8.546E+00 | 9.046E+00      | 8.413E-01 | -0.022  |
|         |           | 135.34       |     | 1.125E-01           | 2.893E+01 | 4.744E+01      | 2.759E+00 | 0.002   |
| TL-202  |           | 167.43       | *   | 6.662E-01           | 8.135E+00 | 1.328E+01      | 7.188E-01 | 0.050   |
|         |           | 68.90        |     | -3.294E-01          | 5.619E-01 | 8.510E-01      | 7.593E-02 | -0.387  |
|         |           | 70.82        |     | 1.260E-01           | 3.305E-01 | 4.910E-01      | 4.389E-02 | 0.257   |
|         |           | 80.30        |     | -1.795E-02          | 7.704E-01 | 8.155E-01      | 7.584E-02 | -0.022  |
| HG-203  |           | 439.56       | *   | -7.397E-03          | 7.780E-02 | 1.278E-01      | 7.191E-03 | -0.058  |
|         |           | 70.83        |     | 5.499E-01           | 1.435E+00 | 2.130E+00      | 2.942E-01 | 0.258   |
|         |           | 72.87        |     | 3.060E+00           | 9.680E-01 | 1.443E+00      | 1.940E-01 | 2.120   |
| BI-207  | +         | 82.60        |     | 1.292E+00           | 1.567E+00 | 2.139E+00      | 3.054E-01 | 0.604   |
|         |           | 279.20       | *   | 1.791E-02           | 4.889E-02 | 8.217E-02      | 5.189E-03 | 0.218   |
|         |           | 72.80        |     | 8.589E-01           | 2.653E-01 | 4.183E-01      | 3.755E-02 | 2.053   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| TL-207  | +         | 74.97        |     | 7.779E-01           | 1.816E-01 | 2.918E-01      | 2.639E-02 | 2.666   |
|         | +         | 84.90        |     | 2.248E-01           | 2.716E-01 | 3.947E-01      | 3.797E-02 | 0.570   |
|         |           | 569.67       |     | -2.670E-03          | 3.454E-02 | 5.504E-02      | 2.988E-03 | -0.049  |
|         |           | 1063.62      | *   | 8.480E-03           | 6.358E-02 | 1.061E-01      | 7.032E-03 | 0.080   |
|         |           | 1770.23      |     | 2.810E-01           | 4.712E-01 | 7.922E-01      | 4.628E-02 | 0.355   |
|         |           | 81.07        |     | -6.599E-02          | 3.691E-01 | 3.855E-01      | 3.603E-02 | -0.171  |
|         | +         | 83.78        |     | 1.482E-01           | 1.791E-01 | 2.458E-01      | 2.344E-02 | 0.603   |
|         |           | 94.90        |     | 2.693E-01           | 3.018E-01 | 4.555E-01      | 3.965E-02 | 0.591   |
|         |           | 122.32       |     | 1.145E+00           | 2.045E+00 | 3.429E+00      | 2.384E-01 | 0.334   |
|         |           | 144.24       |     | 3.264E-01           | 8.170E-01 | 1.338E+00      | 9.549E-02 | 0.244   |
|         |           | 154.21       |     | 4.143E-02           | 4.498E-01 | 7.367E-01      | 5.014E-02 | 0.056   |
|         | +         | 269.46       |     | 4.236E-01           | 2.843E-01 | 4.033E-01      | 2.503E-02 | 1.050   |
|         |           | 323.87       | *   | 9.173E-01           | 8.051E-01 | 1.256E+00      | 2.080E-01 | 0.731   |
|         | +         | 338.28       |     | 5.856E+00           | 2.189E+00 | 2.708E+00      | 2.865E-01 | 2.163   |
| PO-209  |           | 445.03       |     | 1.163E+00           | 2.528E+00 | 4.300E+00      | 4.375E-01 | 0.270   |
|         |           | 260.50       |     | -5.962E+00          | 1.208E+01 | 1.883E+01      | 1.117E+00 | -0.317  |
|         |           | 262.80       |     | -7.531E+00          | 3.309E+01 | 5.229E+01      | 3.104E+00 | -0.144  |
|         |           | 896.60       | *   | -9.269E-01          | 8.003E+00 | 1.318E+01      | 9.551E-01 | -0.070  |
| BI-210  |           | 46.50        | *   | -2.491E-01          | 5.390E+00 | 8.934E+00      | 7.356E-01 | -0.028  |
| PB-210  |           | 46.50        | *   | -2.491E-01          | 5.390E+00 | 8.934E+00      | 7.356E-01 | -0.028  |
| PO-210  |           | 46.50        | *   | -2.491E-01          | 5.390E+00 | 8.934E+00      | 6.454E-01 | -0.028  |
| PB-211  |           | 404.84       | *   | -7.758E-01          | 1.198E+00 | 1.744E+00      | 1.087E+00 | -0.445  |
| BI-212  |           | 427.08       |     | 9.834E-01           | 2.371E+00 | 3.898E+00      | 2.409E+00 | 0.252   |
|         |           | 831.96       |     | 3.619E-01           | 1.363E+00 | 2.298E+00      | 1.434E+00 | 0.157   |
|         | +         | 727.18       | *   | 1.196E+00           | 6.068E-01 | 7.961E-01      | 5.987E-02 | 1.502   |
|         |           | 785.46       |     | 1.713E+00           | 1.971E+00 | 3.519E+00      | 2.148E-01 | 0.487   |
| PO-215  |           | 1620.62      |     | 1.489E+00           | 1.152E+00 | 2.328E+00      | 1.428E-01 | 0.640   |
|         |           | 81.07        |     | -6.599E-02          | 3.691E-01 | 3.855E-01      | 3.603E-02 | -0.171  |
|         | +         | 83.78        |     | 1.482E-01           | 1.791E-01 | 2.458E-01      | 2.344E-02 | 0.603   |
|         |           | 94.90        |     | 2.693E-01           | 3.018E-01 | 4.555E-01      | 3.965E-02 | 0.591   |
|         |           | 122.32       |     | 1.145E+00           | 2.045E+00 | 3.429E+00      | 2.384E-01 | 0.334   |
|         |           | 144.24       |     | 3.264E-01           | 8.170E-01 | 1.338E+00      | 9.549E-02 | 0.244   |
|         |           | 154.21       |     | 4.143E-02           | 4.498E-01 | 7.367E-01      | 5.014E-02 | 0.056   |
|         | +         | 269.46       |     | 4.236E-01           | 2.843E-01 | 4.033E-01      | 2.503E-02 | 1.050   |
|         |           | 323.87       | *   | 9.173E-01           | 8.051E-01 | 1.256E+00      | 2.080E-01 | 0.731   |
|         | +         | 338.28       |     | 5.856E+00           | 2.189E+00 | 2.708E+00      | 2.865E-01 | 2.163   |
|         |           | 445.03       |     | 1.163E+00           | 2.528E+00 | 4.300E+00      | 4.375E-01 | 0.270   |
|         | +         | 271.23       |     | 5.435E-01           | 3.659E-01 | 5.182E-01      | 4.258E-02 | 1.049   |
| RN-219  |           | 401.81       | *   | -2.104E-01          | 4.680E-01 | 7.546E-01      | 1.019E-01 | -0.279  |
| RN-220  |           | 549.76       | *   | -7.289E+00          | 3.100E+01 | 4.981E+01      | 2.738E+00 | -0.146  |
| RA-223  |           | 81.07        |     | -6.599E-02          | 3.691E-01 | 3.855E-01      | 3.603E-02 | -0.171  |
|         | +         | 83.78        |     | 1.482E-01           | 1.791E-01 | 2.458E-01      | 2.344E-02 | 0.603   |
|         |           | 94.90        |     | 2.693E-01           | 3.018E-01 | 4.555E-01      | 3.965E-02 | 0.591   |
|         |           | 122.32       |     | 1.145E+00           | 2.045E+00 | 3.429E+00      | 2.384E-01 | 0.334   |
|         |           | 144.24       |     | 3.264E-01           | 8.170E-01 | 1.338E+00      | 9.549E-02 | 0.244   |
|         |           | 154.21       |     | 4.143E-02           | 4.498E-01 | 7.367E-01      | 5.014E-02 | 0.056   |
|         | +         | 269.46       |     | 4.236E-01           | 2.843E-01 | 4.033E-01      | 2.503E-02 | 1.050   |
|         |           | 323.87       | *   | 9.173E-01           | 8.051E-01 | 1.256E+00      | 2.080E-01 | 0.731   |
|         | +         | 338.28       |     | 5.856E+00           | 2.189E+00 | 2.708E+00      | 2.865E-01 | 2.163   |



----- Non-Identified Nuclides -----

| Nuclide  | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|----------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| AC-227   |           | 445.03       |     | 1.163E+00           | 2.528E+00 | 4.300E+00      | 4.375E-01 | 0.270   |
|          |           | 79.80        |     | 1.315E+00           | 2.758E+00 | 3.023E+00      | 6.582E-01 | 0.435   |
|          |           | 236.00       |     | 2.266E+00           | 4.426E-01 | 6.658E-01      | 6.974E-02 | 3.403   |
|          |           | 256.20       | *   | 2.256E-01           | 4.637E-01 | 7.585E-01      | 1.063E-01 | 0.297   |
|          |           | 286.10       |     | -1.291E+00          | 1.755E+00 | 2.842E+00      | 3.311E-01 | -0.454  |
| + TH-227 |           | 299.80       |     | 4.220E+00           | 2.430E+00 | 2.993E+00      | 4.892E-01 | 1.410   |
|          |           | 304.40       |     | 8.261E-01           | 2.209E+00 | 3.246E+00      | 5.633E-01 | 0.254   |
|          |           | 334.20       |     | -7.994E-01          | 4.262E+00 | 4.046E+00      | 7.430E-01 | -0.198  |
|          |           | 79.80        |     | 1.315E+00           | 2.758E+00 | 3.023E+00      | 6.664E-01 | 0.435   |
|          |           | 94.00        |     | 9.564E+00           | 3.398E+00 | 4.366E+00      | 9.546E-01 | 2.191   |
| + TH-227 |           | 236.00       |     | 2.266E+00           | 4.265E-01 | 6.658E-01      | 6.047E-02 | 3.403   |
|          |           | 256.20       | *   | 2.256E-01           | 4.642E-01 | 7.585E-01      | 1.285E-01 | 0.297   |
|          |           | 286.10       |     | -1.291E+00          | 2.174E+00 | 2.842E+00      | 2.847E+00 | -0.454  |
|          |           | 299.80       |     | 4.220E+00           | 2.430E+00 | 2.993E+00      | 4.892E-01 | 1.410   |
|          |           | 304.40       |     | 8.261E-01           | 2.209E+00 | 3.246E+00      | 5.633E-01 | 0.254   |
| + TH-229 |           | 334.20       |     | -7.994E-01          | 4.262E+00 | 4.046E+00      | 7.430E-01 | -0.198  |
|          |           | 85.43        |     | 1.035E+00           | 3.231E-01 | 4.053E-01      | 3.915E-02 | 2.553   |
|          |           | 88.47        |     | 3.513E-01           | 1.482E-01 | 2.432E-01      | 2.380E-02 | 1.445   |
|          |           | 100.00       |     | 4.439E-01           | 2.290E-01 | 3.757E-01      | 3.020E-02 | 1.182   |
|          |           | 193.63       | *   | 2.327E-01           | 5.783E-01 | 9.522E-01      | 5.320E-02 | 0.244   |
| PA-231   |           | 210.97       |     | 1.228E+00           | 1.005E+00 | 1.514E+00      | 8.631E-02 | 0.811   |
|          |           | 283.67       | *   | -7.139E-01          | 1.798E+00 | 2.970E+00      | 4.115E-01 | -0.240  |
|          |           | 301.29       |     | 1.688E+00           | 9.487E-01 | 1.142E+00      | 1.205E-01 | 1.478   |
| + TH-231 |           | 81.07        |     | -6.599E-02          | 3.691E-01 | 3.855E-01      | 3.603E-02 | -0.171  |
|          |           | 83.78        |     | 1.482E-01           | 1.791E-01 | 2.458E-01      | 2.344E-02 | 0.603   |
|          |           | 94.90        |     | 2.693E-01           | 3.018E-01 | 4.555E-01      | 3.965E-02 | 0.591   |
|          |           | 122.32       |     | 1.145E+00           | 2.045E+00 | 3.429E+00      | 2.384E-01 | 0.334   |
|          |           | 144.24       |     | 3.264E-01           | 8.170E-01 | 1.338E+00      | 9.549E-02 | 0.244   |
| + TH-231 |           | 154.21       |     | 4.143E-02           | 4.498E-01 | 7.367E-01      | 5.014E-02 | 0.056   |
|          |           | 269.46       |     | 4.236E-01           | 2.843E-01 | 4.033E-01      | 2.503E-02 | 1.050   |
|          |           | 323.87       | *   | 9.173E-01           | 8.051E-01 | 1.256E+00      | 2.080E-01 | 0.731   |
|          |           | 338.28       |     | 5.856E+00           | 2.189E+00 | 2.708E+00      | 2.865E-01 | 2.163   |
|          |           | 445.03       |     | 1.163E+00           | 2.528E+00 | 4.300E+00      | 4.375E-01 | 0.270   |
| + U-231  |           | 84.21        |     | 6.353E+00           | 7.677E+00 | 1.073E+01      | 1.026E+00 | 0.592   |
|          |           | 92.29        |     | 9.401E+00           | 2.760E+00 | 4.520E+00      | 4.116E-01 | 2.080   |
|          |           | 95.87        | *   | -1.684E+00          | 1.434E+00 | 1.960E+00      | 1.679E-01 | -0.859  |
| + PA-233 |           | 108.00       |     | -1.722E+00          | 2.368E+00 | 3.802E+00      | 2.740E-01 | -0.453  |
|          |           | 75.28        |     | 2.270E+01           | 6.033E+00 | 9.043E+00      | 1.410E+00 | 2.510   |
|          |           | 86.59        |     | 6.691E+00           | 2.570E+00 | 3.433E+00      | 9.339E-01 | 1.949   |
|          |           | 300.12       |     | 1.176E+00           | 6.687E-01 | 8.255E-01      | 1.115E-01 | 1.425   |
|          |           | 311.98       | *   | 2.040E-03           | 6.821E-02 | 1.147E-01      | 7.235E-03 | 0.018   |
| + PA-234 |           | 340.50       |     | 1.473E+00           | 8.730E-01 | 1.314E+00      | 3.020E-01 | 1.121   |
|          |           | 398.62       |     | 1.072E+00           | 2.402E+00 | 4.067E+00      | 1.049E+00 | 0.264   |
|          |           | 415.76       |     | -8.850E-01          | 1.964E+00 | 3.154E+00      | 6.475E-01 | -0.281  |
|          |           | 63.00        |     | 1.023E+00           | 1.987E+00 | 3.340E+00      | 5.252E-01 | 0.306   |
|          |           | 94.67        |     | 3.476E-01           | 2.227E-01 | 3.398E-01      | 4.243E-02 | 1.023   |
|          |           | 98.44        |     | 1.475E-01           | 1.440E-01 | 1.822E-01      | 1.015E-01 | 0.810   |
|          |           | 99.86        |     | 1.143E+00           | 5.808E-01 | 9.535E-01      | 7.681E-02 | 1.199   |
|          |           | 111.00       |     | -2.303E-02          | 2.078E-01 | 3.413E-01      | 3.738E-02 | -0.067  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 131.20       |     | 8.343E-02           | 1.417E-01 | 2.097E-01      | 1.235E-02 | 0.398   |
|         |           | 152.70       |     | 4.400E-01           | 3.762E-01 | 6.313E-01      | 9.926E-02 | 0.697   |
|         | +         | 186.00       |     | 4.810E+00           | 2.736E+00 | 2.929E+00      | 8.934E-01 | 1.643   |
|         |           | 226.40       |     | -6.658E-02          | 4.775E-01 | 7.632E-01      | 8.819E-02 | -0.087  |
|         |           | 227.20       |     | -3.060E-01          | 5.180E-01 | 8.101E-01      | 4.694E-02 | -0.378  |
|         |           | 248.90       |     | 5.295E-01           | 9.676E-01 | 1.583E+00      | 3.405E-01 | 0.334   |
|         | +         | 293.70       |     | 5.853E+00           | 1.623E+00 | 1.965E+00      | 3.173E-01 | 2.979   |
|         |           | 369.80       |     | -1.615E-01          | 9.502E-01 | 1.567E+00      | 3.259E-01 | -0.103  |
|         |           | 568.70       |     | -1.838E-01          | 1.115E+00 | 1.764E+00      | 9.581E-02 | -0.104  |
|         |           | 569.50       |     | -3.140E-02          | 3.059E-01 | 4.865E-01      | 2.641E-02 | -0.065  |
|         |           | 574.00       |     | -3.748E-01          | 1.687E+00 | 2.705E+00      | 1.464E-01 | -0.139  |
|         |           | 699.00       |     | 3.321E-01           | 8.607E-01 | 1.427E+00      | 2.544E-01 | 0.233   |
|         |           | 706.10       |     | -1.271E+00          | 1.321E+00 | 1.748E+00      | 7.704E-01 | -0.727  |
|         |           | 733.00       |     | -4.191E-02          | 4.823E-01 | 6.946E-01      | 1.473E-01 | -0.060  |
|         |           | 742.81       |     | -1.010E+00          | 1.588E+00 | 2.144E+00      | 1.434E+00 | -0.471  |
|         |           | 796.30       |     | 1.165E+00           | 1.077E+00 | 1.874E+00      | 4.944E-01 | 0.622   |
|         |           | 805.60       |     | -1.491E-04          | 1.105E+00 | 1.852E+00      | 5.570E-01 | 0.000   |
|         |           | 819.60       |     | -4.789E-01          | 1.456E+00 | 2.353E+00      | 8.846E-01 | -0.204  |
|         |           | 826.30       |     | 1.271E-01           | 9.344E-01 | 1.578E+00      | 7.004E-01 | 0.081   |
|         |           | 831.60       |     | 5.676E-02           | 6.993E-01 | 1.177E+00      | 3.451E-01 | 0.048   |
|         |           | 876.40       |     | -5.994E-03          | 9.733E-01 | 1.622E+00      | 1.666E+00 | -0.004  |
|         |           | 880.51       |     | -2.406E-02          | 3.023E-01 | 5.002E-01      | 3.539E-02 | -0.048  |
|         |           | 883.24       |     | -3.335E-01          | 3.817E-01 | 4.609E-01      | 3.090E-01 | -0.724  |
|         |           | 899.00       |     | -2.056E-01          | 9.084E-01 | 1.473E+00      | 6.403E-01 | -0.140  |
|         |           | 925.00       |     | -1.292E+00          | 1.257E+00 | 1.865E+00      | 1.342E-01 | -0.693  |
|         |           | 926.50       |     | -2.767E-01          | 2.189E-01 | 2.802E-01      | 6.956E-02 | -0.988  |
|         |           | 946.00       | *   | -1.182E-02          | 3.631E-01 | 6.011E-01      | 1.090E-01 | -0.020  |
|         |           | 949.00       |     | -1.305E-01          | 5.257E-01 | 8.533E-01      | 6.078E-02 | -0.153  |
|         |           | 980.50       |     | -1.460E-02          | 8.368E-01 | 1.384E+00      | 9.706E-02 | -0.011  |
| PA-234M |           | 1394.10      |     | -1.074E+00          | 1.322E+00 | 1.503E+00      | 9.745E-01 | -0.714  |
|         |           | 766.42       |     | 9.977E+00           | 1.468E+01 | 2.339E+01      | 1.177E+01 | 0.427   |
| TH-234  |           | 1001.03      | *   | -3.599E-01          | 5.041E+00 | 8.176E+00      | 6.988E-01 | -0.044  |
|         |           | 63.29        | *   | 1.106E+00           | 1.692E+00 | 2.843E+00      | 5.168E-01 | 0.389   |
| +       |           | 92.38        |     | 2.475E+00           | 8.263E-01 | 1.188E+00      | 2.176E-01 | 2.083   |
| U-235   | +         | 89.95        |     | 3.526E+00           | 1.818E+00 | 2.171E+00      | 6.756E-01 | 1.624   |
|         | +         | 93.35        |     | 2.975E+00           | 1.180E+00 | 1.409E+00      | 3.961E-01 | 2.112   |
|         |           | 105.00       |     | 1.168E+00           | 1.271E+00 | 2.088E+00      | 6.167E-01 | 0.559   |
|         |           | 143.76       | *   | 7.500E-02           | 2.507E-01 | 4.088E-01      | 6.648E-02 | 0.183   |
|         |           | 163.35       |     | 6.329E-02           | 5.472E-01 | 8.952E-01      | 1.600E-01 | 0.071   |
|         | +         | 185.71       |     | 1.782E-01           | 8.608E-02 | 1.084E-01      | 5.998E-03 | 1.643   |
|         |           | 205.31       |     | -3.125E-01          | 7.041E-01 | 9.639E-01      | 1.729E-01 | -0.324  |
| NP-236  |           | 94.67        |     | 2.671E-01           | 1.674E-01 | 2.581E-01      | 2.256E-02 | 1.035   |
|         |           | 98.44        |     | 1.114E-01           | 8.980E-02 | 1.377E-01      | 1.133E-02 | 0.809   |
|         |           | 111.00       |     | -1.742E-02          | 1.572E-01 | 2.581E-01      | 1.792E-02 | -0.067  |
|         |           | 160.31       | *   | -7.481E-03          | 9.013E-02 | 1.464E-01      | 8.010E-03 | -0.051  |
| U-238   |           | 63.29        | *   | 1.106E+00           | 1.692E+00 | 2.843E+00      | 5.168E-01 | 0.389   |
|         | +         | 92.38        |     | 2.475E+00           | 7.267E-01 | 1.188E+00      | 1.080E-01 | 2.083   |
| NP-239  |           | 99.55        |     | 3.808E-01           | 2.020E-01 | 3.170E-01      | 2.565E-02 | 1.201   |
|         |           | 117.00       | *   | -2.840E-02          | 2.158E-01 | 3.536E-01      | 2.284E-02 | -0.080  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         | +         | 209.75       |     | 1.897E+00           | 1.150E+00 | 1.604E+00      | 9.134E-02 | 1.182   |
|         |           | 228.18       |     | -1.682E-01          | 2.734E-01 | 4.270E-01      | 2.477E-02 | -0.394  |
|         |           | 277.60       |     | 2.419E-01           | 2.246E-01 | 3.711E-01      | 2.213E-02 | 0.652   |
|         |           | 334.30       |     | -5.091E-01          | 2.412E+00 | 2.282E+00      | 1.346E-01 | -0.223  |
| AM-241  |           | 59.54        | *   | -1.680E-01          | 2.005E-01 | 3.260E-01      | 3.187E-02 | -0.515  |
| CM-243  |           | 99.55        |     | 3.919E-01           | 2.079E-01 | 3.262E-01      | 2.640E-02 | 1.201   |
|         |           | 103.76       | *   | 1.608E-02           | 1.110E-01 | 1.844E-01      | 1.406E-02 | 0.087   |
|         |           | 117.00       |     | -2.921E-02          | 2.220E-01 | 3.637E-01      | 2.350E-02 | -0.080  |
|         | +         | 209.75       |     | 1.870E+00           | 1.134E+00 | 1.582E+00      | 9.004E-02 | 1.182   |
|         |           | 228.18       |     | -1.700E-01          | 2.763E-01 | 4.315E-01      | 2.502E-02 | -0.394  |
|         |           | 277.60       |     | 2.439E-01           | 2.264E-01 | 3.741E-01      | 2.231E-02 | 0.652   |
| AM-246  |           | 798.80       |     | -3.120E-01          | 1.636E-01 | 2.288E-01      | 1.427E-02 | -1.364  |
|         |           | 1036.00      |     | 2.718E-01           | 3.428E-01 | 6.066E-01      | 4.108E-02 | 0.448   |
|         |           | 1062.04      |     | 2.409E-02           | 2.697E-01 | 4.483E-01      | 2.977E-02 | 0.054   |
|         |           | 1078.86      | *   | 1.866E-01           | 1.777E-01 | 3.180E-01      | 2.081E-02 | 0.587   |
| CM-247  |           | 278.00       |     | 7.851E-01           | 8.985E-01 | 1.541E+00      | 9.190E-02 | 0.510   |
|         |           | 287.40       |     | -3.649E-01          | 1.450E+00 | 2.350E+00      | 1.404E-01 | -0.155  |
|         |           | 402.60       | *   | 1.730E-02           | 4.142E-02 | 7.046E-02      | 3.926E-03 | 0.246   |
| CF-249  |           | 252.85       |     | -1.188E+00          | 1.062E+00 | 1.599E+00      | 9.443E-02 | -0.743  |
|         |           | 333.44       |     | -7.250E-02          | 3.150E-01 | 2.971E-01      | 1.753E-02 | -0.244  |
|         |           | 387.95       | *   | 4.340E-02           | 4.778E-02 | 8.326E-02      | 4.644E-03 | 0.521   |
| CF-251  |           | 176.60       | *   | 6.086E-02           | 1.489E-01 | 2.458E-01      | 1.345E-02 | 0.248   |
|         |           | 227.00       |     | -3.509E-01          | 4.625E-01 | 7.172E-01      | 4.155E-02 | -0.489  |
|         |           | 285.00       |     | -5.323E-01          | 1.994E+00 | 3.318E+00      | 1.981E-01 | -0.160  |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
*                               DETECTOR DATA                               *
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202015450
* Acquisition date   : 23-JAN-2010 14:07:57 Detector SN#      :
* Detector ID        : GAM06 Sensitivity      : 5.000
* Geometry           : CAN Energy tolerance: 1.500
* Elapsed live time  : 0 02:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 02:00:01.39 Half life ratio : 8.000
*****
*                               SAMPLE DATA                               *
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID
* Sample ID          : G1202015450 Analyst initials: MXR1
* Batch Number       : 941639 Sample Quantity : 1.3673E+02 GRAM
* Recovery           : 1.00000 Carrier Weight : 0.00000
*****
*                               QC DATA                               *
*
* Standard Weight    : 0.00000
* CALIB. DATE/TIME   : 4-FEB-2009 13:05:54 MS Isotope      :
* MSD DPM            : 0.000 MSD Isotope      :
* LCS DPM            : 0.000 LCS Isotope      :
* LCSD DPM           : 0.000 LCSD Isotope     :
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act error | MDA<br>(pCi/GRAM ) |           |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 2.837E+01               | 2.562E+00 | 5.325E-01          | 0.000E+00 |
| CD-109  | 3.477E+00               | 9.819E-01 | 1.470E+00          | 0.000E+00 |
| SN-126  | 3.418E-01               | 9.651E-02 | 1.453E-01          | 0.000E+00 |
| TL-208  | 4.254E-01               | 8.656E-02 | 6.767E-02          | 0.000E+00 |
| BI-211  | 4.453E+00               | 5.843E-01 | 3.664E-01          | 0.000E+00 |
| PB-212  | 1.737E+00               | 1.733E-01 | 1.070E-01          | 0.000E+00 |
| PO-212  | 1.737E+00               | 1.733E-01 | 1.070E-01          | 0.000E+00 |
| BI-214  | 1.142E+00               | 1.857E-01 | 1.210E-01          | 0.000E+00 |
| PB-214  | 1.549E+00               | 2.181E-01 | 1.277E-01          | 0.000E+00 |
| PO-214  | 1.549E+00               | 2.181E-01 | 1.277E-01          | 0.000E+00 |
| PO-216  | 1.737E+00               | 1.733E-01 | 1.070E-01          | 0.000E+00 |
| PO-218  | 1.549E+00               | 2.181E-01 | 1.277E-01          | 0.000E+00 |
| RA-224  | 5.002E+00               | 1.578E+00 | 1.218E+00          | 0.000E+00 |
| RA-226  | 1.142E+00               | 1.857E-01 | 1.210E-01          | 0.000E+00 |
| AC-228  | 1.777E+00               | 3.617E-01 | 2.225E-01          | 0.000E+00 |
| RA-228  | 1.777E+00               | 3.617E-01 | 2.225E-01          | 0.000E+00 |
| TH-228  | 1.764E+00               | 1.759E-01 | 1.086E-01          | 0.000E+00 |
| TH-230  | 1.142E+00               | 1.857E-01 | 1.210E-01          | 0.000E+00 |
| TH-232  | 1.777E+00               | 3.617E-01 | 2.225E-01          | 0.000E+00 |
| U-234   | 1.142E+00               | 1.857E-01 | 1.210E-01          | 0.000E+00 |
| NP-237  | 1.004E+00               | 3.486E-01 | 4.106E-01          | 0.000E+00 |
| AM-243  | 4.334E-01               | 9.915E-02 | 1.134E-01          | 0.000E+00 |
| ANH-511 | 1.407E-01               | 6.990E-02 | 5.227E-02          | 0.000E+00 |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L. Act error<br>) Ided | MDA<br>(pCi/GRAM ) |                      |
|---------|-------------------------------------|--------------------------|--------------------|----------------------|
| BE-7    | -1.387E-01                          | 3.400E-01                | 5.681E-01          | 0.000E+00 NOT IDENT. |
| NA-22   | 1.234E-02                           | 5.035E-02                | 8.625E-02          | 0.000E+00 NOT IDENT. |
| NA-24   | 0.000E+00                           | 7.334E+05                | 0.000E+00          | 0.000E+00 SHORT HLIF |
| AL-26   | -3.829E-02                          | 2.870E-02                | 3.118E-02          | 0.000E+00 NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| TI-44   | 0.000E+00  | 6.282E-02 | 9.699E-02 | 0.000E+00 | FAIL ABUN  |
| SC-46   | 1.086E-02  | 4.144E-02 | 7.302E-02 | 0.000E+00 | FAIL ABUN  |
| V-48    | -2.063E-02 | 7.894E-02 | 1.315E-01 | 0.000E+00 | NOT IDENT. |
| CR-51   | -5.460E-01 | 4.047E-01 | 6.524E-01 | 0.000E+00 | NOT IDENT. |
| MN-52   | 1.085E-02  | 2.284E-01 | 3.809E-01 | 0.000E+00 | FAIL ABUN  |
| MN-54   | -8.768E-03 | 4.104E-02 | 6.978E-02 | 0.000E+00 | NOT IDENT. |
| CO-56   | 3.388E-02  | 4.422E-02 | 8.095E-02 | 0.000E+00 | FAIL ABUN  |
| CO-57   | 1.280E-02  | 2.899E-02 | 5.193E-02 | 0.000E+00 | NOT IDENT. |
| CO-58   | -1.563E-02 | 4.495E-02 | 7.576E-02 | 0.000E+00 | NOT IDENT. |
| FE-59   | 2.497E-02  | 1.142E-01 | 1.969E-01 | 0.000E+00 | NOT IDENT. |
| CO-60   | 3.432E-02  | 4.487E-02 | 8.072E-02 | 0.000E+00 | NOT IDENT. |
| ZN-65   | -3.005E-03 | 1.092E-01 | 1.578E-01 | 0.000E+00 | NOT IDENT. |
| GE-68   | 3.094E-01  | 1.536E+00 | 2.648E+00 | 0.000E+00 | NOT IDENT. |
| AS-73   | -3.603E-01 | 1.111E+00 | 2.010E+00 | 0.000E+00 | NOT IDENT. |
| AS-74   | 5.597E-03  | 9.561E-02 | 1.628E-01 | 0.000E+00 | NOT IDENT. |
| SE-75   | 1.879E-02  | 5.966E-02 | 8.981E-02 | 0.000E+00 | NOT IDENT. |
| BR-77   | 3.516E+00  | 1.157E+01 | 2.022E+01 | 0.000E+00 | FAIL ABUN  |
| SR-82   | -1.128E-01 | 4.254E-01 | 7.247E-01 | 0.000E+00 | NOT IDENT. |
| RB-83   | 1.934E-02  | 7.677E-02 | 1.338E-01 | 0.000E+00 | NOT IDENT. |
| RB-84   | -8.290E-02 | 7.638E-02 | 1.179E-01 | 0.000E+00 | NOT IDENT. |
| KR-85   | 1.336E+01  | 8.858E+00 | 1.489E+01 | 0.000E+00 | NOT IDENT. |
| SR-85   | 6.851E-02  | 4.541E-02 | 7.631E-02 | 0.000E+00 | NOT IDENT. |
| RB-86   | -1.012E-01 | 9.916E-01 | 1.667E+00 | 0.000E+00 | NOT IDENT. |
| Y-88    | 6.130E-03  | 3.488E-02 | 6.074E-02 | 0.000E+00 | NOT IDENT. |
| ZR-88   | -2.774E-02 | 3.483E-02 | 5.789E-02 | 0.000E+00 | NOT IDENT. |
| Y-91    | -2.213E+01 | 2.291E+01 | 3.522E+01 | 0.000E+00 | NOT IDENT. |
| NB-94   | -5.832E-03 | 3.892E-02 | 6.439E-02 | 0.000E+00 | NOT IDENT. |
| NB-95   | 0.189E-02  | 5.063E-02 | 8.825E-02 | 0.000E+00 | NOT IDENT. |
| NB-95M  | 0.000E+00  | 1.812E-01 | 3.047E-01 | 0.000E+00 | NOT IDENT. |
| ZR-95   | 4.727E-02  | 8.544E-02 | 1.486E-01 | 0.000E+00 | NOT IDENT. |
| NB-97   | 0.000E+00  | 1.181E+05 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| ZR-97   | 0.000E+00  | 2.320E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| MO-99   | 3.845E+00  | 1.167E+01 | 2.006E+01 | 0.000E+00 | NOT IDENT. |
| TC-99M  | 0.000E+00  | 4.048E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | -2.245E-02 | 3.845E-02 | 6.207E-02 | 0.000E+00 | NOT IDENT. |
| RH-102  | 1.073E-02  | 3.179E-02 | 5.600E-02 | 0.000E+00 | NOT IDENT. |
| RU-103  | 2.419E-02  | 4.536E-02 | 8.057E-02 | 0.000E+00 | FAIL ABUN  |
| RH-106  | -1.760E-01 | 3.611E-01 | 5.854E-01 | 0.000E+00 | FAIL ABUN  |
| RU-106  | -1.760E-01 | 3.607E-01 | 5.854E-01 | 0.000E+00 | FAIL ABUN  |
| AG-108M | -5.347E-03 | 3.605E-02 | 6.188E-02 | 0.000E+00 | NOT IDENT. |
| AG-110M | -1.042E-02 | 4.328E-02 | 7.153E-02 | 0.000E+00 | NOT IDENT. |
| IN-111  | -4.550E-01 | 1.370E+00 | 1.981E+00 | 0.000E+00 | NOT IDENT. |
| IN-113M | -3.109E-02 | 5.117E-02 | 8.613E-02 | 0.000E+00 | NOT IDENT. |
| SN-113  | -3.109E-02 | 5.117E-02 | 8.613E-02 | 0.000E+00 | NOT IDENT. |
| IN-114M | -3.406E-02 | 2.394E-01 | 3.576E-01 | 0.000E+00 | NOT IDENT. |
| CD-115  | 8.379E+00  | 1.182E+01 | 2.122E+01 | 0.000E+00 | NOT IDENT. |
| SN-117M | 3.602E-03  | 5.987E-02 | 1.044E-01 | 0.000E+00 | NOT IDENT. |
| SB-122  | 1.792E+00  | 2.291E+00 | 4.114E+00 | 0.000E+00 | NOT IDENT. |
| I-123   | 0.000E+00  | 6.032E+06 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TE-123M | 1.445E-02  | 3.087E-02 | 5.472E-02 | 0.000E+00 | NOT IDENT. |
| I-124   | -1.065E+00 | 8.945E-01 | 1.137E+00 | 0.000E+00 | NOT IDENT. |
| SB-124  | -2.742E-02 | 8.055E-02 | 1.281E-01 | 0.000E+00 | FAIL ABUN  |
| SB-125  | 3.680E-02  | 9.989E-02 | 1.773E-01 | 0.000E+00 | FAIL ABUN  |
| TE-125M | -3.015E-01 | 1.037E+01 | 1.836E+01 | 0.000E+00 | NOT IDENT. |
| I-126   | -2.907E-02 | 2.141E-01 | 3.562E-01 | 0.000E+00 | NOT IDENT. |
| SB-126  | -1.360E-01 | 1.909E-01 | 2.501E-01 | 0.000E+00 | FAIL ABUN  |
| SB-127  | 8.665E-01  | 1.437E+00 | 2.534E+00 | 0.000E+00 | NOT IDENT. |
| XE-127  | -2.581E-03 | 5.675E-02 | 9.382E-02 | 0.000E+00 | NOT IDENT. |
| I-131   | -3.902E-02 | 1.262E-01 | 2.172E-01 | 0.000E+00 | NOT IDENT. |
| TE-132  | -5.092E-01 | 8.171E-01 | 1.349E+00 | 0.000E+00 | NOT IDENT. |
| BA-133  | -3.071E-02 | 5.356E-02 | 7.770E-02 | 0.000E+00 | NOT IDENT. |
| I-133   | 0.000E+00  | 6.580E+03 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-134  | 8.042E-02  | 5.203E-02 | 9.986E-02 | 0.000E+00 | NOT IDENT. |
| CS-135  | 0.000E+00  | 2.159E-01 | 3.498E-01 | 0.000E+00 | NOT IDENT. |
| I-135   | 0.000E+00  | 5.744E+15 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-136  | -4.378E-02 | 1.213E-01 | 1.990E-01 | 0.000E+00 | FAIL ABUN  |
| BA-137M | 2.112E-02  | 4.437E-02 | 7.714E-02 | 0.000E+00 | NOT IDENT. |
| CS-137  | 2.233E-02  | 4.690E-02 | 8.155E-02 | 0.000E+00 | NOT IDENT. |
| CE-139  | 2.584E-02  | 3.421E-02 | 6.106E-02 | 0.000E+00 | NOT IDENT. |
| BA-140  | 3.008E-01  | 2.964E-01 | 5.162E-01 | 0.000E+00 | NOT IDENT. |
| LA-140  | -3.297E-02 | 9.340E-02 | 1.510E-01 | 0.000E+00 | FAIL ABUN  |
| CE-141  | 3.583E-02  | 7.135E-02 | 1.270E-01 | 0.000E+00 | NOT IDENT. |
| CE-143  | 0.000E+00  | 2.851E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CE-144  | 3.156E-02  | 2.704E-01 | 4.185E-01 | 0.000E+00 | NOT IDENT. |
| PM-144  | -7.940E-03 | 4.101E-02 | 6.767E-02 | 0.000E+00 | NOT IDENT. |
| PR-144  | -5.380E-01 | 2.779E+00 | 4.586E+00 | 0.000E+00 | NOT IDENT. |
| PM-146  | 1.784E-02  | 4.997E-02 | 8.822E-02 | 0.000E+00 | NOT IDENT. |
| ND-147  | -1.288E-01 | 6.259E-01 | 1.053E+00 | 0.000E+00 | FAIL ABUN  |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PM-149  | -8.756E+01 | 1.027E+02 | 1.741E+02 | 0.000E+00 | NOT IDENT. |
| EU-152  | -1.260E-02 | 1.541E-01 | 1.840E-01 | 0.000E+00 | NOT IDENT. |
| GD-153  | 1.227E-02  | 1.015E-01 | 1.599E-01 | 0.000E+00 | FAIL ABUN  |
| EU-154  | 2.798E-02  | 1.400E-01 | 2.388E-01 | 0.000E+00 | NOT IDENT. |
| EU-155  | 1.088E-01  | 1.227E-01 | 2.241E-01 | 0.000E+00 | FAIL ABUN  |
| TB-160  | 3.649E-02  | 1.437E-01 | 2.533E-01 | 0.000E+00 | FAIL ABUN  |
| HO-166M | 5.027E-02  | 7.146E-02 | 1.261E-01 | 0.000E+00 | FAIL ABUN  |
| TM-171  | -3.322E+01 | 3.514E+01 | 6.135E+01 | 0.000E+00 | NOT IDENT. |
| LU-176  | 2.544E-02  | 2.602E-02 | 4.616E-02 | 0.000E+00 | FAIL ABUN  |
| LU-177  | 0.000E+00  | 1.584E+00 | 2.361E+00 | 0.000E+00 | FAIL ABUN  |
| LU-177M | -3.305E-02 | 2.123E-01 | 3.659E-01 | 0.000E+00 | FAIL ABUN  |
| HF-181  | -5.926E-02 | 4.690E-02 | 7.316E-02 | 0.000E+00 | NOT IDENT. |
| W-181   | 2.246E-01  | 4.551E-01 | 8.313E-01 | 0.000E+00 | NOT IDENT. |
| TA-182  | 5.446E-02  | 2.495E-01 | 4.257E-01 | 0.000E+00 | FAIL ABUN  |
| RE-183  | -1.601E-02 | 1.250E-01 | 2.169E-01 | 0.000E+00 | FAIL ABUN  |
| RE-184  | -3.165E-01 | 2.774E-01 | 4.418E-01 | 0.000E+00 | NOT IDENT. |
| OS-185  | 4.615E-02  | 4.785E-02 | 8.670E-02 | 0.000E+00 | NOT IDENT. |
| RE-188  | -8.186E-03 | 1.906E-01 | 3.315E-01 | 0.000E+00 | NOT IDENT. |
| W-188   | -8.053E-04 | 9.230E+00 | 1.429E+01 | 0.000E+00 | NOT IDENT. |
| IR-192  | -1.857E-02 | 3.667E-02 | 6.307E-02 | 0.000E+00 | FAIL ABUN  |
| AU-195  | 0.000E+00  | 2.814E-01 | 4.781E-01 | 0.000E+00 | FAIL ABUN  |
| TL-200  | 0.000E+00  | 4.862E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TL-201  | 6.662E-01  | 7.972E+00 | 1.388E+01 | 0.000E+00 | NOT IDENT. |
| TL-202  | -7.397E-03 | 7.624E-02 | 1.312E-01 | 0.000E+00 | NOT IDENT. |
| HG-203  | 1.791E-02  | 4.792E-02 | 8.506E-02 | 0.000E+00 | FAIL ABUN  |
| BI-207  | 8.480E-03  | 6.231E-02 | 1.070E-01 | 0.000E+00 | FAIL ABUN  |
| TL-207  | 9.173E-01  | 7.890E-01 | 1.296E+00 | 0.000E+00 | FAIL ABUN  |
| PO-209  | -9.269E-01 | 7.843E+00 | 1.335E+01 | 0.000E+00 | NOT IDENT. |
| BI-210  | -2.491E-01 | 5.282E+00 | 9.551E+00 | 0.000E+00 | NOT IDENT. |
| PB-210  | -2.491E-01 | 5.282E+00 | 9.551E+00 | 0.000E+00 | NOT IDENT. |
| PO-210  | -2.491E-01 | 5.282E+00 | 9.551E+00 | 0.000E+00 | NOT IDENT. |
| PB-211  | -7.758E-01 | 1.174E+00 | 1.793E+00 | 0.000E+00 | NOT IDENT. |
| BI-212  | 0.000E+00  | 5.946E-01 | 8.092E-01 | 0.000E+00 | FAIL ABUN  |
| PO-215  | 9.173E-01  | 7.890E-01 | 1.296E+00 | 0.000E+00 | FAIL ABUN  |
| RN-219  | -2.104E-01 | 4.586E-01 | 7.758E-01 | 0.000E+00 | FAIL ABUN  |
| RN-220  | -7.289E+00 | 3.038E+01 | 5.091E+01 | 0.000E+00 | NOT IDENT. |
| RA-223  | 9.173E-01  | 7.890E-01 | 1.296E+00 | 0.000E+00 | FAIL ABUN  |
| AC-227  | 2.256E-01  | 4.544E-01 | 7.864E-01 | 0.000E+00 | FAIL ABUN  |
| TH-227  | 2.256E-01  | 4.549E-01 | 7.864E-01 | 0.000E+00 | FAIL ABUN  |
| TH-229  | 2.327E-01  | 5.668E-01 | 9.923E-01 | 0.000E+00 | FAIL ABUN  |
| PA-231  | -7.139E-01 | 1.762E+00 | 3.074E+00 | 0.000E+00 | FAIL ABUN  |
| TH-231  | 9.173E-01  | 7.890E-01 | 1.296E+00 | 0.000E+00 | FAIL ABUN  |
| U-231   | -1.684E+00 | 1.405E+00 | 2.068E+00 | 0.000E+00 | FAIL ABUN  |
| PA-233  | 2.040E-03  | 6.685E-02 | 1.185E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234  | -1.182E-02 | 3.558E-01 | 6.079E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234M | -3.599E-01 | 4.940E+00 | 8.260E+00 | 0.000E+00 | NOT IDENT. |
| TH-234  | 1.106E+00  | 1.658E+00 | 3.023E+00 | 0.000E+00 | FAIL ABUN  |
| U-235   | 7.500E-02  | 2.457E-01 | 4.283E-01 | 0.000E+00 | FAIL ABUN  |
| NP-236  | -7.481E-03 | 8.832E-02 | 1.531E-01 | 0.000E+00 | NOT IDENT. |
| U-238   | 1.106E+00  | 1.658E+00 | 3.023E+00 | 0.000E+00 | FAIL ABUN  |
| NP-239  | -2.840E-02 | 2.115E-01 | 3.719E-01 | 0.000E+00 | FAIL ABUN  |
| AM-241  | -1.680E-01 | 1.964E-01 | 3.470E-01 | 0.000E+00 | NOT IDENT. |
| CM-243  | 1.608E-02  | 1.088E-01 | 1.944E-01 | 0.000E+00 | FAIL ABUN  |
| AM-246  | 1.866E-01  | 1.742E-01 | 3.208E-01 | 0.000E+00 | NOT IDENT. |
| CM-247  | 1.730E-02  | 4.059E-02 | 7.244E-02 | 0.000E+00 | NOT IDENT. |
| CF-249  | 4.340E-02  | 4.682E-02 | 8.566E-02 | 0.000E+00 | NOT IDENT. |
| CF-251  | 6.086E-02  | 1.459E-01 | 2.566E-01 | 0.000E+00 | NOT IDENT. |

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202015450.CNF;1
Sample date        : 8-JAN-2010 12:00:00. Acquisition date : 23-JAN-2010 14:07:57
Sample ID         : G1202015450      Sample quantity   : 1.36730E+02 GRAM
Detector name     : GAM06            Detector geometry: CAN
Elapsed live time : 0 02:00:00.00    Elapsed real time: 0 02:00:01.39  0.0%
Energy tolerance  : 1.50000 keV      Analyst Initials : MXR1
Abundance limit   : 75.00000         Sensitivity      : 5.00000
Batch ID          : 941639           Detector SN#     :
Matrix Spike ID   :                  LCS ID            : 1032-A
*****

```

## Nuclide Line Activity Report

## Nuclide Type:

| Nuclide | Energy  | Area  | %Abn   | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|--------|-----------|-------------------------|------------------------|-------------------|
| K-40    | 1460.81 | 1061  | 10.67* | 9.625E-01 | 2.837E+01               | 2.837E+01              | 9.21              |
| CD-109  | 88.03   | 237   | 3.72*  | 5.143E+00 | 3.400E+00               | 3.477E+00              | 28.81             |
| SN-126  | 64.28   | ----- | 9.60   | 2.881E+00 | -----                   | Line Not Found         | -----             |
|         | 86.94   | 237   | 8.90   | 5.143E+00 | 1.421E+00               | 1.421E+00              | 49.66             |
|         | 87.57   | 237   | 37.00* | 5.143E+00 | 3.418E-01               | 3.418E-01              | 28.81             |
| TL-208  | 277.35  | ----- | 6.80   | 3.899E+00 | -----                   | Line Not Found         | -----             |
|         | 510.84  | 123   | 21.60  | 2.407E+00 | 6.515E-01               | 6.515E-01              | 51.37             |
|         | 583.14  | 282   | 84.20* | 2.158E+00 | 4.254E-01               | 4.254E-01              | 20.76             |
|         | 860.37  | 79    | 12.46  | 1.539E+00 | 1.130E+00               | 1.130E+00              | 54.29             |
| BI-211  | 72.87   | ----- | 1.27   | 3.913E+00 | -----                   | Line Not Found         | -----             |
|         | 351.07  | 681   | 12.94* | 3.243E+00 | 4.453E+00               | 4.453E+00              | 13.39             |
| PB-212  | 74.81   | 427   | 10.70  | 4.101E+00 | 2.673E+00               | 2.673E+00              | 25.15             |
|         | 77.11   | 597   | 18.00  | 4.328E+00 | 2.104E+00               | 2.104E+00              | 16.51             |
|         | 87.30   | 237   | 8.00   | 5.143E+00 | 1.581E+00               | 1.581E+00              | 30.50             |
|         | 238.63  | 1233  | 44.60* | 4.367E+00 | 1.737E+00               | 1.737E+00              | 10.18             |
|         | 300.09  | 104   | 3.41   | 3.668E+00 | 2.277E+00               | 2.277E+00              | 55.84             |
| PO-212  | 74.81   | 427   | 10.70  | 4.101E+00 | 2.673E+00               | 2.673E+00              | 25.15             |
|         | 77.11   | 597   | 18.00  | 4.328E+00 | 2.104E+00               | 2.104E+00              | 16.51             |
|         | 87.30   | 237   | 8.00   | 5.143E+00 | 1.581E+00               | 1.581E+00              | 30.50             |
|         | 115.19  | ----- | 0.60   | 6.030E+00 | -----                   | Line Not Found         | -----             |
|         | 238.63  | 1233  | 44.60* | 4.367E+00 | 1.737E+00               | 1.737E+00              | 10.18             |
|         | 300.09  | 104   | 3.41   | 3.668E+00 | 2.277E+00               | 2.277E+00              | 55.84             |
| BI-214  | 609.31  | 401   | 46.30* | 2.080E+00 | 1.142E+00               | 1.142E+00              | 16.59             |
|         | 1120.29 | 108   | 15.10  | 1.211E+00 | 1.614E+00               | 1.614E+00              | 49.71             |
|         | 1764.49 | 68    | 15.80  | 8.404E-01 | 1.406E+00               | 1.406E+00              | 24.95             |
| PB-214  | 74.81   | 427   | 6.21   | 4.101E+00 | 4.606E+00               | 4.606E+00              | 24.49             |
|         | 77.11   | 597   | 10.50  | 4.328E+00 | 3.608E+00               | 3.608E+00              | 18.18             |
|         | 87.30   | 237   | 4.67   | 5.143E+00 | 2.708E+00               | 2.708E+00              | 29.83             |
|         | 241.98  | 311   | 7.49   | 4.327E+00 | 2.638E+00               | 2.638E+00              | 32.68             |
|         | 295.21  | 317   | 19.20  | 3.717E+00 | 1.219E+00               | 1.219E+00              | 24.14             |
|         | 351.92  | 681   | 37.20* | 3.243E+00 | 1.549E+00               | 1.549E+00              | 14.37             |
| PO-214  | 74.81   | 427   | 6.21   | 4.101E+00 | 4.606E+00               | 4.606E+00              | 24.49             |

Nuclide Type:

| Nuclide | Energy  | Area  | %Abn    | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|---------|-------|---------|-----------|-------------------------|------------------------|-------------------|
|         | 77.11   | 597   | 10.50   | 4.328E+00 | 3.608E+00               | 3.608E+00              | 18.18             |
|         | 87.30   | 237   | 4.67    | 5.143E+00 | 2.708E+00               | 2.708E+00              | 29.83             |
|         | 241.98  | 311   | 7.49    | 4.327E+00 | 2.638E+00               | 2.638E+00              | 32.68             |
|         | 295.21  | 317   | 19.20   | 3.717E+00 | 1.219E+00               | 1.219E+00              | 24.14             |
|         | 351.92  | 681   | 37.20*  | 3.243E+00 | 1.549E+00               | 1.549E+00              | 14.37             |
| PO-216  | 74.81   | 427   | 10.70   | 4.101E+00 | 2.673E+00               | 2.673E+00              | 25.15             |
|         | 77.11   | 597   | 18.00   | 4.328E+00 | 2.104E+00               | 2.104E+00              | 16.51             |
|         | 87.30   | 237   | 8.00    | 5.143E+00 | 1.581E+00               | 1.581E+00              | 30.50             |
|         | 238.63  | 1233  | 44.60*  | 4.367E+00 | 1.737E+00               | 1.737E+00              | 10.18             |
|         | 300.09  | 104   | 3.41    | 3.668E+00 | 2.277E+00               | 2.277E+00              | 55.84             |
| PO-218  | 74.81   | 427   | 6.21    | 4.101E+00 | 4.606E+00               | 4.606E+00              | 24.49             |
|         | 77.11   | 597   | 10.50   | 4.328E+00 | 3.608E+00               | 3.608E+00              | 18.18             |
|         | 87.30   | 237   | 4.67    | 5.143E+00 | 2.708E+00               | 2.708E+00              | 29.83             |
|         | 241.98  | 311   | 7.49    | 4.327E+00 | 2.638E+00               | 2.638E+00              | 32.68             |
|         | 295.21  | 317   | 19.20   | 3.717E+00 | 1.219E+00               | 1.219E+00              | 24.14             |
|         | 351.92  | 681   | 37.20*  | 3.243E+00 | 1.549E+00               | 1.549E+00              | 14.37             |
| RA-224  | 240.98  | 311   | 3.95*   | 4.327E+00 | 5.002E+00               | 5.002E+00              | 32.19             |
| RA-226  | 609.31  | 401   | 46.30*  | 2.080E+00 | 1.142E+00               | 1.142E+00              | 16.59             |
|         | 1120.29 | 108   | 15.10   | 1.211E+00 | 1.614E+00               | 1.614E+00              | 49.71             |
|         | 1764.49 | 68    | 15.80   | 8.404E-01 | 1.406E+00               | 1.406E+00              | 24.95             |
| AC-228  | 338.32  | 195   | 11.40   | 3.344E+00 | 1.402E+00               | 1.402E+00              | 54.29             |
|         | 911.07  | 262   | 27.70*  | 1.461E+00 | 1.777E+00               | 1.777E+00              | 20.77             |
|         | 969.11  | 121   | 16.60   | 1.382E+00 | 1.452E+00               | 1.452E+00              | 54.90             |
| RA-228  | 338.32  | 195   | 11.40   | 3.344E+00 | 1.402E+00               | 1.402E+00              | 54.29             |
|         | 911.07  | 262   | 27.70*  | 1.461E+00 | 1.777E+00               | 1.777E+00              | 20.77             |
|         | 969.11  | 121   | 16.60   | 1.382E+00 | 1.452E+00               | 1.452E+00              | 54.90             |
| TH-228  | 74.81   | 427   | 10.70   | 4.101E+00 | 2.673E+00               | 2.714E+00              | 23.37             |
|         | 77.11   | 597   | 18.00   | 4.328E+00 | 2.104E+00               | 2.136E+00              | 16.51             |
|         | 87.30   | 237   | 8.00    | 5.143E+00 | 1.581E+00               | 1.605E+00              | 28.81             |
|         | 238.63  | 1233  | 44.60*  | 4.367E+00 | 1.737E+00               | 1.764E+00              | 10.18             |
|         | 300.09  | 104   | 3.41    | 3.668E+00 | 2.277E+00               | 2.311E+00              | 80.77             |
| TH-230  | 609.31  | 401   | 46.30*  | 2.080E+00 | 1.142E+00               | 1.142E+00              | 16.59             |
|         | 1120.29 | 108   | 15.10   | 1.211E+00 | 1.614E+00               | 1.614E+00              | 49.71             |
|         | 1764.49 | 68    | 15.80   | 8.404E-01 | 1.406E+00               | 1.406E+00              | 24.95             |
| TH-232  | 338.32  | 195   | 11.40   | 3.344E+00 | 1.402E+00               | 1.402E+00              | 36.32             |
|         | 911.07  | 262   | 27.70*  | 1.461E+00 | 1.777E+00               | 1.777E+00              | 20.77             |
|         | 969.11  | 121   | 16.60   | 1.382E+00 | 1.452E+00               | 1.452E+00              | 54.90             |
| U-234   | 609.31  | 401   | 46.30*  | 2.080E+00 | 1.142E+00               | 1.142E+00              | 16.59             |
|         | 1120.29 | 108   | 15.10   | 1.211E+00 | 1.614E+00               | 1.614E+00              | 49.71             |
|         | 1764.49 | 68    | 15.80   | 8.404E-01 | 1.406E+00               | 1.406E+00              | 24.95             |
| NP-237  | 86.50   | 237   | 12.60*  | 5.143E+00 | 1.004E+00               | 1.004E+00              | 35.44             |
|         | 95.87   | ----- | 2.60    | 5.611E+00 | -----                   | Line Not Found         | -----             |
| AM-243  | 74.67   | 427   | 66.00*  | 4.101E+00 | 4.334E-01               | 4.334E-01              | 23.34             |
|         | 86.72   | 237   | 0.34    | 5.143E+00 | 3.764E+01               | 3.764E+01              | 28.81             |
|         | 117.66  | ----- | 0.55    | 6.042E+00 | -----                   | Line Not Found         | -----             |
|         | 142.18  | ----- | 0.13    | 5.887E+00 | -----                   | Line Not Found         | -----             |
| ANH-511 | 511.00  | 123   | 100.00* | 2.407E+00 | 1.407E-01               | 1.407E-01              | 50.69             |

Flag: "\*" = Keyline



Total number of lines in spectrum 32  
Number of unidentified lines 2  
Number of lines tentatively identified by NID 30 93.75%

Nuclide Type :

| Nuclide          | Hlife     | Decay | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | Decay Corr<br>2-Sigma Error | 2-Sigma<br>%Error | Flags |
|------------------|-----------|-------|-------------------------|------------------------|-----------------------------|-------------------|-------|
| K-40             | 1.28E+09Y | 1.00  | 2.837E+01               | 2.837E+01              | 0.261E+01                   | 9.21              |       |
| CD-109           | 464.00D   | 1.02  | 3.400E+00               | 3.477E+00              | 1.002E+00                   | 28.81             |       |
| SN-126           | 1.00E+05Y | 1.00  | 3.418E-01               | 3.418E-01              | 0.985E-01                   | 28.81             |       |
| TL-208           | 1.41E+10Y | 1.00  | 4.254E-01               | 4.254E-01              | 0.883E-01                   | 20.76             |       |
| BI-211           | 7.04E+08Y | 1.00  | 4.453E+00               | 4.453E+00              | 0.596E+00                   | 13.39             |       |
| PB-212           | 1.41E+10Y | 1.00  | 1.737E+00               | 1.737E+00              | 0.177E+00                   | 10.18             |       |
| PO-212           | 1.41E+10Y | 1.00  | 1.737E+00               | 1.737E+00              | 0.177E+00                   | 10.18             |       |
| BI-214           | 1600.00Y  | 1.00  | 1.142E+00               | 1.142E+00              | 0.190E+00                   | 16.59             |       |
| PB-214           | 1600.00Y  | 1.00  | 1.549E+00               | 1.549E+00              | 0.223E+00                   | 14.37             |       |
| PO-214           | 1600.00Y  | 1.00  | 1.549E+00               | 1.549E+00              | 0.223E+00                   | 14.37             |       |
| PO-216           | 1.41E+10Y | 1.00  | 1.737E+00               | 1.737E+00              | 0.177E+00                   | 10.18             |       |
| PO-218           | 1600.00Y  | 1.00  | 1.549E+00               | 1.549E+00              | 0.223E+00                   | 14.37             |       |
| RA-224           | 1.41E+10Y | 1.00  | 5.002E+00               | 5.002E+00              | 1.610E+00                   | 32.19             |       |
| RA-226           | 1600.00Y  | 1.00  | 1.142E+00               | 1.142E+00              | 0.190E+00                   | 16.59             |       |
| AC-228           | 1.41E+10Y | 1.00  | 1.777E+00               | 1.777E+00              | 0.369E+00                   | 20.77             |       |
| RA-228           | 1.41E+10Y | 1.00  | 1.777E+00               | 1.777E+00              | 0.369E+00                   | 20.77             |       |
| TH-228           | 1.91Y     | 1.02  | 1.737E+00               | 1.764E+00              | 0.179E+00                   | 10.18             |       |
| TH-230           | 4.47E+09Y | 1.00  | 1.142E+00               | 1.142E+00              | 0.190E+00                   | 16.59             |       |
| TH-232           | 1.41E+10Y | 1.00  | 1.777E+00               | 1.777E+00              | 0.369E+00                   | 20.77             |       |
| U-234            | 4.47E+09Y | 1.00  | 1.142E+00               | 1.142E+00              | 0.190E+00                   | 16.59             |       |
| NP-237           | 2.14E+06Y | 1.00  | 1.004E+00               | 1.004E+00              | 0.356E+00                   | 35.44             |       |
| AM-243           | 7380.00Y  | 1.00  | 4.334E-01               | 4.334E-01              | 1.012E-01                   | 23.34             |       |
| ANH-511          | 1.00E+09Y | 1.00  | 1.407E-01               | 1.407E-01              | 0.713E-01                   | 50.69             |       |
| Total Activity : |           |       | 6.507E+01               | 6.517E+01              |                             |                   |       |

Grand Total Activity : 6.507E+01 6.517E+01

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

| It | Energy  | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | %Eff     | Flags |
|----|---------|------|-------|------|---------|------|----|----------|------|----------|-------|
| 0  | 83.61   | 65   | 500   | 1.37 | 167.22  | 164  | 8  | 9.09E-03 | **** | 4.91E+00 | T     |
| 1  | 89.87   | 184  | 419   | 1.41 | 179.74  | 171  | 23 | 2.56E-02 | 41.1 | 5.32E+00 | T     |
| 1  | 92.58   | 266  | 342   | 1.19 | 185.16  | 171  | 23 | 3.70E-02 | 27.9 | 5.46E+00 | T     |
| 0  | 128.86  | 48   | 345   | 0.91 | 257.72  | 255  | 7  | 6.60E-03 | **** | 6.02E+00 | T     |
| 0  | 185.76  | 181  | 432   | 1.24 | 371.53  | 366  | 11 | 2.52E-02 | 48.0 | 5.18E+00 | T     |
| 0  | 209.33  | 107  | 287   | 1.18 | 418.66  | 414  | 9  | 1.49E-02 | 60.4 | 4.79E+00 | T     |
| 0  | 270.08  | 83   | 214   | 0.87 | 540.16  | 536  | 9  | 1.16E-02 | 66.8 | 3.98E+00 | T     |
| 0  | 328.47  | 152  | 214   | 1.72 | 656.94  | 651  | 16 | 2.12E-02 | 45.7 | 3.42E+00 | T     |
| 0  | 463.17  | 65   | 93    | 1.35 | 926.34  | 922  | 9  | 8.99E-03 | 59.9 | 2.61E+00 | T     |
| 0  | 727.07  | 92   | 96    | 1.53 | 1454.15 | 1445 | 14 | 1.28E-02 | 50.2 | 1.79E+00 | T     |
| 0  | 934.37  | 36   | 41    | 1.13 | 1868.74 | 1864 | 10 | 4.95E-03 | 76.0 | 1.43E+00 | T     |
| 0  | 1238.26 | 41   | 56    | 1.13 | 2476.51 | 2470 | 14 | 5.69E-03 | 83.5 | 1.11E+00 | T     |
| 0  | 1377.97 | 44   | 7     | 2.13 | 2755.94 | 2749 | 13 | 6.04E-03 | 38.8 | 1.01E+00 |       |
| 0  | 1502.16 | 12   | 7     | 1.63 | 3004.32 | 2998 | 10 | 1.62E-03 | **** | 9.41E-01 |       |

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC
*                                     2040 Savage Road
*                                     Charleston, SC 29414
*****
*
*                               DETECTOR DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202015450.CNF;1
* Acquisition date   : 23-JAN-2010 14:07:57   Detector SN#      :
* Detector ID        : GAM06                   Sensitivity       : 5.00000
* Geometry           : CAN                     Energy tolerance  : 1.50000
* Elapsed live time  : 0 02:00:00.00           Abundance limit   : 75.00000
* Elapsed real time  : 0 02:00:01.39           Half life ratio   : 8.00000
*****
*
*                               SAMPLE DATA
*
* Sample date        : 8-JAN-2010 12:00:00.   Nuclide Library   : SOLID
* Sample ID          : G1202015450           Analyst initials  : MXR1
* Batch Number       : 941639                Sample Quantity   : 1.36730E+02 GRAM
*****
*
*                               QC DATA
*
* CALIB. DATE/TIME   : 4-FEB-2009 13:05:54.47MS Isotope      :
* MSD ID             :                        MSD Isotope     :
* LCS ID             : 1032-A                 LCS Isotope        :
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| K-40    | 2.837E+01              | 2.614E+00 | 5.311E-01         | 3.513E-02 | 53.422  |
| CD-109  | 3.477E+00              | 1.002E+00 | 1.391E+00         | 1.373E-01 | 2.501   |
| SN-126  | 3.418E-01              | 9.848E-02 | 1.374E-01         | 1.352E-02 | 2.488   |
| TL-208  | 4.254E-01              | 8.833E-02 | 6.629E-02         | 4.190E-03 | 6.417   |
| BI-211  | 4.453E+00              | 5.962E-01 | 3.554E-01         | 2.294E-02 | 12.527  |
| PB-212  | 1.737E+00              | 1.768E-01 | 1.031E-01         | 7.598E-03 | 16.856  |
| PO-212  | 1.737E+00              | 1.768E-01 | 1.031E-01         | 7.598E-03 | 16.856  |
| BI-214  | 1.142E+00              | 1.895E-01 | 1.186E-01         | 8.756E-03 | 9.627   |
| PB-214  | 1.549E+00              | 2.226E-01 | 1.239E-01         | 1.028E-02 | 12.501  |
| PO-214  | 1.549E+00              | 2.226E-01 | 1.239E-01         | 1.028E-02 | 12.501  |
| PO-216  | 1.737E+00              | 1.768E-01 | 1.031E-01         | 7.598E-03 | 16.856  |
| PO-218  | 1.549E+00              | 2.226E-01 | 1.239E-01         | 1.028E-02 | 12.501  |
| RA-224  | 5.002E+00              | 1.610E+00 | 1.173E+00         | 6.875E-02 | 4.264   |
| RA-226  | 1.142E+00              | 1.895E-01 | 1.186E-01         | 8.756E-03 | 9.627   |
| AC-228  | 1.777E+00              | 3.690E-01 | 2.198E-01         | 2.246E-02 | 8.081   |
| RA-228  | 1.777E+00              | 3.690E-01 | 2.198E-01         | 2.246E-02 | 8.081   |
| TH-228  | 1.764E+00              | 1.795E-01 | 1.046E-01         | 7.713E-03 | 16.856  |
| TH-230  | 1.142E+00              | 1.895E-01 | 1.186E-01         | 8.755E-03 | 9.627   |

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| TH-232  | 1.777E+00              | 3.690E-01 | 2.198E-01         | 2.246E-02 | 8.081   |
| U-234   | 1.142E+00              | 1.895E-01 | 1.186E-01         | 8.755E-03 | 9.627   |
| NP-237  | 1.004E+00              | 3.557E-01 | 3.883E-01         | 8.861E-02 | 2.585   |
| AM-243  | 4.334E-01              | 1.012E-01 | 1.070E-01         | 9.664E-03 | 4.050   |
| ANH-511 | 1.407E-01              | 7.133E-02 | 5.107E-02         | 2.855E-03 | 2.755   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| BE-7    | -1.387E-01                         |              | 3.469E-01 | 5.544E-01           | 3.662E-02 | -0.250  |
| NA-22   | 1.234E-02                          |              | 5.138E-02 | 8.578E-02           | 5.297E-03 | 0.144   |
| NA-24   | 5.773E-01                          |              | 3.742E-01 | Half-Life too short |           |         |
| AL-26   | -3.829E-02                         |              | 2.929E-02 | 3.122E-02           | 1.793E-03 | -1.226  |
| TI-44   | 3.884E-01                          | +            | 6.410E-02 | 9.156E-02           | 8.416E-03 | 4.242   |
| SC-46   | 1.086E-02                          |              | 4.229E-02 | 7.211E-02           | 5.168E-03 | 0.151   |
| V-48    | -2.063E-02                         |              | 8.055E-02 | 1.302E-01           | 9.113E-03 | -0.158  |
| CR-51   | -5.460E-01                         |              | 4.129E-01 | 6.319E-01           | 4.163E-02 | -0.864  |
| MN-52   | 1.085E-02                          |              | 2.330E-01 | 3.797E-01           | 2.390E-02 | 0.029   |
| MN-54   | -8.768E-03                         |              | 4.188E-02 | 6.883E-02           | 4.543E-03 | -0.127  |
| CO-56   | 3.388E-02                          |              | 4.512E-02 | 7.987E-02           | 5.370E-03 | 0.424   |
| CO-57   | 1.280E-02                          |              | 2.958E-02 | 4.941E-02           | 3.018E-03 | 0.259   |
| CO-58   | -1.563E-02                         |              | 4.587E-02 | 7.469E-02           | 4.769E-03 | -0.209  |
| FE-59   | 2.497E-02                          |              | 1.166E-01 | 1.952E-01           | 1.432E-02 | 0.128   |
| CO-60   | 3.432E-02                          |              | 4.579E-02 | 8.036E-02           | 5.048E-03 | 0.427   |
| ZN-65   | -3.005E-03                         |              | 1.114E-01 | 1.566E-01           | 9.918E-03 | -0.019  |
| GE-68   | 3.094E-01                          |              | 1.567E+00 | 2.625E+00           | 1.721E-01 | 0.118   |
| AS-73   | -3.603E-01                         |              | 1.134E+00 | 1.884E+00           | 1.723E-01 | -0.191  |
| AS-74   | 5.597E-03                          |              | 9.756E-02 | 1.596E-01           | 8.486E-03 | 0.035   |
| SE-75   | 1.879E-02                          |              | 6.088E-02 | 8.668E-02           | 5.200E-03 | 0.217   |
| BR-77   | 3.516E+00                          |              | 1.180E+01 | 1.976E+01           | 1.101E+00 | 0.178   |
| SR-82   | -1.128E-01                         |              | 4.341E-01 | 7.138E-01           | 4.294E-02 | -0.158  |
| RB-83   | 1.934E-02                          |              | 7.834E-02 | 1.307E-01           | 7.285E-03 | 0.148   |
| RB-84   | -8.290E-02                         |              | 7.794E-02 | 1.164E-01           | 8.250E-03 | -0.712  |
| KR-85   | 1.336E+01                          |              | 9.039E+00 | 1.455E+01           | 8.125E-01 | 0.919   |
| SR-85   | 6.851E-02                          |              | 4.633E-02 | 7.457E-02           | 4.165E-03 | 0.919   |
| RB-86   | -1.012E-01                         |              | 1.012E+00 | 1.652E+00           | 1.084E-01 | -0.061  |
| Y-88    | 6.130E-03                          |              | 3.559E-02 | 6.085E-02           | 3.458E-03 | 0.101   |
| ZR-88   | -2.774E-02                         |              | 3.554E-02 | 5.628E-02           | 3.123E-03 | -0.493  |
| Y-91    | -2.213E+01                         |              | 2.338E+01 | 3.499E+01           | 2.098E+00 | -0.632  |
| NB-94   | -5.832E-03                         |              | 3.972E-02 | 6.331E-02           | 3.362E-03 | -0.092  |
| NB-95   | 3.189E-02                          |              | 5.166E-02 | 8.690E-02           | 5.137E-03 | 0.367   |
| NB-95M  | 5.521E-01                          |              | 1.849E-01 | 2.934E-01           | 2.217E-02 | 1.882   |
| ZR-95   | 4.727E-02                          |              | 8.718E-02 | 1.463E-01           | 1.031E-02 | 0.323   |
| NB-97   | -1.812E-02                         |              | 6.025E-02 | Half-Life too short |           |         |
| ZR-97   | 4.514E+00                          |              | 1.184E+00 | Half-Life too short |           |         |
| MO-99   | 3.845E+00                          |              | 1.190E+01 | 1.974E+01           | 2.709E+00 | 0.195   |
| TC-99M  | -2.236E+10                         |              | 2.065E+10 | Half-Life too short |           |         |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| RH-101  | -2.245E-02                         |              | 3.923E-02 | 5.959E-02         | 3.347E-03 | -0.377  |
| RH-102  | 1.073E-02                          |              | 3.244E-02 | 5.464E-02         | 3.077E-03 | 0.196   |
| RU-103  | 2.419E-02                          |              | 4.629E-02 | 7.868E-02         | 9.882E-03 | 0.307   |
| RH-106  | -1.760E-01                         |              | 3.685E-01 | 5.742E-01         | 6.572E-02 | -0.307  |
| RU-106  | -1.760E-01                         |              | 3.680E-01 | 5.742E-01         | 2.977E-02 | -0.307  |
| AG-108M | -5.347E-03                         |              | 3.678E-02 | 6.028E-02         | 3.697E-03 | -0.089  |
| AG-110M | -1.042E-02                         |              | 4.416E-02 | 7.023E-02         | 3.791E-03 | -0.148  |
| IN-111  | -4.550E-01                         |              | 1.398E+00 | 1.909E+00         | 1.122E-01 | -0.238  |
| IN-113M | -3.109E-02                         |              | 5.221E-02 | 8.374E-02         | 4.983E-03 | -0.371  |
| SN-113  | -3.109E-02                         |              | 5.221E-02 | 8.374E-02         | 4.983E-03 | -0.371  |
| IN-114M | -3.406E-02                         |              | 2.443E-01 | 3.430E-01         | 1.909E-02 | -0.099  |
| CD-115  | 8.379E+00                          |              | 1.206E+01 | 2.074E+01         | 1.153E+00 | 0.404   |
| SN-117M | 3.602E-03                          |              | 6.109E-02 | 9.985E-02         | 5.485E-03 | 0.036   |
| SB-122  | 1.792E+00                          |              | 2.338E+00 | 4.027E+00         | 2.195E-01 | 0.445   |
| I-123   | 2.823E+00                          |              | 3.078E+00 | Half-Life         | too short |         |
| TE-123M | 1.445E-02                          |              | 3.150E-02 | 5.231E-02         | 2.914E-03 | 0.276   |
| I-124   | -1.065E+00                         |              | 9.128E-01 | 1.114E+00         | 5.888E-02 | -0.956  |
| SB-124  | -2.742E-02                         |              | 8.219E-02 | 1.281E-01         | 8.318E-03 | -0.214  |
| SB-125  | 3.680E-02                          |              | 1.019E-01 | 1.726E-01         | 1.013E-02 | 0.213   |
| TE-125M | -3.015E-01                         |              | 1.058E+01 | 1.744E+01         | 1.585E+00 | -0.017  |
| I-126   | -2.907E-02                         |              | 2.185E-01 | 3.498E-01         | 1.742E-02 | -0.083  |
| SB-126  | -1.360E-01                         |              | 1.948E-01 | 2.460E-01         | 1.348E-02 | -0.553  |
| SB-127  | 8.665E-01                          |              | 1.467E+00 | 2.490E+00         | 2.250E-01 | 0.348   |
| XE-127  | -2.581E-03                         |              | 5.791E-02 | 9.010E-02         | 5.090E-03 | -0.029  |
| I-131   | -3.902E-02                         |              | 1.288E-01 | 2.109E-01         | 1.356E-02 | -0.185  |
| TE-132  | -5.092E-01                         |              | 8.337E-01 | 1.298E+00         | 1.864E-01 | -0.392  |
| BA-133  | -3.071E-02                         |              | 5.465E-02 | 7.541E-02         | 8.717E-03 | -0.407  |
| I-133   | 8.441E-04                          |              | 3.357E-03 | Half-Life         | too short |         |
| CS-134  | 8.042E-02                          |              | 5.309E-02 | 9.841E-02         | 6.193E-03 | 0.817   |
| CS-135  | 3.610E-01                          |              | 2.203E-01 | 3.376E-01         | 2.624E-02 | 1.069   |
| I-135   | 9.588E+08                          |              | 2.931E+09 | Half-Life         | too short |         |
| CS-136  | -4.378E-02                         |              | 1.237E-01 | 1.971E-01         | 1.415E-02 | -0.222  |
| BA-137M | 2.112E-02                          |              | 4.527E-02 | 7.575E-02         | 3.741E-03 | 0.279   |
| CS-137  | 2.233E-02                          |              | 4.786E-02 | 8.008E-02         | 3.978E-03 | 0.279   |
| CE-139  | 2.584E-02                          |              | 3.490E-02 | 5.843E-02         | 3.159E-03 | 0.442   |
| BA-140  | 3.008E-01                          |              | 3.024E-01 | 5.049E-01         | 1.640E-01 | 0.596   |
| LA-140  | -3.297E-02                         |              | 9.531E-02 | 1.509E-01         | 9.307E-03 | -0.219  |
| CE-141  | 3.583E-02                          |              | 7.280E-02 | 1.212E-01         | 7.150E-03 | 0.296   |
| CE-143  | 9.495E-04                          |              | 1.454E-04 | Half-Life         | too short |         |
| CE-144  | 3.156E-02                          |              | 2.759E-01 | 3.989E-01         | 5.673E-02 | 0.079   |
| PM-144  | -7.940E-03                         |              | 4.184E-02 | 6.652E-02         | 3.498E-03 | -0.119  |
| PR-144  | -5.380E-01                         |              | 2.835E+00 | 4.507E+00         | 2.368E-01 | -0.119  |
| PM-146  | 1.784E-02                          |              | 5.099E-02 | 8.601E-02         | 7.320E-03 | 0.207   |
| ND-147  | -1.288E-01                         |              | 6.387E-01 | 1.030E+00         | 1.382E-01 | -0.125  |
| PM-149  | -8.756E+01                         |              | 1.047E+02 | 1.682E+02         | 2.397E+01 | -0.520  |
| EU-152  | -1.260E-02                         |              | 1.572E-01 | 1.785E-01         | 1.176E-02 | -0.071  |
| GD-153  | 1.227E-02                          |              | 1.036E-01 | 1.516E-01         | 1.267E-02 | 0.081   |
| EU-154  | 2.798E-02                          |              | 1.429E-01 | 2.375E-01         | 2.273E-02 | 0.118   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| EU-155  | 1.088E-01                          |              | 1.252E-01 | 2.127E-01           | 1.613E-02 | 0.512   |
| TB-160  | 3.649E-02                          |              | 1.466E-01 | 2.501E-01           | 1.767E-02 | 0.146   |
| HO-166M | 5.027E-02                          |              | 7.292E-02 | 1.240E-01           | 6.689E-03 | 0.405   |
| TM-171  | -3.322E+01                         |              | 3.586E+01 | 5.775E+01           | 5.159E+00 | -0.575  |
| LU-176  | 2.544E-02                          |              | 2.655E-02 | 4.467E-02           | 2.665E-03 | 0.570   |
| LU-177  | 2.667E+00                          | +            | 1.617E+00 | 2.269E+00           | 1.290E-01 | 1.176   |
| LU-177M | -3.305E-02                         |              | 2.166E-01 | 3.561E-01           | 1.992E-02 | -0.093  |
| HF-181  | -5.926E-02                         |              | 4.785E-02 | 7.140E-02           | 4.018E-03 | -0.830  |
| W-181   | 2.246E-01                          |              | 4.644E-01 | 7.822E-01           | 7.007E-02 | 0.287   |
| TA-182  | 5.446E-02                          |              | 2.546E-01 | 4.231E-01           | 2.555E-02 | 0.129   |
| RE-183  | -1.601E-02                         |              | 1.280E-01 | 2.074E-01           | 1.130E-02 | -0.077  |
| RE-184  | -3.165E-01                         |              | 2.830E-01 | 4.260E-01           | 2.516E-02 | -0.743  |
| OS-185  | 4.615E-02                          |              | 4.882E-02 | 8.509E-02           | 4.290E-03 | 0.542   |
| RE-188  | -8.186E-03                         |              | 1.945E-01 | 3.168E-01           | 1.754E-02 | -0.026  |
| W-188   | -8.053E-04                         |              | 9.418E+00 | 1.382E+01           | 8.254E-01 | 0.000   |
| IR-192  | -1.857E-02                         |              | 3.742E-02 | 6.107E-02           | 3.650E-03 | -0.304  |
| AU-195  | 5.859E-01                          |              | 2.871E-01 | 4.532E-01           | 3.704E-02 | 1.293   |
| TL-200  | -2.239E-04                         |              | 2.480E-04 | Half-Life too short |           |         |
| TL-201  | 6.662E-01                          |              | 8.135E+00 | 1.328E+01           | 7.188E-01 | 0.050   |
| TL-202  | -7.397E-03                         |              | 7.780E-02 | 1.278E-01           | 7.191E-03 | -0.058  |
| HG-203  | 1.791E-02                          |              | 4.889E-02 | 8.217E-02           | 5.189E-03 | 0.218   |
| BI-207  | 8.480E-03                          |              | 6.358E-02 | 1.061E-01           | 7.032E-03 | 0.080   |
| TL-207  | 9.173E-01                          |              | 8.051E-01 | 1.256E+00           | 2.080E-01 | 0.731   |
| PO-209  | -9.269E-01                         |              | 8.003E+00 | 1.318E+01           | 9.551E-01 | -0.070  |
| BI-210  | -2.491E-01                         |              | 5.390E+00 | 8.934E+00           | 7.356E-01 | -0.028  |
| PB-210  | -2.491E-01                         |              | 5.390E+00 | 8.934E+00           | 7.356E-01 | -0.028  |
| PO-210  | -2.491E-01                         |              | 5.390E+00 | 8.934E+00           | 6.454E-01 | -0.028  |
| PB-211  | -7.758E-01                         |              | 1.198E+00 | 1.744E+00           | 1.087E+00 | -0.445  |
| BI-212  | 1.196E+00                          | +            | 6.068E-01 | 7.961E-01           | 5.987E-02 | 1.502   |
| PO-215  | 9.173E-01                          |              | 8.051E-01 | 1.256E+00           | 2.080E-01 | 0.731   |
| RN-219  | -2.104E-01                         |              | 4.680E-01 | 7.546E-01           | 1.019E-01 | -0.279  |
| RN-220  | -7.289E+00                         |              | 3.100E+01 | 4.981E+01           | 2.738E+00 | -0.146  |
| RA-223  | 9.173E-01                          |              | 8.051E-01 | 1.256E+00           | 2.080E-01 | 0.731   |
| AC-227  | 2.256E-01                          |              | 4.637E-01 | 7.585E-01           | 1.063E-01 | 0.297   |
| TH-227  | 2.256E-01                          |              | 4.642E-01 | 7.585E-01           | 1.285E-01 | 0.297   |
| TH-229  | 2.327E-01                          |              | 5.783E-01 | 9.522E-01           | 5.320E-02 | 0.244   |
| PA-231  | -7.139E-01                         |              | 1.798E+00 | 2.970E+00           | 4.115E-01 | -0.240  |
| TH-231  | 9.173E-01                          |              | 8.051E-01 | 1.256E+00           | 2.080E-01 | 0.731   |
| U-231   | -1.684E+00                         |              | 1.434E+00 | 1.960E+00           | 1.679E-01 | -0.859  |
| PA-233  | 2.040E-03                          |              | 6.821E-02 | 1.147E-01           | 7.235E-03 | 0.018   |
| PA-234  | -1.182E-02                         |              | 3.631E-01 | 6.011E-01           | 1.090E-01 | -0.020  |
| PA-234M | -3.599E-01                         |              | 5.041E+00 | 8.176E+00           | 6.988E-01 | -0.044  |
| TH-234  | 1.106E+00                          |              | 1.692E+00 | 2.843E+00           | 5.168E-01 | 0.389   |
| U-235   | 7.500E-02                          |              | 2.507E-01 | 4.088E-01           | 6.648E-02 | 0.183   |
| NP-236  | -7.481E-03                         |              | 9.013E-02 | 1.464E-01           | 8.010E-03 | -0.051  |
| U-238   | 1.106E+00                          |              | 1.692E+00 | 2.843E+00           | 5.168E-01 | 0.389   |
| NP-239  | -2.840E-02                         |              | 2.158E-01 | 3.536E-01           | 2.284E-02 | -0.080  |
| AM-241  | -1.680E-01                         |              | 2.005E-01 | 3.260E-01           | 3.187E-02 | -0.515  |

----- Non-Identified Nuclides -----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| CM-243  | 1.608E-02                          |              | 1.110E-01 | 1.844E-01         | 1.406E-02 | 0.087   |
| AM-246  | 1.866E-01                          |              | 1.777E-01 | 3.180E-01         | 2.081E-02 | 0.587   |
| CM-247  | 1.730E-02                          |              | 4.142E-02 | 7.046E-02         | 3.926E-03 | 0.246   |
| CF-249  | 4.340E-02                          |              | 4.778E-02 | 8.326E-02         | 4.644E-03 | 0.521   |
| CF-251  | 6.086E-02                          |              | 1.489E-01 | 2.458E-01         | 1.345E-02 | 0.248   |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : SYSSYSROOT:[ALPHA.ARCHIVE.GAMMA]G1202015450          *
* Acquisition date   : 23-JAN-2010 14:07:57 Detector SN# :                  *
* Detector ID        : GAM06                      Sensitivity      : 5.000    *
* Geometry           : CAN                        Energy tolerance: 1.500    *
* Elapsed live time  : 0 02:00:00.00             Abundance limit : 75.000    *
* Elapsed real time  : 0 02:00:01.39             Half life ratio : 8.000    *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 8-JAN-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID           : G1202015450             Analyst initials: MXR1       *
* Batch Number        : 941639                   Sample Quantity : 1.3673E+02 GRAM *
* Recovery            : 1.00000                  Carrier Weight  : 0.00000    *
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 4-FEB-2009 13:05:54 MS Isotope      :                  *
* MSD DPM              : 0.000                      MSD Isotope   :                  *
* LCS DPM               : 0.000                      LCS Isotope   :                  *
* LCSD DPM              : 0.000                      LCSD Isotope  :                  *
*****

```

## Combined Activity-MDA Report

### ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act Error | DLC<br>(pCi/GRAM ) | TPU       |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 2.837E+01               | 2.562E+00 | 2.664E-01          | 1.307E+00 |
| CD-109  | 3.477E+00               | 9.819E-01 | 7.354E-01          | 5.010E-01 |
| SN-126  | 3.418E-01               | 9.651E-02 | 7.268E-02          | 4.924E-02 |
| TL-208  | 4.254E-01               | 8.656E-02 | 3.386E-02          | 4.416E-02 |
| BI-211  | 4.453E+00               | 5.843E-01 | 1.833E-01          | 2.981E-01 |
| PB-212  | 1.737E+00               | 1.733E-01 | 5.353E-02          | 8.840E-02 |
| PO-212  | 1.737E+00               | 1.733E-01 | 5.353E-02          | 8.840E-02 |
| BI-214  | 1.142E+00               | 1.857E-01 | 6.055E-02          | 9.477E-02 |
| PB-214  | 1.549E+00               | 2.181E-01 | 6.389E-02          | 1.113E-01 |
| PO-214  | 1.549E+00               | 2.181E-01 | 6.389E-02          | 1.113E-01 |
| PO-216  | 1.737E+00               | 1.733E-01 | 5.353E-02          | 8.840E-02 |
| PO-218  | 1.549E+00               | 2.181E-01 | 6.389E-02          | 1.113E-01 |
| RA-224  | 5.002E+00               | 1.578E+00 | 6.092E-01          | 8.051E-01 |
| RA-226  | 1.142E+00               | 1.857E-01 | 6.055E-02          | 9.477E-02 |
| AC-228  | 1.777E+00               | 3.617E-01 | 1.113E-01          | 1.845E-01 |
| RA-228  | 1.777E+00               | 3.617E-01 | 1.113E-01          | 1.845E-01 |
| TH-228  | 1.764E+00               | 1.759E-01 | 5.434E-02          | 8.974E-02 |
| TH-230  | 1.142E+00               | 1.857E-01 | 6.055E-02          | 9.477E-02 |
| TH-232  | 1.777E+00               | 3.617E-01 | 1.113E-01          | 1.845E-01 |
| U-234   | 1.142E+00               | 1.857E-01 | 6.055E-02          | 9.477E-02 |
| NP-237  | 1.004E+00               | 3.486E-01 | 2.054E-01          | 1.779E-01 |
| AM-243  | 4.334E-01               | 9.915E-02 | 5.676E-02          | 5.058E-02 |
| ANH-511 | 1.407E-01               | 6.990E-02 | 2.615E-02          | 3.566E-02 |

### ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L Act error | DLC<br>(pCi/GRAM ) | TPU                  |
|---------|-------------------------------------|---------------|--------------------|----------------------|
| BE-7    | -1.387E-01                          | 3.400E-01     | 2.842E-01          | 1.735E-01 NOT IDENT. |
| NA-22   | 1.234E-02                           | 5.035E-02     | 4.315E-02          | 2.569E-02 NOT IDENT. |
| NA-24   | 5.773E+05                           | 7.334E+05     | 0.000E+00          | 3.742E+05 SHORT HLIF |
| AL-26   | -3.829E-02                          | 2.870E-02     | 1.560E-02          | 1.464E-02 NOT IDENT. |



|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| TI-44   | 3.884E-01  | 6.282E-02 | 4.852E-02 | 3.205E-02 | FAIL ABUN  |
| SC-46   | 1.086E-02  | 4.144E-02 | 3.653E-02 | 2.114E-02 | FAIL ABUN  |
| V-48    | -2.063E-02 | 7.894E-02 | 6.580E-02 | 4.027E-02 | NOT IDENT. |
| CR-51   | -5.460E-01 | 4.047E-01 | 3.264E-01 | 2.065E-01 | NOT IDENT. |
| MN-52   | 1.085E-02  | 2.284E-01 | 1.905E-01 | 1.165E-01 | FAIL ABUN  |
| MN-54   | -8.768E-03 | 4.104E-02 | 3.491E-02 | 2.094E-02 | NOT IDENT. |
| CO-56   | 3.388E-02  | 4.422E-02 | 4.050E-02 | 2.256E-02 | FAIL ABUN  |
| CO-57   | 1.280E-02  | 2.899E-02 | 2.598E-02 | 1.479E-02 | NOT IDENT. |
| CO-58   | -1.563E-02 | 4.495E-02 | 3.790E-02 | 2.294E-02 | NOT IDENT. |
| FE-59   | 2.497E-02  | 1.142E-01 | 9.850E-02 | 5.829E-02 | NOT IDENT. |
| CO-60   | 3.432E-02  | 4.487E-02 | 4.039E-02 | 2.289E-02 | NOT IDENT. |
| ZN-65   | -3.005E-03 | 1.092E-01 | 7.897E-02 | 5.571E-02 | NOT IDENT. |
| GE-68   | 3.094E-01  | 1.536E+00 | 1.325E+00 | 7.836E-01 | NOT IDENT. |
| AS-73   | -3.603E-01 | 1.111E+00 | 1.005E+00 | 5.670E-01 | NOT IDENT. |
| AS-74   | 5.597E-03  | 9.561E-02 | 8.147E-02 | 4.878E-02 | NOT IDENT. |
| SE-75   | 1.879E-02  | 5.966E-02 | 4.493E-02 | 3.044E-02 | NOT IDENT. |
| BR-77   | 3.516E+00  | 1.157E+01 | 1.012E+01 | 5.901E+00 | FAIL ABUN  |
| SR-82   | -1.128E-01 | 4.254E-01 | 3.626E-01 | 2.171E-01 | NOT IDENT. |
| RB-83   | 1.934E-02  | 7.677E-02 | 6.692E-02 | 3.917E-02 | NOT IDENT. |
| RB-84   | -8.290E-02 | 7.638E-02 | 5.899E-02 | 3.897E-02 | NOT IDENT. |
| KR-85   | 1.336E+01  | 8.858E+00 | 7.448E+00 | 4.520E+00 | NOT IDENT. |
| SR-85   | 6.851E-02  | 4.541E-02 | 3.818E-02 | 2.317E-02 | NOT IDENT. |
| RB-86   | -1.012E-01 | 9.916E-01 | 8.340E-01 | 5.059E-01 | NOT IDENT. |
| Y-88    | 6.130E-03  | 3.488E-02 | 3.039E-02 | 1.780E-02 | NOT IDENT. |
| ZR-88   | -2.774E-02 | 3.483E-02 | 2.896E-02 | 1.777E-02 | NOT IDENT. |
| Y-91    | -2.213E+01 | 2.291E+01 | 1.762E+01 | 1.169E+01 | NOT IDENT. |
| NB-94   | -5.832E-03 | 3.892E-02 | 3.222E-02 | 1.986E-02 | NOT IDENT. |
| NB-95   | 3.189E-02  | 5.063E-02 | 4.415E-02 | 2.583E-02 | NOT IDENT. |
| NB-95M  | 5.521E-01  | 1.812E-01 | 1.524E-01 | 9.247E-02 | NOT IDENT. |
| ZR-95   | 4.727E-02  | 8.544E-02 | 7.433E-02 | 4.359E-02 | NOT IDENT. |
| NB-97   | -1.812E+04 | 1.181E+05 | 0.000E+00 | 6.025E+04 | SHORT HLIF |
| ZR-97   | 4.514E+06  | 2.320E+06 | 0.000E+00 | 1.184E+06 | SHORT HLIF |
| MO-99   | 3.845E+00  | 1.167E+01 | 1.004E+01 | 5.952E+00 | NOT IDENT. |
| TC-99M  | -2.236E+16 | 4.048E+16 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | -2.245E-02 | 3.845E-02 | 3.105E-02 | 1.962E-02 | NOT IDENT. |
| RH-102  | 1.073E-02  | 3.179E-02 | 2.802E-02 | 1.622E-02 | NOT IDENT. |
| RU-103  | 2.419E-02  | 4.536E-02 | 4.031E-02 | 2.314E-02 | FAIL ABUN  |
| RH-106  | -1.760E-01 | 3.611E-01 | 2.929E-01 | 1.842E-01 | FAIL ABUN  |
| RU-106  | -1.760E-01 | 3.607E-01 | 2.929E-01 | 1.840E-01 | FAIL ABUN  |
| AG-108M | -5.347E-03 | 3.605E-02 | 3.096E-02 | 1.839E-02 | NOT IDENT. |
| AG-110M | -1.042E-02 | 4.328E-02 | 3.579E-02 | 2.208E-02 | NOT IDENT. |
| IN-111  | -4.550E-01 | 1.370E+00 | 9.911E-01 | 6.989E-01 | NOT IDENT. |
| IN-113M | -3.109E-02 | 5.117E-02 | 4.309E-02 | 2.611E-02 | NOT IDENT. |
| SN-113  | -3.109E-02 | 5.117E-02 | 4.309E-02 | 2.611E-02 | NOT IDENT. |
| IN-114M | -3.406E-02 | 2.394E-01 | 1.789E-01 | 1.221E-01 | NOT IDENT. |
| CD-115  | 8.379E+00  | 1.182E+01 | 1.062E+01 | 6.028E+00 | NOT IDENT. |
| SN-117M | 3.602E-03  | 5.987E-02 | 5.225E-02 | 3.055E-02 | NOT IDENT. |
| SB-122  | 1.792E+00  | 2.291E+00 | 2.058E+00 | 1.169E+00 | NOT IDENT. |
| I-123   | 2.823E+06  | 6.032E+06 | 0.000E+00 | 3.078E+06 | SHORT HLIF |
| TE-123M | 1.445E-02  | 3.087E-02 | 2.737E-02 | 1.575E-02 | NOT IDENT. |
| I-124   | -1.065E+00 | 8.945E-01 | 5.686E-01 | 4.564E-01 | NOT IDENT. |
| SB-124  | -2.742E-02 | 8.055E-02 | 6.408E-02 | 4.109E-02 | FAIL ABUN  |
| SB-125  | 3.680E-02  | 9.989E-02 | 8.868E-02 | 5.096E-02 | FAIL ABUN  |
| TE-125M | -3.015E-01 | 1.037E+01 | 9.186E+00 | 5.289E+00 | NOT IDENT. |
| I-126   | -2.907E-02 | 2.141E-01 | 1.782E-01 | 1.092E-01 | NOT IDENT. |
| SB-126  | -1.360E-01 | 1.909E-01 | 1.251E-01 | 9.740E-02 | FAIL ABUN  |
| SB-127  | 8.665E-01  | 1.437E+00 | 1.268E+00 | 7.333E-01 | NOT IDENT. |
| XE-127  | -2.581E-03 | 5.675E-02 | 4.694E-02 | 2.895E-02 | NOT IDENT. |
| I-131   | -3.902E-02 | 1.262E-01 | 1.087E-01 | 6.439E-02 | NOT IDENT. |
| TE-132  | -5.092E-01 | 8.171E-01 | 6.747E-01 | 4.169E-01 | NOT IDENT. |
| BA-133  | -3.071E-02 | 5.356E-02 | 3.887E-02 | 2.733E-02 | NOT IDENT. |
| I-133   | 8.441E+02  | 6.580E+03 | 0.000E+00 | 3.357E+03 | SHORT HLIF |
| CS-134  | 8.042E-02  | 5.203E-02 | 4.996E-02 | 2.655E-02 | NOT IDENT. |
| CS-135  | 3.610E-01  | 2.159E-01 | 1.750E-01 | 1.101E-01 | NOT IDENT. |
| I-135   | 9.588E+14  | 5.744E+15 | 0.000E+00 | 2.931E+15 | SHORT HLIF |
| CS-136  | -4.378E-02 | 1.213E-01 | 9.954E-02 | 6.186E-02 | FAIL ABUN  |
| BA-137M | 2.112E-02  | 4.437E-02 | 3.860E-02 | 2.264E-02 | NOT IDENT. |
| CS-137  | 2.233E-02  | 4.690E-02 | 4.080E-02 | 2.393E-02 | NOT IDENT. |
| CE-139  | 2.584E-02  | 3.421E-02 | 3.055E-02 | 1.745E-02 | NOT IDENT. |
| BA-140  | 3.008E-01  | 2.964E-01 | 2.583E-01 | 1.512E-01 | NOT IDENT. |
| LA-140  | -3.297E-02 | 9.340E-02 | 7.555E-02 | 4.765E-02 | FAIL ABUN  |
| CE-141  | 3.583E-02  | 7.135E-02 | 6.352E-02 | 3.640E-02 | NOT IDENT. |
| CE-143  | 9.495E+02  | 2.851E+02 | 0.000E+00 | 1.454E+02 | SHORT HLIF |
| CE-144  | 3.156E-02  | 2.704E-01 | 2.094E-01 | 1.380E-01 | NOT IDENT. |
| PM-144  | -7.940E-03 | 4.101E-02 | 3.386E-02 | 2.092E-02 | NOT IDENT. |
| PR-144  | -5.380E-01 | 2.779E+00 | 2.294E+00 | 1.418E+00 | NOT IDENT. |
| PM-146  | 1.784E-02  | 4.997E-02 | 4.414E-02 | 2.549E-02 | NOT IDENT. |
| ND-147  | -1.288E-01 | 6.259E-01 | 5.270E-01 | 3.193E-01 | FAIL ABUN  |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| PM-149  | -8.756E+01 | 1.027E+02 | 8.709E+01 | 5.237E+01 | NOT IDENT. |
| EU-152  | -1.260E-02 | 1.541E-01 | 9.206E-02 | 7.862E-02 | NOT IDENT. |
| GD-153  | 1.227E-02  | 1.015E-01 | 8.001E-02 | 5.181E-02 | FAIL ABUN  |
| EU-154  | 2.798E-02  | 1.400E-01 | 1.195E-01 | 7.143E-02 | NOT IDENT. |
| EU-155  | 1.088E-01  | 1.227E-01 | 1.121E-01 | 6.261E-02 | FAIL ABUN  |
| TB-160  | 3.649E-02  | 1.437E-01 | 1.267E-01 | 7.332E-02 | FAIL ABUN  |
| HO-166M | 5.027E-02  | 7.146E-02 | 6.308E-02 | 3.646E-02 | FAIL ABUN  |
| TM-171  | -3.322E+01 | 3.514E+01 | 3.070E+01 | 1.793E+01 | NOT IDENT. |
| LU-176  | 2.544E-02  | 2.602E-02 | 2.309E-02 | 1.328E-02 | FAIL ABUN  |
| LU-177  | 2.667E+00  | 1.584E+00 | 1.181E+00 | 8.084E-01 | FAIL ABUN  |
| LU-177M | -3.305E-02 | 2.123E-01 | 1.830E-01 | 1.083E-01 | FAIL ABUN  |
| HF-181  | -5.926E-02 | 4.690E-02 | 3.660E-02 | 2.393E-02 | NOT IDENT. |
| W-181   | 2.246E-01  | 4.551E-01 | 4.159E-01 | 2.322E-01 | NOT IDENT. |
| TA-182  | 5.446E-02  | 2.495E-01 | 2.130E-01 | 1.273E-01 | FAIL ABUN  |
| RE-183  | -1.601E-02 | 1.254E-01 | 1.085E-01 | 6.398E-02 | FAIL ABUN  |
| RE-184  | -3.165E-01 | 2.774E-01 | 2.210E-01 | 1.415E-01 | NOT IDENT. |
| OS-185  | 4.615E-02  | 4.785E-02 | 4.337E-02 | 2.441E-02 | NOT IDENT. |
| RE-188  | -8.186E-03 | 1.906E-01 | 1.658E-01 | 9.723E-02 | NOT IDENT. |
| W-188   | -8.053E-04 | 9.230E+00 | 7.150E+00 | 4.709E+00 | NOT IDENT. |
| IR-192  | -1.857E-02 | 3.667E-02 | 3.155E-02 | 1.871E-02 | FAIL ABUN  |
| AU-195  | 5.859E-01  | 2.814E-01 | 2.392E-01 | 1.436E-01 | FAIL ABUN  |
| TL-200  | -2.239E+02 | 4.862E+02 | 0.000E+00 | 2.480E+02 | SHORT HLIF |
| TL-201  | 6.662E-01  | 7.972E+00 | 6.943E+00 | 4.067E+00 | NOT IDENT. |
| TL-202  | -7.397E-03 | 7.624E-02 | 6.563E-02 | 3.890E-02 | NOT IDENT. |
| HG-203  | 1.791E-02  | 4.792E-02 | 4.255E-02 | 2.445E-02 | FAIL ABUN  |
| BI-207  | 8.480E-03  | 6.231E-02 | 5.354E-02 | 3.179E-02 | FAIL ABUN  |
| TL-207  | 9.173E-01  | 7.890E-01 | 6.484E-01 | 4.026E-01 | FAIL ABUN  |
| PO-209  | -9.269E-01 | 7.843E+00 | 6.677E+00 | 4.001E+00 | NOT IDENT. |
| BI-210  | -2.491E-01 | 5.282E+00 | 4.779E+00 | 2.695E+00 | NOT IDENT. |
| PB-210  | -2.491E-01 | 5.282E+00 | 4.779E+00 | 2.695E+00 | NOT IDENT. |
| PO-210  | -2.491E-01 | 5.282E+00 | 4.779E+00 | 2.695E+00 | NOT IDENT. |
| PB-211  | -7.758E-01 | 1.174E+00 | 8.968E-01 | 5.990E-01 | NOT IDENT. |
| BI-212  | 1.196E+00  | 5.946E-01 | 4.049E-01 | 3.034E-01 | FAIL ABUN  |
| PO-215  | 9.173E-01  | 7.890E-01 | 6.484E-01 | 4.026E-01 | FAIL ABUN  |
| RN-219  | -2.104E-01 | 4.586E-01 | 3.881E-01 | 2.340E-01 | FAIL ABUN  |
| RN-220  | -7.289E+00 | 3.038E+01 | 2.547E+01 | 1.550E+01 | NOT IDENT. |
| RA-223  | 9.173E-01  | 7.890E-01 | 6.484E-01 | 4.026E-01 | FAIL ABUN  |
| AC-227  | 2.256E-01  | 4.544E-01 | 3.934E-01 | 2.319E-01 | FAIL ABUN  |
| TH-227  | 2.256E-01  | 4.549E-01 | 3.934E-01 | 2.321E-01 | FAIL ABUN  |
| TH-229  | 2.327E-01  | 5.668E-01 | 4.965E-01 | 2.892E-01 | FAIL ABUN  |
| PA-231  | -7.139E-01 | 1.762E+00 | 1.538E+00 | 8.989E-01 | FAIL ABUN  |
| TH-231  | 9.173E-01  | 7.890E-01 | 6.484E-01 | 4.026E-01 | FAIL ABUN  |
| U-231   | -1.684E+00 | 1.405E+00 | 1.035E+00 | 7.169E-01 | FAIL ABUN  |
| PA-233  | 2.040E-03  | 6.685E-02 | 5.928E-02 | 3.411E-02 | FAIL ABUN  |
| PA-234  | -1.182E-02 | 3.558E-01 | 3.041E-01 | 1.816E-01 | FAIL ABUN  |
| PA-234M | -3.599E-01 | 4.940E+00 | 4.132E+00 | 2.521E+00 | NOT IDENT. |
| TH-234  | 1.106E+00  | 1.658E+00 | 1.512E+00 | 8.458E-01 | FAIL ABUN  |
| U-235   | 7.500E-02  | 2.457E-01 | 2.143E-01 | 1.253E-01 | FAIL ABUN  |
| NP-236  | -7.481E-03 | 8.832E-02 | 7.659E-02 | 4.506E-02 | NOT IDENT. |
| U-238   | 1.106E+00  | 1.658E+00 | 1.512E+00 | 8.458E-01 | FAIL ABUN  |
| NP-239  | -2.840E-02 | 2.115E-01 | 1.860E-01 | 1.079E-01 | FAIL ABUN  |
| AM-241  | -1.680E-01 | 1.964E-01 | 1.736E-01 | 1.002E-01 | NOT IDENT. |
| CM-243  | 1.608E-02  | 1.088E-01 | 9.726E-02 | 5.552E-02 | FAIL ABUN  |
| AM-246  | 1.866E-01  | 1.742E-01 | 1.605E-01 | 8.886E-02 | NOT IDENT. |
| CM-247  | 1.730E-02  | 4.059E-02 | 3.624E-02 | 2.071E-02 | NOT IDENT. |
| CF-249  | 4.340E-02  | 4.682E-02 | 4.285E-02 | 2.389E-02 | NOT IDENT. |
| CF-251  | 6.086E-02  | 1.459E-01 | 1.284E-01 | 7.444E-02 | NOT IDENT. |

\*\*\*\*\*  
 \* GEL Laboratories LLC \*  
 \* 2040 SAVAGE ROAD \*  
 \* CHARLESTON, SC 29417 \*  
 \* GAMMA SPECTROSCOPY BACKGROUND REPORT \*  
 \*\*\*\*\*

| ENERGY | MDA COUNTS |
|--------|------------|
|--------|------------|

|       |          |
|-------|----------|
| 46.50 | 397.5088 |
| 46.50 | 397.5088 |
| 46.50 | 397.5088 |
| 48.70 | 403.6225 |
| 49.72 | 407.9853 |
| 51.35 | 379.9837 |
| 52.39 | 372.4457 |
| 52.97 | 390.1736 |
| 53.15 | 402.1749 |
| 53.44 | 404.2003 |
| 54.07 | 395.4732 |
| 56.28 | 418.0498 |
| 56.28 | 418.0515 |
| 57.37 | 0.0000   |
| 57.53 | 404.1697 |
| 57.53 | 404.1706 |
| 57.60 | 396.8488 |
| 57.98 | 400.7767 |
| 57.98 | 400.7767 |
| 59.32 | 446.8743 |
| 59.32 | 446.8743 |
| 59.40 | 446.9306 |
| 59.54 | 478.4323 |
| 59.72 | 480.4164 |
| 60.01 | 478.7870 |
| 61.10 | 486.0842 |
| 61.14 | 487.9661 |
| 61.30 | 488.0878 |
| 63.00 | 478.2233 |
| 63.29 | 475.6470 |
| 63.29 | 475.6470 |
| 63.58 | 470.2810 |
| 64.28 | 454.9623 |
| 65.12 | 496.5258 |
| 65.20 | 496.5848 |
| 65.20 | 496.5848 |
| 66.05 | 537.3281 |
| 66.72 | 551.8644 |
| 66.83 | 551.9568 |
| 66.91 | 572.5712 |
| 67.20 | 552.2567 |
| 67.20 | 552.2567 |
| 67.75 | 543.3488 |
| 67.85 | 543.4286 |
| 68.90 | 537.0779 |
| 68.90 | 537.0779 |
| 69.30 | 538.6382 |
| 69.67 | 517.6706 |
| 70.82 | 506.4955 |
| 70.82 | 506.4955 |
| 70.83 | 506.5038 |
| 72.80 | 510.9291 |
| 72.87 | 510.9788 |
| 72.87 | 510.9788 |
| 74.67 | 515.6574 |
| 74.81 | 515.7574 |
| 74.81 | 515.7574 |
| 74.81 | 515.7574 |
| 74.81 | 515.7574 |
| 74.81 | 515.7574 |
| 74.81 | 515.7574 |
| 74.97 | 515.8699 |
| 75.28 | 516.0906 |
| 75.70 | 516.3864 |
| 77.11 | 517.3778 |
| 77.11 | 517.3778 |

|        |          |
|--------|----------|
| 77.11  | 517.3778 |
| 77.11  | 517.3778 |
| 77.11  | 517.3778 |
| 77.11  | 517.3778 |
| 77.11  | 517.3778 |
| 78.38  | 448.0222 |
| 79.62  | 429.7469 |
| 79.80  | 429.8487 |
| 79.80  | 429.8487 |
| 80.11  | 464.2761 |
| 80.18  | 464.3189 |
| 80.30  | 464.3915 |
| 80.30  | 464.3915 |
| 80.57  | 464.5572 |
| 81.00  | 464.8197 |
| 81.07  | 464.8625 |
| 81.07  | 464.8625 |
| 81.07  | 464.8625 |
| 81.07  | 464.8625 |
| 82.60  | 435.2477 |
| 83.37  | 502.9419 |
| 83.78  | 497.0909 |
| 83.78  | 497.0909 |
| 83.78  | 497.0909 |
| 83.78  | 497.0909 |
| 84.21  | 382.5897 |
| 84.90  | 382.9269 |
| 85.43  | 383.1848 |
| 86.29  | 383.6029 |
| 86.50  | 383.7051 |
| 86.54  | 383.7234 |
| 86.59  | 383.7479 |
| 86.72  | 383.8120 |
| 86.79  | 383.8440 |
| 86.94  | 383.9172 |
| 87.30  | 425.5731 |
| 87.30  | 425.5731 |
| 87.30  | 425.5731 |
| 87.30  | 425.5731 |
| 87.30  | 425.5731 |
| 87.30  | 425.5731 |
| 87.57  | 425.7168 |
| 87.88  | 425.8824 |
| 88.03  | 425.9619 |
| 88.36  | 426.1360 |
| 88.47  | 426.1952 |
| 89.95  | 426.9763 |
| 91.11  | 427.5850 |
| 92.29  | 428.1987 |
| 92.38  | 428.2460 |
| 92.38  | 428.2460 |
| 93.35  | 428.7481 |
| 94.00  | 429.0829 |
| 94.67  | 429.4236 |
| 94.67  | 429.4261 |
| 94.90  | 434.1965 |
| 94.90  | 434.1965 |
| 94.90  | 434.1965 |
| 94.90  | 434.1965 |
| 95.87  | 473.5095 |
| 95.87  | 473.5095 |
| 96.73  | 453.7888 |
| 97.43  | 399.7241 |
| 98.44  | 350.3650 |
| 98.44  | 350.3664 |
| 98.88  | 311.5955 |
| 99.55  | 322.7527 |
| 99.55  | 322.7527 |
| 99.86  | 326.2471 |
| 100.00 | 326.2995 |
| 100.10 | 326.3391 |
| 103.18 | 422.7336 |
| 103.76 | 371.1133 |
| 105.00 | 356.9226 |
| 105.31 | 360.9697 |
| 108.00 | 405.3362 |
| 109.28 | 372.4081 |

|        |          |
|--------|----------|
| 111.00 | 363.2355 |
| 111.00 | 363.2355 |
| 111.76 | 390.2054 |
| 112.95 | 358.0630 |
| 115.19 | 342.0625 |
| 116.30 | 351.3964 |
| 117.00 | 351.6544 |
| 117.00 | 351.6544 |
| 117.66 | 359.8499 |
| 121.11 | 347.1690 |
| 121.62 | 338.3676 |
| 121.78 | 347.4066 |
| 122.06 | 347.5062 |
| 122.32 | 343.6024 |
| 122.32 | 343.6024 |
| 122.32 | 343.6024 |
| 122.32 | 343.6024 |
| 123.07 | 375.8523 |
| 127.23 | 367.7886 |
| 129.76 | 401.5145 |
| 131.20 | 367.6166 |
| 133.02 | 348.8827 |
| 133.54 | 371.6836 |
| 135.34 | 351.0797 |
| 136.00 | 363.4481 |
| 136.25 | 366.5736 |
| 136.48 | 376.7823 |
| 140.51 | 382.2823 |
| 140.51 | 0.0000   |
| 142.18 | 332.9801 |
| 142.65 | 357.5743 |
| 143.76 | 367.1191 |
| 144.24 | 368.3014 |
| 144.24 | 368.3014 |
| 144.24 | 368.3014 |
| 144.24 | 368.3014 |
| 145.22 | 350.2514 |
| 145.44 | 351.3434 |
| 147.16 | 376.4453 |
| 152.43 | 306.2826 |
| 152.70 | 309.4395 |
| 153.22 | 315.7529 |
| 154.21 | 333.5268 |
| 154.21 | 333.5268 |
| 154.21 | 333.5268 |
| 154.21 | 333.5268 |
| 155.03 | 334.7992 |
| 156.02 | 335.0893 |
| 158.56 | 307.9309 |
| 159.00 | 0.0000   |
| 159.00 | 293.5749 |
| 160.31 | 319.7784 |
| 161.27 | 345.9359 |
| 162.32 | 340.0242 |
| 162.64 | 338.0429 |
| 163.35 | 329.9464 |
| 163.89 | 326.9839 |
| 165.85 | 315.0486 |
| 167.43 | 327.9584 |
| 171.28 | 301.8501 |
| 171.86 | 309.3104 |
| 172.10 | 309.3714 |
| 176.55 | 309.4448 |
| 176.60 | 309.4561 |
| 181.06 | 338.5667 |
| 184.41 | 334.3957 |
| 185.71 | 320.1552 |
| 186.00 | 320.2292 |
| 190.27 | 318.9574 |
| 192.34 | 310.7232 |
| 193.63 | 278.5289 |
| 197.04 | 304.8286 |
| 198.01 | 297.5848 |
| 198.60 | 315.8550 |
| 200.40 | 264.9929 |
| 201.83 | 298.4320 |
| 202.84 | 313.1830 |
| 205.31 | 322.5765 |

|        |          |
|--------|----------|
| 208.36 | 316.4162 |
| 208.81 | 284.9106 |
| 209.75 | 240.9924 |
| 209.75 | 240.9924 |
| 210.97 | 270.4934 |
| 215.65 | 251.7364 |
| 216.55 | 248.6531 |
| 218.09 | 305.2017 |
| 222.10 | 262.6473 |
| 223.80 | 243.3987 |
| 226.40 | 271.0482 |
| 227.00 | 292.9402 |
| 227.08 | 286.4222 |
| 227.20 | 286.4463 |
| 228.16 | 289.9025 |
| 228.18 | 289.9066 |
| 228.18 | 289.9066 |
| 231.56 | 0.0000   |
| 235.69 | 273.4171 |
| 236.00 | 278.7333 |
| 236.00 | 278.7333 |
| 238.63 | 246.9538 |
| 238.63 | 246.9538 |
| 238.63 | 246.9538 |
| 238.63 | 246.9538 |
| 239.00 | 247.0139 |
| 240.98 | 247.3383 |
| 241.98 | 247.5014 |
| 241.98 | 247.5014 |
| 241.98 | 247.5014 |
| 244.69 | 225.6813 |
| 245.39 | 234.6041 |
| 247.94 | 207.6058 |
| 248.90 | 207.7349 |
| 249.79 | 215.5932 |
| 252.40 | 249.1785 |
| 252.85 | 253.6817 |
| 252.85 | 253.6817 |
| 254.15 | 0.0000   |
| 256.20 | 218.6972 |
| 256.20 | 218.6972 |
| 260.50 | 249.3442 |
| 260.90 | 240.5017 |
| 262.80 | 234.0967 |
| 264.65 | 210.7061 |
| 268.24 | 202.2248 |
| 268.79 | 198.7133 |
| 269.46 | 207.7493 |
| 269.46 | 207.7493 |
| 269.46 | 207.7493 |
| 269.46 | 207.7493 |
| 271.23 | 193.6327 |
| 273.65 | 271.1254 |
| 276.40 | 224.8138 |
| 277.35 | 203.5725 |
| 277.60 | 199.1034 |
| 277.60 | 199.1034 |
| 278.00 | 209.7284 |
| 278.60 | 211.6033 |
| 279.20 | 214.3830 |
| 279.53 | 230.6406 |
| 280.46 | 236.1774 |
| 281.68 | 216.5039 |
| 283.67 | 219.4683 |
| 284.30 | 216.8408 |
| 285.00 | 203.3707 |
| 285.90 | 217.0459 |
| 286.10 | 212.5471 |
| 286.10 | 212.5471 |
| 287.40 | 205.1676 |
| 288.45 | 0.0000   |
| 290.67 | 194.9802 |
| 290.80 | 194.9933 |
| 291.72 | 214.7594 |
| 293.26 | 0.0000   |
| 293.70 | 199.8665 |
| 295.21 | 204.5847 |
| 295.21 | 204.5847 |

|        |          |
|--------|----------|
| 295.21 | 204.5847 |
| 295.96 | 204.6753 |
| 296.50 | 204.7385 |
| 297.23 | 204.8236 |
| 298.57 | 204.9802 |
| 299.80 | 142.8283 |
| 299.80 | 142.8283 |
| 300.09 | 142.8512 |
| 300.09 | 142.8512 |
| 300.09 | 142.8512 |
| 300.09 | 142.8512 |
| 300.12 | 142.8531 |
| 301.29 | 158.1561 |
| 302.84 | 140.0308 |
| 303.76 | 137.0581 |
| 303.91 | 137.0691 |
| 304.40 | 137.1075 |
| 304.40 | 137.1075 |
| 304.84 | 140.1881 |
| 306.84 | 125.8548 |
| 308.46 | 165.8209 |
| 311.98 | 151.4588 |
| 316.51 | 163.8004 |
| 318.01 | 160.2533 |
| 319.02 | 165.8694 |
| 319.41 | 163.1395 |
| 320.08 | 175.1864 |
| 323.87 | 129.3513 |
| 323.87 | 129.3513 |
| 323.87 | 129.3513 |
| 323.87 | 129.3513 |
| 325.23 | 135.6094 |
| 328.77 | 173.6961 |
| 333.44 | 162.5201 |
| 334.20 | 162.5864 |
| 334.20 | 162.5864 |
| 334.30 | 162.5949 |
| 338.28 | 141.9877 |
| 338.28 | 141.9877 |
| 338.28 | 141.9877 |
| 338.28 | 141.9877 |
| 338.32 | 141.9896 |
| 338.32 | 141.9896 |
| 338.32 | 141.9896 |
| 340.50 | 156.9125 |
| 340.57 | 156.9166 |
| 344.27 | 152.5508 |
| 345.85 | 140.2112 |
| 350.59 | 0.0000   |
| 351.07 | 136.8411 |
| 351.92 | 136.8999 |
| 351.92 | 136.8999 |
| 351.92 | 136.8999 |
| 355.39 | 0.0000   |
| 356.01 | 150.3398 |
| 364.48 | 141.5460 |
| 366.43 | 139.7961 |
| 367.43 | 137.0296 |
| 367.94 | 0.0000   |
| 369.80 | 137.1907 |
| 374.96 | 142.2821 |
| 383.85 | 171.4790 |
| 387.95 | 135.5448 |
| 388.63 | 148.9560 |
| 391.69 | 153.9543 |
| 391.69 | 153.9543 |
| 392.90 | 152.1292 |
| 398.62 | 126.6375 |
| 400.65 | 146.9245 |
| 401.10 | 142.1537 |
| 401.81 | 140.2791 |
| 402.60 | 123.0297 |
| 404.84 | 155.8716 |
| 410.95 | 133.1552 |
| 411.60 | 138.0215 |
| 413.65 | 154.5742 |
| 414.70 | 145.9495 |
| 415.30 | 132.4545 |

|        |          |
|--------|----------|
| 415.76 | 144.0873 |
| 417.63 | 0.0000   |
| 418.52 | 130.7120 |
| 423.70 | 138.7826 |
| 427.08 | 108.8623 |
| 427.89 | 107.9296 |
| 432.53 | 120.8198 |
| 433.93 | 116.0192 |
| 439.47 | 114.3492 |
| 439.56 | 114.3535 |
| 439.89 | 116.3257 |
| 443.98 | 104.7822 |
| 444.90 | 100.9053 |
| 445.03 | 100.9116 |
| 445.03 | 100.9116 |
| 445.03 | 100.9116 |
| 445.03 | 100.9116 |
| 453.90 | 113.1006 |
| 463.38 | 110.5973 |
| 468.07 | 107.1881 |
| 473.00 | 108.0713 |
| 475.06 | 96.2552  |
| 475.35 | 91.3048  |
| 476.78 | 99.3030  |
| 477.59 | 100.3305 |
| 477.96 | 103.3259 |
| 482.03 | 118.4277 |
| 484.57 | 83.6832  |
| 487.03 | 89.7517  |
| 490.36 | 0.0000   |
| 492.35 | 108.9348 |
| 497.08 | 92.1213  |
| 507.63 | 0.0000   |
| 510.53 | 0.0000   |
| 510.84 | 92.6283  |
| 511.00 | 92.6340  |
| 511.85 | 92.6660  |
| 511.85 | 92.6660  |
| 513.99 | 89.0472  |
| 513.99 | 89.0472  |
| 520.41 | 90.9558  |
| 520.65 | 90.9646  |
| 527.90 | 81.0859  |
| 528.96 | 0.0000   |
| 529.64 | 92.2975  |
| 529.87 | 0.0000   |
| 531.02 | 95.3907  |
| 537.32 | 73.2410  |
| 543.00 | 107.0405 |
| 546.56 | 0.0000   |
| 549.76 | 101.1825 |
| 552.65 | 93.1062  |
| 555.20 | 92.1709  |
| 563.23 | 82.1738  |
| 563.90 | 82.1953  |
| 568.70 | 85.4276  |
| 569.32 | 86.4773  |
| 569.50 | 85.4539  |
| 569.67 | 85.4580  |
| 573.80 | 92.8059  |
| 574.00 | 91.7812  |
| 574.64 | 92.8345  |
| 578.91 | 82.6465  |
| 579.30 | 0.0000   |
| 583.14 | 88.9815  |
| 585.48 | 98.3770  |
| 591.81 | 80.9555  |
| 592.07 | 73.6972  |
| 593.00 | 72.6831  |
| 595.88 | 75.8747  |
| 600.56 | 80.1657  |
| 602.52 | 0.0000   |
| 602.71 | 116.3449 |
| 602.71 | 116.3449 |
| 603.60 | 104.2236 |
| 604.41 | 81.6648  |
| 604.70 | 81.6724  |
| 609.31 | 80.0639  |



|        |          |
|--------|----------|
| 609.31 | 80.0639  |
| 609.31 | 80.0639  |
| 609.31 | 80.0639  |
| 610.33 | 83.5742  |
| 612.46 | 99.3186  |
| 614.37 | 87.1806  |
| 618.01 | 67.0391  |
| 621.84 | 89.1525  |
| 621.84 | 89.1525  |
| 631.29 | 68.3976  |
| 633.02 | 74.7545  |
| 633.10 | 74.7563  |
| 634.78 | 79.0137  |
| 635.90 | 76.9352  |
| 636.97 | 87.5066  |
| 645.85 | 76.1361  |
| 646.12 | 65.5677  |
| 656.30 | 93.3797  |
| 657.75 | 100.8563 |
| 657.90 | 0.0000   |
| 661.65 | 93.5451  |
| 661.65 | 93.5451  |
| 664.57 | 0.0000   |
| 666.33 | 92.6244  |
| 666.33 | 92.6244  |
| 675.00 | 70.4650  |
| 677.61 | 81.2102  |
| 685.20 | 59.9854  |
| 692.80 | 83.7548  |
| 695.00 | 84.8884  |
| 696.49 | 92.4542  |
| 696.49 | 92.4542  |
| 697.00 | 91.3937  |
| 697.49 | 90.3328  |
| 698.33 | 83.9014  |
| 698.50 | 84.9829  |
| 699.00 | 83.9205  |
| 702.63 | 87.2470  |
| 706.10 | 91.6552  |
| 706.58 | 0.0000   |
| 706.67 | 88.4363  |
| 709.31 | 73.3988  |
| 711.68 | 73.4536  |
| 713.82 | 94.0390  |
| 717.42 | 69.7372  |
| 720.50 | 84.8471  |
| 721.93 | 0.0000   |
| 722.20 | 88.5045  |
| 722.78 | 84.9064  |
| 722.78 | 84.9064  |
| 722.89 | 84.9102  |
| 722.95 | 84.9121  |
| 723.30 | 70.4669  |
| 724.18 | 68.6786  |
| 727.18 | 83.2140  |
| 733.00 | 74.5597  |
| 735.90 | 67.4750  |
| 739.58 | 52.2961  |
| 742.81 | 65.4346  |
| 744.21 | 65.4624  |
| 747.13 | 63.3370  |
| 751.79 | 78.7342  |
| 752.31 | 84.2150  |
| 753.82 | 78.7834  |
| 755.35 | 74.4398  |
| 756.15 | 72.2681  |
| 756.87 | 64.6177  |
| 763.93 | 107.5560 |
| 765.79 | 80.1628  |
| 766.42 | 80.1770  |
| 766.84 | 90.0739  |
| 776.49 | 76.1931  |
| 778.00 | 78.0637  |
| 778.57 | 72.5645  |
| 778.89 | 72.5710  |
| 783.80 | 54.2766  |
| 785.46 | 61.6661  |
| 792.07 | 64.5512  |

|         |         |
|---------|---------|
| 795.84  | 56.3126 |
| 796.30  | 61.8597 |
| 798.80  | 99.7866 |
| 801.93  | 60.1110 |
| 805.60  | 64.8018 |
| 810.29  | 76.9395 |
| 810.76  | 74.1683 |
| 815.85  | 70.5619 |
| 817.79  | 68.7427 |
| 818.51  | 64.1105 |
| 819.60  | 71.5656 |
| 826.30  | 62.3886 |
| 828.27  | 0.0000  |
| 831.60  | 65.2789 |
| 831.96  | 62.4881 |
| 834.83  | 72.8060 |
| 836.80  | 0.0000  |
| 846.75  | 56.1890 |
| 848.13  | 62.7689 |
| 856.28  | 0.0000  |
| 856.80  | 51.5145 |
| 860.37  | 67.6787 |
| 867.32  | 72.6494 |
| 867.82  | 67.8149 |
| 871.10  | 66.9323 |
| 873.19  | 58.4807 |
| 874.81  | 61.3382 |
| 875.33  | 0.0000  |
| 876.40  | 62.3074 |
| 879.36  | 48.1850 |
| 880.27  | 54.8128 |
| 880.51  | 53.8712 |
| 881.50  | 68.0654 |
| 883.24  | 64.3131 |
| 884.67  | 54.8765 |
| 889.25  | 50.2072 |
| 896.60  | 54.1020 |
| 898.02  | 54.1217 |
| 899.00  | 56.0351 |
| 903.28  | 51.9785 |
| 911.07  | 48.5907 |
| 911.07  | 48.5907 |
| 911.07  | 48.5907 |
| 919.63  | 50.9267 |
| 920.93  | 38.5554 |
| 925.00  | 60.2404 |
| 925.24  | 61.2005 |
| 926.50  | 70.0219 |
| 935.52  | 60.8154 |
| 937.48  | 62.4895 |
| 944.10  | 62.4583 |
| 946.00  | 64.4114 |
| 949.00  | 64.4605 |
| 962.29  | 84.3958 |
| 964.01  | 71.1873 |
| 966.15  | 79.5084 |
| 968.20  | 65.7380 |
| 969.11  | 65.7533 |
| 969.11  | 65.7533 |
| 969.11  | 65.7533 |
| 977.42  | 49.9980 |
| 980.50  | 55.2721 |
| 983.50  | 57.2547 |
| 989.30  | 46.6465 |
| 996.32  | 63.2756 |
| 1001.03 | 49.7040 |
| 1001.68 | 47.7618 |
| 1004.76 | 57.5524 |
| 1021.30 | 0.0000  |
| 1024.50 | 0.0000  |
| 1034.80 | 44.2145 |
| 1036.00 | 45.2083 |
| 1037.82 | 54.0780 |
| 1038.57 | 58.0205 |
| 1038.76 | 0.0000  |
| 1045.16 | 45.3075 |
| 1046.59 | 55.1751 |
| 1048.07 | 58.1501 |

|         |         |
|---------|---------|
| 1050.47 | 51.2806 |
| 1050.47 | 51.2806 |
| 1062.04 | 56.3645 |
| 1063.62 | 59.3530 |
| 1076.63 | 68.4609 |
| 1077.35 | 62.5181 |
| 1078.86 | 51.6191 |
| 1085.78 | 55.6787 |
| 1099.22 | 65.8228 |
| 1112.02 | 66.8708 |
| 1112.84 | 63.4544 |
| 1115.52 | 53.1948 |
| 1120.29 | 71.1473 |
| 1120.29 | 71.1473 |
| 1120.29 | 71.1473 |
| 1120.29 | 71.1473 |
| 1120.51 | 71.1502 |
| 1121.28 | 71.1618 |
| 1124.00 | 0.0000  |
| 1129.67 | 72.2988 |
| 1131.51 | 0.0000  |
| 1147.95 | 0.0000  |
| 1167.94 | 64.8073 |
| 1173.22 | 77.0483 |
| 1175.09 | 81.1361 |
| 1177.93 | 64.9479 |
| 1189.05 | 60.0179 |
| 1204.90 | 83.6950 |
| 1205.75 | 0.0000  |
| 1213.00 | 86.9057 |
| 1221.42 | 78.8673 |
| 1230.97 | 73.8926 |
| 1235.34 | 93.3304 |
| 1236.41 | 0.0000  |
| 1238.25 | 66.8091 |
| 1246.25 | 60.2281 |
| 1260.41 | 0.0000  |
| 1271.85 | 46.5729 |
| 1274.45 | 46.5967 |
| 1274.54 | 46.5985 |
| 1291.56 | 49.8750 |
| 1298.22 | 0.0000  |
| 1312.09 | 31.3000 |
| 1325.50 | 39.7519 |
| 1325.50 | 39.7519 |
| 1332.49 | 27.2367 |
| 1333.61 | 30.3853 |
| 1360.21 | 24.2241 |
| 1362.66 | 0.0000  |
| 1365.15 | 20.0298 |
| 1368.21 | 17.2612 |
| 1368.53 | 0.0000  |
| 1376.25 | 23.5444 |
| 1384.27 | 16.3251 |
| 1394.10 | 25.4414 |
| 1395.20 | 26.5076 |
| 1407.95 | 30.8219 |
| 1434.06 | 19.2246 |
| 1436.60 | 23.5075 |
| 1457.56 | 0.0000  |
| 1460.81 | 18.2465 |
| 1489.15 | 28.0503 |
| 1509.49 | 15.5918 |
| 1596.49 | 24.4992 |
| 1620.62 | 6.6230  |
| 1678.03 | 0.0000  |
| 1691.02 | 16.2737 |
| 1691.02 | 16.2737 |
| 1706.46 | 0.0000  |
| 1750.46 | 0.0000  |
| 1764.49 | 11.6237 |
| 1764.49 | 11.6237 |
| 1764.49 | 11.6237 |
| 1764.49 | 11.6237 |
| 1770.23 | 6.7866  |
| 1771.40 | 34.9089 |
| 1791.20 | 0.0000  |
| 1808.65 | 15.6060 |

1836.01

10.7744

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G1202015450

|                             |            |      |
|-----------------------------|------------|------|
| Total Uranium Activity      | 3.3236E+00 | ug/g |
| Total Uranium Counting Unc. | 4.9331E+00 | ug/g |
| Total Uranium Tpu           | 2.5169E-06 | ug/g |
| Total Uranium Mda           | 4.5005E+00 | ug/g |

```

*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON , SC 29417              *
*               GROSS GAMMA REPORT                 *
*
*****
*
*  BATCH ID      : 941639                          SAMPLE ID   : G1202015450
*  ANALYST       : MXR1                            DETECTOR    : GAM06
*  SAMPLE DATE   : 8-JAN-2010 12:00:00.00          COUNT TIME   : 0 02:00:00.00
*  ANALYSIS DATE : 23-JAN-2010 14:07:57.11          SAMPLE ALQT  : 136.730 GRAM
*
*****

```

```

GROSS GAMMA ACTIVITY (pCi/GRAM ) : 9.363E+00
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.491E+00
GROSS GAMMA MDA      (pCi/GRAM ) : 4.116E+00
GROSS GAMMA DLC      (pCi/GRAM ) : 2.003E+00

```

VAX/VMS Nuclide Identification Report Generated 23-JAN-2010 15:08:52.89

```

*****
*                               GEL Laboratories LLC                      *
*                               2040 Savage Road                        *
*                               Charleston, SC 29414                    *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202015451.CNF;1
Sample date        : 15-JAN-2010 00:00:00 Acquisition date : 23-JAN-2010 14:08:28
Sample ID          : G1202015451 Sample quantity : 1.55440E+02 GRAM
Detector name      : GAM07 Detector geometry: CAN
Elapsed live time  : 0 01:00:00.00 Elapsed real time: 0 01:00:01.30 0.0%
Energy tolerance   : 1.50000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 941639 Detector SN# :
Matrix Spike ID    : LCS ID : 1032-A
*****

```

| Pk | It | Energy   | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | Fit      |
|----|----|----------|------|-------|------|---------|------|----|----------|------|----------|
| 1  | 0  | 59.51    | 4500 | 1193  | 0.98 | 118.67  | 113  | 12 | 1.25E+00 | 2.2  |          |
| 2  | 3  | 74.84*   | 189  | 437   | 1.34 | 149.34  | 144  | 15 | 5.26E-02 | 21.1 | 1.10E+00 |
| 3  | 3  | 77.17*   | 248  | 361   | 1.04 | 154.00  | 144  | 15 | 6.89E-02 | 13.8 |          |
| 4  | 2  | 88.03*   | 1754 | 365   | 1.11 | 175.71  | 172  | 18 | 4.87E-01 | 3.0  | 4.99E+00 |
| 5  | 2  | 90.11    | 92   | 297   | 1.24 | 179.86  | 172  | 18 | 2.55E-02 | 48.9 |          |
| 6  | 2  | 92.99*   | 99   | 273   | 1.15 | 185.62  | 172  | 18 | 2.74E-02 | 32.6 |          |
| 7  | 0  | 122.26   | 250  | 389   | 1.00 | 244.16  | 238  | 11 | 6.95E-02 | 16.6 |          |
| 8  | 0  | 185.74*  | 98   | 293   | 1.73 | 371.10  | 366  | 11 | 2.72E-02 | 35.8 |          |
| 9  | 4  | 238.74*  | 486  | 165   | 1.20 | 477.07  | 470  | 18 | 1.35E-01 | 6.5  | 1.46E+00 |
| 10 | 4  | 241.78   | 132  | 250   | 1.69 | 483.16  | 470  | 18 | 3.67E-02 | 25.5 |          |
| 11 | 0  | 295.47*  | 123  | 205   | 1.38 | 590.52  | 586  | 9  | 3.42E-02 | 23.1 |          |
| 12 | 0  | 299.71   | 39   | 196   | 0.93 | 598.99  | 598  | 9  | 1.08E-02 | 66.0 |          |
| 13 | 0  | 338.33*  | 100  | 172   | 1.87 | 676.22  | 671  | 10 | 2.78E-02 | 26.7 |          |
| 14 | 0  | 352.06*  | 202  | 188   | 1.25 | 703.67  | 699  | 10 | 5.61E-02 | 14.7 |          |
| 15 | 0  | 510.89*  | 36   | 142   | 3.60 | 1021.29 | 1016 | 12 | 1.00E-02 | 73.4 |          |
| 16 | 0  | 583.72*  | 186  | 144   | 1.28 | 1166.92 | 1160 | 14 | 5.18E-02 | 15.7 |          |
| 17 | 0  | 609.46*  | 121  | 119   | 1.26 | 1218.40 | 1214 | 10 | 3.35E-02 | 19.4 |          |
| 18 | 0  | 661.83   | 2260 | 182   | 1.48 | 1323.11 | 1316 | 14 | 6.28E-01 | 2.5  |          |
| 19 | 0  | 911.35   | 132  | 145   | 0.83 | 1822.10 | 1812 | 17 | 3.67E-02 | 22.6 |          |
| 20 | 0  | 1173.41  | 1829 | 77    | 1.95 | 2346.16 | 2338 | 17 | 5.08E-01 | 2.6  |          |
| 21 | 0  | 1332.77  | 1636 | 29    | 2.00 | 2664.86 | 2655 | 18 | 4.55E-01 | 2.6  |          |
| 22 | 0  | 1461.73* | 16   | 15    | 1.61 | 2922.76 | 2917 | 9  | 4.38E-03 | 53.7 |          |

Flag: "\*" = Peak area was modified by background subtraction

## VMS Nuclide Identification Report V3.1 Generated 23-JAN-2010 15:08:56

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202015451.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 15-JAN-2010 00:00:00 Acquisition date : 23-JAN-2010 14:08:28
Sample ID         : G1202015451 Sample quantity : 155.44 GRAM
Sample type       : SOLID Sample geometry :
Detector name     : GAMMA7 Detector geometry: CAN
Elapsed live time : 0 01:00:00.00 Elapsed real time: 0 01:00:01.30 0.0%
Peak Width (FWHM): 3.00 Confidence level : 5.00 %
Energy tolerance : 1.50 keV Half life ratio : 8.00
Errors propagated: Yes Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 75.00 WTM error limit : 3.00

```

## Full Combined Activity-MDA Report

## ---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| K-40    | +         | 1460.81      | *   | 6.330E-01           | 6.825E-01 | 4.989E-01      | 4.285E-02 | 1.269   |
| CO-57   | +         | 122.06       | *   | 2.042E-01           | 6.983E-02 | 5.535E-02      | 4.762E-03 | 3.689   |
|         |           | 136.48       |     | 3.152E-01           | 3.097E-01 | 5.174E-01      | 4.658E-02 | 0.609   |
| CO-60   | +         | 1173.22      |     | 6.526E+00           | 6.290E-01 | 1.276E-01      | 1.038E-02 | 51.155  |
|         | +         | 1332.49      | *   | 6.512E+00           | 6.306E-01 | 1.010E-01      | 8.274E-03 | 64.467  |
| CD-109  | +         | 88.03        | *   | 3.360E+01           | 3.741E+00 | 1.641E+00      | 1.546E-01 | 20.478  |
| SN-126  |           | 64.28        |     | -3.738E-01          | 5.938E-01 | 8.529E-01      | 1.237E-01 | -0.438  |
|         | +         | 86.94        |     | 1.386E+01           | 5.816E+00 | 8.144E-01      | 3.380E-01 | 17.024  |
|         | +         | 87.57        | *   | 3.335E+00           | 3.713E-01 | 1.632E-01      | 1.529E-02 | 20.433  |
| BA-137M | +         | 661.65       | *   | 5.440E+00           | 5.506E-01 | 1.189E-01      | 1.052E-02 | 45.762  |
| CS-137  | +         | 661.65       | *   | 5.751E+00           | 5.828E-01 | 1.257E-01      | 1.114E-02 | 45.762  |
| TL-208  |           | 277.35       |     | 1.580E-01           | 6.152E-01 | 1.033E+00      | 1.265E-01 | 0.153   |
|         | +         | 510.84       |     | 2.927E-01           | 4.312E-01 | 4.039E-01      | 4.920E-02 | 0.725   |
|         | +         | 583.14       | *   | 4.319E-01           | 1.419E-01 | 1.119E-01      | 1.071E-02 | 3.859   |
|         |           | 860.37       |     | 3.691E-01           | 6.880E-01 | 1.145E+00      | 1.120E-01 | 0.322   |
| BI-211  |           | 72.87        |     | -1.166E+00          | 3.925E+00 | 5.681E+00      | 4.484E-01 | -0.205  |
|         | +         | 351.07       | *   | 2.048E+00           | 6.281E-01 | 6.617E-01      | 5.936E-02 | 3.095   |
| PB-212  | +         | 74.81        |     | 1.406E+00           | 6.193E-01 | 6.402E-01      | 7.896E-02 | 2.197   |
|         | +         | 77.11        |     | 1.063E+00           | 3.056E-01 | 3.702E-01      | 3.055E-02 | 2.872   |
|         | +         | 87.30        |     | 1.542E+01           | 2.308E+00 | 9.029E-01      | 1.235E-01 | 17.082  |
|         | +         | 238.63       | *   | 1.072E+00           | 1.727E-01 | 1.430E-01      | 1.367E-02 | 7.498   |
|         | +         | 300.09       |     | 1.327E+00           | 1.757E+00 | 1.914E+00      | 1.985E-01 | 0.693   |
| PO-212  | +         | 74.81        |     | 1.406E+00           | 6.193E-01 | 6.402E-01      | 7.896E-02 | 2.197   |
|         | +         | 77.11        |     | 1.063E+00           | 3.056E-01 | 3.702E-01      | 3.055E-02 | 2.872   |
|         | +         | 87.30        |     | 1.542E+01           | 2.308E+00 | 9.029E-01      | 1.235E-01 | 17.082  |
|         | +         | 115.19       |     | 3.062E+00           | 4.962E+00 | 8.227E+00      | 7.086E-01 | 0.372   |
|         | +         | 238.63       | *   | 1.072E+00           | 1.727E-01 | 1.430E-01      | 1.367E-02 | 7.498   |
|         | +         | 300.09       |     | 1.327E+00           | 1.757E+00 | 1.914E+00      | 1.985E-01 | 0.693   |
| PB-214  | +         | 74.81        |     | 2.423E+00           | 1.058E+00 | 1.103E+00      | 1.207E-01 | 2.197   |
|         | +         | 77.11        |     | 1.823E+00           | 5.420E-01 | 6.346E-01      | 7.128E-02 | 2.872   |
|         | +         | 87.30        |     | 2.642E+01           | 3.578E+00 | 1.547E+00      | 1.873E-01 | 17.082  |
|         | +         | 241.98       |     | 1.752E+00           | 9.112E-01 | 8.611E-01      | 8.740E-02 | 2.035   |
|         | +         | 295.21       |     | 7.366E-01           | 3.488E-01 | 3.679E-01      | 3.894E-02 | 2.002   |
|         | +         | 351.92       | *   | 7.122E-01           | 2.216E-01 | 2.249E-01      | 2.333E-02 | 3.167   |



---- Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PO-214  | +         | 74.81        |     | 2.423E+00           | 1.058E+00 | 1.103E+00      | 1.207E-01 | 2.197   |
|         | +         | 77.11        |     | 1.823E+00           | 5.420E-01 | 6.346E-01      | 7.128E-02 | 2.872   |
|         | +         | 87.30        |     | 2.642E+01           | 3.578E+00 | 1.547E+00      | 1.873E-01 | 17.082  |
|         | +         | 241.98       |     | 1.752E+00           | 9.112E-01 | 8.611E-01      | 8.740E-02 | 2.035   |
|         | +         | 295.21       |     | 7.366E-01           | 3.488E-01 | 3.679E-01      | 3.894E-02 | 2.002   |
| PO-216  | +         | 351.92       | *   | 7.122E-01           | 2.216E-01 | 2.249E-01      | 2.333E-02 | 3.167   |
|         | +         | 74.81        |     | 1.406E+00           | 6.193E-01 | 6.402E-01      | 7.896E-02 | 2.197   |
|         | +         | 77.11        |     | 1.063E+00           | 3.056E-01 | 3.702E-01      | 3.055E-02 | 2.872   |
|         | +         | 87.30        |     | 1.542E+01           | 2.308E+00 | 9.029E-01      | 1.235E-01 | 17.082  |
|         | +         | 238.63       | *   | 1.072E+00           | 1.727E-01 | 1.430E-01      | 1.367E-02 | 7.498   |
| PO-218  | +         | 300.09       |     | 1.327E+00           | 1.757E+00 | 1.914E+00      | 1.985E-01 | 0.693   |
|         | +         | 74.81        |     | 2.423E+00           | 1.058E+00 | 1.103E+00      | 1.207E-01 | 2.197   |
|         | +         | 77.11        |     | 1.823E+00           | 5.420E-01 | 6.346E-01      | 7.128E-02 | 2.872   |
|         | +         | 87.30        |     | 2.642E+01           | 3.578E+00 | 1.547E+00      | 1.873E-01 | 17.082  |
|         | +         | 241.98       |     | 1.752E+00           | 9.112E-01 | 8.611E-01      | 8.740E-02 | 2.035   |
| RA-224  | +         | 295.21       |     | 7.366E-01           | 3.488E-01 | 3.679E-01      | 3.894E-02 | 2.002   |
|         | +         | 351.92       | *   | 7.122E-01           | 2.216E-01 | 2.249E-01      | 2.333E-02 | 3.167   |
|         | +         | 240.98       | *   | 3.323E+00           | 1.718E+00 | 1.627E+00      | 1.376E-01 | 2.042   |
|         | +         | 74.81        |     | 1.418E+00           | 6.106E-01 | 6.457E-01      | 5.248E-02 | 2.197   |
|         | +         | 77.11        |     | 1.072E+00           | 3.082E-01 | 3.733E-01      | 3.081E-02 | 2.872   |
| TH-228  | +         | 87.30        |     | 1.556E+01           | 1.732E+00 | 9.107E-01      | 8.503E-02 | 17.082  |
|         | +         | 238.63       | *   | 1.081E+00           | 1.742E-01 | 1.442E-01      | 1.379E-02 | 7.498   |
|         | +         | 300.09       |     | 1.338E+00           | 1.937E+00 | 1.931E+00      | 1.144E+00 | 0.693   |
|         | +         | 59.54        | *   | 1.425E+01           | 1.287E+00 | 3.629E-01      | 2.877E-02 | 39.258  |
|         | +         | 74.67        | *   | 2.280E-01           | 9.812E-02 | 1.040E-01      | 8.358E-03 | 2.193   |
| AM-241  | +         | 86.72        |     | 3.672E+02           | 4.089E+01 | 2.160E+01      | 2.002E+00 | 17.004  |
|         |           | 117.66       |     | -2.072E+00          | 6.172E+00 | 8.659E+00      | 7.448E-01 | -0.239  |
|         |           | 142.18       |     | 1.709E+00           | 2.534E+01 | 4.059E+01      | 3.350E+00 | 0.042   |
| ANH-511 | +         | 511.00       | *   | 6.323E-02           | 9.298E-02 | 8.726E-02      | 7.753E-03 | 0.725   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM)      | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|---------------------|-----------|---------|
| BE-7    |           | 477.59       | *   | 2.220E-02           | 6.577E-01 | 1.056E+00           | 9.970E-02 | 0.021   |
| NA-22   |           | 1274.54      | *   | 6.571E-04           | 4.680E-02 | 7.751E-02           | 6.362E-03 | 0.008   |
| NA-24   |           | 1368.53      | *   | 3.977E-04           | 4.680E-02 | Half-Life too short |           |         |
| AL-26   |           | 1129.67      |     | 1.468E+00           | 2.979E+00 | 5.173E+00           | 4.346E-01 | 0.284   |
|         |           | 1808.65      | *   | 2.866E-03           | 4.348E-02 | 7.355E-02           | 5.998E-03 | 0.039   |
| TI-44   |           | 67.85        |     | -5.990E-03          | 5.213E-02 | 8.537E-02           | 6.441E-03 | -0.070  |
|         | +         | 78.38        | *   | 1.961E-01           | 5.638E-02 | 8.679E-02           | 7.266E-03 | 2.260   |
| SC-46   |           | 889.25       | *   | -1.650E-02          | 8.681E-02 | 1.389E-01           | 1.273E-02 | -0.119  |
|         |           | 1120.51      |     | 3.912E-02           | 9.767E-02 | 1.685E-01           | 1.424E-02 | 0.232   |
| V-48    |           | 944.10       |     | -4.092E-01          | 1.692E+00 | 2.687E+00           | 2.443E-01 | -0.152  |
|         |           | 983.50       | *   | -4.122E-02          | 1.167E-01 | 1.823E-01           | 1.641E-02 | -0.226  |
| CR-51   |           | 1312.09      |     | -2.830E-02          | 7.597E-02 | 1.179E-01           | 9.664E-03 | -0.240  |
|         |           | 320.08       | *   | -1.565E-02          | 5.567E-01 | 9.142E-01           | 8.261E-02 | -0.017  |
| MN-52   |           | 744.21       |     | -8.075E-02          | 2.157E-01 | 3.449E-01           | 3.131E-02 | -0.234  |
|         |           | 848.13       |     | -2.274E-01          | 6.442E+00 | 1.047E+01           | 9.610E-01 | -0.022  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         |           | 935.52       |     | -7.917E-02          | 2.908E-01 | 4.615E-01      | 4.203E-02 | -0.172  |
|         |           | 1246.25      |     | 2.329E+00           | 3.845E+00 | 6.844E+00      | 5.606E-01 | 0.340   |
|         | +         | 1333.61      |     | 3.723E+02           | 3.606E+01 | 4.284E+01      | 3.510E+00 | 8.690   |
|         |           | 1434.06      | *   | -2.065E-03          | 1.160E-01 | 1.892E-01      | 1.573E-02 | -0.011  |
| MN-54   |           | 834.83       | *   | -2.204E-02          | 7.518E-02 | 1.199E-01      | 1.101E-02 | -0.184  |
| CO-56   |           | 846.75       | *   | 6.129E-02           | 8.097E-02 | 1.388E-01      | 1.274E-02 | 0.442   |
|         |           | 977.42       |     | -4.662E+00          | 6.035E+00 | 9.060E+00      | 8.170E-01 | -0.515  |
|         |           | 1037.82      |     | -2.027E-02          | 6.469E-01 | 1.084E+00      | 1.005E-01 | -0.019  |
|         |           | 1175.09      |     | 2.867E+02           | 2.744E+01 | 3.280E+01      | 2.670E+00 | 8.742   |
|         |           | 1238.25      |     | 9.060E-02           | 9.971E-02 | 1.814E-01      | 1.533E-02 | 0.499   |
|         |           | 1360.21      |     | 1.014E-01           | 1.055E+00 | 1.765E+00      | 1.453E-01 | 0.057   |
|         |           | 1771.40      |     | -7.508E-01          | 4.056E-01 | 4.242E-01      | 3.484E-02 | -1.770  |
| CO-58   |           | 810.76       | *   | -1.175E-02          | 7.894E-02 | 1.276E-01      | 1.173E-02 | -0.092  |
| FE-59   |           | 142.65       |     | -3.544E+00          | 3.674E+00 | 5.550E+00      | 4.577E-01 | -0.639  |
|         |           | 192.34       |     | 3.698E-01           | 1.313E+00 | 2.244E+00      | 2.947E-01 | 0.165   |
|         |           | 1099.22      | *   | -3.569E-02          | 1.745E-01 | 2.872E-01      | 2.661E-02 | -0.124  |
|         |           | 1291.56      |     | 8.294E-02           | 1.376E-01 | 2.461E-01      | 2.317E-02 | 0.337   |
| ZN-65   |           | 1115.52      | *   | 8.163E-02           | 1.986E-01 | 3.401E-01      | 2.886E-02 | 0.240   |
| GE-68   |           | 1077.35      | *   | -2.145E+00          | 2.739E+00 | 4.317E+00      | 3.740E-01 | -0.497  |
| AS-73   |           | 53.44        | *   | 1.192E-01           | 1.226E+00 | 2.040E+00      | 1.532E-01 | 0.058   |
| AS-74   |           | 595.88       | *   | -9.650E-02          | 1.224E-01 | 1.921E-01      | 1.722E-02 | -0.502  |
|         |           | 634.78       |     | -9.287E-02          | 5.246E-01 | 8.619E-01      | 7.684E-02 | -0.108  |
| SE-75   |           | 66.05        |     | 1.167E+00           | 5.031E+00 | 8.352E+00      | 7.924E-01 | 0.140   |
|         |           | 96.73        |     | -7.160E-01          | 1.015E+00 | 1.395E+00      | 1.932E-01 | -0.513  |
|         | +         | 121.11       |     | 1.075E+00           | 3.756E-01 | 4.205E-01      | 4.710E-02 | 2.556   |
|         |           | 136.00       |     | 4.611E-02           | 5.641E-02 | 9.361E-02      | 7.869E-03 | 0.493   |
|         |           | 198.60       |     | -9.948E-01          | 2.605E+00 | 4.319E+00      | 3.970E-01 | -0.230  |
|         |           | 264.65       | *   | 2.204E-02           | 7.531E-02 | 1.269E-01      | 1.084E-02 | 0.174   |
|         |           | 279.53       |     | -5.337E-02          | 1.828E-01 | 2.986E-01      | 2.632E-02 | -0.179  |
|         |           | 303.91       |     | -7.064E-02          | 4.008E+00 | 5.796E+00      | 6.626E-01 | -0.012  |
|         |           | 400.65       |     | 3.071E-01           | 4.610E-01 | 7.757E-01      | 8.480E-02 | 0.396   |
| BR-77   | +         | 87.88        |     | 1.086E+03           | 1.209E+02 | 1.305E+02      | 1.228E+01 | 8.318   |
|         |           | 200.40       |     | 9.534E+00           | 3.717E+01 | 6.337E+01      | 5.210E+00 | 0.150   |
|         | +         | 239.00       |     | 2.549E+01           | 3.944E+00 | 6.464E+00      | 5.462E-01 | 3.944   |
|         |           | 249.79       |     | 1.681E+00           | 1.681E+01 | 2.817E+01      | 2.389E+00 | 0.060   |
|         |           | 281.68       |     | 5.819E+00           | 2.346E+01 | 3.933E+01      | 3.342E+00 | 0.148   |
|         |           | 297.23       |     | 3.153E+01           | 1.971E+01 | 2.461E+01      | 2.104E+00 | 1.281   |
|         |           | 303.76       |     | 5.505E-01           | 5.259E+01 | 7.621E+01      | 6.525E+00 | 0.007   |
|         |           | 439.47       |     | 6.317E+01           | 4.632E+01 | 7.982E+01      | 6.875E+00 | 0.791   |
|         |           | 484.57       |     | -3.263E+01          | 6.915E+01 | 1.071E+02      | 9.435E+00 | -0.305  |
|         |           | 520.65       | *   | -1.564E+00          | 2.903E+00 | 4.723E+00      | 4.207E-01 | -0.331  |
|         |           | 574.64       |     | -2.208E+01          | 5.743E+01 | 9.371E+01      | 8.405E+00 | -0.236  |
|         |           | 578.91       |     | 1.786E+00           | 2.616E+01 | 3.834E+01      | 3.439E+00 | 0.047   |
|         |           | 585.48       |     | 2.016E+02           | 6.111E+01 | 1.062E+02      | 9.526E+00 | 1.898   |
|         |           | 755.35       |     | 1.742E+01           | 5.030E+01 | 8.463E+01      | 7.700E+00 | 0.206   |
|         |           | 817.79       |     | -3.109E+01          | 4.327E+01 | 6.672E+01      | 6.120E+00 | -0.466  |
| SR-82   |           | 698.33       |     | 4.035E+01           | 5.044E+01 | 8.798E+01      | 7.889E+00 | 0.459   |
|         |           | 776.49       | *   | -3.461E-01          | 5.786E-01 | 9.001E-01      | 8.219E-02 | -0.385  |
|         |           | 1395.20      |     | -5.164E+00          | 1.074E+01 | 1.589E+01      | 1.315E+00 | -0.325  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| RB-83   | 520.41    | *            |     | -6.226E-02          | 1.232E-01 | 2.009E-01      | 1.789E-02 | -0.310  |
|         | 529.64    |              |     | -9.906E-02          | 1.818E-01 | 2.949E-01      | 2.632E-02 | -0.336  |
|         | 552.65    |              |     | 3.644E-02           | 3.248E-01 | 5.495E-01      | 4.922E-02 | 0.066   |
| RB-84   | 881.50    | *            |     | -7.824E-02          | 1.484E-01 | 2.318E-01      | 2.126E-02 | -0.338  |
| KR-85   | 513.99    | *            |     | 1.003E+01           | 1.493E+01 | 2.308E+01      | 2.053E+00 | 0.434   |
| SR-85   | 513.99    | *            |     | 4.800E-02           | 7.144E-02 | 1.105E-01      | 9.825E-03 | 0.434   |
| RB-86   | 1076.63   | *            |     | -3.106E-01          | 1.354E+00 | 2.230E+00      | 1.933E-01 | -0.139  |
| Y-88    | 898.02    |              |     | -3.994E-02          | 9.247E-02 | 1.451E-01      | 1.334E-02 | -0.275  |
|         | 1836.01   | *            |     | 4.896E-02           | 4.835E-02 | 9.595E-02      | 7.787E-03 | 0.510   |
| ZR-88   | 392.90    | *            |     | 9.700E-03           | 5.752E-02 | 9.431E-02      | 7.855E-03 | 0.103   |
| Y-91    | 1204.90   | *            |     | 1.933E+01           | 2.178E+01 | 3.969E+01      | 3.241E+00 | 0.487   |
| NB-94   | 702.63    | *            |     | -6.712E-02          | 6.464E-02 | 9.832E-02      | 8.828E-03 | -0.683  |
|         | 871.10    |              |     | -2.289E-02          | 8.438E-02 | 1.346E-01      | 1.235E-02 | -0.170  |
| NB-95   | 765.79    | *            |     | 1.838E-02           | 6.947E-02 | 1.163E-01      | 1.061E-02 | 0.158   |
| NB-95M  | 235.69    | *            |     | 9.112E-02           | 1.938E-01 | 2.939E-01      | 2.853E-02 | 0.310   |
| ZR-95   | 724.18    |              |     | -5.709E-02          | 1.696E-01 | 2.729E-01      | 2.660E-02 | -0.209  |
|         | 756.15    | *            |     | 4.921E-02           | 1.301E-01 | 2.196E-01      | 2.181E-02 | 0.224   |
| NB-97   | 657.90    | *            |     | 5.612E-04           | 1.301E-01 | Half-Life      | too short |         |
|         | 1024.50   |              |     | -1.650E-02          | 1.301E-01 | Half-Life      | too short |         |
| ZR-97   | 254.15    |              |     | 1.330E-02           | 1.301E-01 | Half-Life      | too short |         |
|         | 355.39    |              |     | 7.923E-03           | 1.301E-01 | Half-Life      | too short |         |
|         | 507.63    | *            |     | 6.515E-04           | 1.301E-01 | Half-Life      | too short |         |
|         | 602.52    |              |     | 8.223E-03           | 1.301E-01 | Half-Life      | too short |         |
|         | 1021.30   |              |     | 1.930E-02           | 1.301E-01 | Half-Life      | too short |         |
|         | 1147.95   |              |     | -3.555E-03          | 1.301E-01 | Half-Life      | too short |         |
|         | 1362.66   |              |     | -1.252E-02          | 1.301E-01 | Half-Life      | too short |         |
|         | 1750.46   |              |     | 5.269E-03           | 1.301E-01 | Half-Life      | too short |         |
| MO-99   | 140.51    |              |     | 8.448E-02           | 7.353E+00 | 1.175E+01      | 3.242E+00 | 0.007   |
|         | 181.06    |              |     | -6.202E-01          | 5.355E+00 | 7.961E+00      | 1.435E+00 | -0.078  |
|         | 366.43    |              |     | 9.984E+00           | 3.062E+01 | 5.087E+01      | 4.309E+00 | 0.196   |
|         | 739.58    | *            |     | 3.310E+00           | 4.752E+00 | 8.141E+00      | 1.257E+00 | 0.407   |
|         | 778.00    |              |     | -1.617E+00          | 1.219E+01 | 1.977E+01      | 1.806E+00 | -0.082  |
| TC-99M  | 140.51    | *            |     | 8.860E+00           | 1.219E+01 | Half-Life      | too short |         |
| RH-101  | 127.23    |              |     | 8.723E-03           | 4.593E-02 | 7.090E-02      | 6.021E-03 | 0.123   |
|         | 198.01    | *            |     | -2.534E-02          | 4.993E-02 | 8.233E-02      | 6.754E-03 | -0.308  |
|         | 325.23    |              |     | -3.161E-01          | 4.066E-01 | 6.390E-01      | 5.480E-02 | -0.495  |
| RH-102  | 418.52    |              |     | -8.951E-02          | 5.821E-01 | 9.328E-01      | 7.926E-02 | -0.096  |
|         | 475.06    | *            |     | 6.406E-02           | 6.528E-02 | 1.102E-01      | 9.670E-03 | 0.581   |
|         | 631.29    |              |     | 2.655E-03           | 1.051E-01 | 1.752E-01      | 1.563E-02 | 0.015   |
|         | 697.49    |              |     | 1.502E-01           | 1.349E-01 | 2.399E-01      | 2.150E-02 | 0.626   |
|         | 766.84    |              |     | -1.066E-01          | 1.954E-01 | 3.071E-01      | 2.800E-02 | -0.347  |
|         | 1046.59   |              |     | 5.294E-03           | 2.572E-01 | 4.322E-01      | 3.801E-02 | 0.012   |
|         | 1112.84   |              |     | 2.814E-01           | 4.820E-01 | 8.362E-01      | 7.100E-02 | 0.336   |
| RU-103  | 497.08    | *            |     | 3.000E-02           | 7.226E-02 | 1.186E-01      | 1.696E-02 | 0.253   |
| +       | 610.33    |              |     | 5.065E+00           | 2.147E+00 | 2.995E+00      | 5.049E-01 | 1.691   |
| RH-106  | 511.85    | +            |     | 3.119E-01           | 4.587E-01 | 5.864E-01      | 5.212E-02 | 0.532   |
|         | 621.84    | *            |     | 1.649E-01           | 5.745E-01 | 9.755E-01      | 1.323E-01 | 0.169   |
|         | 1050.47   |              |     | 5.015E+00           | 5.039E+00 | 8.986E+00      | 7.890E-01 | 0.558   |
| RU-106  | 511.85    | +            |     | 3.119E-01           | 4.587E-01 | 5.864E-01      | 5.212E-02 | 0.532   |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| AG-108M | 621.84    | *            |     | 1.649E-01           | 5.743E-01 | 9.755E-01      | 8.718E-02 | 0.169   |
|         | 1050.47   |              |     | 5.015E+00           | 5.039E+00 | 8.986E+00      | 7.890E-01 | 0.558   |
|         | 433.93    | *            |     | -1.036E-02          | 6.844E-02 | 1.094E-01      | 9.768E-03 | -0.095  |
|         | 614.37    |              |     | -1.073E-02          | 7.675E-02 | 1.096E-01      | 1.017E-02 | -0.098  |
| AG-110M | 722.95    |              |     | -2.404E-02          | 8.237E-02 | 1.330E-01      | 1.244E-02 | -0.181  |
|         | 657.75    | *            |     | 1.014E-01           | 7.897E-02 | 1.262E-01      | 1.150E-02 | 0.804   |
|         | 677.61    |              |     | 4.396E-02           | 5.143E-01 | 8.576E-01      | 7.837E-02 | 0.051   |
|         | 706.67    |              |     | 1.663E-01           | 3.906E-01 | 6.635E-01      | 6.116E-02 | 0.251   |
|         | 763.93    |              |     | 1.166E-01           | 3.030E-01 | 5.113E-01      | 4.778E-02 | 0.228   |
|         | 884.67    |              |     | 8.733E-02           | 1.119E-01 | 1.913E-01      | 1.804E-02 | 0.456   |
|         | 937.48    |              |     | 2.305E-01           | 2.684E-01 | 4.578E-01      | 4.303E-02 | 0.504   |
|         | 1384.27   |              |     | -2.308E-02          | 1.923E-01 | 3.088E-01      | 2.630E-02 | -0.075  |
| IN-111  | 171.28    |              |     | 2.774E-01           | 2.995E-01 | 4.962E-01      | 3.949E-02 | 0.559   |
|         | 245.39    | *            |     | -3.363E-01          | 4.047E-01 | 5.598E-01      | 4.741E-02 | -0.601  |
| IN-113M | 391.69    | *            |     | 2.508E-02           | 8.358E-02 | 1.380E-01      | 1.187E-02 | 0.182   |
| SN-113  | 391.69    | *            |     | 2.508E-02           | 8.358E-02 | 1.380E-01      | 1.187E-02 | 0.182   |
| IN-114M | 190.27    | *            |     | 1.686E-01           | 2.790E-01 | 4.312E-01      | 3.508E-02 | 0.391   |
| CD-115  | 260.90    |              |     | -3.527E+01          | 3.021E+01 | 4.718E+01      | 4.009E+00 | -0.748  |
|         | 492.35    |              |     | 5.360E+00           | 9.681E+00 | 1.603E+01      | 1.416E+00 | 0.334   |
|         | 527.90    | *            |     | -4.844E-01          | 2.551E+00 | 4.242E+00      | 3.785E-01 | -0.114  |
| SN-117M | 156.02    |              |     | 1.777E-01           | 2.367E+00 | 3.776E+00      | 3.042E-01 | 0.047   |
|         | 158.56    | *            |     | 1.508E-02           | 5.941E-02 | 9.554E-02      | 7.660E-03 | 0.158   |
| SB-122  | 563.90    | *            |     | -1.772E-02          | 6.928E-01 | 1.160E+00      | 1.040E-01 | -0.015  |
|         | 692.80    |              |     | -1.157E+01          | 1.375E+01 | 2.111E+01      | 1.890E+00 | -0.548  |
| I-123   | 159.00    | *            |     | 6.990E-04           | 1.375E+01 | Half-Life      | too short |         |
|         | 528.96    |              |     | -8.691E-02          | 1.375E+01 | Half-Life      | too short |         |
| TE-123M | 159.00    | *            |     | 1.333E-02           | 4.050E-02 | 6.539E-02      | 5.275E-03 | 0.204   |
| I-124   | 602.71    | *            |     | 1.544E-01           | 4.442E-01 | 7.181E-01      | 6.434E-02 | 0.215   |
|         | 722.78    |              |     | -7.794E-01          | 2.909E+00 | 4.706E+00      | 4.250E-01 | -0.166  |
|         | 1325.50   |              |     | 7.374E+00           | 1.977E+01 | 2.999E+01      | 2.457E+00 | 0.246   |
|         | 1376.25   |              |     | 4.027E+00           | 1.328E+01 | 2.283E+01      | 1.884E+00 | 0.176   |
|         | 1509.49   |              |     | 3.232E+00           | 5.903E+00 | 1.071E+01      | 8.955E-01 | 0.302   |
|         | 1691.02   |              |     | 5.339E-01           | 1.581E+00 | 2.773E+00      | 2.304E-01 | 0.193   |
|         | 602.71    |              |     | 2.465E-02           | 7.093E-02 | 1.146E-01      | 1.027E-02 | 0.215   |
|         | 645.85    |              |     | 4.963E-02           | 8.961E-01 | 1.495E+00      | 1.404E-01 | 0.033   |
|         | 709.31    |              |     | 5.927E-01           | 4.774E+00 | 7.952E+00      | 7.154E-01 | 0.075   |
|         | 713.82    |              |     | 1.087E+00           | 2.783E+00 | 4.721E+00      | 5.816E-01 | 0.230   |
|         | 722.78    |              |     | -1.804E-01          | 6.733E-01 | 1.089E+00      | 1.003E-01 | -0.166  |
|         | 968.20    |              |     | 9.395E+00           | 6.250E+00 | 1.086E+01      | 9.817E-01 | 0.865   |
|         | 1045.16   |              |     | -7.120E-01          | 5.094E+00 | 8.464E+00      | 7.449E-01 | -0.084  |
|         | 1325.50   |              |     | 1.823E+00           | 4.886E+00 | 7.413E+00      | 6.074E-01 | 0.246   |
|         | 1368.21   |              |     | 1.247E+00           | 2.237E+00 | 3.980E+00      | 5.269E-01 | 0.313   |
| SB-124  | 1436.60   |              |     | 4.237E-01           | 3.798E+00 | 6.366E+00      | 5.295E-01 | 0.067   |
|         | 1691.02   | *            |     | 2.915E-02           | 8.634E-02 | 1.514E-01      | 1.311E-02 | 0.193   |
|         | 427.89    | *            |     | -3.341E-02          | 1.826E-01 | 2.916E-01      | 2.542E-02 | -0.115  |
|         | 463.38    |              |     | 7.926E-01           | 6.572E-01 | 1.114E+00      | 1.047E-01 | 0.711   |
|         | 600.56    |              |     | 1.576E-01           | 3.208E-01 | 5.522E-01      | 5.287E-02 | 0.285   |
|         | 635.90    |              |     | -1.151E-01          | 5.149E-01 | 8.429E-01      | 8.082E-02 | -0.137  |
| TE-125M | 109.28    | *            |     | 3.059E+00           | 1.150E+01 | 1.879E+01      | 1.946E+00 | 0.163   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| I-126   | 388.63    |              |     | -1.727E-01          | 2.767E-01 | 4.323E-01      | 3.606E-02 | -0.400  |
|         | 666.33    | *            |     | -5.815E-02          | 2.739E-01 | 3.855E-01      | 3.418E-02 | -0.151  |
|         | 753.82    |              |     | 1.624E+00           | 2.055E+00 | 3.559E+00      | 3.237E-01 | 0.456   |
| SB-126  | 223.80    |              |     | 1.821E+00           | 4.517E+00 | 7.708E+00      | 6.460E-01 | 0.236   |
|         | 278.60    |              |     | -1.495E+00          | 2.980E+00 | 4.814E+00      | 4.086E-01 | -0.310  |
|         | 296.50    | +            |     | 5.086E+00           | 2.387E+00 | 3.366E+00      | 2.876E-01 | 1.511   |
|         | 414.70    |              |     | -8.326E-03          | 1.041E-01 | 1.677E-01      | 1.421E-02 | -0.050  |
|         | 415.30    |              |     | 4.248E+00           | 8.644E+00 | 1.438E+01      | 1.219E+00 | 0.295   |
|         | 555.20    |              |     | -2.616E+00          | 4.764E+00 | 7.676E+00      | 6.877E-01 | -0.341  |
|         | 573.80    |              |     | 2.945E-02           | 1.352E+00 | 2.267E+00      | 2.033E-01 | 0.013   |
|         | 593.00    |              |     | 2.896E-01           | 1.100E+00 | 1.872E+00      | 1.679E-01 | 0.155   |
|         | 656.30    |              |     | 4.084E+00           | 5.006E+00 | 7.771E+00      | 6.889E-01 | 0.526   |
|         | 666.33    |              |     | -2.394E-02          | 1.127E-01 | 1.587E-01      | 1.407E-02 | -0.151  |
|         | 675.00    |              |     | -3.619E-01          | 2.468E+00 | 4.043E+00      | 3.596E-01 | -0.090  |
|         | 695.00    |              |     | -9.428E-03          | 9.324E-02 | 1.529E-01      | 1.370E-02 | -0.062  |
|         | 697.00    |              |     | 3.561E-01           | 3.301E-01 | 5.857E-01      | 5.249E-02 | 0.608   |
|         | 720.50    | *            |     | -9.617E-02          | 1.903E-01 | 3.017E-01      | 2.723E-02 | -0.319  |
|         | 856.80    |              |     | 2.871E-01           | 7.565E-01 | 1.262E+00      | 1.159E-01 | 0.227   |
|         | 989.30    |              |     | 9.961E-01           | 2.036E+00 | 3.397E+00      | 3.052E-01 | 0.293   |
|         | 1034.80   |              |     | 9.895E-01           | 1.354E+01 | 2.285E+01      | 2.020E+00 | 0.043   |
| SB-127  | 1213.00   |              |     | -6.479E-01          | 3.453E+00 | 5.577E+00      | 4.558E-01 | -0.116  |
|         | 61.10     |              |     | 6.930E+02           | 6.848E+01 | 7.905E+01      | 6.543E+00 | 8.767   |
|         | 252.40    |              |     | -5.032E-01          | 2.346E+00 | 3.856E+00      | 1.604E+00 | -0.130  |
|         | 290.80    |              |     | -1.233E+01          | 1.330E+01 | 1.795E+01      | 1.693E+00 | -0.687  |
|         | 411.60    |              |     | -1.159E-01          | 7.483E+00 | 1.211E+01      | 1.756E+00 | -0.010  |
|         | 444.90    |              |     | 1.258E+00           | 6.794E+00 | 1.106E+01      | 1.228E+00 | 0.114   |
|         | 473.00    |              |     | -1.547E-01          | 1.191E+00 | 1.897E+00      | 2.196E-01 | -0.082  |
|         | 543.00    |              |     | 1.853E+00           | 9.113E+00 | 1.547E+01      | 2.069E+00 | 0.120   |
|         | 603.60    |              |     | 4.287E+00           | 7.296E+00 | 1.158E+01      | 1.312E+00 | 0.370   |
|         | 685.20    | *            |     | 1.998E-01           | 7.093E-01 | 1.200E+00      | 1.205E-01 | 0.167   |
|         | 698.50    |              |     | 5.111E+00           | 8.415E+00 | 1.446E+01      | 2.155E+00 | 0.353   |
|         | 722.20    |              |     | 3.397E+00           | 1.810E+01 | 3.021E+01      | 2.987E+00 | 0.112   |
|         | 783.80    |              |     | 1.494E+00           | 2.092E+00 | 3.603E+00      | 4.098E-01 | 0.415   |
| XE-127  | 57.60     |              |     | 7.901E+01           | 1.313E+01 | 2.046E+01      | 1.483E+00 | 3.861   |
|         | 145.22    |              |     | 9.361E-01           | 8.827E-01 | 1.474E+00      | 1.210E-01 | 0.635   |
|         | 172.10    |              |     | 7.593E-02           | 1.601E-01 | 2.594E-01      | 2.067E-02 | 0.293   |
|         | 202.84    | *            |     | 1.834E-03           | 6.408E-02 | 1.082E-01      | 8.913E-03 | 0.017   |
|         | 374.96    |              |     | -3.294E-01          | 3.465E-01 | 5.317E-01      | 4.481E-02 | -0.619  |
| I-131   | 80.18     |              |     | 2.068E-02           | 3.681E+00 | 5.404E+00      | 4.629E-01 | 0.004   |
|         | 284.30    |              |     | 3.581E-01           | 1.515E+00 | 2.537E+00      | 2.265E-01 | 0.141   |
|         | 364.48    | *            |     | -1.033E-02          | 1.234E-01 | 2.003E-01      | 1.786E-02 | -0.052  |
|         | 636.97    |              |     | -6.781E-01          | 1.675E+00 | 2.704E+00      | 2.527E-01 | -0.251  |
|         | 722.89    |              |     | -2.237E+00          | 7.893E+00 | 1.275E+01      | 1.154E+00 | -0.175  |
| TE-132  | 49.72     |              |     | -1.724E+00          | 6.293E+00 | 1.040E+01      | 9.127E-01 | -0.166  |
|         | 111.76    |              |     | -7.654E+00          | 1.008E+01 | 1.563E+01      | 1.472E+00 | -0.490  |
|         | 116.30    |              |     | 5.306E+00           | 1.005E+01 | 1.584E+01      | 1.487E+00 | 0.335   |
|         | 228.16    | *            |     | 3.869E-02           | 2.780E-01 | 4.686E-01      | 6.852E-02 | 0.083   |
| BA-133  | 53.15     |              |     | -2.582E-01          | 5.533E+00 | 9.179E+00      | 6.917E-01 | -0.028  |
|         | 79.62     |              |     | 9.743E-01           | 1.775E+00 | 2.669E+00      | 4.044E-01 | 0.365   |

----- Non-Identified Nuclides -----

| Nuclide          | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|------------------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| I-133            | +         | 81.00        |     | -2.965E-01          | 1.549E-01 | 1.953E-01      | 3.102E-02 | -1.518  |
|                  |           | 276.40       |     | 8.924E-02           | 6.096E-01 | 1.018E+00      | 1.463E-01 | 0.088   |
|                  |           | 302.84       |     | -9.907E-02          | 2.857E-01 | 4.027E-01      | 5.336E-02 | -0.246  |
|                  |           | 356.01       | *   | 1.521E-02           | 9.266E-02 | 1.343E-01      | 1.763E-02 | 0.113   |
|                  |           | 383.85       |     | 5.078E-01           | 5.529E-01 | 9.426E-01      | 1.172E-01 | 0.539   |
|                  |           | 510.53       |     | 3.419E-03           | 5.529E-01 | Half-Life      | too short |         |
|                  |           | 529.87       | *   | -3.294E-05          | 5.529E-01 | Half-Life      | too short |         |
|                  |           | 706.58       |     | 1.941E-03           | 5.529E-01 | Half-Life      | too short |         |
|                  |           | 856.28       |     | 1.738E-03           | 5.529E-01 | Half-Life      | too short |         |
|                  |           | 875.33       |     | 1.563E-03           | 5.529E-01 | Half-Life      | too short |         |
|                  |           | 1236.41      |     | 4.509E-03           | 5.529E-01 | Half-Life      | too short |         |
|                  |           | 1298.22      |     | -1.653E-03          | 5.529E-01 | Half-Life      | too short |         |
| CS-134           |           | 475.35       |     | 3.408E+00           | 4.270E+00 | 7.146E+00      | 6.270E-01 | 0.477   |
|                  |           | 563.23       |     | 4.580E-02           | 6.488E-01 | 1.093E+00      | 9.884E-02 | 0.042   |
|                  |           | 569.32       |     | 4.591E-02           | 3.652E-01 | 6.189E-01      | 5.620E-02 | 0.074   |
|                  |           | 604.70       |     | 1.927E-02           | 7.274E-02 | 1.080E-01      | 9.696E-03 | 0.178   |
|                  |           | 795.84       | *   | -1.999E-02          | 9.323E-02 | 1.502E-01      | 1.384E-02 | -0.133  |
|                  |           | 801.93       |     | -6.367E-01          | 7.845E-01 | 1.199E+00      | 1.104E-01 | -0.531  |
|                  |           | 1038.57      |     | 3.281E-01           | 8.403E+00 | 1.414E+01      | 1.248E+00 | 0.023   |
|                  |           | 1167.94      |     | 2.361E+00           | 5.060E+00 | 7.666E+00      | 6.264E-01 | 0.308   |
|                  |           | 1365.15      |     | 5.524E-01           | 1.523E+00 | 2.657E+00      | 2.298E-01 | 0.208   |
|                  |           | 268.24       | *   | -1.070E-01          | 2.650E-01 | 4.312E-01      | 4.252E-02 | -0.248  |
| I-135            |           | 288.45       |     | 2.088E+03           | 2.650E-01 | Half-Life      | too short |         |
|                  |           | 417.63       |     | 2.123E+03           | 2.650E-01 | Half-Life      | too short |         |
|                  |           | 546.56       |     | -5.155E+02          | 2.650E-01 | Half-Life      | too short |         |
|                  |           | 836.80       |     | -1.819E+03          | 2.650E-01 | Half-Life      | too short |         |
|                  |           | 1038.76      |     | 1.852E+02           | 2.650E-01 | Half-Life      | too short |         |
|                  |           | 1124.00      |     | -3.613E+03          | 2.650E-01 | Half-Life      | too short |         |
|                  |           | 1131.51      |     | 2.505E+02           | 2.650E-01 | Half-Life      | too short |         |
|                  |           | 1260.41      | *   | -7.708E+01          | 2.650E-01 | Half-Life      | too short |         |
|                  |           | 1457.56      |     | 5.319E+02           | 2.650E-01 | Half-Life      | too short |         |
|                  |           | 1678.03      |     | 6.367E+02           | 2.650E-01 | Half-Life      | too short |         |
|                  |           | 1706.46      |     | 4.624E+02           | 2.650E-01 | Half-Life      | too short |         |
|                  |           | 1791.20      |     | -9.380E+02          | 2.650E-01 | Half-Life      | too short |         |
| CS-136           |           | 66.91        |     | 3.665E-01           | 6.063E-01 | 1.016E+00      | 1.507E-01 | 0.361   |
|                  |           | 86.29        |     | 8.941E+00           | 1.887E+00 | 2.583E+00      | 3.424E-01 | 3.461   |
|                  |           | 153.22       |     | -6.669E-01          | 6.904E-01 | 1.037E+00      | 9.504E-02 | -0.643  |
|                  |           | 163.89       |     | -6.323E-01          | 1.148E+00 | 1.763E+00      | 1.595E-01 | -0.359  |
|                  |           | 176.55       |     | 2.145E-01           | 3.838E-01 | 6.659E-01      | 5.685E-02 | 0.322   |
|                  |           | 273.65       |     | -1.865E-01          | 5.185E-01 | 8.443E-01      | 7.654E-02 | -0.221  |
|                  |           | 340.57       |     | 1.700E-01           | 1.741E-01 | 2.674E-01      | 2.354E-02 | 0.636   |
|                  |           | 818.51       |     | -8.246E-02          | 1.167E-01 | 1.802E-01      | 1.653E-02 | -0.458  |
|                  |           | 1048.07      | *   | 3.997E-02           | 1.708E-01 | 2.910E-01      | 2.661E-02 | 0.137   |
|                  |           | 1235.34      |     | 2.357E-01           | 4.945E-01 | 8.624E-01      | 9.946E-02 | 0.273   |
| CE-139<br>BA-140 |           | 165.85       | *   | 3.874E-02           | 4.331E-02 | 7.166E-02      | 5.668E-03 | 0.541   |
|                  |           | 162.64       |     | -4.717E-01          | 7.942E-01 | 1.217E+00      | 1.034E-01 | -0.388  |
|                  |           | 304.84       |     | -2.616E-01          | 1.803E+00 | 2.581E+00      | 7.227E-01 | -0.101  |
|                  |           | 423.70       |     | 1.706E+00           | 2.778E+00 | 4.561E+00      | 1.477E+00 | 0.374   |
|                  |           | 537.32       | *   | -1.816E-01          | 3.278E-01 | 5.214E-01      | 1.732E-01 | -0.348  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| LA-140  |           | 328.77       |     | 1.369E-01           | 3.745E-01 | 6.262E-01      | 5.672E-02 | 0.219   |
|         |           | 432.53       |     | 2.838E-01           | 2.954E+00 | 4.795E+00      | 4.314E-01 | 0.059   |
|         |           | 487.03       |     | -1.329E-01          | 2.013E-01 | 3.075E-01      | 2.871E-02 | -0.432  |
|         |           | 751.79       |     | -9.084E-01          | 2.459E+00 | 3.931E+00      | 3.919E-01 | -0.231  |
|         |           | 815.85       |     | -1.635E-02          | 4.967E-01 | 8.097E-01      | 8.186E-02 | -0.020  |
|         |           | 867.82       |     | -1.733E+00          | 2.302E+00 | 3.532E+00      | 3.393E-01 | -0.491  |
|         |           | 919.63       |     | 3.210E+00           | 4.710E+00 | 7.790E+00      | 8.619E-01 | 0.412   |
|         |           | 925.24       |     | -1.348E+00          | 1.943E+00 | 2.978E+00      | 2.870E-01 | -0.453  |
|         |           | 1596.49      | *   | 3.343E-02           | 9.014E-02 | 1.556E-01      | 1.301E-02 | 0.215   |
| CE-141  |           | 145.44       | *   | 8.106E-02           | 7.810E-02 | 1.306E-01      | 1.094E-02 | 0.621   |
| CE-143  |           | 57.37        |     | 2.815E+02           | 8.452E+01 | 1.313E+02      | 1.177E+01 | 2.144   |
|         |           | 231.56       |     | 6.394E+01           | 1.558E+02 | 2.553E+02      | 8.069E+01 | 0.250   |
|         |           | 293.26       | *   | 1.212E+01           | 9.808E+00 | 1.489E+01      | 3.206E+00 | 0.814   |
|         | +         | 350.59       |     | 5.980E+02           | 2.555E+02 | 2.547E+02      | 7.914E+01 | 2.348   |
|         |           | 490.36       |     | 8.774E+01           | 2.172E+02 | 3.541E+02      | 1.123E+02 | 0.248   |
|         |           | 664.57       |     | 2.144E+03           | 7.221E+02 | 4.115E+02      | 1.335E+02 | 5.210   |
|         |           | 721.93       |     | 5.903E+01           | 1.001E+02 | 1.692E+02      | 4.970E+01 | 0.349   |
|         |           | 80.11        |     | 1.167E-01           | 2.935E+00 | 4.316E+00      | 3.687E-01 | 0.027   |
|         |           | 133.54       | *   | -2.840E-01          | 2.988E-01 | 4.501E-01      | 6.948E-02 | -0.631  |
|         |           | 476.78       |     | 1.335E-02           | 1.511E-01 | 2.434E-01      | 2.330E-02 | 0.055   |
| PM-144  |           | 618.01       |     | -8.256E-03          | 5.575E-02 | 9.191E-02      | 8.429E-03 | -0.090  |
|         |           | 696.49       | *   | 2.463E-02           | 6.083E-02 | 1.035E-01      | 9.272E-03 | 0.238   |
|         |           | 778.57       |     | -1.573E+00          | 4.196E+00 | 6.666E+00      | 6.089E-01 | -0.236  |
| PR-144  |           | 696.49       | *   | 1.663E+00           | 4.108E+00 | 6.986E+00      | 6.261E-01 | 0.238   |
|         |           | 1489.15      |     | -7.932E+00          | 1.509E+01 | 2.183E+01      | 1.823E+00 | -0.363  |
| PM-146  |           | 453.90       | *   | -3.653E-02          | 9.146E-02 | 1.434E-01      | 1.545E-02 | -0.255  |
|         |           | 633.02       |     | -1.439E-01          | 2.636E+00 | 4.368E+00      | 1.635E+00 | -0.033  |
|         |           | 735.90       |     | 1.216E-01           | 3.129E-01 | 5.256E-01      | 1.510E-01 | 0.231   |
|         |           | 747.13       |     | -1.677E-01          | 1.835E-01 | 2.783E-01      | 3.987E-02 | -0.603  |
| ND-147  | +         | 91.11        |     | 3.930E-01           | 3.867E-01 | 3.717E-01      | 3.678E-02 | 1.057   |
|         |           | 319.41       |     | -1.960E+00          | 3.923E+00 | 6.269E+00      | 5.377E-01 | -0.313  |
|         |           | 439.89       |     | 1.062E+01           | 8.558E+00 | 1.466E+01      | 1.263E+00 | 0.725   |
|         |           | 531.02       | *   | -2.201E-01          | 6.736E-01 | 1.108E+00      | 1.677E-01 | -0.199  |
| PM-149  |           | 285.90       | *   | -1.007E+01          | 2.135E+01 | 3.442E+01      | 5.324E+00 | -0.293  |
| EU-152  | +         | 121.78       |     | 6.020E-01           | 2.080E-01 | 2.424E-01      | 2.402E-02 | 2.484   |
|         |           | 244.69       |     | -4.954E-01          | 6.249E-01 | 8.680E-01      | 7.350E-02 | -0.571  |
|         |           | 344.27       | *   | -1.129E-01          | 1.937E-01 | 2.952E-01      | 2.676E-02 | -0.382  |
|         |           | 443.98       |     | -2.338E-01          | 2.151E+00 | 3.445E+00      | 2.975E-01 | -0.068  |
|         |           | 778.89       |     | -2.337E-01          | 4.862E-01 | 7.647E-01      | 6.986E-02 | -0.306  |
|         |           | 867.32       |     | -6.385E-01          | 1.913E+00 | 3.034E+00      | 2.784E-01 | -0.210  |
|         |           | 964.01       |     | -1.346E+00          | 7.943E-01 | 1.143E+00      | 1.035E-01 | -1.177  |
|         |           | 1085.78      |     | -5.146E-02          | 8.425E-01 | 1.403E+00      | 1.210E-01 | -0.037  |
|         |           | 1112.02      |     | -3.756E-02          | 6.896E-01 | 1.147E+00      | 9.747E-02 | -0.033  |
|         |           | 1407.95      |     | 2.672E-02           | 2.267E-01 | 3.793E-01      | 3.145E-02 | 0.070   |
| GD-153  |           | 69.67        |     | -9.408E-02          | 2.078E+00 | 3.054E+00      | 2.339E-01 | -0.031  |
|         |           | 83.37        |     | 7.231E+00           | 2.075E+01 | 3.280E+01      | 2.914E+00 | 0.220   |
|         |           | 97.43        | *   | -1.049E-01          | 1.101E-01 | 1.490E-01      | 1.332E-02 | -0.704  |
| EU-154  | +         | 103.18       |     | -1.392E-01          | 1.378E-01 | 2.113E-01      | 1.854E-02 | -0.659  |
|         |           | 123.07       |     | 4.225E-01           | 1.478E-01 | 1.711E-01      | 1.938E-02 | 2.469   |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| EU-155  |           | 247.94       |     | 3.332E-01           | 6.097E-01 | 1.041E+00      | 1.184E-01 | 0.320   |
|         |           | 591.81       |     | -3.294E-01          | 1.094E+00 | 1.738E+00      | 2.074E-01 | -0.190  |
|         |           | 723.30       |     | -7.714E-02          | 3.390E-01 | 5.499E-01      | 5.445E-02 | -0.140  |
|         |           | 756.87       |     | 3.360E-01           | 1.525E+00 | 2.545E+00      | 3.138E-01 | 0.132   |
|         |           | 873.19       |     | 5.243E-01           | 7.599E-01 | 1.286E+00      | 1.625E-01 | 0.408   |
|         |           | 996.32       |     | -1.611E-01          | 8.792E-01 | 1.395E+00      | 2.501E-01 | -0.116  |
|         |           | 1004.76      |     | -3.763E-01          | 5.433E-01 | 8.273E-01      | 9.827E-02 | -0.455  |
|         |           | 1274.45      | *   | 1.375E-02           | 1.297E-01 | 2.179E-01      | 2.396E-02 | 0.063   |
|         |           | 48.70        |     | -2.195E+00          | 2.998E+00 | 4.886E+00      | 3.954E-01 | -0.449  |
|         | +         | 60.01        |     | 4.623E+02           | 3.881E+01 | 3.227E+01      | 2.324E+00 | 14.324  |
| TB-160  | +         | 86.54        |     | 4.006E+00           | 4.488E-01 | 3.865E-01      | 3.605E-02 | 10.366  |
|         |           | 105.31       | *   | -2.216E-02          | 1.428E-01 | 2.294E-01      | 2.027E-02 | -0.097  |
|         | +         | 86.79        |     | 1.008E+01           | 1.122E+00 | 1.098E+00      | 1.019E-01 | 9.173   |
|         |           | 197.04       |     | -3.300E-01          | 7.900E-01 | 1.308E+00      | 1.072E-01 | -0.252  |
|         |           | 215.65       |     | -3.776E-01          | 1.122E+00 | 1.857E+00      | 1.547E-01 | -0.203  |
|         | +         | 298.57       |     | 1.813E-01           | 2.399E-01 | 3.082E-01      | 2.635E-02 | 0.588   |
|         |           | 879.36       | *   | -1.339E-01          | 3.265E-01 | 5.151E-01      | 4.724E-02 | -0.260  |
|         |           | 962.29       |     | -8.055E-02          | 1.210E+00 | 1.957E+00      | 1.772E-01 | -0.041  |
|         |           | 966.15       |     | 3.236E-01           | 4.904E-01 | 8.199E-01      | 7.416E-02 | 0.395   |
|         |           | 1177.93      |     | 1.021E+00           | 6.927E-01 | 1.157E+00      | 9.419E-02 | 0.883   |
| HO-166M |           | 1271.85      |     | 4.706E-01           | 7.208E-01 | 1.309E+00      | 1.073E-01 | 0.360   |
|         | +         | 80.57        |     | -4.437E-01          | 3.989E-01 | 5.508E-01      | 4.730E-02 | -0.806  |
|         |           | 184.41       |     | 1.129E-01           | 8.141E-02 | 8.783E-02      | 7.100E-03 | 1.286   |
|         |           | 280.46       |     | 2.477E-02           | 1.499E-01 | 2.504E-01      | 2.126E-02 | 0.099   |
|         |           | 410.95       |     | 9.499E-02           | 4.850E-01 | 7.940E-01      | 6.709E-02 | 0.120   |
|         |           | 711.68       | *   | -5.441E-02          | 1.144E-01 | 1.820E-01      | 1.639E-02 | -0.299  |
|         |           | 752.31       |     | -1.419E-01          | 5.627E-01 | 9.080E-01      | 8.256E-02 | -0.156  |
|         |           | 810.29       |     | -1.353E-02          | 1.270E-01 | 2.061E-01      | 1.889E-02 | -0.066  |
|         |           | 51.35        |     | 3.138E+01           | 4.293E+01 | 7.263E+01      | 5.608E+00 | 0.432   |
|         | +         | 52.39        |     | -9.438E+00          | 2.359E+01 | 3.881E+01      | 2.953E+00 | -0.243  |
| TM-171  | +         | 59.40        |     | 2.422E+03           | 2.033E+02 | 1.772E+02      | 1.274E+01 | 13.664  |
|         |           | 66.72        | *   | 1.790E+01           | 3.092E+01 | 5.194E+01      | 3.884E+00 | 0.345   |
|         | +         | 88.36        |     | 7.909E+00           | 8.806E-01 | 9.398E-01      | 8.832E-02 | 8.416   |
|         |           | 201.83       |     | 3.759E-03           | 4.432E-02 | 7.499E-02      | 6.175E-03 | 0.050   |
|         |           | 306.84       | *   | -4.871E-02          | 5.126E-02 | 7.333E-02      | 6.281E-03 | -0.664  |
|         |           | 401.10       |     | 9.849E+00           | 1.255E+01 | 2.126E+01      | 1.783E+00 | 0.463   |
|         | LU-177    | 112.95       |     | -2.747E-01          | 1.147E+00 | 1.829E+00      | 1.579E-01 | -0.150  |
|         |           | 208.36       | *   | 8.989E-01           | 8.485E-01 | 1.486E+00      | 1.231E-01 | 0.605   |
|         | LU-177M   | 52.97        |     | -4.925E-01          | 2.422E+00 | 4.003E+00      | 3.023E-01 | -0.123  |
|         |           | 54.07        |     | 4.854E-01           | 1.465E+00 | 2.204E+00      | 1.643E-01 | 0.220   |
| LU-176  | +         | 61.30        |     | 3.215E+01           | 3.451E+00 | 5.129E+00      | 3.713E-01 | 6.268   |
|         |           | 121.62       |     | 3.004E+00           | 1.028E+00 | 1.201E+00      | 1.032E-01 | 2.502   |
|         |           | 147.16       |     | -3.602E-01          | 9.428E-01 | 1.473E+00      | 1.205E-01 | -0.245  |
|         |           | 171.86       |     | 3.127E-01           | 7.091E-01 | 1.147E+00      | 9.137E-02 | 0.273   |
|         |           | 218.09       |     | 1.017E-01           | 1.338E+00 | 2.255E+00      | 1.882E-01 | 0.045   |
|         |           | 268.79       |     | 6.842E-01           | 1.293E+00 | 2.200E+00      | 1.870E-01 | 0.311   |
|         |           | 319.02       |     | -2.532E-01          | 4.480E-01 | 7.129E-01      | 6.114E-02 | -0.355  |
|         |           | 367.43       |     | -1.057E+00          | 1.707E+00 | 2.680E+00      | 2.269E-01 | -0.394  |
|         |           | 413.65       | *   | 2.981E-02           | 3.393E-01 | 5.520E-01      | 4.674E-02 | 0.054   |



----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| HF-181  | 56.28     |              |     | 2.211E+00           | 1.609E+00 | 2.480E+00      | 1.813E-01 | 0.892   |
|         | 57.53     |              |     | 5.210E+00           | 1.052E+00 | 1.658E+00      | 1.203E-01 | 3.141   |
|         | 65.20     |              |     | -6.703E-01          | 9.586E-01 | 1.459E+00      | 1.079E-01 | -0.460  |
|         | 133.02    |              |     | -7.824E-02          | 8.697E-02 | 1.326E-01      | 1.113E-02 | -0.590  |
|         | 136.25    |              |     | 6.383E-01           | 6.126E-01 | 1.026E+00      | 8.556E-02 | 0.622   |
|         | 345.85    |              |     | 7.553E-02           | 3.438E-01 | 5.505E-01      | 4.703E-02 | 0.137   |
|         | 482.03    | *            |     | 5.254E-03           | 7.781E-02 | 1.252E-01      | 1.102E-02 | 0.042   |
| W-181   | 56.28     |              |     | 9.302E-01           | 6.755E-01 | 1.041E+00      | 7.611E-02 | 0.893   |
|         | 57.53     |              |     | 2.169E+00           | 4.407E-01 | 6.953E-01      | 5.042E-02 | 3.119   |
|         | 65.20     | *            |     | -2.793E-01          | 3.994E-01 | 6.077E-01      | 4.497E-02 | -0.460  |
| TA-182  | 67.75     |              |     | -1.194E-02          | 1.196E-01 | 1.960E-01      | 1.477E-02 | -0.061  |
|         | 100.10    |              |     | 1.387E-01           | 2.189E-01 | 3.654E-01      | 3.236E-02 | 0.380   |
|         | 152.43    |              |     | -1.033E-01          | 4.781E-01 | 7.518E-01      | 6.095E-02 | -0.137  |
|         | 222.10    |              |     | 2.781E-01           | 5.398E-01 | 9.253E-01      | 7.746E-02 | 0.301   |
|         | 1001.68   |              |     | 3.962E+00           | 4.631E+00 | 7.882E+00      | 7.054E-01 | 0.503   |
|         | 1121.28   |              |     | 7.662E-02           | 2.756E-01 | 4.717E-01      | 3.984E-02 | 0.162   |
|         | 1189.05   |              |     | 1.249E-01           | 4.408E-01 | 7.529E-01      | 6.138E-02 | 0.166   |
|         | 1221.42   | *            |     | 1.586E-01           | 2.086E-01 | 3.785E-01      | 3.096E-02 | 0.419   |
|         | 1230.97   |              |     | -2.785E-01          | 5.202E-01 | 8.006E-01      | 6.552E-02 | -0.348  |
|         | 57.98     |              |     | 7.396E+00           | 6.858E-01 | 8.983E-01      | 6.498E-02 | 8.233   |
| RE-183  | 59.32     |              |     | 9.361E+00           | 7.859E-01 | 6.884E-01      | 4.951E-02 | 13.600  |
|         | 67.20     |              |     | 2.253E-02           | 2.087E-01 | 3.447E-01      | 2.587E-02 | 0.065   |
|         | 162.32    | *            |     | -9.435E-02          | 1.550E-01 | 2.374E-01      | 1.890E-02 | -0.397  |
|         | 208.81    |              |     | 1.152E+00           | 1.414E+00 | 2.456E+00      | 2.035E-01 | 0.469   |
|         | 291.72    |              |     | -1.038E+00          | 1.771E+00 | 2.462E+00      | 2.100E-01 | -0.422  |
|         | 57.98     |              |     | 2.831E+01           | 2.625E+00 | 3.438E+00      | 2.487E-01 | 8.233   |
|         | 59.32     |              |     | 3.580E+01           | 3.006E+00 | 2.633E+00      | 1.893E-01 | 13.600  |
| RE-184  | 67.20     |              |     | 8.619E-02           | 7.984E-01 | 1.319E+00      | 9.900E-02 | 0.065   |
|         | 161.27    |              |     | -4.266E-02          | 5.090E-01 | 8.037E-01      | 6.411E-02 | -0.053  |
|         | 216.55    |              |     | 1.087E-01           | 4.144E-01 | 7.041E-01      | 5.871E-02 | 0.154   |
|         | 252.85    | *            |     | 7.698E-02           | 3.908E-01 | 6.573E-01      | 5.579E-02 | 0.117   |
|         | 318.01    |              |     | -7.562E-02          | 7.834E-01 | 1.282E+00      | 1.099E-01 | -0.059  |
|         | 792.07    |              |     | 1.781E+00           | 1.955E+00 | 3.394E+00      | 3.106E-01 | 0.525   |
|         | 903.28    |              |     | 1.160E+00           | 2.665E+00 | 3.888E+00      | 3.557E-01 | 0.298   |
|         | 920.93    |              |     | 2.287E-01           | 1.046E+00 | 1.720E+00      | 1.570E-01 | 0.133   |
|         | 59.72     |              |     | 2.596E+01           | 2.179E+00 | 1.858E+00      | 1.337E-01 | 13.971  |
|         | 61.14     |              |     | 5.579E+00           | 5.146E-01 | 6.703E-01      | 4.849E-02 | 8.322   |
| OS-185  | 69.30     |              |     | 8.710E-02           | 3.343E-01 | 5.305E-01      | 4.051E-02 | 0.164   |
|         | 592.07    |              |     | -1.650E+00          | 4.167E+00 | 6.760E+00      | 6.061E-01 | -0.244  |
|         | 646.12    | *            |     | 1.740E-02           | 7.699E-02 | 1.299E-01      | 1.155E-02 | 0.134   |
|         | 717.42    |              |     | -2.927E-01          | 1.595E+00 | 2.594E+00      | 2.339E-01 | -0.113  |
|         | 874.81    |              |     | 8.953E-01           | 1.422E+00 | 2.401E+00      | 2.203E-01 | 0.373   |
|         | 880.27    |              |     | -1.157E-01          | 1.804E+00 | 2.918E+00      | 2.676E-01 | -0.040  |
|         | 155.03    | *            |     | -9.796E-02          | 2.327E-01 | 3.613E-01      | 2.915E-02 | -0.271  |
|         | 477.96    |              |     | 4.490E-01           | 6.330E+00 | 1.019E+01      | 8.950E-01 | 0.044   |
|         | 633.10    |              |     | -2.441E-01          | 5.002E+00 | 8.295E+00      | 7.397E-01 | -0.029  |
|         | 63.58     |              |     | -3.952E+01          | 5.646E+01 | 8.105E+01      | 5.937E+00 | -0.488  |
| W-188   | 227.08    |              |     | -7.510E+00          | 1.896E+01 | 3.117E+01      | 2.618E+00 | -0.241  |
|         | 290.67    | *            |     | -1.235E+01          | 1.404E+01 | 1.905E+01      | 1.625E+00 | -0.648  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| IR-192  | +         | 295.96       |     | 5.283E-01           | 2.480E-01 | 3.441E-01      | 2.962E-02 | 1.535   |
|         |           | 308.46       |     | 1.023E-01           | 1.667E-01 | 2.830E-01      | 2.437E-02 | 0.361   |
|         |           | 316.51       | *   | 2.448E-02           | 5.773E-02 | 9.713E-02      | 8.348E-03 | 0.252   |
|         |           | 468.07       |     | -7.896E-02          | 1.433E-01 | 2.225E-01      | 2.081E-02 | -0.355  |
|         |           | 604.41       |     | 1.722E-01           | 9.324E-01 | 1.375E+00      | 1.821E-01 | 0.125   |
| AU-195  |           | 612.46       |     | 1.681E-01           | 1.378E+00 | 2.019E+00      | 2.057E-01 | 0.083   |
|         |           | 65.12        |     | -1.282E-01          | 1.873E-01 | 2.853E-01      | 2.110E-02 | -0.449  |
|         |           | 66.83        |     | 5.516E-02           | 1.003E-01 | 1.684E-01      | 1.260E-02 | 0.328   |
|         |           | 75.70        | +   | 7.198E-01           | 3.097E-01 | 4.532E-01      | 3.683E-02 | 1.588   |
|         |           | 98.88        | *   | 1.444E-01           | 2.711E-01 | 4.511E-01      | 4.012E-02 | 0.320   |
| TL-200  |           | 129.76       |     | 1.670E+00           | 3.921E+00 | 6.415E+00      | 5.419E-01 | 0.260   |
|         |           | 367.94       | *   | -9.345E+00          | 1.359E+01 | 2.123E+01      | 1.797E+00 | -0.440  |
|         |           | 579.30       |     | 2.128E+01           | 1.111E+02 | 1.647E+02      | 1.477E+01 | 0.129   |
|         |           | 828.27       |     | 3.885E+01           | 1.722E+02 | 2.854E+02      | 2.619E+01 | 0.136   |
|         |           | 1205.75      |     | 4.759E+01           | 4.767E+01 | 8.777E+01      | 7.168E+00 | 0.542   |
| TL-201  |           | 68.90        |     | 6.839E-01           | 1.209E+00 | 2.030E+00      | 1.545E-01 | 0.337   |
|         |           | 70.82        |     | 2.885E-01           | 7.560E-01 | 1.134E+00      | 8.773E-02 | 0.255   |
|         |           | 80.30        |     | -8.414E-02          | 1.586E+00 | 2.321E+00      | 1.987E-01 | -0.036  |
|         |           | 135.34       |     | 2.686E+00           | 8.504E+00 | 1.381E+01      | 1.154E+00 | 0.194   |
|         |           | 167.43       | *   | -1.788E-01          | 2.360E+00 | 3.720E+00      | 2.947E-01 | -0.048  |
| TL-202  |           | 68.90        |     | 1.885E-01           | 3.331E-01 | 5.595E-01      | 4.258E-02 | 0.337   |
|         |           | 70.82        |     | 7.931E-02           | 2.078E-01 | 3.116E-01      | 2.411E-02 | 0.255   |
|         |           | 80.30        |     | -2.313E-02          | 4.361E-01 | 6.383E-01      | 5.464E-02 | -0.036  |
|         |           | 439.56       | *   | 1.449E-01           | 1.046E-01 | 1.804E-01      | 1.554E-02 | 0.803   |
|         |           | 70.83        |     | 4.475E-01           | 1.185E+00 | 1.775E+00      | 2.319E-01 | 0.252   |
| HG-203  |           | 72.87        |     | -2.105E-01          | 7.085E-01 | 1.025E+00      | 1.306E-01 | -0.205  |
|         |           | 82.60        |     | -2.480E-01          | 1.339E+00 | 2.174E+00      | 3.013E-01 | -0.114  |
|         |           | 279.20       | *   | -5.498E-03          | 6.363E-02 | 1.050E-01      | 9.173E-03 | -0.052  |
|         |           | 72.80        |     | -8.070E-02          | 2.286E-01 | 3.299E-01      | 2.602E-02 | -0.245  |
|         |           | 74.97        | +   | 4.091E-01           | 1.761E-01 | 2.369E-01      | 1.910E-02 | 1.727   |
| BI-207  |           | 84.90        |     | 5.125E-01           | 2.827E-01 | 4.427E-01      | 4.009E-02 | 1.158   |
|         |           | 569.67       |     | 5.838E-03           | 5.718E-02 | 9.676E-02      | 8.677E-03 | 0.060   |
|         |           | 1063.62      | *   | 6.361E-03           | 1.157E-01 | 1.946E-01      | 1.698E-02 | 0.033   |
|         |           | 1770.23      |     | -1.612E+00          | 9.113E-01 | 1.028E+00      | 8.446E-02 | -1.568  |
|         |           | 81.07        |     | -6.532E-01          | 3.311E-01 | 4.319E-01      | 3.732E-02 | -1.512  |
| TL-207  |           | 83.78        |     | 2.870E-01           | 1.892E-01 | 2.937E-01      | 2.623E-02 | 0.977   |
|         |           | 94.90        |     | 2.901E-01           | 2.997E-01 | 4.594E-01      | 4.154E-02 | 0.632   |
|         |           | 122.32       | +   | 1.435E+01           | 4.932E+00 | 5.884E+00      | 5.427E-01 | 2.439   |
|         |           | 144.24       |     | 4.040E-01           | 9.982E-01 | 1.620E+00      | 1.505E-01 | 0.249   |
|         |           | 154.21       |     | -4.032E-01          | 5.789E-01 | 8.841E-01      | 7.950E-02 | -0.456  |
| PO-209  |           | 269.46       |     | 4.580E-01           | 3.065E-01 | 5.414E-01      | 4.699E-02 | 0.846   |
|         |           | 323.87       | *   | -1.385E-01          | 1.155E+00 | 1.884E+00      | 3.332E-01 | -0.073  |
|         |           | 338.28       | +   | 4.662E+00           | 2.556E+00 | 3.370E+00      | 4.135E-01 | 1.383   |
|         |           | 445.03       |     | 1.022E+00           | 5.150E+00 | 8.385E+00      | 1.015E+00 | 0.122   |
|         |           | 260.50       |     | -7.248E+00          | 1.661E+01 | 2.703E+01      | 2.297E+00 | -0.268  |
| BI-210  |           | 262.80       |     | 6.256E+01           | 4.676E+01 | 8.213E+01      | 6.979E+00 | 0.762   |
|         |           | 896.60       | *   | -8.137E+00          | 1.685E+01 | 2.631E+01      | 2.409E+00 | -0.309  |
|         |           | 46.50        | *   | 8.669E-01           | 3.781E+00 | 6.374E+00      | 5.980E-01 | 0.136   |
|         |           | 46.50        | *   | 8.669E-01           | 3.781E+00 | 6.374E+00      | 5.980E-01 | 0.136   |
|         |           | 46.50        | *   | 8.669E-01           | 3.781E+00 | 6.374E+00      | 5.980E-01 | 0.136   |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| PO-210  |           | 46.50        | *   | 8.669E-01           | 3.781E+00 | 6.374E+00      | 5.424E-01 | 0.136   |
| PB-211  |           | 404.84       | *   | -1.596E+00          | 2.036E+00 | 2.715E+00      | 1.701E+00 | -0.588  |
|         |           | 427.08       |     | -6.899E-01          | 4.216E+00 | 6.707E+00      | 4.167E+00 | -0.103  |
|         |           | 831.96       |     | 3.285E-01           | 2.655E+00 | 4.357E+00      | 2.733E+00 | 0.075   |
| BI-212  |           | 727.18       | *   | 2.555E-01           | 5.754E-01 | 9.762E-01      | 1.013E-01 | 0.262   |
|         |           | 785.46       |     | 1.574E+00           | 3.311E+00 | 5.618E+00      | 5.136E-01 | 0.280   |
|         |           | 1620.62      |     | 5.454E-01           | 1.533E+00 | 2.680E+00      | 2.239E-01 | 0.204   |
| BI-214  | +         | 609.31       | *   | 5.264E-01           | 2.118E-01 | 3.127E-01      | 3.235E-02 | 1.684   |
|         |           | 1120.29      |     | 1.151E-01           | 6.110E-01 | 1.039E+00      | 1.116E-01 | 0.111   |
|         |           | 1764.49      |     | 8.142E-01           | 4.214E-01 | 8.649E-01      | 7.112E-02 | 0.941   |
| PO-215  |           | 81.07        |     | -6.532E-01          | 3.311E-01 | 4.319E-01      | 3.732E-02 | -1.512  |
|         |           | 83.78        |     | 2.870E-01           | 1.892E-01 | 2.937E-01      | 2.623E-02 | 0.977   |
|         |           | 94.90        |     | 2.901E-01           | 2.997E-01 | 4.594E-01      | 4.154E-02 | 0.632   |
|         | +         | 122.32       |     | 1.435E+01           | 4.932E+00 | 5.884E+00      | 5.427E-01 | 2.439   |
|         |           | 144.24       |     | 4.040E-01           | 9.982E-01 | 1.620E+00      | 1.505E-01 | 0.249   |
|         |           | 154.21       |     | -4.032E-01          | 5.789E-01 | 8.841E-01      | 7.950E-02 | -0.456  |
|         |           | 269.46       |     | 4.580E-01           | 3.065E-01 | 5.414E-01      | 4.699E-02 | 0.846   |
|         |           | 323.87       | *   | -1.385E-01          | 1.155E+00 | 1.884E+00      | 3.332E-01 | -0.073  |
|         | +         | 338.28       |     | 4.662E+00           | 2.556E+00 | 3.370E+00      | 4.135E-01 | 1.383   |
|         |           | 445.03       |     | 1.022E+00           | 5.150E+00 | 8.385E+00      | 1.015E+00 | 0.122   |
| RN-219  |           | 271.23       |     | -6.748E-02          | 3.999E-01 | 6.583E-01      | 6.721E-02 | -0.103  |
|         |           | 401.81       | *   | 5.075E-01           | 7.642E-01 | 1.283E+00      | 1.911E-01 | 0.396   |
| RN-220  |           | 549.76       | *   | 8.018E+00           | 4.649E+01 | 7.897E+01      | 7.070E+00 | 0.102   |
| RA-223  |           | 81.07        |     | -6.532E-01          | 3.311E-01 | 4.319E-01      | 3.732E-02 | -1.512  |
|         |           | 83.78        |     | 2.870E-01           | 1.892E-01 | 2.937E-01      | 2.623E-02 | 0.977   |
|         |           | 94.90        |     | 2.901E-01           | 2.997E-01 | 4.594E-01      | 4.154E-02 | 0.632   |
|         | +         | 122.32       |     | 1.435E+01           | 4.932E+00 | 5.884E+00      | 5.427E-01 | 2.439   |
|         |           | 144.24       |     | 4.040E-01           | 9.982E-01 | 1.620E+00      | 1.505E-01 | 0.249   |
|         |           | 154.21       |     | -4.032E-01          | 5.789E-01 | 8.841E-01      | 7.950E-02 | -0.456  |
|         |           | 269.46       |     | 4.580E-01           | 3.065E-01 | 5.414E-01      | 4.699E-02 | 0.846   |
|         |           | 323.87       | *   | -1.385E-01          | 1.155E+00 | 1.884E+00      | 3.332E-01 | -0.073  |
|         | +         | 338.28       |     | 4.662E+00           | 2.556E+00 | 3.370E+00      | 4.135E-01 | 1.383   |
|         |           | 445.03       |     | 1.022E+00           | 5.150E+00 | 8.385E+00      | 1.015E+00 | 0.122   |
| RA-226  | +         | 609.31       | *   | 5.264E-01           | 2.118E-01 | 3.127E-01      | 3.235E-02 | 1.684   |
|         |           | 1120.29      |     | 1.151E-01           | 6.110E-01 | 1.039E+00      | 1.116E-01 | 0.111   |
|         |           | 1764.49      |     | 8.142E-01           | 4.214E-01 | 8.649E-01      | 7.112E-02 | 0.941   |
| AC-227  |           | 79.80        |     | 1.374E+00           | 2.272E+00 | 3.408E+00      | 7.313E-01 | 0.403   |
|         |           | 236.00       |     | 3.971E-01           | 3.853E-01 | 6.006E-01      | 7.278E-02 | 0.661   |
|         |           | 256.20       | *   | 5.865E-02           | 6.584E-01 | 1.101E+00      | 1.682E-01 | 0.053   |
|         |           | 286.10       |     | -1.658E+00          | 2.811E+00 | 4.503E+00      | 5.914E-01 | -0.368  |
|         | +         | 299.80       |     | 2.458E+00           | 3.275E+00 | 4.255E+00      | 7.428E-01 | 0.578   |
|         |           | 304.40       |     | -5.245E-01          | 3.780E+00 | 5.415E+00      | 9.969E-01 | -0.097  |
|         |           | 334.20       |     | -2.010E+00          | 4.494E+00 | 6.205E+00      | 1.203E+00 | -0.324  |
| TH-227  |           | 79.80        |     | 1.374E+00           | 2.272E+00 | 3.408E+00      | 7.407E-01 | 0.403   |
|         | +         | 94.00        |     | 4.851E+00           | 3.338E+00 | 4.331E+00      | 9.514E-01 | 1.120   |
|         |           | 236.00       |     | 3.971E-01           | 3.847E-01 | 6.006E-01      | 6.569E-02 | 0.661   |
|         |           | 256.20       | *   | 5.865E-02           | 6.584E-01 | 1.101E+00      | 1.982E-01 | 0.053   |
|         |           | 286.10       |     | -1.658E+00          | 3.259E+00 | 4.503E+00      | 4.519E+00 | -0.368  |
|         | +         | 299.80       |     | 2.458E+00           | 3.275E+00 | 4.255E+00      | 7.428E-01 | 0.578   |

----- Non-Identified Nuclides -----

| Nuclide | Line Ided | Energy (keV) | Activity Key | (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|--------------|------------|-----------|----------------|-----------|---------|
|         |           | 304.40       |              | -5.245E-01 | 3.780E+00 | 5.415E+00      | 9.969E-01 | -0.097  |
|         |           | 334.20       |              | -2.010E+00 | 4.494E+00 | 6.205E+00      | 1.203E+00 | -0.324  |
| AC-228  | +         | 338.32       |              | 1.116E+00  | 7.536E-01 | 8.074E-01      | 3.331E-01 | 1.383   |
|         | +         | 911.07       | *            | 1.359E+00  | 6.340E-01 | 7.014E-01      | 8.171E-02 | 1.938   |
|         |           | 969.11       |              | 8.136E-01  | 6.893E-01 | 1.143E+00      | 2.685E-01 | 0.712   |
| RA-228  | +         | 338.32       |              | 1.116E+00  | 7.536E-01 | 8.074E-01      | 3.331E-01 | 1.383   |
|         | +         | 911.07       | *            | 1.359E+00  | 6.340E-01 | 7.014E-01      | 8.171E-02 | 1.938   |
|         |           | 969.11       |              | 8.136E-01  | 6.893E-01 | 1.143E+00      | 2.685E-01 | 0.712   |
| TH-229  |           | 85.43        |              | 4.821E-01  | 2.878E-01 | 4.475E-01      | 4.080E-02 | 1.077   |
|         | +         | 88.47        |              | 4.553E+00  | 5.069E-01 | 5.401E-01      | 5.071E-02 | 8.431   |
|         |           | 100.00       |              | 1.451E-01  | 2.377E-01 | 3.964E-01      | 1.115E-02 | 0.366   |
|         |           | 193.63       | *            | 3.496E-02  | 7.911E-01 | 1.339E+00      | 1.094E-01 | 0.026   |
|         |           | 210.97       |              | 6.375E-01  | 1.163E+00 | 2.001E+00      | 1.661E-01 | 0.319   |
| TH-230  | +         | 609.31       | *            | 5.264E-01  | 2.118E-01 | 3.127E-01      | 3.235E-02 | 1.684   |
|         |           | 1120.29      |              | 1.151E-01  | 6.110E-01 | 1.039E+00      | 1.116E-01 | 0.111   |
|         |           | 1764.49      |              | 8.142E-01  | 4.214E-01 | 8.649E-01      | 7.112E-02 | 0.941   |
| PA-231  |           | 283.67       | *            | 8.764E-01  | 2.770E+00 | 4.652E+00      | 7.033E-01 | 0.188   |
|         |           | 301.29       |              | 8.443E-01  | 1.043E+00 | 1.727E+00      | 2.107E-01 | 0.489   |
| TH-231  |           | 81.07        |              | -6.532E-01 | 3.311E-01 | 4.319E-01      | 3.732E-02 | -1.512  |
|         |           | 83.78        |              | 2.870E-01  | 1.892E-01 | 2.937E-01      | 2.623E-02 | 0.977   |
|         |           | 94.90        |              | 2.901E-01  | 2.997E-01 | 4.594E-01      | 4.154E-02 | 0.632   |
|         | +         | 122.32       |              | 1.435E+01  | 4.932E+00 | 5.884E+00      | 5.427E-01 | 2.439   |
|         |           | 144.24       |              | 4.040E-01  | 9.982E-01 | 1.620E+00      | 1.505E-01 | 0.249   |
|         |           | 154.21       |              | -4.032E-01 | 5.789E-01 | 8.841E-01      | 7.950E-02 | -0.456  |
|         |           | 269.46       |              | 4.580E-01  | 3.065E-01 | 5.414E-01      | 4.699E-02 | 0.846   |
|         |           | 323.87       | *            | -1.385E-01 | 1.155E+00 | 1.884E+00      | 3.332E-01 | -0.073  |
|         | +         | 338.28       |              | 4.662E+00  | 2.556E+00 | 3.370E+00      | 4.135E-01 | 1.383   |
|         |           | 445.03       |              | 1.022E+00  | 5.150E+00 | 8.385E+00      | 1.015E+00 | 0.122   |
| U-231   |           | 84.21        |              | 5.295E+00  | 2.756E+00 | 4.328E+00      | 3.886E-01 | 1.223   |
|         | +         | 92.29        |              | 1.626E+00  | 1.070E+00 | 1.502E+00      | 1.376E-01 | 1.083   |
|         |           | 95.87        | *            | -1.258E-01 | 4.806E-01 | 6.848E-01      | 6.164E-02 | -0.184  |
|         |           | 108.00       |              | -3.203E-01 | 9.349E-01 | 1.484E+00      | 1.289E-01 | -0.216  |
| TH-232  | +         | 338.32       |              | 1.116E+00  | 6.042E-01 | 8.074E-01      | 6.912E-02 | 1.383   |
|         | +         | 911.07       | *            | 1.359E+00  | 6.340E-01 | 7.014E-01      | 8.171E-02 | 1.938   |
|         |           | 969.11       |              | 8.136E-01  | 6.893E-01 | 1.143E+00      | 2.685E-01 | 0.712   |
| PA-233  | +         | 75.28        |              | 1.194E+01  | 5.358E+00 | 7.107E+00      | 1.070E+00 | 1.681   |
|         | +         | 86.59        |              | 6.528E+01  | 1.810E+01 | 6.472E+00      | 1.749E+00 | 10.088  |
|         | +         | 300.12       |              | 6.854E-01  | 9.108E-01 | 1.178E+00      | 1.747E-01 | 0.582   |
|         |           | 311.98       | *            | -1.219E-01 | 1.208E-01 | 1.877E-01      | 1.655E-02 | -0.650  |
|         |           | 340.50       |              | 1.259E+00  | 1.230E+00 | 1.847E+00      | 4.398E-01 | 0.682   |
|         |           | 398.62       |              | 3.089E-01  | 4.140E+00 | 6.744E+00      | 1.791E+00 | 0.046   |
|         |           | 415.76       |              | -8.820E-01 | 3.355E+00 | 5.336E+00      | 1.147E+00 | -0.165  |
| PA-234  |           | 63.00        |              | -1.328E+00 | 1.785E+00 | 2.545E+00      | 3.768E-01 | -0.522  |
|         |           | 94.67        |              | 3.002E-01  | 2.222E-01 | 3.438E-01      | 4.369E-02 | 0.873   |
|         |           | 98.44        |              | 9.954E-03  | 1.144E-01 | 1.862E-01      | 1.040E-01 | 0.053   |
|         |           | 99.86        |              | 3.752E-01  | 6.021E-01 | 1.004E+00      | 8.902E-02 | 0.374   |
|         |           | 111.00       |              | -2.522E-02 | 2.528E-01 | 4.063E-01      | 4.920E-02 | -0.062  |
|         |           | 131.20       |              | -3.295E-02 | 1.516E-01 | 2.403E-01      | 2.024E-02 | -0.137  |
|         |           | 152.70       |              | -2.668E-01 | 4.821E-01 | 7.413E-01      | 1.245E-01 | -0.360  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
|         | +         | 186.00       |     | 4.065E+00           | 3.174E+00 | 3.323E+00      | 1.033E+00 | 1.223   |
|         |           | 226.40       |     | -4.095E-01          | 6.399E-01 | 1.037E+00      | 1.354E-01 | -0.395  |
|         |           | 227.20       |     | -4.543E-01          | 6.916E-01 | 1.122E+00      | 9.426E-02 | -0.405  |
|         |           | 248.90       |     | 1.080E+00           | 1.405E+00 | 2.393E+00      | 5.350E-01 | 0.451   |
|         |           | 293.70       |     | 2.941E+00           | 1.429E+00 | 2.207E+00      | 3.810E-01 | 1.332   |
|         |           | 369.80       |     | 5.300E-01           | 1.621E+00 | 2.685E+00      | 5.830E-01 | 0.197   |
|         |           | 568.70       |     | 1.868E-01           | 1.858E+00 | 3.145E+00      | 2.820E-01 | 0.059   |
|         |           | 569.50       |     | 5.769E-02           | 5.079E-01 | 8.602E-01      | 7.714E-02 | 0.067   |
|         |           | 574.00       |     | -1.339E-01          | 2.798E+00 | 4.672E+00      | 4.190E-01 | -0.029  |
|         |           | 699.00       |     | 3.282E-01           | 1.286E+00 | 2.162E+00      | 4.160E-01 | 0.152   |
|         |           | 706.10       |     | 1.838E+00           | 2.112E+00 | 3.424E+00      | 1.529E+00 | 0.537   |
|         |           | 733.00       |     | -3.121E-01          | 7.580E-01 | 1.206E+00      | 2.698E-01 | -0.259  |
|         |           | 742.81       |     | 5.134E-01           | 2.876E+00 | 4.757E+00      | 3.200E+00 | 0.108   |
|         |           | 796.30       |     | -4.981E-01          | 1.849E+00 | 2.960E+00      | 8.060E-01 | -0.168  |
|         |           | 805.60       |     | -6.202E-02          | 2.011E+00 | 3.282E+00      | 1.011E+00 | -0.019  |
|         |           | 819.60       |     | -1.225E+00          | 2.838E+00 | 4.429E+00      | 1.690E+00 | -0.277  |
|         |           | 826.30       |     | -1.401E+00          | 1.994E+00 | 2.926E+00      | 1.312E+00 | -0.479  |
|         |           | 831.60       |     | 2.421E-01           | 1.370E+00 | 2.260E+00      | 6.783E-01 | 0.107   |
|         |           | 876.40       |     | 2.788E+00           | 3.528E+00 | 3.637E+00      | 3.740E+00 | 0.766   |
|         |           | 880.51       |     | 1.088E-02           | 6.819E-01 | 1.109E+00      | 1.017E-01 | 0.010   |
|         |           | 883.24       |     | 3.988E-01           | 7.379E-01 | 1.161E+00      | 7.815E-01 | 0.343   |
|         |           | 899.00       |     | 5.223E-01           | 1.978E+00 | 3.247E+00      | 1.423E+00 | 0.161   |
|         |           | 925.00       |     | -1.933E+00          | 2.868E+00 | 4.404E+00      | 4.017E-01 | -0.439  |
|         |           | 926.50       |     | -3.656E-01          | 4.571E-01 | 6.828E-01      | 1.738E-01 | -0.535  |
|         |           | 946.00       | *   | 5.449E-02           | 7.698E-01 | 1.250E+00      | 2.372E-01 | 0.044   |
|         |           | 949.00       |     | 4.331E-01           | 1.159E+00 | 1.917E+00      | 1.741E-01 | 0.226   |
|         |           | 980.50       |     | 4.019E-01           | 1.548E+00 | 2.548E+00      | 2.295E-01 | 0.158   |
| PA-234M |           | 1394.10      |     | -6.526E-01          | 1.406E+00 | 1.974E+00      | 1.284E+00 | -0.331  |
|         |           | 766.42       |     | -1.233E+01          | 2.147E+01 | 3.215E+01      | 1.634E+01 | -0.384  |
| TH-234  |           | 1001.03      | *   | 8.455E+00           | 1.087E+01 | 1.841E+01      | 1.888E+00 | 0.459   |
|         |           | 63.29        | *   | -1.192E+00          | 1.522E+00 | 2.157E+00      | 3.754E-01 | -0.553  |
| U-234   | +         | 92.38        |     | 1.255E+00           | 8.503E-01 | 1.161E+00      | 2.131E-01 | 1.081   |
|         | +         | 609.31       | *   | 5.264E-01           | 2.118E-01 | 3.127E-01      | 3.235E-02 | 1.684   |
|         |           | 1120.29      |     | 1.151E-01           | 6.110E-01 | 1.039E+00      | 1.116E-01 | 0.111   |
|         |           | 1764.49      |     | 8.142E-01           | 4.214E-01 | 8.649E-01      | 7.112E-02 | 0.941   |
| U-235   | +         | 89.95        |     | 2.367E+00           | 2.431E+00 | 3.070E+00      | 9.533E-01 | 0.771   |
|         | +         | 93.35        |     | 1.509E+00           | 1.072E+00 | 1.388E+00      | 3.911E-01 | 1.087   |
|         |           | 105.00       |     | 1.297E-01           | 1.406E+00 | 2.286E+00      | 6.829E-01 | 0.057   |
|         |           | 143.76       | *   | -1.750E-01          | 3.107E-01 | 4.781E-01      | 8.281E-02 | -0.366  |
|         |           | 163.35       |     | -5.991E-01          | 7.195E-01 | 1.075E+00      | 2.019E-01 | -0.557  |
|         | +         | 185.71       |     | 1.506E-01           | 1.085E-01 | 1.224E-01      | 9.905E-03 | 1.230   |
|         |           | 205.31       |     | -2.708E-01          | 8.094E-01 | 1.341E+00      | 2.537E-01 | -0.202  |
| NP-236  |           | 94.67        |     | 2.296E-01           | 1.674E-01 | 2.610E-01      | 2.363E-02 | 0.880   |
|         |           | 98.44        |     | 7.509E-03           | 8.635E-02 | 1.408E-01      | 1.254E-02 | 0.053   |
|         |           | 111.00       |     | -1.908E-02          | 1.912E-01 | 3.073E-01      | 2.658E-02 | -0.062  |
|         |           | 160.31       | *   | 3.189E-04           | 1.200E-01 | 1.905E-01      | 1.522E-02 | 0.002   |
| NP-237  |           | 86.50        | *   | 4.241E+00           | 1.083E+00 | 9.232E-01      | 2.087E-01 | 4.594   |
|         |           | 95.87        |     | -3.272E-01          | 1.252E+00 | 1.781E+00      | 4.411E-01 | -0.184  |
| U-238   |           | 63.29        | *   | -1.192E+00          | 1.522E+00 | 2.157E+00      | 3.754E-01 | -0.553  |

---- Non-Identified Nuclides ----

| Nuclide | Line Ided | Energy (keV) | Key | Activity (pCi/GRAM) | Act error | MDA (pCi/GRAM) | MDA error | Act/MDA |
|---------|-----------|--------------|-----|---------------------|-----------|----------------|-----------|---------|
| NP-239  | +         | 92.38        |     | 1.255E+00           | 8.265E-01 | 1.161E+00      | 1.064E-01 | 1.081   |
|         |           | 99.55        |     | 1.116E-01           | 1.982E-01 | 3.300E-01      | 2.927E-02 | 0.338   |
|         |           | 117.00       | *   | -2.358E-01          | 3.181E-01 | 4.340E-01      | 3.734E-02 | -0.543  |
|         |           | 209.75       |     | 2.478E-01           | 1.179E+00 | 2.001E+00      | 1.660E-01 | 0.124   |
|         |           | 228.18       |     | 5.273E-02           | 3.662E-01 | 6.176E-01      | 5.190E-02 | 0.085   |
| CM-243  |           | 277.60       |     | 8.423E-02           | 2.981E-01 | 5.011E-01      | 4.254E-02 | 0.168   |
|         |           | 334.30       |     | -1.201E+00          | 2.536E+00 | 3.504E+00      | 3.002E-01 | -0.343  |
|         |           | 99.55        |     | 1.148E-01           | 2.039E-01 | 3.394E-01      | 3.011E-02 | 0.338   |
|         |           | 103.76       | *   | 7.263E-03           | 1.269E-01 | 2.062E-01      | 1.807E-02 | 0.035   |
|         |           | 117.00       |     | -2.424E-01          | 3.271E-01 | 4.463E-01      | 3.840E-02 | -0.543  |
| AM-246  |           | 209.75       |     | 2.442E-01           | 1.162E+00 | 1.972E+00      | 1.635E-01 | 0.124   |
|         |           | 228.18       |     | 5.326E-02           | 3.699E-01 | 6.237E-01      | 5.242E-02 | 0.085   |
|         |           | 277.60       |     | 8.488E-02           | 3.004E-01 | 5.050E-01      | 4.287E-02 | 0.168   |
|         |           | 798.80       |     | -2.219E-01          | 2.753E-01 | 4.209E-01      | 3.854E-02 | -0.527  |
|         |           | 1036.00      |     | -1.021E-02          | 6.587E-01 | 1.105E+00      | 9.760E-02 | -0.009  |
| CM-247  |           | 1062.04      |     | -6.818E-02          | 5.136E-01 | 8.528E-01      | 7.447E-02 | -0.080  |
|         |           | 1078.86      | *   | -1.515E-01          | 3.168E-01 | 5.119E-01      | 4.432E-02 | -0.296  |
|         |           | 278.00       |     | 3.366E-01           | 1.253E+00 | 2.105E+00      | 1.787E-01 | 0.160   |
|         |           | 287.40       |     | 2.283E+00           | 2.190E+00 | 3.796E+00      | 3.234E-01 | 0.602   |
|         |           | 402.60       | *   | -5.772E-02          | 6.996E-02 | 1.073E-01      | 9.012E-03 | -0.538  |
| CF-249  |           | 252.85       |     | 2.967E-01           | 1.506E+00 | 2.534E+00      | 2.150E-01 | 0.117   |
|         |           | 333.44       |     | -2.528E-02          | 3.325E-01 | 4.753E-01      | 4.072E-02 | -0.053  |
| CF-251  |           | 387.95       | *   | -6.591E-02          | 7.814E-02 | 1.204E-01      | 1.005E-02 | -0.548  |
|         |           | 176.60       | *   | 1.081E-01           | 1.870E-01 | 3.248E-01      | 2.601E-02 | 0.333   |
|         |           | 227.00       |     | -2.257E-01          | 6.079E-01 | 1.001E+00      | 8.406E-02 | -0.226  |
|         |           | 285.00       |     | -2.346E+00          | 3.259E+00 | 5.196E+00      | 4.422E-01 | -0.452  |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202015451      *
* Acquisition date   : 23-JAN-2010 14:08:28 Detector SN# :                  *
* Detector ID        : GAM07 Sensitivity      : 5.000                      *
* Geometry           : CAN Energy tolerance: 1.500                      *
* Elapsed live time  : 0 01:00:00.00 Abundance limit : 75.000             *
* Elapsed real time  : 0 01:00:01.30 Half life ratio : 8.000              *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date        : 15-JAN-2010 00:00:00 Nuclide Library : SOLID          *
* Sample ID          : G1202015451 Analyst initials: MXR1                 *
* Batch Number       : 941639 Sample Quantity : 1.5544E+02 GRAM           *
* Recovery           : 1.00000 Carrier Weight  : 0.00000                  *
*****
*
*                                     QC DATA                                *
*
* Standard Weight    : 0.00000                                              *
* CALIB. DATE/TIME   : 20-JUL-2009 15:29:58 MS Isotope :                  *
* MSD DPM             : 0.000 MSD Isotope :                               *
* LCS DPM             : 0.000 LCS Isotope :                               *
* LCSD DPM            : 0.000 LCSD Isotope :                               *
*****

```

## Combined Activity-MDA Report

### ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act error | MDA<br>(pCi/GRAM ) |           |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 6.330E-01               | 6.688E-01 | 5.032E-01          | 0.000E+00 |
| CO-57   | 2.042E-01               | 6.844E-02 | 5.961E-02          | 0.000E+00 |
| CO-60   | 6.512E+00               | 6.180E-01 | 1.021E-01          | 0.000E+00 |
| CD-109  | 3.360E+01               | 3.666E+00 | 1.781E+00          | 0.000E+00 |
| SN-126  | 3.335E+00               | 3.639E-01 | 1.772E-01          | 0.000E+00 |
| BA-137M | 5.440E+00               | 5.396E-01 | 1.225E-01          | 0.000E+00 |
| CS-137  | 5.751E+00               | 5.712E-01 | 1.295E-01          | 0.000E+00 |
| TL-208  | 4.319E-01               | 1.390E-01 | 1.158E-01          | 0.000E+00 |
| BI-211  | 2.048E+00               | 6.156E-01 | 6.937E-01          | 0.000E+00 |
| PB-212  | 1.072E+00               | 1.692E-01 | 1.514E-01          | 0.000E+00 |
| PO-212  | 1.072E+00               | 1.692E-01 | 1.514E-01          | 0.000E+00 |
| PB-214  | 7.122E-01               | 2.172E-01 | 2.357E-01          | 0.000E+00 |
| PO-214  | 7.122E-01               | 2.172E-01 | 2.357E-01          | 0.000E+00 |
| PO-216  | 1.072E+00               | 1.692E-01 | 1.514E-01          | 0.000E+00 |
| PO-218  | 7.122E-01               | 2.172E-01 | 2.357E-01          | 0.000E+00 |
| RA-224  | 3.323E+00               | 1.683E+00 | 1.723E+00          | 0.000E+00 |
| TH-228  | 1.081E+00               | 1.707E-01 | 1.527E-01          | 0.000E+00 |
| AM-241  | 1.425E+01               | 1.262E+00 | 3.978E-01          | 0.000E+00 |
| AM-243  | 2.280E-01               | 9.615E-02 | 1.133E-01          | 0.000E+00 |
| ANH-511 | 6.323E-02               | 9.112E-02 | 9.058E-02          | 0.000E+00 |

### ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L. Act error<br>) Ided | MDA<br>(pCi/GRAM ) |                      |
|---------|-------------------------------------|--------------------------|--------------------|----------------------|
| BE-7    | 2.220E-02                           | 6.445E-01                | 1.099E+00          | 0.000E+00 NOT IDENT. |
| NA-22   | 6.571E-04                           | 4.586E-02                | 7.847E-02          | 0.000E+00 NOT IDENT. |
| NA-24   | 0.000E+00                           | 6.982E+02                | 0.000E+00          | 0.000E+00 SHORT HLIF |
| AL-26   | 2.866E-03                           | 4.261E-02                | 7.373E-02          | 0.000E+00 NOT IDENT. |
| TI-44   | 0.000E+00                           | 5.525E-02                | 9.449E-02          | 0.000E+00 FAIL ABUN  |
| SC-46   | -1.650E-02                          | 8.507E-02                | 1.421E-01          | 0.000E+00 NOT IDENT. |
| V-48    | -4.122E-02                          | 1.144E-01                | 1.859E-01          | 0.000E+00 NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| CR-51   | -1.565E-02 | 5.456E-01 | 9.607E-01 | 0.000E+00 | NOT IDENT. |
| MN-52   | -2.065E-03 | 1.137E-01 | 1.909E-01 | 0.000E+00 | FAIL ABUN  |
| MN-54   | -2.204E-02 | 7.367E-02 | 1.228E-01 | 0.000E+00 | NOT IDENT. |
| CO-56   | 6.129E-02  | 7.935E-02 | 1.421E-01 | 0.000E+00 | NOT IDENT. |
| CO-58   | -1.175E-02 | 7.736E-02 | 1.308E-01 | 0.000E+00 | NOT IDENT. |
| FE-59   | -3.569E-02 | 1.710E-01 | 2.920E-01 | 0.000E+00 | NOT IDENT. |
| ZN-65   | 8.163E-02  | 1.946E-01 | 3.456E-01 | 0.000E+00 | NOT IDENT. |
| GE-68   | -2.145E+00 | 2.684E+00 | 4.391E+00 | 0.000E+00 | NOT IDENT. |
| AS-73   | 1.192E-01  | 1.201E+00 | 2.242E+00 | 0.000E+00 | NOT IDENT. |
| AS-74   | -9.650E-02 | 1.199E-01 | 1.986E-01 | 0.000E+00 | NOT IDENT. |
| SE-75   | 2.204E-02  | 7.381E-02 | 1.340E-01 | 0.000E+00 | FAIL ABUN  |
| BR-77   | -1.564E+00 | 2.845E+00 | 4.901E+00 | 0.000E+00 | FAIL ABUN  |
| SR-82   | -3.461E-01 | 5.671E-01 | 9.239E-01 | 0.000E+00 | NOT IDENT. |
| RB-83   | -6.226E-02 | 1.207E-01 | 2.085E-01 | 0.000E+00 | NOT IDENT. |
| RB-84   | -7.824E-02 | 1.454E-01 | 2.371E-01 | 0.000E+00 | NOT IDENT. |
| KR-85   | 1.003E+01  | 1.463E+01 | 2.396E+01 | 0.000E+00 | NOT IDENT. |
| SR-85   | 4.800E-02  | 7.001E-02 | 1.147E-01 | 0.000E+00 | NOT IDENT. |
| RB-86   | -3.106E-01 | 1.327E+00 | 2.268E+00 | 0.000E+00 | NOT IDENT. |
| Y-88    | 4.896E-02  | 4.739E-02 | 9.614E-02 | 0.000E+00 | NOT IDENT. |
| ZR-88   | 9.700E-03  | 5.637E-02 | 9.858E-02 | 0.000E+00 | NOT IDENT. |
| Y-91    | 1.933E+01  | 2.134E+01 | 4.024E+01 | 0.000E+00 | NOT IDENT. |
| NB-94   | -6.712E-02 | 6.335E-02 | 1.012E-01 | 0.000E+00 | NOT IDENT. |
| NB-95   | 1.838E-02  | 6.808E-02 | 1.195E-01 | 0.000E+00 | NOT IDENT. |
| NB-95M  | 9.112E-02  | 1.899E-01 | 3.114E-01 | 0.000E+00 | NOT IDENT. |
| ZR-95   | 4.921E-02  | 1.275E-01 | 2.255E-01 | 0.000E+00 | NOT IDENT. |
| NB-97   | 0.000E+00  | 3.557E+02 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| ZR-97   | 0.000E+00  | 5.827E+03 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| MO-99   | 3.310E+00  | 4.657E+00 | 8.367E+00 | 0.000E+00 | NOT IDENT. |
| TC-99M  | 0.000E+00  | 7.558E+08 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| RH-101  | -2.534E-02 | 4.893E-02 | 8.761E-02 | 0.000E+00 | NOT IDENT. |
| RH-102  | 6.406E-02  | 6.397E-02 | 1.146E-01 | 0.000E+00 | NOT IDENT. |
| RU-103  | 3.000E-02  | 7.082E-02 | 1.232E-01 | 0.000E+00 | FAIL ABUN  |
| RH-106  | 1.649E-01  | 5.630E-01 | 1.007E+00 | 0.000E+00 | FAIL ABUN  |
| RU-106  | 1.649E-01  | 5.628E-01 | 1.007E+00 | 0.000E+00 | FAIL ABUN  |
| AG-108M | -1.036E-02 | 6.707E-02 | 1.141E-01 | 0.000E+00 | NOT IDENT. |
| AG-110M | 1.014E-01  | 7.739E-02 | 1.301E-01 | 0.000E+00 | NOT IDENT. |
| IN-111  | -3.363E-01 | 3.966E-01 | 5.924E-01 | 0.000E+00 | NOT IDENT. |
| IN-113M | 2.508E-02  | 8.190E-02 | 1.443E-01 | 0.000E+00 | NOT IDENT. |
| SN-113  | 2.508E-02  | 8.190E-02 | 1.443E-01 | 0.000E+00 | NOT IDENT. |
| IN-114M | 1.686E-01  | 2.734E-01 | 4.593E-01 | 0.000E+00 | NOT IDENT. |
| CD-115  | -4.844E-01 | 2.500E+00 | 4.400E+00 | 0.000E+00 | NOT IDENT. |
| SN-117M | 1.508E-02  | 5.822E-02 | 1.022E-01 | 0.000E+00 | NOT IDENT. |
| SB-122  | -1.772E-02 | 6.790E-01 | 1.201E+00 | 0.000E+00 | NOT IDENT. |
| I-123   | 0.000E+00  | 2.081E+03 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| TE-123M | 1.333E-02  | 3.969E-02 | 6.996E-02 | 0.000E+00 | NOT IDENT. |
| I-124   | 1.544E-01  | 4.354E-01 | 7.421E-01 | 0.000E+00 | NOT IDENT. |
| SB-124  | 2.915E-02  | 8.461E-02 | 1.520E-01 | 0.000E+00 | NOT IDENT. |
| SB-125  | -3.341E-02 | 1.790E-01 | 3.041E-01 | 0.000E+00 | NOT IDENT. |
| TE-125M | 3.059E+00  | 1.127E+01 | 2.030E+01 | 0.000E+00 | NOT IDENT. |
| I-126   | -5.815E-02 | 2.684E-01 | 3.973E-01 | 0.000E+00 | NOT IDENT. |
| SB-126  | -9.617E-02 | 1.865E-01 | 3.103E-01 | 0.000E+00 | FAIL ABUN  |
| SB-127  | 1.998E-01  | 6.951E-01 | 1.236E+00 | 0.000E+00 | NOT IDENT. |
| XE-127  | 1.834E-03  | 6.280E-02 | 1.150E-01 | 0.000E+00 | NOT IDENT. |
| I-131   | -1.033E-02 | 1.209E-01 | 2.098E-01 | 0.000E+00 | NOT IDENT. |
| TE-132  | 3.869E-02  | 2.724E-01 | 4.968E-01 | 0.000E+00 | NOT IDENT. |
| BA-133  | 1.521E-02  | 9.081E-02 | 1.407E-01 | 0.000E+00 | NOT IDENT. |
| I-133   | 0.000E+00  | 5.712E+01 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-134  | -1.999E-02 | 9.137E-02 | 1.541E-01 | 0.000E+00 | NOT IDENT. |
| CS-135  | -1.070E-01 | 2.597E-01 | 4.553E-01 | 0.000E+00 | NOT IDENT. |
| I-135   | 0.000E+00  | 4.230E+08 | 0.000E+00 | 0.000E+00 | SHORT HLIF |
| CS-136  | 3.997E-02  | 1.674E-01 | 2.962E-01 | 0.000E+00 | NOT IDENT. |
| CE-139  | 3.874E-02  | 4.245E-02 | 7.659E-02 | 0.000E+00 | NOT IDENT. |
| BA-140  | -1.816E-01 | 3.212E-01 | 5.405E-01 | 0.000E+00 | NOT IDENT. |
| LA-140  | 3.343E-02  | 8.834E-02 | 1.565E-01 | 0.000E+00 | NOT IDENT. |
| CE-141  | 8.106E-02  | 7.654E-02 | 1.401E-01 | 0.000E+00 | NOT IDENT. |
| CE-143  | 1.212E+01  | 9.612E+00 | 1.569E+01 | 0.000E+00 | FAIL ABUN  |
| CE-144  | -2.840E-01 | 2.928E-01 | 4.836E-01 | 0.000E+00 | NOT IDENT. |
| PM-144  | 2.463E-02  | 5.961E-02 | 1.065E-01 | 0.000E+00 | NOT IDENT. |
| PR-144  | 1.663E+00  | 4.026E+00 | 7.192E+00 | 0.000E+00 | NOT IDENT. |
| PM-146  | -3.653E-02 | 8.963E-02 | 1.493E-01 | 0.000E+00 | NOT IDENT. |
| ND-147  | -2.201E-01 | 6.601E-01 | 1.149E+00 | 0.000E+00 | FAIL ABUN  |
| PM-149  | -1.007E+01 | 2.092E+01 | 3.628E+01 | 0.000E+00 | NOT IDENT. |
| EU-152  | -1.129E-01 | 1.898E-01 | 3.097E-01 | 0.000E+00 | FAIL ABUN  |
| GD-153  | -1.049E-01 | 1.079E-01 | 1.614E-01 | 0.000E+00 | NOT IDENT. |
| EU-154  | 1.375E-02  | 1.271E-01 | 2.206E-01 | 0.000E+00 | FAIL ABUN  |
| EU-155  | -2.216E-02 | 1.400E-01 | 2.480E-01 | 0.000E+00 | FAIL ABUN  |
| TB-160  | -1.339E-01 | 3.199E-01 | 5.270E-01 | 0.000E+00 | FAIL ABUN  |
| HO-166M | -5.441E-02 | 1.122E-01 | 1.873E-01 | 0.000E+00 | FAIL ABUN  |



|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| TM-171  | 1.790E+01  | 3.030E+01 | 5.677E+01 | 0.000E+00 | FAIL ABUN  |
| LU-176  | -4.871E-02 | 5.023E-02 | 7.715E-02 | 0.000E+00 | FAIL ABUN  |
| LU-177  | 8.989E-01  | 8.315E-01 | 1.579E+00 | 0.000E+00 | NOT IDENT. |
| LU-177M | 2.981E-02  | 3.325E-01 | 5.763E-01 | 0.000E+00 | FAIL ABUN  |
| HF-181  | 5.254E-03  | 7.625E-02 | 1.302E-01 | 0.000E+00 | NOT IDENT. |
| W-181   | -2.793E-01 | 3.914E-01 | 6.646E-01 | 0.000E+00 | NOT IDENT. |
| TA-182  | 1.586E-01  | 2.044E-01 | 3.837E-01 | 0.000E+00 | NOT IDENT. |
| RE-183  | -9.435E-02 | 1.519E-01 | 2.538E-01 | 0.000E+00 | FAIL ABUN  |
| RE-184  | 7.698E-02  | 3.830E-01 | 6.950E-01 | 0.000E+00 | FAIL ABUN  |
| OS-185  | 1.740E-02  | 7.545E-02 | 1.340E-01 | 0.000E+00 | FAIL ABUN  |
| RE-188  | -9.796E-02 | 2.281E-01 | 3.868E-01 | 0.000E+00 | NOT IDENT. |
| W-188   | -1.235E+01 | 1.376E+01 | 2.007E+01 | 0.000E+00 | NOT IDENT. |
| IR-192  | 2.448E-02  | 5.658E-02 | 1.021E-01 | 0.000E+00 | FAIL ABUN  |
| AU-195  | 1.444E-01  | 2.657E-01 | 4.884E-01 | 0.000E+00 | FAIL ABUN  |
| TL-200  | -9.345E+00 | 1.332E+01 | 2.223E+01 | 0.000E+00 | NOT IDENT. |
| TL-201  | -1.788E-01 | 2.312E+00 | 3.975E+00 | 0.000E+00 | NOT IDENT. |
| TL-202  | 1.449E-01  | 1.025E-01 | 1.880E-01 | 0.000E+00 | NOT IDENT. |
| HG-203  | -5.498E-03 | 6.235E-02 | 1.108E-01 | 0.000E+00 | NOT IDENT. |
| BI-207  | 6.361E-03  | 1.134E-01 | 1.980E-01 | 0.000E+00 | FAIL ABUN  |
| TL-207  | -1.385E-01 | 1.131E+00 | 1.980E+00 | 0.000E+00 | FAIL ABUN  |
| PO-209  | -8.137E+00 | 1.652E+01 | 2.690E+01 | 0.000E+00 | NOT IDENT. |
| BI-210  | 8.669E-01  | 3.706E+00 | 7.028E+00 | 0.000E+00 | NOT IDENT. |
| PB-210  | 8.669E-01  | 3.706E+00 | 7.028E+00 | 0.000E+00 | NOT IDENT. |
| PO-210  | 8.669E-01  | 3.705E+00 | 7.028E+00 | 0.000E+00 | NOT IDENT. |
| PB-211  | -1.596E+00 | 1.995E+00 | 2.836E+00 | 0.000E+00 | NOT IDENT. |
| BI-212  | 2.555E-01  | 5.639E-01 | 1.004E+00 | 0.000E+00 | NOT IDENT. |
| BI-214  | 0.000E+00  | 2.076E-01 | 3.230E-01 | 0.000E+00 | FAIL ABUN  |
| PO-215  | -1.385E-01 | 1.131E+00 | 1.980E+00 | 0.000E+00 | FAIL ABUN  |
| RN-219  | 5.075E-01  | 7.489E-01 | 1.341E+00 | 0.000E+00 | NOT IDENT. |
| RN-220  | 8.018E+00  | 4.556E+01 | 8.181E+01 | 0.000E+00 | NOT IDENT. |
| RA-223  | -1.385E-01 | 1.131E+00 | 1.980E+00 | 0.000E+00 | FAIL ABUN  |
| RA-226  | 0.000E+00  | 2.076E-01 | 3.230E-01 | 0.000E+00 | FAIL ABUN  |
| AC-227  | 5.865E-02  | 6.452E-01 | 1.164E+00 | 0.000E+00 | FAIL ABUN  |
| TH-227  | 5.865E-02  | 6.452E-01 | 1.164E+00 | 0.000E+00 | FAIL ABUN  |
| AC-228  | 0.000E+00  | 6.214E-01 | 7.168E-01 | 0.000E+00 | FAIL ABUN  |
| RA-228  | 0.000E+00  | 6.214E-01 | 7.168E-01 | 0.000E+00 | FAIL ABUN  |
| TH-229  | 3.496E-02  | 7.753E-01 | 1.426E+00 | 0.000E+00 | FAIL ABUN  |
| TH-230  | 0.000E+00  | 2.076E-01 | 3.230E-01 | 0.000E+00 | FAIL ABUN  |
| PA-231  | 8.764E-01  | 2.714E+00 | 4.904E+00 | 0.000E+00 | NOT IDENT. |
| TH-231  | -1.385E-01 | 1.131E+00 | 1.980E+00 | 0.000E+00 | FAIL ABUN  |
| U-231   | -1.258E-01 | 4.710E-01 | 7.420E-01 | 0.000E+00 | FAIL ABUN  |
| TH-232  | 0.000E+00  | 6.214E-01 | 7.168E-01 | 0.000E+00 | FAIL ABUN  |
| PA-233  | -1.219E-01 | 1.184E-01 | 1.974E-01 | 0.000E+00 | FAIL ABUN  |
| PA-234  | 5.449E-02  | 7.544E-01 | 1.276E+00 | 0.000E+00 | FAIL ABUN  |
| PA-234M | 8.455E+00  | 1.065E+01 | 1.877E+01 | 0.000E+00 | NOT IDENT. |
| TH-234  | -1.192E+00 | 1.492E+00 | 2.361E+00 | 0.000E+00 | FAIL ABUN  |
| U-234   | 0.000E+00  | 2.076E-01 | 3.230E-01 | 0.000E+00 | FAIL ABUN  |
| U-235   | -1.750E-01 | 3.045E-01 | 5.129E-01 | 0.000E+00 | FAIL ABUN  |
| NP-236  | 3.189E-04  | 1.176E-01 | 2.037E-01 | 0.000E+00 | NOT IDENT. |
| NP-237  | 0.000E+00  | 1.061E+00 | 1.003E+00 | 0.000E+00 | NOT IDENT. |
| U-238   | -1.192E+00 | 1.492E+00 | 2.361E+00 | 0.000E+00 | FAIL ABUN  |
| NP-239  | -2.358E-01 | 3.117E-01 | 4.679E-01 | 0.000E+00 | NOT IDENT. |
| CM-243  | 7.263E-03  | 1.244E-01 | 2.229E-01 | 0.000E+00 | NOT IDENT. |
| AM-246  | -1.515E-01 | 3.105E-01 | 5.206E-01 | 0.000E+00 | NOT IDENT. |
| CM-247  | -5.772E-02 | 6.856E-02 | 1.121E-01 | 0.000E+00 | NOT IDENT. |
| CF-249  | -6.591E-02 | 7.658E-02 | 1.259E-01 | 0.000E+00 | NOT IDENT. |
| CF-251  | 1.081E-01  | 1.833E-01 | 3.466E-01 | 0.000E+00 | NOT IDENT. |

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202015451.CNF;1
Sample date       : 15-JAN-2010 00:00:00 Acquisition date : 23-JAN-2010 14:08:28
Sample ID        : G1202015451 Sample quantity : 1.55440E+02 GRAM
Detector name    : GAM07 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:01.30 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit  : 75.00000 Sensitivity : 5.00000
Batch ID        : 941639 Detector SN# :
Matrix Spike ID  : LCS ID : 1032-A
*****

```

## Nuclide Line Activity Report

## Nuclide Type:

| Nuclide | Energy  | Area  | %Abn    | %Eff      | Uncorrected pCi/GRAM | Decay Corr pCi/GRAM | 2-Sigma %Error |
|---------|---------|-------|---------|-----------|----------------------|---------------------|----------------|
| K-40    | 1460.81 | 16    | 10.67*  | 1.129E+00 | 6.330E-01            | 6.330E-01           | 107.82         |
| CO-57   | 122.06  | 250   | 85.51*  | 7.071E+00 | 1.997E-01            | 2.042E-01           | 34.20          |
|         | 136.48  | ----- | 10.60   | 6.835E+00 | -----                | Line Not Found      | -----          |
| CO-60   | 1173.22 | 1829  | 100.00  | 1.358E+00 | 6.506E+00            | 6.526E+00           | 9.64           |
|         | 1332.49 | 1636  | 100.00* | 1.218E+00 | 6.491E+00            | 6.512E+00           | 9.68           |
| CD-109  | 88.03   | 1754  | 3.72*   | 6.868E+00 | 3.317E+01            | 3.360E+01           | 11.13          |
| SN-126  | 64.28   | ----- | 9.60    | 4.930E+00 | -----                | Line Not Found      | -----          |
|         | 86.94   | 1754  | 8.90    | 6.868E+00 | 1.386E+01            | 1.386E+01           | 41.95          |
|         | 87.57   | 1754  | 37.00*  | 6.868E+00 | 3.335E+00            | 3.335E+00           | 11.13          |
| BA-137M | 661.65  | 2260  | 89.98*  | 2.231E+00 | 5.437E+00            | 5.440E+00           | 10.12          |
| CS-137  | 661.65  | 2260  | 85.12*  | 2.231E+00 | 5.747E+00            | 5.751E+00           | 10.14          |
| TL-208  | 277.35  | ----- | 6.80    | 4.401E+00 | -----                | Line Not Found      | -----          |
|         | 510.84  | 36    | 21.60   | 2.755E+00 | 2.927E-01            | 2.927E-01           | 147.29         |
|         | 583.14  | 186   | 84.20*  | 2.475E+00 | 4.319E-01            | 4.319E-01           | 32.84          |
|         | 860.37  | ----- | 12.46   | 1.783E+00 | -----                | Line Not Found      | -----          |
| BI-211  | 72.87   | ----- | 1.27    | 5.899E+00 | -----                | Line Not Found      | -----          |
|         | 351.07  | 202   | 12.94*  | 3.680E+00 | 2.048E+00            | 2.048E+00           | 30.68          |
| PB-212  | 74.81   | 189   | 10.70   | 6.075E+00 | 1.406E+00            | 1.406E+00           | 44.03          |
|         | 77.11   | 248   | 18.00   | 6.262E+00 | 1.063E+00            | 1.063E+00           | 28.74          |
|         | 87.30   | 1754  | 8.00    | 6.868E+00 | 1.542E+01            | 1.542E+01           | 14.97          |
|         | 238.63  | 486   | 44.60*  | 4.909E+00 | 1.072E+00            | 1.072E+00           | 16.11          |
|         | 300.09  | 39    | 3.41    | 4.155E+00 | 1.327E+00            | 1.327E+00           | 132.47         |
| PO-212  | 74.81   | 189   | 10.70   | 6.075E+00 | 1.406E+00            | 1.406E+00           | 44.03          |
|         | 77.11   | 248   | 18.00   | 6.262E+00 | 1.063E+00            | 1.063E+00           | 28.74          |
|         | 87.30   | 1754  | 8.00    | 6.868E+00 | 1.542E+01            | 1.542E+01           | 14.97          |
|         | 115.19  | ----- | 0.60    | 7.150E+00 | -----                | Line Not Found      | -----          |
|         | 238.63  | 486   | 44.60*  | 4.909E+00 | 1.072E+00            | 1.072E+00           | 16.11          |
|         | 300.09  | 39    | 3.41    | 4.155E+00 | 1.327E+00            | 1.327E+00           | 132.47         |
| PB-214  | 74.81   | 189   | 6.21    | 6.075E+00 | 2.423E+00            | 2.423E+00           | 43.66          |
|         | 77.11   | 248   | 10.50   | 6.262E+00 | 1.823E+00            | 1.823E+00           | 29.74          |
|         | 87.30   | 1754  | 4.67    | 6.868E+00 | 2.642E+01            | 2.642E+01           | 13.54          |
|         | 241.98  | 132   | 7.49    | 4.864E+00 | 1.752E+00            | 1.752E+00           | 51.99          |

Nuclide Type:

| Nuclide | Energy | Area  | %Abn    | %Eff      | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | 2-Sigma<br>%Error |
|---------|--------|-------|---------|-----------|-------------------------|------------------------|-------------------|
| PO-214  | 295.21 | 123   | 19.20   | 4.199E+00 | 7.366E-01               | 7.366E-01              | 47.36             |
|         | 351.92 | 202   | 37.20*  | 3.680E+00 | 7.122E-01               | 7.122E-01              | 31.12             |
|         | 74.81  | 189   | 6.21    | 6.075E+00 | 2.423E+00               | 2.423E+00              | 43.66             |
|         | 77.11  | 248   | 10.50   | 6.262E+00 | 1.823E+00               | 1.823E+00              | 29.74             |
|         | 87.30  | 1754  | 4.67    | 6.868E+00 | 2.642E+01               | 2.642E+01              | 13.54             |
| PO-216  | 241.98 | 132   | 7.49    | 4.864E+00 | 1.752E+00               | 1.752E+00              | 51.99             |
|         | 295.21 | 123   | 19.20   | 4.199E+00 | 7.366E-01               | 7.366E-01              | 47.36             |
|         | 351.92 | 202   | 37.20*  | 3.680E+00 | 7.122E-01               | 7.122E-01              | 31.12             |
|         | 74.81  | 189   | 10.70   | 6.075E+00 | 1.406E+00               | 1.406E+00              | 44.03             |
|         | 77.11  | 248   | 18.00   | 6.262E+00 | 1.063E+00               | 1.063E+00              | 28.74             |
| PO-218  | 87.30  | 1754  | 8.00    | 6.868E+00 | 1.542E+01               | 1.542E+01              | 14.97             |
|         | 238.63 | 486   | 44.60*  | 4.909E+00 | 1.072E+00               | 1.072E+00              | 16.11             |
|         | 300.09 | 39    | 3.41    | 4.155E+00 | 1.327E+00               | 1.327E+00              | 132.47            |
|         | 74.81  | 189   | 6.21    | 6.075E+00 | 2.423E+00               | 2.423E+00              | 43.66             |
|         | 77.11  | 248   | 10.50   | 6.262E+00 | 1.823E+00               | 1.823E+00              | 29.74             |
| RA-224  | 87.30  | 1754  | 4.67    | 6.868E+00 | 2.642E+01               | 2.642E+01              | 13.54             |
|         | 241.98 | 132   | 7.49    | 4.864E+00 | 1.752E+00               | 1.752E+00              | 51.99             |
|         | 295.21 | 123   | 19.20   | 4.199E+00 | 7.366E-01               | 7.366E-01              | 47.36             |
|         | 351.92 | 202   | 37.20*  | 3.680E+00 | 7.122E-01               | 7.122E-01              | 31.12             |
|         | 240.98 | 132   | 3.95*   | 4.864E+00 | 3.323E+00               | 3.323E+00              | 51.69             |
| TH-228  | 74.81  | 189   | 10.70   | 6.075E+00 | 1.406E+00               | 1.418E+00              | 43.05             |
|         | 77.11  | 248   | 18.00   | 6.262E+00 | 1.063E+00               | 1.072E+00              | 28.74             |
|         | 87.30  | 1754  | 8.00    | 6.868E+00 | 1.542E+01               | 1.556E+01              | 11.13             |
|         | 238.63 | 486   | 44.60*  | 4.909E+00 | 1.072E+00               | 1.081E+00              | 16.11             |
|         | 300.09 | 39    | 3.41    | 4.155E+00 | 1.327E+00               | 1.338E+00              | 144.75            |
| AM-241  | 59.54  | 4500  | 35.90*  | 4.250E+00 | 1.425E+01               | 1.425E+01              | 9.04              |
| AM-243  | 74.67  | 189   | 66.00*  | 6.075E+00 | 2.280E-01               | 2.280E-01              | 43.03             |
|         | 86.72  | 1754  | 0.34    | 6.868E+00 | 3.672E+02               | 3.672E+02              | 11.13             |
|         | 117.66 | ----- | 0.55    | 7.126E+00 | -----                   | Line Not Found         | -----             |
| ANH-511 | 142.18 | ----- | 0.13    | 6.723E+00 | -----                   | Line Not Found         | -----             |
|         | 511.00 | 36    | 100.00* | 2.755E+00 | 6.323E-02               | 6.323E-02              | 147.06            |

Flag: "\*" = Keyline

Total number of lines in spectrum 22  
Number of unidentified lines 0  
Number of lines tentatively identified by NID 22 100.00%

Nuclide Type :

| Nuclide          | Hlife     | Decay | Uncorrected<br>pCi/GRAM | Decay Corr<br>pCi/GRAM | Decay Corr<br>2-Sigma Error | 2-Sigma<br>%Error | Flags |
|------------------|-----------|-------|-------------------------|------------------------|-----------------------------|-------------------|-------|
| K-40             | 1.28E+09Y | 1.00  | 6.330E-01               | 6.330E-01              | 6.825E-01                   | 107.82            |       |
| CO-57            | 270.90D   | 1.02  | 1.997E-01               | 2.042E-01              | 0.698E-01                   | 34.20             |       |
| CO-60            | 5.27Y     | 1.00  | 6.491E+00               | 6.512E+00              | 0.631E+00                   | 9.68              |       |
| CD-109           | 464.00D   | 1.01  | 3.317E+01               | 3.360E+01              | 0.374E+01                   | 11.13             |       |
| SN-126           | 1.00E+05Y | 1.00  | 3.335E+00               | 3.335E+00              | 0.371E+00                   | 11.13             |       |
| BA-137M          | 30.17Y    | 1.00  | 5.437E+00               | 5.440E+00              | 0.551E+00                   | 10.12             |       |
| CS-137           | 30.17Y    | 1.00  | 5.747E+00               | 5.751E+00              | 0.583E+00                   | 10.14             |       |
| TL-208           | 1.41E+10Y | 1.00  | 4.319E-01               | 4.319E-01              | 1.419E-01                   | 32.84             |       |
| BI-211           | 7.04E+08Y | 1.00  | 2.048E+00               | 2.048E+00              | 0.628E+00                   | 30.68             |       |
| PB-212           | 1.41E+10Y | 1.00  | 1.072E+00               | 1.072E+00              | 0.173E+00                   | 16.11             |       |
| PO-212           | 1.41E+10Y | 1.00  | 1.072E+00               | 1.072E+00              | 0.173E+00                   | 16.11             |       |
| PB-214           | 1600.00Y  | 1.00  | 7.122E-01               | 7.122E-01              | 2.216E-01                   | 31.12             |       |
| PO-214           | 1600.00Y  | 1.00  | 7.122E-01               | 7.122E-01              | 2.216E-01                   | 31.12             |       |
| PO-216           | 1.41E+10Y | 1.00  | 1.072E+00               | 1.072E+00              | 0.173E+00                   | 16.11             |       |
| PO-218           | 1600.00Y  | 1.00  | 7.122E-01               | 7.122E-01              | 2.216E-01                   | 31.12             |       |
| RA-224           | 1.41E+10Y | 1.00  | 3.323E+00               | 3.323E+00              | 1.718E+00                   | 51.69             |       |
| TH-228           | 1.91Y     | 1.01  | 1.072E+00               | 1.081E+00              | 0.174E+00                   | 16.11             |       |
| AM-241           | 432.20Y   | 1.00  | 1.425E+01               | 1.425E+01              | 0.129E+01                   | 9.04              |       |
| AM-243           | 7380.00Y  | 1.00  | 2.280E-01               | 2.280E-01              | 0.981E-01                   | 43.03             |       |
| ANH-511          | 1.00E+09Y | 1.00  | 6.323E-02               | 6.323E-02              | 9.298E-02                   | 147.06            |       |
| Total Activity : |           |       | 8.178E+01               | 8.225E+01              |                             |                   |       |

Grand Total Activity : 8.178E+01 8.225E+01

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

Unidentified Energy Lines  
Sample ID : G1202015451

Page : 4  
Acquisition date : 23-JAN-2010 14:08:28

| It | Energy | Area | Bkgnd | FWHM | Channel | Left | Pw | Cts/Sec  | %Err | %Eff     | Flags |
|----|--------|------|-------|------|---------|------|----|----------|------|----------|-------|
| 2  | 90.11  | 92   | 297   | 1.24 | 179.86  | 172  | 18 | 2.55E-02 | 97.9 | 6.94E+00 | T     |
| 2  | 92.99  | 99   | 273   | 1.15 | 185.62  | 172  | 18 | 2.74E-02 | 65.2 | 7.02E+00 | T     |
| 0  | 185.74 | 98   | 293   | 1.73 | 371.10  | 366  | 11 | 2.72E-02 | 71.6 | 5.82E+00 | T     |
| 0  | 338.33 | 100  | 172   | 1.87 | 676.22  | 671  | 10 | 2.78E-02 | 53.4 | 3.79E+00 | T     |
| 0  | 609.46 | 121  | 119   | 1.26 | 1218.40 | 1214 | 10 | 3.35E-02 | 38.9 | 2.39E+00 | T     |
| 0  | 911.35 | 132  | 145   | 0.83 | 1822.10 | 1812 | 17 | 3.67E-02 | 45.2 | 1.70E+00 | T     |

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202015451.CNF;1 *
* Acquisition date   : 23-JAN-2010 14:08:28   Detector SN#      :          *
* Detector ID        : GAM07                  Sensitivity       : 5.00000    *
* Geometry           : CAN                    Energy tolerance  : 1.50000    *
* Elapsed live time  : 0 01:00:00.00          Abundance limit      : 75.00000   *
* Elapsed real time  : 0 01:00:01.30          Half life ratio     : 8.00000    *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 15-JAN-2010 00:00:00   Nuclide Library   : SOLID      *
* Sample ID          : G1202015451           Analyst initials  : MXR1        *
* Batch Number       : 941639                Sample Quantity   : 1.55440E+02 GRAM *
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 20-JUL-2009 15:29:58.0MS Isotope         :          *
* MSD ID              :                      MSD Isotope        :          *
* LCS ID              : 1032-A               LCS Isotope        :          *
*****

```

## Combined Activity-MDA Report

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| K-40    | 6.330E-01              | 6.825E-01 | 4.989E-01         | 4.285E-02 | 1.269   |
| CO-57   | 2.042E-01              | 6.983E-02 | 5.535E-02         | 4.762E-03 | 3.689   |
| CO-60   | 6.512E+00              | 6.306E-01 | 1.010E-01         | 8.274E-03 | 64.467  |
| CD-109  | 3.360E+01              | 3.741E+00 | 1.641E+00         | 1.546E-01 | 20.478  |
| SN-126  | 3.335E+00              | 3.713E-01 | 1.632E-01         | 1.529E-02 | 20.433  |
| BA-137M | 5.440E+00              | 5.506E-01 | 1.189E-01         | 1.052E-02 | 45.762  |
| CS-137  | 5.751E+00              | 5.828E-01 | 1.257E-01         | 1.114E-02 | 45.762  |
| TL-208  | 4.319E-01              | 1.419E-01 | 1.119E-01         | 1.071E-02 | 3.859   |
| BI-211  | 2.048E+00              | 6.281E-01 | 6.617E-01         | 5.936E-02 | 3.095   |
| PB-212  | 1.072E+00              | 1.727E-01 | 1.430E-01         | 1.367E-02 | 7.498   |
| PO-212  | 1.072E+00              | 1.727E-01 | 1.430E-01         | 1.367E-02 | 7.498   |
| PB-214  | 7.122E-01              | 2.216E-01 | 2.249E-01         | 2.333E-02 | 3.167   |
| PO-214  | 7.122E-01              | 2.216E-01 | 2.249E-01         | 2.333E-02 | 3.167   |
| PO-216  | 1.072E+00              | 1.727E-01 | 1.430E-01         | 1.367E-02 | 7.498   |
| PO-218  | 7.122E-01              | 2.216E-01 | 2.249E-01         | 2.333E-02 | 3.167   |
| RA-224  | 3.323E+00              | 1.718E+00 | 1.627E+00         | 1.376E-01 | 2.042   |
| TH-228  | 1.081E+00              | 1.742E-01 | 1.442E-01         | 1.379E-02 | 7.498   |
| AM-241  | 1.425E+01              | 1.287E+00 | 3.629E-01         | 2.877E-02 | 39.258  |

---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM) | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------|-----------|-------------------|-----------|---------|
| AM-243  | 2.280E-01              | 9.812E-02 | 1.040E-01         | 8.358E-03 | 2.193   |
| ANH-511 | 6.323E-02              | 9.298E-02 | 8.726E-02         | 7.753E-03 | 0.725   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| BE-7    | 2.220E-02                          |              | 6.577E-01 | 1.056E+00           | 9.970E-02 | 0.021   |
| NA-22   | 6.571E-04                          |              | 4.680E-02 | 7.751E-02           | 6.362E-03 | 0.008   |
| NA-24   | 3.977E-04                          |              | 3.562E-04 | Half-Life too short |           |         |
| AL-26   | 2.866E-03                          |              | 4.348E-02 | 7.355E-02           | 5.998E-03 | 0.039   |
| TI-44   | 1.961E-01                          | +            | 5.638E-02 | 8.679E-02           | 7.266E-03 | 2.260   |
| SC-46   | -1.650E-02                         |              | 8.681E-02 | 1.389E-01           | 1.273E-02 | -0.119  |
| V-48    | -4.122E-02                         |              | 1.167E-01 | 1.823E-01           | 1.641E-02 | -0.226  |
| CR-51   | -1.565E-02                         |              | 5.567E-01 | 9.142E-01           | 8.261E-02 | -0.017  |
| MN-52   | -2.065E-03                         |              | 1.160E-01 | 1.892E-01           | 1.573E-02 | -0.011  |
| MN-54   | -2.204E-02                         |              | 7.518E-02 | 1.199E-01           | 1.101E-02 | -0.184  |
| CO-56   | 6.129E-02                          |              | 8.097E-02 | 1.388E-01           | 1.274E-02 | 0.442   |
| CO-58   | -1.175E-02                         |              | 7.894E-02 | 1.276E-01           | 1.173E-02 | -0.092  |
| FE-59   | -3.569E-02                         |              | 1.745E-01 | 2.872E-01           | 2.661E-02 | -0.124  |
| ZN-65   | 8.163E-02                          |              | 1.986E-01 | 3.401E-01           | 2.886E-02 | 0.240   |
| GE-68   | -2.145E+00                         |              | 2.739E+00 | 4.317E+00           | 3.740E-01 | -0.497  |
| AS-73   | 1.192E-01                          |              | 1.226E+00 | 2.040E+00           | 1.532E-01 | 0.058   |
| AS-74   | -9.650E-02                         |              | 1.224E-01 | 1.921E-01           | 1.722E-02 | -0.502  |
| SE-75   | 2.204E-02                          |              | 7.531E-02 | 1.269E-01           | 1.084E-02 | 0.174   |
| BR-77   | -1.564E+00                         |              | 2.903E+00 | 4.723E+00           | 4.207E-01 | -0.331  |
| SR-82   | -3.461E-01                         |              | 5.786E-01 | 9.001E-01           | 8.219E-02 | -0.385  |
| RB-83   | -6.226E-02                         |              | 1.232E-01 | 2.009E-01           | 1.789E-02 | -0.310  |
| RB-84   | -7.824E-02                         |              | 1.484E-01 | 2.318E-01           | 2.126E-02 | -0.338  |
| KR-85   | 1.003E+01                          |              | 1.493E+01 | 2.308E+01           | 2.053E+00 | 0.434   |
| SR-85   | 4.800E-02                          |              | 7.144E-02 | 1.105E-01           | 9.825E-03 | 0.434   |
| RB-86   | -3.106E-01                         |              | 1.354E+00 | 2.230E+00           | 1.933E-01 | -0.139  |
| Y-88    | 4.896E-02                          |              | 4.835E-02 | 9.595E-02           | 7.787E-03 | 0.510   |
| ZR-88   | 9.700E-03                          |              | 5.752E-02 | 9.431E-02           | 7.855E-03 | 0.103   |
| Y-91    | 1.933E+01                          |              | 2.178E+01 | 3.969E+01           | 3.241E+00 | 0.487   |
| NB-94   | -6.712E-02                         |              | 6.464E-02 | 9.832E-02           | 8.828E-03 | -0.683  |
| NB-95   | 1.838E-02                          |              | 6.947E-02 | 1.163E-01           | 1.061E-02 | 0.158   |
| NB-95M  | 9.112E-02                          |              | 1.938E-01 | 2.939E-01           | 2.853E-02 | 0.310   |
| ZR-95   | 4.921E-02                          |              | 1.301E-01 | 2.196E-01           | 2.181E-02 | 0.224   |
| NB-97   | 5.612E-04                          |              | 1.815E-04 | Half-Life too short |           |         |
| ZR-97   | 6.515E-04                          |              | 2.973E-03 | Half-Life too short |           |         |
| MO-99   | 3.310E+00                          |              | 4.752E+00 | 8.141E+00           | 1.257E+00 | 0.407   |
| TC-99M  | 8.860E+00                          |              | 3.856E+02 | Half-Life too short |           |         |
| RH-101  | -2.534E-02                         |              | 4.993E-02 | 8.233E-02           | 6.754E-03 | -0.308  |
| RH-102  | 6.406E-02                          |              | 6.528E-02 | 1.102E-01           | 9.670E-03 | 0.581   |
| RU-103  | 3.000E-02                          |              | 7.226E-02 | 1.186E-01           | 1.696E-02 | 0.253   |
| RH-106  | 1.649E-01                          |              | 5.745E-01 | 9.755E-01           | 1.323E-01 | 0.169   |
| RU-106  | 1.649E-01                          |              | 5.743E-01 | 9.755E-01           | 8.718E-02 | 0.169   |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM)   | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|---------------------|-----------|---------|
| AG-108M | -1.036E-02                         |              | 6.844E-02 | 1.094E-01           | 9.768E-03 | -0.095  |
| AG-110M | 1.014E-01                          |              | 7.897E-02 | 1.262E-01           | 1.150E-02 | 0.804   |
| IN-111  | -3.363E-01                         |              | 4.047E-01 | 5.598E-01           | 4.741E-02 | -0.601  |
| IN-113M | 2.508E-02                          |              | 8.358E-02 | 1.380E-01           | 1.187E-02 | 0.182   |
| SN-113  | 2.508E-02                          |              | 8.358E-02 | 1.380E-01           | 1.187E-02 | 0.182   |
| IN-114M | 1.686E-01                          |              | 2.790E-01 | 4.312E-01           | 3.508E-02 | 0.391   |
| CD-115  | -4.844E-01                         |              | 2.551E+00 | 4.242E+00           | 3.785E-01 | -0.114  |
| SN-117M | 1.508E-02                          |              | 5.941E-02 | 9.554E-02           | 7.660E-03 | 0.158   |
| SB-122  | -1.772E-02                         |              | 6.928E-01 | 1.160E+00           | 1.040E-01 | -0.015  |
| I-123   | 6.990E-04                          |              | 1.062E-03 | Half-Life too short |           |         |
| TE-123M | 1.333E-02                          |              | 4.050E-02 | 6.539E-02           | 5.275E-03 | 0.204   |
| I-124   | 1.544E-01                          |              | 4.442E-01 | 7.181E-01           | 6.434E-02 | 0.215   |
| SB-124  | 2.915E-02                          |              | 8.634E-02 | 1.514E-01           | 1.311E-02 | 0.193   |
| SB-125  | -3.341E-02                         |              | 1.826E-01 | 2.916E-01           | 2.542E-02 | -0.115  |
| TE-125M | 3.059E+00                          |              | 1.150E+01 | 1.879E+01           | 1.946E+00 | 0.163   |
| I-126   | -5.815E-02                         |              | 2.739E-01 | 3.855E-01           | 3.418E-02 | -0.151  |
| SB-126  | -9.617E-02                         |              | 1.903E-01 | 3.017E-01           | 2.723E-02 | -0.319  |
| SB-127  | 1.998E-01                          |              | 7.093E-01 | 1.200E+00           | 1.205E-01 | 0.167   |
| XE-127  | 1.834E-03                          |              | 6.408E-02 | 1.082E-01           | 8.913E-03 | 0.017   |
| I-131   | -1.033E-02                         |              | 1.234E-01 | 2.003E-01           | 1.786E-02 | -0.052  |
| TE-132  | 3.869E-02                          |              | 2.780E-01 | 4.686E-01           | 6.852E-02 | 0.083   |
| BA-133  | 1.521E-02                          |              | 9.266E-02 | 1.343E-01           | 1.763E-02 | 0.113   |
| I-133   | -3.294E-05                         |              | 2.914E-05 | Half-Life too short |           |         |
| CS-134  | -1.999E-02                         |              | 9.323E-02 | 1.502E-01           | 1.384E-02 | -0.133  |
| CS-135  | -1.070E-01                         |              | 2.650E-01 | 4.312E-01           | 4.252E-02 | -0.248  |
| I-135   | -7.708E+01                         |              | 2.158E+02 | Half-Life too short |           |         |
| CS-136  | 3.997E-02                          |              | 1.708E-01 | 2.910E-01           | 2.661E-02 | 0.137   |
| CE-139  | 3.874E-02                          |              | 4.331E-02 | 7.166E-02           | 5.668E-03 | 0.541   |
| BA-140  | -1.816E-01                         |              | 3.278E-01 | 5.214E-01           | 1.732E-01 | -0.348  |
| LA-140  | 3.343E-02                          |              | 9.014E-02 | 1.556E-01           | 1.301E-02 | 0.215   |
| CE-141  | 8.106E-02                          |              | 7.810E-02 | 1.306E-01           | 1.094E-02 | 0.621   |
| CE-143  | 1.212E+01                          |              | 9.808E+00 | 1.489E+01           | 3.206E+00 | 0.814   |
| CE-144  | -2.840E-01                         |              | 2.988E-01 | 4.501E-01           | 6.948E-02 | -0.631  |
| PM-144  | 2.463E-02                          |              | 6.083E-02 | 1.035E-01           | 9.272E-03 | 0.238   |
| PR-144  | 1.663E+00                          |              | 4.108E+00 | 6.986E+00           | 6.261E-01 | 0.238   |
| PM-146  | -3.653E-02                         |              | 9.146E-02 | 1.434E-01           | 1.545E-02 | -0.255  |
| ND-147  | -2.201E-01                         |              | 6.736E-01 | 1.108E+00           | 1.677E-01 | -0.199  |
| PM-149  | -1.007E+01                         |              | 2.135E+01 | 3.442E+01           | 5.324E+00 | -0.293  |
| EU-152  | -1.129E-01                         |              | 1.937E-01 | 2.952E-01           | 2.676E-02 | -0.382  |
| GD-153  | -1.049E-01                         |              | 1.101E-01 | 1.490E-01           | 1.332E-02 | -0.704  |
| EU-154  | 1.375E-02                          |              | 1.297E-01 | 2.179E-01           | 2.396E-02 | 0.063   |
| EU-155  | -2.216E-02                         |              | 1.428E-01 | 2.294E-01           | 2.027E-02 | -0.097  |
| TB-160  | -1.339E-01                         |              | 3.265E-01 | 5.151E-01           | 4.724E-02 | -0.260  |
| HO-166M | -5.441E-02                         |              | 1.144E-01 | 1.820E-01           | 1.639E-02 | -0.299  |
| TM-171  | 1.790E+01                          |              | 3.092E+01 | 5.194E+01           | 3.884E+00 | 0.345   |
| LU-176  | -4.871E-02                         |              | 5.126E-02 | 7.333E-02           | 6.281E-03 | -0.664  |
| LU-177  | 8.989E-01                          |              | 8.485E-01 | 1.486E+00           | 1.231E-01 | 0.605   |
| LU-177M | 2.981E-02                          |              | 3.393E-01 | 5.520E-01           | 4.674E-02 | 0.054   |



----- Non-Identified Nuclides -----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| HF-181  | 5.254E-03                          |              | 7.781E-02 | 1.252E-01         | 1.102E-02 | 0.042   |
| W-181   | -2.793E-01                         |              | 3.994E-01 | 6.077E-01         | 4.497E-02 | -0.460  |
| TA-182  | 1.586E-01                          |              | 2.086E-01 | 3.785E-01         | 3.096E-02 | 0.419   |
| RE-183  | -9.435E-02                         |              | 1.550E-01 | 2.374E-01         | 1.890E-02 | -0.397  |
| RE-184  | 7.698E-02                          |              | 3.908E-01 | 6.573E-01         | 5.579E-02 | 0.117   |
| OS-185  | 1.740E-02                          |              | 7.699E-02 | 1.299E-01         | 1.155E-02 | 0.134   |
| RE-188  | -9.796E-02                         |              | 2.327E-01 | 3.613E-01         | 2.915E-02 | -0.271  |
| W-188   | -1.235E+01                         |              | 1.404E+01 | 1.905E+01         | 1.625E+00 | -0.648  |
| IR-192  | 2.448E-02                          |              | 5.773E-02 | 9.713E-02         | 8.348E-03 | 0.252   |
| AU-195  | 1.444E-01                          |              | 2.711E-01 | 4.511E-01         | 4.012E-02 | 0.320   |
| TL-200  | -9.345E+00                         |              | 1.359E+01 | 2.123E+01         | 1.797E+00 | -0.440  |
| TL-201  | -1.788E-01                         |              | 2.360E+00 | 3.720E+00         | 2.947E-01 | -0.048  |
| TL-202  | 1.449E-01                          |              | 1.046E-01 | 1.804E-01         | 1.554E-02 | 0.803   |
| HG-203  | -5.498E-03                         |              | 6.363E-02 | 1.050E-01         | 9.173E-03 | -0.052  |
| BI-207  | 6.361E-03                          |              | 1.157E-01 | 1.946E-01         | 1.698E-02 | 0.033   |
| TL-207  | -1.385E-01                         |              | 1.155E+00 | 1.884E+00         | 3.332E-01 | -0.073  |
| PO-209  | -8.137E+00                         |              | 1.685E+01 | 2.631E+01         | 2.409E+00 | -0.309  |
| BI-210  | 8.669E-01                          |              | 3.781E+00 | 6.374E+00         | 5.980E-01 | 0.136   |
| PB-210  | 8.669E-01                          |              | 3.781E+00 | 6.374E+00         | 5.980E-01 | 0.136   |
| PO-210  | 8.669E-01                          |              | 3.781E+00 | 6.374E+00         | 5.424E-01 | 0.136   |
| PB-211  | -1.596E+00                         |              | 2.036E+00 | 2.715E+00         | 1.701E+00 | -0.588  |
| BI-212  | 2.555E-01                          |              | 5.754E-01 | 9.762E-01         | 1.013E-01 | 0.262   |
| BI-214  | 5.264E-01                          | +            | 2.118E-01 | 3.127E-01         | 3.235E-02 | 1.684   |
| PO-215  | -1.385E-01                         |              | 1.155E+00 | 1.884E+00         | 3.332E-01 | -0.073  |
| RN-219  | 5.075E-01                          |              | 7.642E-01 | 1.283E+00         | 1.911E-01 | 0.396   |
| RN-220  | 8.018E+00                          |              | 4.649E+01 | 7.897E+01         | 7.070E+00 | 0.102   |
| RA-223  | -1.385E-01                         |              | 1.155E+00 | 1.884E+00         | 3.332E-01 | -0.073  |
| RA-226  | 5.264E-01                          | +            | 2.118E-01 | 3.127E-01         | 3.235E-02 | 1.684   |
| AC-227  | 5.865E-02                          |              | 6.584E-01 | 1.101E+00         | 1.682E-01 | 0.053   |
| TH-227  | 5.865E-02                          |              | 6.584E-01 | 1.101E+00         | 1.982E-01 | 0.053   |
| AC-228  | 1.359E+00                          | +            | 6.340E-01 | 7.014E-01         | 8.171E-02 | 1.938   |
| RA-228  | 1.359E+00                          | +            | 6.340E-01 | 7.014E-01         | 8.171E-02 | 1.938   |
| TH-229  | 3.496E-02                          |              | 7.911E-01 | 1.339E+00         | 1.094E-01 | 0.026   |
| TH-230  | 5.264E-01                          | +            | 2.118E-01 | 3.127E-01         | 3.235E-02 | 1.684   |
| PA-231  | 8.764E-01                          |              | 2.770E+00 | 4.652E+00         | 7.033E-01 | 0.188   |
| TH-231  | -1.385E-01                         |              | 1.155E+00 | 1.884E+00         | 3.332E-01 | -0.073  |
| U-231   | -1.258E-01                         |              | 4.806E-01 | 6.848E-01         | 6.164E-02 | -0.184  |
| TH-232  | 1.359E+00                          | +            | 6.340E-01 | 7.014E-01         | 8.171E-02 | 1.938   |
| PA-233  | -1.219E-01                         |              | 1.208E-01 | 1.877E-01         | 1.655E-02 | -0.650  |
| PA-234  | 5.449E-02                          |              | 7.698E-01 | 1.250E+00         | 2.372E-01 | 0.044   |
| PA-234M | 8.455E+00                          |              | 1.087E+01 | 1.841E+01         | 1.888E+00 | 0.459   |
| TH-234  | -1.192E+00                         |              | 1.522E+00 | 2.157E+00         | 3.754E-01 | -0.553  |
| U-234   | 5.264E-01                          | +            | 2.118E-01 | 3.127E-01         | 3.235E-02 | 1.684   |
| U-235   | -1.750E-01                         |              | 3.107E-01 | 4.781E-01         | 8.281E-02 | -0.366  |
| NP-236  | 3.189E-04                          |              | 1.200E-01 | 1.905E-01         | 1.522E-02 | 0.002   |
| NP-237  | 4.241E+00                          |              | 1.083E+00 | 9.232E-01         | 2.087E-01 | 4.594   |
| U-238   | -1.192E+00                         |              | 1.522E+00 | 2.157E+00         | 3.754E-01 | -0.553  |
| NP-239  | -2.358E-01                         |              | 3.181E-01 | 4.340E-01         | 3.734E-02 | -0.543  |

---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM) | K.L.<br>Ided | Act error | MDA<br>(pCi/GRAM) | MDA error | Act/MDA |
|---------|------------------------------------|--------------|-----------|-------------------|-----------|---------|
| CM-243  | 7.263E-03                          |              | 1.269E-01 | 2.062E-01         | 1.807E-02 | 0.035   |
| AM-246  | -1.515E-01                         |              | 3.168E-01 | 5.119E-01         | 4.432E-02 | -0.296  |
| CM-247  | -5.772E-02                         |              | 6.996E-02 | 1.073E-01         | 9.012E-03 | -0.538  |
| CF-249  | -6.591E-02                         |              | 7.814E-02 | 1.204E-01         | 1.005E-02 | -0.548  |
| CF-251  | 1.081E-01                          |              | 1.870E-01 | 3.248E-01         | 2.601E-02 | 0.333   |

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : SYSSYSROOT:[ALPHA.ARCHIVE.GAMMA]G1202015451          *
* Acquisition date   : 23-JAN-2010 14:08:28 Detector SN# :                  *
* Detector ID        : GAM07 Sensitivity : 5.000                          *
* Geometry           : CAN Energy tolerance: 1.500                        *
* Elapsed live time  : 0 01:00:00.00 Abundance limit : 75.000             *
* Elapsed real time  : 0 01:00:01.30 Half life ratio : 8.000              *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 15-JAN-2010 00:00:00 Nuclide Library : SOLID          *
* Sample ID          : G1202015451 Analyst initials: MXR1                 *
* Batch Number       : 941639 Sample Quantity : 1.5544E+02 GRAM           *
* Recovery           : 1.00000 Carrier Weight : 0.00000                  *
*****
*                                     QC DATA                                *
*
* CALIB. DATE/TIME   : 20-JUL-2009 15:29:58 MS Isotope :                  *
* MSD DPM             : 0.000 MSD Isotope :                               *
* LCS DPM             : 0.000 LCS Isotope :                               *
* LCSD DPM            : 0.000 LCSD Isotope :                              *
*****

```

## Combined Activity-MDA Report

### ---- Identified Nuclides ----

| Nuclide | Activity<br>(pCi/GRAM ) | Act Error | DLC<br>(pCi/GRAM ) | TPU       |
|---------|-------------------------|-----------|--------------------|-----------|
| K-40    | 6.330E-01               | 6.688E-01 | 2.518E-01          | 3.412E-01 |
| CO-57   | 2.042E-01               | 6.844E-02 | 2.982E-02          | 3.492E-02 |
| CO-60   | 6.512E+00               | 6.180E-01 | 5.110E-02          | 3.153E-01 |
| CD-109  | 3.360E+01               | 3.666E+00 | 8.912E-01          | 1.870E+00 |
| SN-126  | 3.335E+00               | 3.639E-01 | 8.866E-02          | 1.856E-01 |
| BA-137M | 5.440E+00               | 5.396E-01 | 6.131E-02          | 2.753E-01 |
| CS-137  | 5.751E+00               | 5.712E-01 | 6.481E-02          | 2.914E-01 |
| TL-208  | 4.319E-01               | 1.390E-01 | 5.792E-02          | 7.093E-02 |
| BI-211  | 2.048E+00               | 6.156E-01 | 3.471E-01          | 3.141E-01 |
| PB-212  | 1.072E+00               | 1.692E-01 | 7.573E-02          | 8.634E-02 |
| PO-212  | 1.072E+00               | 1.692E-01 | 7.573E-02          | 8.634E-02 |
| PB-214  | 7.122E-01               | 2.172E-01 | 1.179E-01          | 1.108E-01 |
| PO-214  | 7.122E-01               | 2.172E-01 | 1.179E-01          | 1.108E-01 |
| PO-216  | 1.072E+00               | 1.692E-01 | 7.573E-02          | 8.634E-02 |
| PO-218  | 7.122E-01               | 2.172E-01 | 1.179E-01          | 1.108E-01 |
| RA-224  | 3.323E+00               | 1.683E+00 | 8.619E-01          | 8.588E-01 |
| TH-228  | 1.081E+00               | 1.707E-01 | 7.639E-02          | 8.708E-02 |
| AM-241  | 1.425E+01               | 1.262E+00 | 1.990E-01          | 6.437E-01 |
| AM-243  | 2.280E-01               | 9.615E-02 | 5.670E-02          | 4.906E-02 |
| ANH-511 | 6.323E-02               | 9.112E-02 | 4.532E-02          | 4.649E-02 |

### ---- Non-Identified Nuclides ----

| Nuclide | Key-Line<br>Activity<br>(pCi/GRAM ) | K.L Act error | DLC<br>(pCi/GRAM ) | TPU                  |
|---------|-------------------------------------|---------------|--------------------|----------------------|
| BE-7    | 2.220E-02                           | 6.445E-01     | 5.496E-01          | 3.288E-01 NOT IDENT. |
| NA-22   | 6.571E-04                           | 4.586E-02     | 3.926E-02          | 2.340E-02 NOT IDENT. |
| NA-24   | 3.977E+02                           | 6.982E+02     | 0.000E+00          | 3.562E+02 SHORT HLIF |
| AL-26   | 2.866E-03                           | 4.261E-02     | 3.689E-02          | 2.174E-02 NOT IDENT. |
| TI-44   | 1.961E-01                           | 5.525E-02     | 4.727E-02          | 2.819E-02 FAIL ABUN  |
| SC-46   | -1.650E-02                          | 8.507E-02     | 7.109E-02          | 4.340E-02 NOT IDENT. |
| V-48    | -4.122E-02                          | 1.144E-01     | 9.301E-02          | 5.834E-02 NOT IDENT. |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| CR-51   | -1.565E-02 | 5.456E-01 | 4.807E-01 | 2.784E-01 | NOT IDENT. |
| MN-52   | -2.065E-03 | 1.137E-01 | 9.551E-02 | 5.802E-02 | FAIL ABUN  |
| MN-54   | -2.204E-02 | 7.367E-02 | 6.145E-02 | 3.759E-02 | NOT IDENT. |
| CO-56   | 6.129E-02  | 7.935E-02 | 7.111E-02 | 4.049E-02 | NOT IDENT. |
| CO-58   | -1.175E-02 | 7.736E-02 | 6.546E-02 | 3.947E-02 | NOT IDENT. |
| FE-59   | -3.569E-02 | 1.710E-01 | 1.461E-01 | 8.725E-02 | NOT IDENT. |
| ZN-65   | 8.163E-02  | 1.946E-01 | 1.729E-01 | 9.928E-02 | NOT IDENT. |
| GE-68   | -2.145E+00 | 2.684E+00 | 2.197E+00 | 1.369E+00 | NOT IDENT. |
| AS-73   | 1.192E-01  | 1.201E+00 | 1.122E+00 | 6.129E-01 | NOT IDENT. |
| AS-74   | -9.650E-02 | 1.199E-01 | 9.936E-02 | 6.119E-02 | NOT IDENT. |
| SE-75   | 2.204E-02  | 7.381E-02 | 6.705E-02 | 3.766E-02 | FAIL ABUN  |
| BR-77   | -1.564E+00 | 2.845E+00 | 2.452E+00 | 1.451E+00 | FAIL ABUN  |
| SR-82   | -3.461E-01 | 5.671E-01 | 4.622E-01 | 2.893E-01 | NOT IDENT. |
| RB-83   | -6.226E-02 | 1.207E-01 | 1.043E-01 | 6.159E-02 | NOT IDENT. |
| RB-84   | -7.824E-02 | 1.454E-01 | 1.186E-01 | 7.420E-02 | NOT IDENT. |
| KR-85   | 1.003E+01  | 1.463E+01 | 1.199E+01 | 7.463E+00 | NOT IDENT. |
| SR-85   | 4.800E-02  | 7.001E-02 | 5.737E-02 | 3.572E-02 | NOT IDENT. |
| RB-86   | -3.106E-01 | 1.327E+00 | 1.135E+00 | 6.772E-01 | NOT IDENT. |
| Y-88    | 4.896E-02  | 4.739E-02 | 4.810E-02 | 2.418E-02 | NOT IDENT. |
| ZR-88   | 9.700E-03  | 5.637E-02 | 4.932E-02 | 2.876E-02 | NOT IDENT. |
| Y-91    | 1.933E+01  | 2.134E+01 | 2.013E+01 | 1.089E+01 | NOT IDENT. |
| NB-94   | -6.712E-02 | 6.335E-02 | 5.062E-02 | 3.232E-02 | NOT IDENT. |
| NB-95   | 1.838E-02  | 6.808E-02 | 5.976E-02 | 3.473E-02 | NOT IDENT. |
| NB-95M  | 9.112E-02  | 1.899E-01 | 1.558E-01 | 9.690E-02 | NOT IDENT. |
| ZR-95   | 4.921E-02  | 1.275E-01 | 1.128E-01 | 6.506E-02 | NOT IDENT. |
| NB-97   | 5.612E+02  | 3.557E+02 | 0.000E+00 | 1.815E+02 | SHORT HLIF |
| ZR-97   | 6.515E+02  | 5.827E+03 | 0.000E+00 | 2.973E+03 | SHORT HLIF |
| MO-99   | 3.310E+00  | 4.657E+00 | 4.186E+00 | 2.376E+00 | NOT IDENT. |
| TC-99M  | 8.860E+06  | 7.558E+08 | 0.000E+00 | 3.856E+08 | SHORT HLIF |
| RH-101  | -2.534E-02 | 4.893E-02 | 4.383E-02 | 2.496E-02 | NOT IDENT. |
| RH-102  | 6.406E-02  | 6.397E-02 | 5.735E-02 | 3.264E-02 | NOT IDENT. |
| RU-103  | 3.000E-02  | 7.082E-02 | 6.164E-02 | 3.613E-02 | FAIL ABUN  |
| RH-106  | 1.649E-01  | 5.630E-01 | 5.039E-01 | 2.873E-01 | FAIL ABUN  |
| RU-106  | 1.649E-01  | 5.628E-01 | 5.039E-01 | 2.871E-01 | FAIL ABUN  |
| AG-108M | -1.036E-02 | 6.707E-02 | 5.707E-02 | 3.422E-02 | NOT IDENT. |
| AG-110M | 1.014E-01  | 7.739E-02 | 6.509E-02 | 3.948E-02 | NOT IDENT. |
| IN-111  | -3.363E-01 | 3.966E-01 | 2.964E-01 | 2.023E-01 | NOT IDENT. |
| IN-113M | 2.508E-02  | 8.190E-02 | 7.220E-02 | 4.179E-02 | NOT IDENT. |
| SN-113  | 2.508E-02  | 8.190E-02 | 7.220E-02 | 4.179E-02 | NOT IDENT. |
| IN-114M | 1.686E-01  | 2.734E-01 | 2.298E-01 | 1.395E-01 | NOT IDENT. |
| CD-115  | -4.844E-01 | 2.500E+00 | 2.201E+00 | 1.275E+00 | NOT IDENT. |
| SN-117M | 1.508E-02  | 5.822E-02 | 5.114E-02 | 2.970E-02 | NOT IDENT. |
| SB-122  | -1.772E-02 | 6.790E-01 | 6.007E-01 | 3.464E-01 | NOT IDENT. |
| I-123   | 6.990E+02  | 2.081E+03 | 0.000E+00 | 1.062E+03 | SHORT HLIF |
| TE-123M | 1.333E-02  | 3.969E-02 | 3.500E-02 | 2.025E-02 | NOT IDENT. |
| I-124   | 1.544E-01  | 4.354E-01 | 3.713E-01 | 2.221E-01 | NOT IDENT. |
| SB-124  | 2.915E-02  | 8.461E-02 | 7.606E-02 | 4.317E-02 | NOT IDENT. |
| SB-125  | -3.341E-02 | 1.790E-01 | 1.521E-01 | 9.131E-02 | NOT IDENT. |
| TE-125M | 3.059E+00  | 1.127E+01 | 1.015E+01 | 5.749E+00 | NOT IDENT. |
| I-126   | -5.815E-02 | 2.684E-01 | 1.988E-01 | 1.369E-01 | NOT IDENT. |
| SB-126  | -9.617E-02 | 1.865E-01 | 1.552E-01 | 9.514E-02 | FAIL ABUN  |
| SB-127  | 1.998E-01  | 6.951E-01 | 6.181E-01 | 3.546E-01 | NOT IDENT. |
| XE-127  | 1.834E-03  | 6.280E-02 | 5.754E-02 | 3.204E-02 | NOT IDENT. |
| I-131   | -1.033E-02 | 1.209E-01 | 1.049E-01 | 6.168E-02 | NOT IDENT. |
| TE-132  | 3.869E-02  | 2.724E-01 | 2.486E-01 | 1.390E-01 | NOT IDENT. |
| BA-133  | 1.521E-02  | 9.081E-02 | 7.040E-02 | 4.633E-02 | NOT IDENT. |
| I-133   | -3.294E+01 | 5.712E+01 | 0.000E+00 | 2.914E+01 | SHORT HLIF |
| CS-134  | -1.999E-02 | 9.137E-02 | 7.708E-02 | 4.662E-02 | NOT IDENT. |
| CS-135  | -1.070E-01 | 2.597E-01 | 2.278E-01 | 1.325E-01 | NOT IDENT. |
| I-135   | -7.708E+07 | 4.230E+08 | 0.000E+00 | 2.158E+08 | SHORT HLIF |
| CS-136  | 3.997E-02  | 1.674E-01 | 1.482E-01 | 8.539E-02 | NOT IDENT. |
| CE-139  | 3.874E-02  | 4.245E-02 | 3.832E-02 | 2.166E-02 | NOT IDENT. |
| BA-140  | -1.816E-01 | 3.212E-01 | 2.704E-01 | 1.639E-01 | NOT IDENT. |
| LA-140  | 3.343E-02  | 8.834E-02 | 7.829E-02 | 4.507E-02 | NOT IDENT. |
| CE-141  | 8.106E-02  | 7.654E-02 | 7.008E-02 | 3.905E-02 | NOT IDENT. |
| CE-143  | 1.212E+01  | 9.612E+00 | 7.848E+00 | 4.904E+00 | FAIL ABUN  |
| CE-144  | -2.840E-01 | 2.928E-01 | 2.420E-01 | 1.494E-01 | NOT IDENT. |
| PM-144  | 2.463E-02  | 5.961E-02 | 5.328E-02 | 3.041E-02 | NOT IDENT. |
| PR-144  | 1.663E+00  | 4.026E+00 | 3.598E+00 | 2.054E+00 | NOT IDENT. |
| PM-146  | -3.653E-02 | 8.963E-02 | 7.470E-02 | 4.573E-02 | NOT IDENT. |
| ND-147  | -2.201E-01 | 6.601E-01 | 5.750E-01 | 3.368E-01 | FAIL ABUN  |
| PM-149  | -1.007E+01 | 2.092E+01 | 1.815E+01 | 1.068E+01 | NOT IDENT. |
| EU-152  | -1.129E-01 | 1.898E-01 | 1.549E-01 | 9.684E-02 | FAIL ABUN  |
| GD-153  | -1.049E-01 | 1.079E-01 | 8.074E-02 | 5.506E-02 | NOT IDENT. |
| EU-154  | 1.375E-02  | 1.271E-01 | 1.104E-01 | 6.484E-02 | FAIL ABUN  |
| EU-155  | -2.216E-02 | 1.400E-01 | 1.241E-01 | 7.140E-02 | FAIL ABUN  |
| TB-160  | -1.339E-01 | 3.199E-01 | 2.636E-01 | 1.632E-01 | FAIL ABUN  |
| HO-166M | -5.441E-02 | 1.122E-01 | 9.368E-02 | 5.722E-02 | FAIL ABUN  |

|         |            |           |           |           |            |
|---------|------------|-----------|-----------|-----------|------------|
| TM-171  | 1.790E+01  | 3.030E+01 | 2.840E+01 | 1.546E+01 | FAIL ABUN  |
| LU-176  | -4.871E-02 | 5.023E-02 | 3.860E-02 | 2.563E-02 | FAIL ABUN  |
| LU-177  | 8.989E-01  | 8.315E-01 | 7.899E-01 | 4.242E-01 | NOT IDENT. |
| LU-177M | 2.981E-02  | 3.325E-01 | 2.883E-01 | 1.697E-01 | FAIL ABUN  |
| HF-181  | 5.254E-03  | 7.625E-02 | 6.513E-02 | 3.890E-02 | NOT IDENT. |
| W-181   | -2.793E-01 | 3.914E-01 | 3.325E-01 | 1.997E-01 | NOT IDENT. |
| TA-182  | 1.586E-01  | 2.044E-01 | 1.920E-01 | 1.043E-01 | NOT IDENT. |
| RE-183  | -9.435E-02 | 1.519E-01 | 1.270E-01 | 7.748E-02 | FAIL ABUN  |
| RE-184  | 7.698E-02  | 3.830E-01 | 3.477E-01 | 1.954E-01 | FAIL ABUN  |
| OS-185  | 1.740E-02  | 7.545E-02 | 6.704E-02 | 3.849E-02 | FAIL ABUN  |
| RE-188  | -9.796E-02 | 2.281E-01 | 1.935E-01 | 1.164E-01 | NOT IDENT. |
| W-188   | -1.235E+01 | 1.376E+01 | 1.004E+01 | 7.018E+00 | NOT IDENT. |
| IR-192  | 2.448E-02  | 5.658E-02 | 5.108E-02 | 2.887E-02 | FAIL ABUN  |
| AU-195  | 1.444E-01  | 2.657E-01 | 2.444E-01 | 1.356E-01 | FAIL ABUN  |
| TL-200  | -9.345E+00 | 1.332E+01 | 1.112E+01 | 6.795E+00 | NOT IDENT. |
| TL-201  | -1.788E-01 | 2.312E+00 | 1.989E+00 | 1.180E+00 | NOT IDENT. |
| TL-202  | 1.449E-01  | 1.025E-01 | 9.408E-02 | 5.231E-02 | NOT IDENT. |
| HG-203  | -5.498E-03 | 6.235E-02 | 5.541E-02 | 3.181E-02 | NOT IDENT. |
| BI-207  | 6.361E-03  | 1.134E-01 | 9.904E-02 | 5.783E-02 | FAIL ABUN  |
| TL-207  | -1.385E-01 | 1.131E+00 | 9.905E-01 | 5.773E-01 | FAIL ABUN  |
| PO-209  | -8.137E+00 | 1.652E+01 | 1.346E+01 | 8.426E+00 | NOT IDENT. |
| BI-210  | 8.669E-01  | 3.706E+00 | 3.516E+00 | 1.891E+00 | NOT IDENT. |
| PB-210  | 8.669E-01  | 3.706E+00 | 3.516E+00 | 1.891E+00 | NOT IDENT. |
| PO-210  | 8.669E-01  | 3.705E+00 | 3.516E+00 | 1.890E+00 | NOT IDENT. |
| PB-211  | -1.596E+00 | 1.995E+00 | 1.419E+00 | 1.018E+00 | NOT IDENT. |
| BI-212  | 2.555E-01  | 5.639E-01 | 5.022E-01 | 2.877E-01 | NOT IDENT. |
| BI-214  | 5.264E-01  | 2.076E-01 | 1.616E-01 | 1.059E-01 | FAIL ABUN  |
| PO-215  | -1.385E-01 | 1.131E+00 | 9.905E-01 | 5.773E-01 | FAIL ABUN  |
| RN-219  | 5.075E-01  | 7.489E-01 | 6.707E-01 | 3.821E-01 | NOT IDENT. |
| RN-220  | 8.018E+00  | 4.556E+01 | 4.093E+01 | 2.325E+01 | NOT IDENT. |
| RA-223  | -1.385E-01 | 1.131E+00 | 9.905E-01 | 5.773E-01 | FAIL ABUN  |
| RA-226  | 5.264E-01  | 2.076E-01 | 1.616E-01 | 1.059E-01 | FAIL ABUN  |
| AC-227  | 5.865E-02  | 6.452E-01 | 5.822E-01 | 3.292E-01 | FAIL ABUN  |
| TH-227  | 5.865E-02  | 6.452E-01 | 5.822E-01 | 3.292E-01 | FAIL ABUN  |
| AC-228  | 1.359E+00  | 6.214E-01 | 3.586E-01 | 3.170E-01 | FAIL ABUN  |
| RA-228  | 1.359E+00  | 6.214E-01 | 3.586E-01 | 3.170E-01 | FAIL ABUN  |
| TH-229  | 3.496E-02  | 7.753E-01 | 7.133E-01 | 3.956E-01 | FAIL ABUN  |
| TH-230  | 5.264E-01  | 2.076E-01 | 1.616E-01 | 1.059E-01 | FAIL ABUN  |
| PA-231  | 8.764E-01  | 2.714E+00 | 2.454E+00 | 1.385E+00 | NOT IDENT. |
| TH-231  | -1.385E-01 | 1.131E+00 | 9.905E-01 | 5.773E-01 | FAIL ABUN  |
| U-231   | -1.258E-01 | 4.710E-01 | 3.712E-01 | 2.403E-01 | FAIL ABUN  |
| TH-232  | 1.359E+00  | 6.214E-01 | 3.586E-01 | 3.170E-01 | FAIL ABUN  |
| PA-233  | -1.219E-01 | 1.184E-01 | 9.875E-02 | 6.042E-02 | FAIL ABUN  |
| PA-234  | 5.449E-02  | 7.544E-01 | 6.382E-01 | 3.849E-01 | FAIL ABUN  |
| PA-234M | 8.455E+00  | 1.065E+01 | 9.388E+00 | 5.436E+00 | NOT IDENT. |
| TH-234  | -1.192E+00 | 1.492E+00 | 1.181E+00 | 7.611E-01 | FAIL ABUN  |
| U-234   | 5.264E-01  | 2.076E-01 | 1.616E-01 | 1.059E-01 | FAIL ABUN  |
| U-235   | -1.750E-01 | 3.045E-01 | 2.566E-01 | 1.553E-01 | FAIL ABUN  |
| NP-236  | 3.189E-04  | 1.176E-01 | 1.019E-01 | 6.001E-02 | NOT IDENT. |
| NP-237  | 4.241E+00  | 1.061E+00 | 5.017E-01 | 5.415E-01 | NOT IDENT. |
| U-238   | -1.192E+00 | 1.492E+00 | 1.181E+00 | 7.611E-01 | FAIL ABUN  |
| NP-239  | -2.358E-01 | 3.117E-01 | 2.341E-01 | 1.590E-01 | NOT IDENT. |
| CM-243  | 7.263E-03  | 1.244E-01 | 1.115E-01 | 6.346E-02 | NOT IDENT. |
| AM-246  | -1.515E-01 | 3.105E-01 | 2.605E-01 | 1.584E-01 | NOT IDENT. |
| CM-247  | -5.772E-02 | 6.856E-02 | 5.610E-02 | 3.498E-02 | NOT IDENT. |
| CF-249  | -6.591E-02 | 7.658E-02 | 6.297E-02 | 3.907E-02 | NOT IDENT. |
| CF-251  | 1.081E-01  | 1.833E-01 | 1.734E-01 | 9.351E-02 | NOT IDENT. |

\*\*\*\*\*  
 \* GEL Laboratories LLC \*  
 \* 2040 SAVAGE ROAD \*  
 \* CHARLESTON, SC 29417 \*  
 \* GAMMA SPECTROSCOPY BACKGROUND REPORT \*  
 \*\*\*\*\*

| ENERGY | MDA COUNTS |
|--------|------------|
|--------|------------|

|       |          |
|-------|----------|
| 46.50 | 524.3987 |
| 46.50 | 524.3987 |
| 46.50 | 524.3987 |
| 48.70 | 645.9138 |
| 49.72 | 668.5526 |
| 51.35 | 675.2122 |
| 52.39 | 786.0233 |
| 52.97 | 788.1390 |
| 53.15 | 786.5807 |
| 53.44 | 790.9901 |
| 54.07 | 787.9171 |
| 56.28 | 819.7310 |
| 56.28 | 819.7353 |
| 57.37 | 884.3398 |
| 57.53 | 880.3210 |
| 57.53 | 880.3256 |
| 57.60 | 880.4689 |
| 57.98 | 606.9024 |
| 57.98 | 606.9024 |
| 59.32 | 608.8335 |
| 59.32 | 608.8335 |
| 59.40 | 608.9465 |
| 59.54 | 609.1471 |
| 59.72 | 609.4050 |
| 60.01 | 609.8173 |
| 61.10 | 325.2140 |
| 61.14 | 325.2436 |
| 61.30 | 325.3638 |
| 63.00 | 331.0425 |
| 63.29 | 331.2597 |
| 63.29 | 331.2597 |
| 63.58 | 330.0032 |
| 64.28 | 339.3742 |
| 65.12 | 355.9747 |
| 65.20 | 356.0376 |
| 65.20 | 356.0376 |
| 66.05 | 329.8430 |
| 66.72 | 325.3805 |
| 66.83 | 325.4608 |
| 66.91 | 321.5600 |
| 67.20 | 346.5126 |
| 67.20 | 346.5126 |
| 67.75 | 353.8641 |
| 67.85 | 353.9404 |
| 68.90 | 336.8533 |
| 68.90 | 336.8533 |
| 69.30 | 347.2853 |
| 69.67 | 364.2818 |
| 70.82 | 332.2395 |
| 70.82 | 332.2395 |
| 70.83 | 332.2463 |
| 72.80 | 377.1894 |
| 72.87 | 377.2449 |
| 72.87 | 377.2449 |
| 74.67 | 342.9339 |
| 74.81 | 343.0310 |
| 74.81 | 343.0310 |
| 74.81 | 343.0310 |
| 74.81 | 343.0310 |
| 74.81 | 343.0310 |
| 74.81 | 343.0310 |
| 74.97 | 343.1420 |
| 75.28 | 343.3571 |
| 75.70 | 343.6467 |
| 77.11 | 344.6162 |
| 77.11 | 344.6162 |

|        |          |
|--------|----------|
| 77.11  | 344.6162 |
| 77.11  | 344.6162 |
| 77.11  | 344.6162 |
| 77.11  | 344.6162 |
| 77.11  | 344.6162 |
| 78.38  | 373.8497 |
| 79.62  | 336.6713 |
| 79.80  | 336.7893 |
| 79.80  | 336.7893 |
| 80.11  | 367.4886 |
| 80.18  | 367.5382 |
| 80.30  | 367.6228 |
| 80.30  | 367.6228 |
| 80.57  | 425.8096 |
| 81.00  | 471.9869 |
| 81.07  | 472.0506 |
| 81.07  | 472.0506 |
| 81.07  | 472.0506 |
| 81.07  | 472.0506 |
| 82.60  | 410.6142 |
| 83.37  | 407.5268 |
| 83.78  | 360.8568 |
| 83.78  | 360.8568 |
| 83.78  | 360.8568 |
| 83.78  | 360.8568 |
| 84.21  | 345.7809 |
| 84.90  | 344.6868 |
| 85.43  | 375.8328 |
| 86.29  | 470.5403 |
| 86.50  | 484.6120 |
| 86.54  | 484.6479 |
| 86.59  | 484.6934 |
| 86.72  | 484.8084 |
| 86.79  | 484.8683 |
| 86.94  | 485.0049 |
| 87.30  | 483.7779 |
| 87.30  | 483.7779 |
| 87.30  | 483.7779 |
| 87.30  | 483.7779 |
| 87.30  | 483.7779 |
| 87.30  | 483.7779 |
| 87.57  | 339.1725 |
| 87.88  | 339.3649 |
| 88.03  | 339.4569 |
| 88.36  | 339.6611 |
| 88.47  | 339.7297 |
| 89.95  | 340.6367 |
| 91.11  | 341.3445 |
| 92.29  | 342.0574 |
| 92.38  | 342.1126 |
| 92.38  | 342.1126 |
| 93.35  | 342.6949 |
| 94.00  | 214.2977 |
| 94.67  | 219.2435 |
| 94.67  | 219.2456 |
| 94.90  | 214.6332 |
| 94.90  | 214.6332 |
| 94.90  | 214.6332 |
| 94.90  | 214.6332 |
| 95.87  | 225.9778 |
| 95.87  | 225.9778 |
| 96.73  | 238.8846 |
| 97.43  | 254.9035 |
| 98.44  | 221.7159 |
| 98.44  | 221.7159 |
| 98.88  | 206.1067 |
| 99.55  | 213.7082 |
| 99.55  | 213.7082 |
| 99.86  | 218.0329 |
| 100.00 | 218.0834 |
| 100.10 | 214.9601 |
| 103.18 | 258.4210 |
| 103.76 | 226.8634 |
| 105.00 | 231.5695 |
| 105.31 | 235.9371 |
| 108.00 | 236.9556 |
| 109.28 | 220.3230 |

|        |          |
|--------|----------|
| 111.00 | 239.1493 |
| 111.00 | 239.1493 |
| 111.76 | 252.3159 |
| 112.95 | 246.3269 |
| 115.19 | 221.2690 |
| 116.30 | 220.5601 |
| 117.00 | 272.7449 |
| 117.00 | 272.7449 |
| 117.66 | 248.6390 |
| 121.11 | 212.3460 |
| 121.62 | 212.5056 |
| 121.78 | 212.5552 |
| 122.06 | 212.6425 |
| 122.32 | 212.7229 |
| 122.32 | 212.7229 |
| 122.32 | 212.7229 |
| 122.32 | 212.7229 |
| 123.07 | 193.2985 |
| 127.23 | 214.8921 |
| 129.76 | 223.8201 |
| 131.20 | 238.6340 |
| 133.02 | 258.0648 |
| 133.54 | 256.0330 |
| 135.34 | 233.3319 |
| 136.00 | 221.3082 |
| 136.25 | 214.7082 |
| 136.48 | 220.3391 |
| 140.51 | 234.9597 |
| 140.51 | 0.0000   |
| 142.18 | 227.6295 |
| 142.65 | 261.4329 |
| 143.76 | 242.7100 |
| 144.24 | 219.2520 |
| 144.24 | 219.2520 |
| 144.24 | 219.2520 |
| 144.24 | 219.2520 |
| 145.22 | 194.7640 |
| 145.44 | 198.1969 |
| 147.16 | 243.7822 |
| 152.43 | 229.5145 |
| 152.70 | 237.5487 |
| 153.22 | 244.5279 |
| 154.21 | 232.3036 |
| 154.21 | 232.3036 |
| 154.21 | 232.3036 |
| 154.21 | 232.3036 |
| 155.03 | 222.2810 |
| 156.02 | 213.4243 |
| 158.56 | 217.5266 |
| 159.00 | 0.0000   |
| 159.00 | 206.1877 |
| 160.31 | 220.2852 |
| 161.27 | 211.3518 |
| 162.32 | 231.1713 |
| 162.64 | 231.2592 |
| 163.35 | 236.0616 |
| 163.89 | 231.6068 |
| 165.85 | 195.1879 |
| 167.43 | 211.7520 |
| 171.28 | 180.1601 |
| 171.86 | 197.7281 |
| 172.10 | 197.7834 |
| 176.55 | 212.2393 |
| 176.60 | 212.2522 |
| 181.06 | 225.6582 |
| 184.41 | 203.8482 |
| 185.71 | 207.3279 |
| 186.00 | 207.3940 |
| 190.27 | 212.2741 |
| 192.34 | 227.5588 |
| 193.63 | 238.5954 |
| 197.04 | 234.0760 |
| 198.01 | 242.3927 |
| 198.60 | 234.4563 |
| 200.40 | 224.9966 |
| 201.83 | 231.6396 |
| 202.84 | 232.7830 |
| 205.31 | 244.2261 |



|        |          |
|--------|----------|
| 208.36 | 215.0416 |
| 208.81 | 223.3091 |
| 209.75 | 231.6969 |
| 209.75 | 231.6969 |
| 210.97 | 219.2447 |
| 215.65 | 235.8025 |
| 216.55 | 222.2896 |
| 218.09 | 227.2059 |
| 222.10 | 214.2956 |
| 223.80 | 212.8033 |
| 226.40 | 225.3377 |
| 227.00 | 218.9979 |
| 227.08 | 219.0160 |
| 227.20 | 229.2059 |
| 228.16 | 216.4632 |
| 228.18 | 216.4686 |
| 228.18 | 216.4686 |
| 231.56 | 203.6350 |
| 235.69 | 196.7528 |
| 236.00 | 184.8814 |
| 236.00 | 184.8814 |
| 238.63 | 194.2954 |
| 238.63 | 194.2954 |
| 238.63 | 194.2954 |
| 238.63 | 194.2954 |
| 239.00 | 194.3621 |
| 240.98 | 194.7128 |
| 241.98 | 194.8897 |
| 241.98 | 194.8897 |
| 241.98 | 194.8897 |
| 244.69 | 231.4342 |
| 245.39 | 225.5658 |
| 247.94 | 191.2263 |
| 248.90 | 185.7321 |
| 249.79 | 203.8068 |
| 252.40 | 216.5709 |
| 252.85 | 202.4650 |
| 252.85 | 202.4650 |
| 254.15 | 0.0000   |
| 256.20 | 204.0082 |
| 256.20 | 204.0082 |
| 260.50 | 209.5297 |
| 260.90 | 234.3749 |
| 262.80 | 173.6798 |
| 264.65 | 202.6286 |
| 268.24 | 208.0367 |
| 268.79 | 187.9908 |
| 269.46 | 159.3079 |
| 269.46 | 159.3079 |
| 269.46 | 159.3079 |
| 269.46 | 159.3079 |
| 271.23 | 199.9099 |
| 273.65 | 194.5347 |
| 276.40 | 184.3609 |
| 277.35 | 179.6738 |
| 277.60 | 180.6769 |
| 277.60 | 180.6769 |
| 278.00 | 185.5693 |
| 278.60 | 214.6696 |
| 279.20 | 197.3604 |
| 279.53 | 206.1227 |
| 280.46 | 197.5627 |
| 281.68 | 190.9730 |
| 283.67 | 193.2246 |
| 284.30 | 188.4644 |
| 285.00 | 224.5356 |
| 285.90 | 208.1615 |
| 286.10 | 214.0314 |
| 286.10 | 214.0314 |
| 287.40 | 169.4572 |
| 288.45 | 0.0000   |
| 290.67 | 214.0324 |
| 290.80 | 214.0558 |
| 291.72 | 209.5222 |
| 293.26 | 176.9018 |
| 293.70 | 172.2644 |
| 295.21 | 174.7084 |
| 295.21 | 174.7084 |

|        |          |
|--------|----------|
| 295.21 | 174.7084 |
| 295.96 | 180.4147 |
| 296.50 | 145.1771 |
| 297.23 | 145.2607 |
| 298.57 | 145.4120 |
| 299.80 | 137.6843 |
| 299.80 | 137.6843 |
| 300.09 | 145.5836 |
| 300.09 | 145.5836 |
| 300.09 | 145.5836 |
| 300.09 | 145.5836 |
| 300.12 | 145.5881 |
| 301.29 | 181.1643 |
| 302.84 | 187.6894 |
| 303.76 | 178.3530 |
| 303.91 | 178.3723 |
| 304.40 | 184.7577 |
| 304.40 | 184.7577 |
| 304.84 | 183.2409 |
| 306.84 | 218.8544 |
| 308.46 | 173.2536 |
| 311.98 | 208.4587 |
| 316.51 | 158.3692 |
| 318.01 | 170.5121 |
| 319.02 | 176.6273 |
| 319.41 | 176.6786 |
| 320.08 | 163.7823 |
| 323.87 | 167.2446 |
| 323.87 | 167.2446 |
| 323.87 | 167.2446 |
| 323.87 | 167.2446 |
| 325.23 | 200.4913 |
| 328.77 | 178.8990 |
| 333.44 | 161.3501 |
| 334.20 | 166.2811 |
| 334.20 | 166.2811 |
| 334.30 | 166.2937 |
| 338.28 | 156.8495 |
| 338.28 | 156.8495 |
| 338.28 | 156.8495 |
| 338.28 | 156.8495 |
| 338.32 | 156.8542 |
| 338.32 | 156.8542 |
| 338.32 | 156.8542 |
| 340.50 | 150.8117 |
| 340.57 | 150.8185 |
| 344.27 | 192.7915 |
| 345.85 | 177.8881 |
| 350.59 | 205.7713 |
| 351.07 | 197.6708 |
| 351.92 | 187.9812 |
| 351.92 | 187.9812 |
| 351.92 | 187.9812 |
| 355.39 | 0.0000   |
| 356.01 | 163.9209 |
| 364.48 | 155.5897 |
| 366.43 | 148.5725 |
| 367.43 | 173.4500 |
| 367.94 | 172.4761 |
| 369.80 | 149.9406 |
| 374.96 | 185.7300 |
| 383.85 | 126.2786 |
| 387.95 | 176.8394 |
| 388.63 | 167.4951 |
| 391.69 | 154.1867 |
| 391.69 | 154.1867 |
| 392.90 | 159.5541 |
| 398.62 | 160.1316 |
| 400.65 | 132.9099 |
| 401.10 | 131.8913 |
| 401.81 | 129.8392 |
| 402.60 | 161.5866 |
| 404.84 | 166.0435 |
| 410.95 | 160.3016 |
| 411.60 | 164.6142 |
| 413.65 | 156.3131 |
| 414.70 | 158.5421 |
| 415.30 | 146.8903 |

|        |          |
|--------|----------|
| 415.76 | 165.0328 |
| 417.63 | 0.0000   |
| 418.52 | 162.1100 |
| 423.70 | 146.5680 |
| 427.08 | 157.5849 |
| 427.89 | 150.1535 |
| 432.53 | 149.4924 |
| 433.93 | 160.3792 |
| 439.47 | 143.6240 |
| 439.56 | 143.6301 |
| 439.89 | 151.2195 |
| 443.98 | 179.7286 |
| 444.90 | 175.4918 |
| 445.03 | 175.5066 |
| 445.03 | 175.5066 |
| 445.03 | 175.5066 |
| 445.03 | 175.5066 |
| 453.90 | 160.0680 |
| 463.38 | 180.6324 |
| 468.07 | 189.8866 |
| 473.00 | 177.1992 |
| 475.06 | 146.5484 |
| 475.35 | 150.9810 |
| 476.78 | 166.5387 |
| 477.59 | 161.0955 |
| 477.96 | 155.6108 |
| 482.03 | 131.6234 |
| 484.57 | 139.5582 |
| 487.03 | 147.5083 |
| 490.36 | 123.3286 |
| 492.35 | 121.2362 |
| 497.08 | 115.9669 |
| 507.63 | 0.0000   |
| 510.53 | 0.0000   |
| 510.84 | 114.5632 |
| 511.00 | 114.5726 |
| 511.85 | 125.8607 |
| 511.85 | 125.8607 |
| 513.99 | 124.5000 |
| 513.99 | 124.5000 |
| 520.41 | 123.7081 |
| 520.65 | 123.7248 |
| 527.90 | 107.8670 |
| 528.96 | 0.0000   |
| 529.64 | 114.3136 |
| 529.87 | 0.0000   |
| 531.02 | 109.8542 |
| 537.32 | 108.3812 |
| 543.00 | 95.8997  |
| 546.56 | 0.0000   |
| 549.76 | 96.2227  |
| 552.65 | 90.8523  |
| 555.20 | 99.2355  |
| 563.23 | 104.2353 |
| 563.90 | 104.2684 |
| 568.70 | 105.4333 |
| 569.32 | 105.4667 |
| 569.50 | 105.4750 |
| 569.67 | 105.4834 |
| 573.80 | 109.4006 |
| 574.00 | 110.3365 |
| 574.64 | 113.1538 |
| 578.91 | 102.2307 |
| 579.30 | 102.2495 |
| 583.14 | 108.0222 |
| 585.48 | 90.1176  |
| 591.81 | 91.4232  |
| 592.07 | 93.5107  |
| 593.00 | 82.3260  |
| 595.88 | 100.2341 |
| 600.56 | 96.6958  |
| 602.52 | 0.0000   |
| 602.71 | 108.0680 |
| 602.71 | 108.0680 |
| 603.60 | 106.0984 |
| 604.41 | 117.5568 |
| 604.70 | 116.0044 |
| 609.31 | 109.3362 |

|        |          |
|--------|----------|
| 609.31 | 109.3362 |
| 609.31 | 109.3362 |
| 609.31 | 109.3362 |
| 610.33 | 102.1576 |
| 612.46 | 106.9749 |
| 614.37 | 94.4727  |
| 618.01 | 91.7877  |
| 621.84 | 89.1026  |
| 621.84 | 89.1026  |
| 631.29 | 100.8993 |
| 633.02 | 99.0717  |
| 633.10 | 99.0742  |
| 634.78 | 100.1012 |
| 635.90 | 101.1037 |
| 636.97 | 103.0614 |
| 645.85 | 97.7143  |
| 646.12 | 91.9758  |
| 656.30 | 85.0036  |
| 657.75 | 91.4746  |
| 657.90 | 0.0000   |
| 661.65 | 112.8467 |
| 661.65 | 112.8467 |
| 664.57 | 93.3508  |
| 666.33 | 99.8645  |
| 666.33 | 99.8645  |
| 675.00 | 85.3574  |
| 677.61 | 73.7976  |
| 685.20 | 70.1350  |
| 692.80 | 87.9434  |
| 695.00 | 83.1344  |
| 696.49 | 82.2056  |
| 696.49 | 82.2056  |
| 697.00 | 71.4548  |
| 697.49 | 70.4900  |
| 698.33 | 76.3909  |
| 698.50 | 81.2938  |
| 699.00 | 86.2082  |
| 702.63 | 115.7702 |
| 706.10 | 80.5626  |
| 706.58 | 0.0000   |
| 706.67 | 91.3902  |
| 709.31 | 88.5366  |
| 711.68 | 97.4845  |
| 713.82 | 79.8293  |
| 717.42 | 89.8136  |
| 720.50 | 99.8065  |
| 721.93 | 90.9645  |
| 722.20 | 101.8508 |
| 722.78 | 109.7859 |
| 722.78 | 109.7859 |
| 722.89 | 109.7914 |
| 722.95 | 109.7941 |
| 723.30 | 105.8532 |
| 724.18 | 109.8483 |
| 727.18 | 96.1072  |
| 733.00 | 105.2650 |
| 735.90 | 98.4272  |
| 739.58 | 95.5805  |
| 742.81 | 100.6868 |
| 744.21 | 102.7360 |
| 747.13 | 105.8473 |
| 751.79 | 104.0381 |
| 752.31 | 103.0578 |
| 753.82 | 82.0941  |
| 755.35 | 94.1629  |
| 756.15 | 86.1764  |
| 756.87 | 89.2064  |
| 763.93 | 85.4275  |
| 765.79 | 79.4532  |
| 766.42 | 97.5802  |
| 766.84 | 97.5944  |
| 776.49 | 83.8146  |
| 778.00 | 80.8301  |
| 778.57 | 82.8688  |
| 778.89 | 82.8789  |
| 783.80 | 74.9304  |
| 785.46 | 78.0170  |
| 792.07 | 85.3186  |

|         |          |
|---------|----------|
| 795.84  | 100.6943 |
| 796.30  | 103.7631 |
| 798.80  | 99.7849  |
| 801.93  | 95.8222  |
| 805.60  | 88.8054  |
| 810.29  | 99.1811  |
| 810.76  | 99.1977  |
| 815.85  | 99.3824  |
| 817.79  | 107.6532 |
| 818.51  | 109.7325 |
| 819.60  | 110.8028 |
| 826.30  | 119.2965 |
| 828.27  | 102.9126 |
| 831.60  | 102.0043 |
| 831.96  | 103.0493 |
| 834.83  | 100.0597 |
| 836.80  | 0.0000   |
| 846.75  | 85.9788  |
| 848.13  | 93.2739  |
| 856.28  | 0.0000   |
| 856.80  | 108.1107 |
| 860.37  | 110.3270 |
| 867.32  | 108.5043 |
| 867.82  | 118.9569 |
| 871.10  | 120.1365 |
| 873.19  | 111.8589 |
| 874.81  | 112.9676 |
| 875.33  | 0.0000   |
| 876.40  | 94.1902  |
| 879.36  | 123.6177 |
| 880.27  | 113.1785 |
| 880.51  | 111.0904 |
| 881.50  | 119.5163 |
| 883.24  | 99.6549  |
| 884.67  | 88.1590  |
| 889.25  | 105.1123 |
| 896.60  | 103.2661 |
| 898.02  | 108.5850 |
| 899.00  | 99.1314  |
| 903.28  | 103.8478 |
| 911.07  | 103.7637 |
| 911.07  | 103.7637 |
| 911.07  | 103.7637 |
| 919.63  | 90.8443  |
| 920.93  | 99.8520  |
| 925.00  | 117.0039 |
| 925.24  | 118.0784 |
| 926.50  | 130.8977 |
| 935.52  | 131.2821 |
| 937.48  | 100.3913 |
| 944.10  | 117.7317 |
| 946.00  | 117.8042 |
| 949.00  | 117.9170 |
| 962.29  | 133.4877 |
| 964.01  | 199.2634 |
| 966.15  | 147.6630 |
| 968.20  | 128.3434 |
| 969.11  | 139.1694 |
| 969.11  | 139.1694 |
| 969.11  | 139.1694 |
| 977.42  | 91.9395  |
| 980.50  | 74.7056  |
| 983.50  | 87.7790  |
| 989.30  | 86.8516  |
| 996.32  | 105.5372 |
| 1001.03 | 92.6139  |
| 1001.68 | 92.6326  |
| 1004.76 | 126.5352 |
| 1021.30 | 0.0000   |
| 1024.50 | 0.0000   |
| 1034.80 | 88.9798  |
| 1036.00 | 89.9290  |
| 1037.82 | 90.8950  |
| 1038.57 | 88.1602  |
| 1038.76 | 0.0000   |
| 1045.16 | 94.7729  |
| 1046.59 | 94.8148  |
| 1048.07 | 90.2520  |

|         |          |
|---------|----------|
| 1050.47 | 77.4136  |
| 1050.47 | 77.4136  |
| 1062.04 | 96.1712  |
| 1063.62 | 90.6628  |
| 1076.63 | 91.9343  |
| 1077.35 | 103.1005 |
| 1078.86 | 98.4994  |
| 1085.78 | 83.8000  |
| 1099.22 | 87.8611  |
| 1112.02 | 94.7450  |
| 1112.84 | 84.4446  |
| 1115.52 | 101.4126 |
| 1120.29 | 88.3851  |
| 1120.29 | 88.3851  |
| 1120.29 | 88.3851  |
| 1120.29 | 88.3851  |
| 1120.51 | 82.7471  |
| 1121.28 | 85.5865  |
| 1124.00 | 0.0000   |
| 1129.67 | 54.6771  |
| 1131.51 | 0.0000   |
| 1147.95 | 0.0000   |
| 1167.94 | 57.1606  |
| 1173.22 | 59.1493  |
| 1175.09 | 50.7253  |
| 1177.93 | 47.4891  |
| 1189.05 | 43.1140  |
| 1204.90 | 25.9772  |
| 1205.75 | 25.0203  |
| 1213.00 | 26.0321  |
| 1221.42 | 21.2588  |
| 1230.97 | 33.9048  |
| 1235.34 | 31.0339  |
| 1236.41 | 0.0000   |
| 1238.25 | 27.1740  |
| 1246.25 | 23.3408  |
| 1260.41 | 0.0000   |
| 1271.85 | 14.6832  |
| 1274.45 | 17.6316  |
| 1274.54 | 18.6111  |
| 1291.56 | 18.6908  |
| 1298.22 | 0.0000   |
| 1312.09 | 23.7295  |
| 1325.50 | 23.8076  |
| 1325.50 | 23.8076  |
| 1332.49 | 29.8108  |
| 1333.61 | 29.8181  |
| 1360.21 | 13.0042  |
| 1362.66 | 0.0000   |
| 1365.15 | 14.0211  |
| 1368.21 | 16.0358  |
| 1368.53 | 0.0000   |
| 1376.25 | 18.0747  |
| 1384.27 | 16.0970  |
| 1394.10 | 15.1257  |
| 1395.20 | 16.1380  |
| 1407.95 | 15.1746  |
| 1434.06 | 11.1952  |
| 1436.60 | 10.1831  |
| 1457.56 | 0.0000   |
| 1460.81 | 7.1675   |
| 1489.15 | 15.4565  |
| 1509.49 | 8.2806   |
| 1596.49 | 14.7628  |
| 1620.62 | 8.4785   |
| 1678.03 | 0.0000   |
| 1691.02 | 6.4502   |
| 1691.02 | 6.4502   |
| 1706.46 | 0.0000   |
| 1750.46 | 0.0000   |
| 1764.49 | 7.4785   |
| 1764.49 | 7.4785   |
| 1764.49 | 7.4785   |
| 1764.49 | 7.4785   |
| 1770.23 | 31.8181  |
| 1771.40 | 29.0182  |
| 1791.20 | 0.0000   |
| 1808.65 | 9.4270   |

1836.01

5.6853

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G1202015451

|                             |             |      |
|-----------------------------|-------------|------|
| Total Uranium Activity      | -3.6278E+00 | ug/g |
| Total Uranium Counting Unc. | 4.4401E+00  | ug/g |
| Total Uranium Tpu           | 2.2654E-06  | ug/g |
| Total Uranium Mda           | 3.5162E+00  | ug/g |



```

*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON , SC 29417              *
*               GROSS GAMMA REPORT                 *
*
*****
*
*   BATCH ID      : 941639                        SAMPLE ID   : G1202015451
*   ANALYST       : MXR1                          DETECTOR    : GAM07
*   SAMPLE DATE   : 15-JAN-2010 00:00:00.00      COUNT TIME   : 0 01:00:00.00
*   ANALYSIS DATE : 23-JAN-2010 14:08:28.30      SAMPLE ALQT  : 155.440 GRAM
*
*****

```

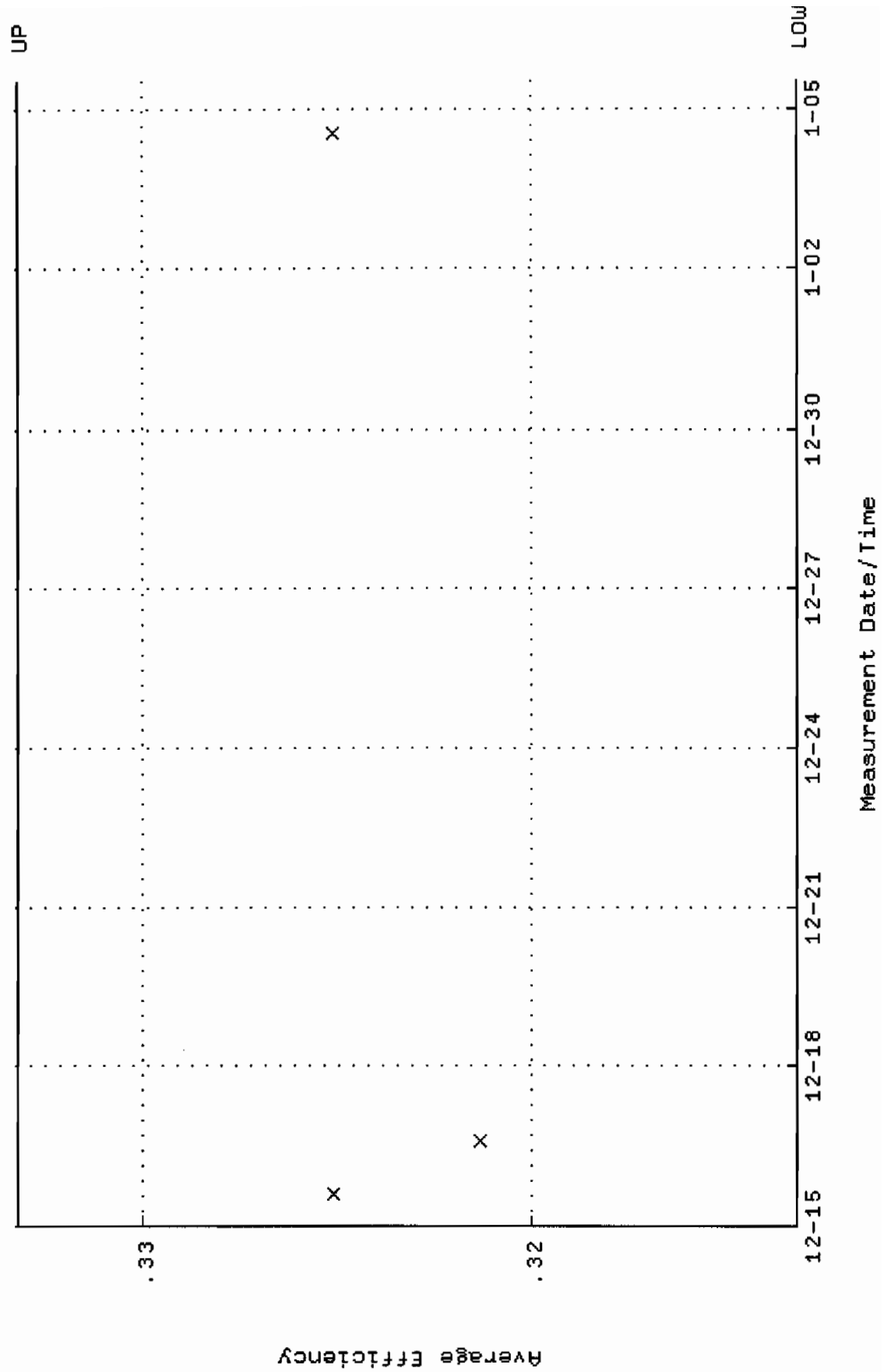
```

GROSS GAMMA ACTIVITY (pCi/GRAM ) : 2.727E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 2.843E+00
GROSS GAMMA MDA     (pCi/GRAM ) : 4.464E+00
GROSS GAMMA DLC     (pCi/GRAM ) : 2.185E+00

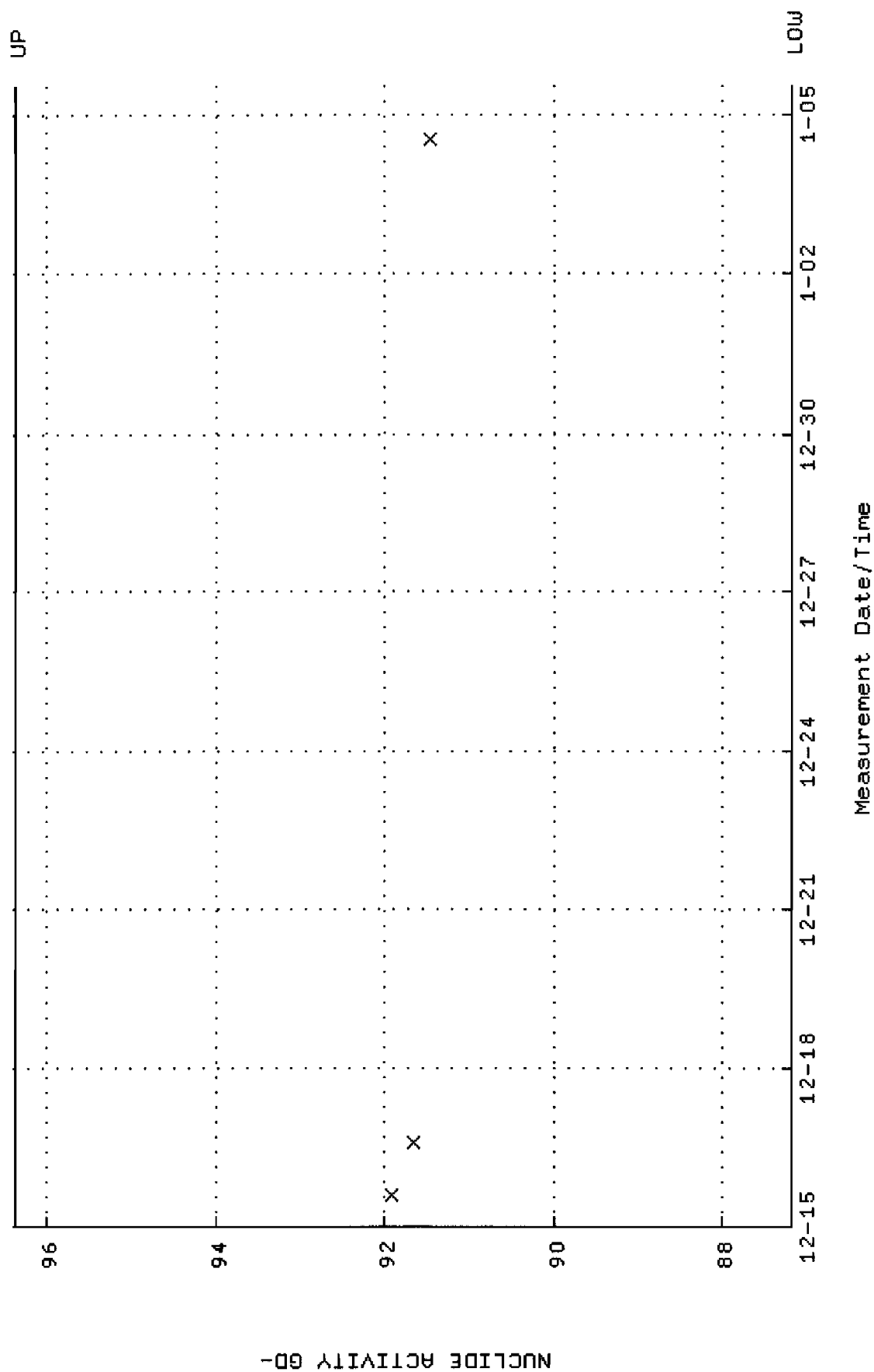
```

# BACKGROUND AND EFFICIENCY DATA

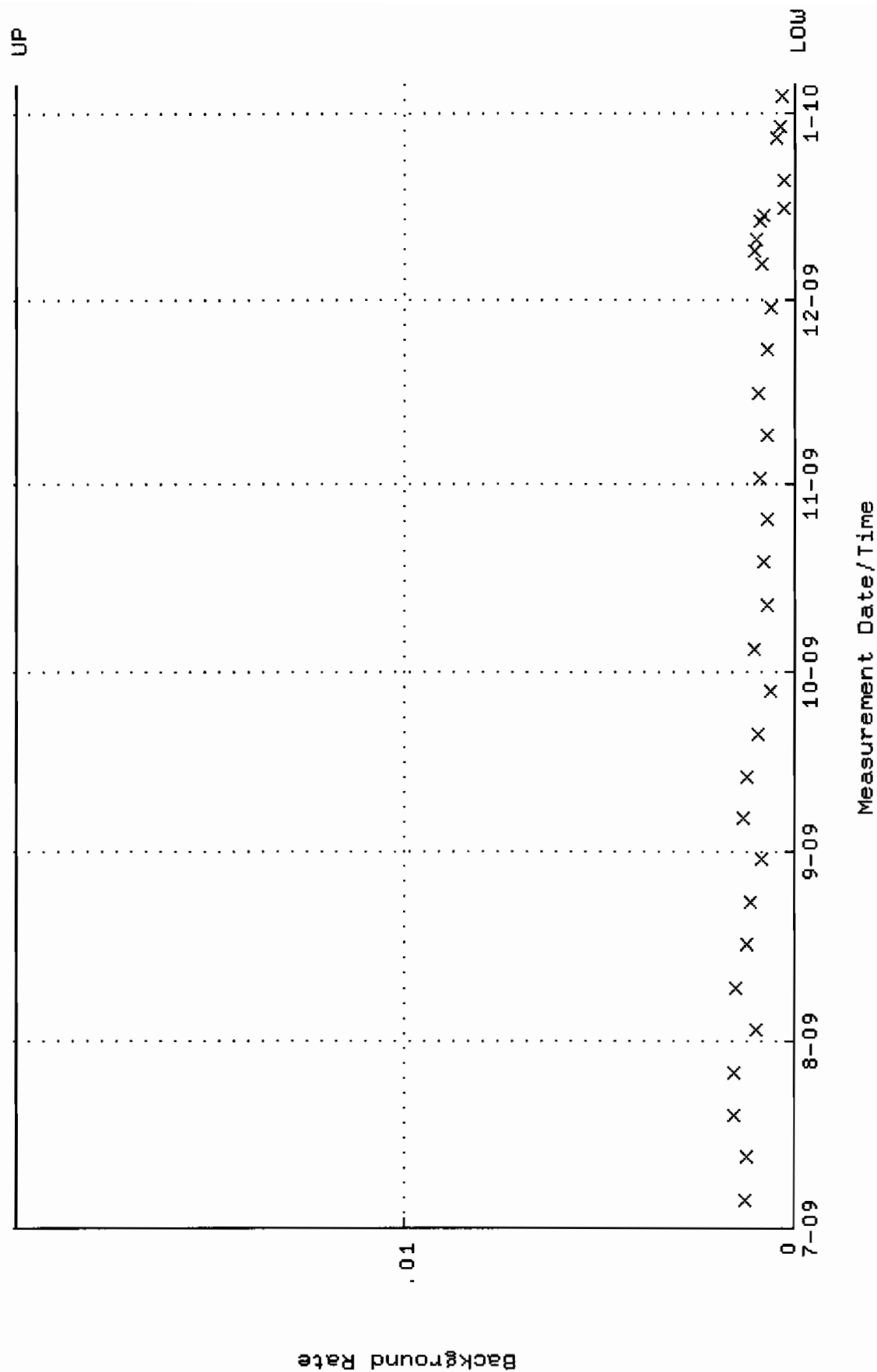
QA filename : DKA100:[ENV\_ALPHA.QA.W]W001.QAF;7  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 15-DEC-2009 14:48:34 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.313195 through 0.333195



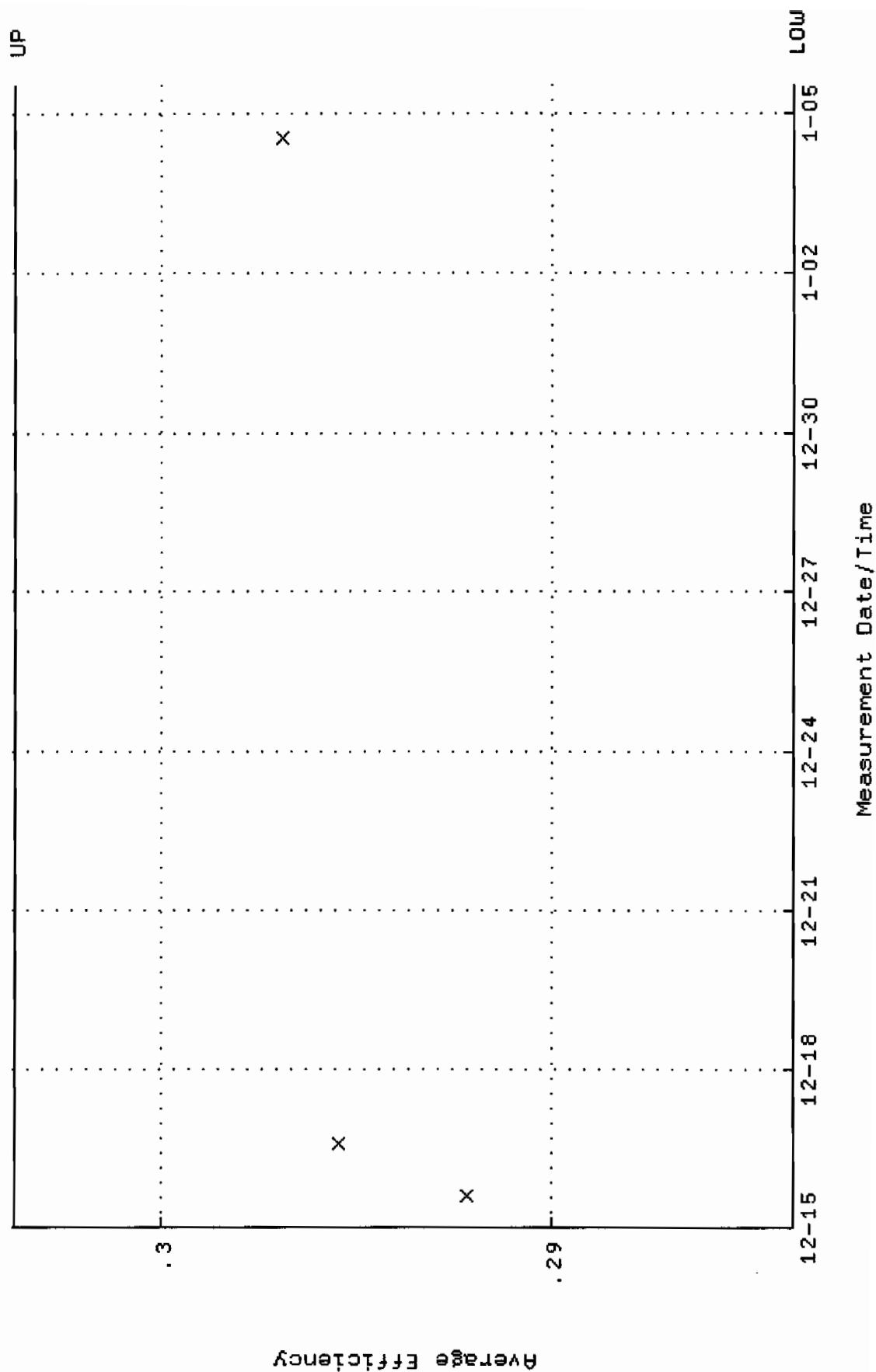
QA filename : DKA100:[ENV\_ALPHA.QA.W]W001.QAF;7  
 Parameter Name : NACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 15-DEC-2009 14:48:34 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 87.1884 through 96.3662



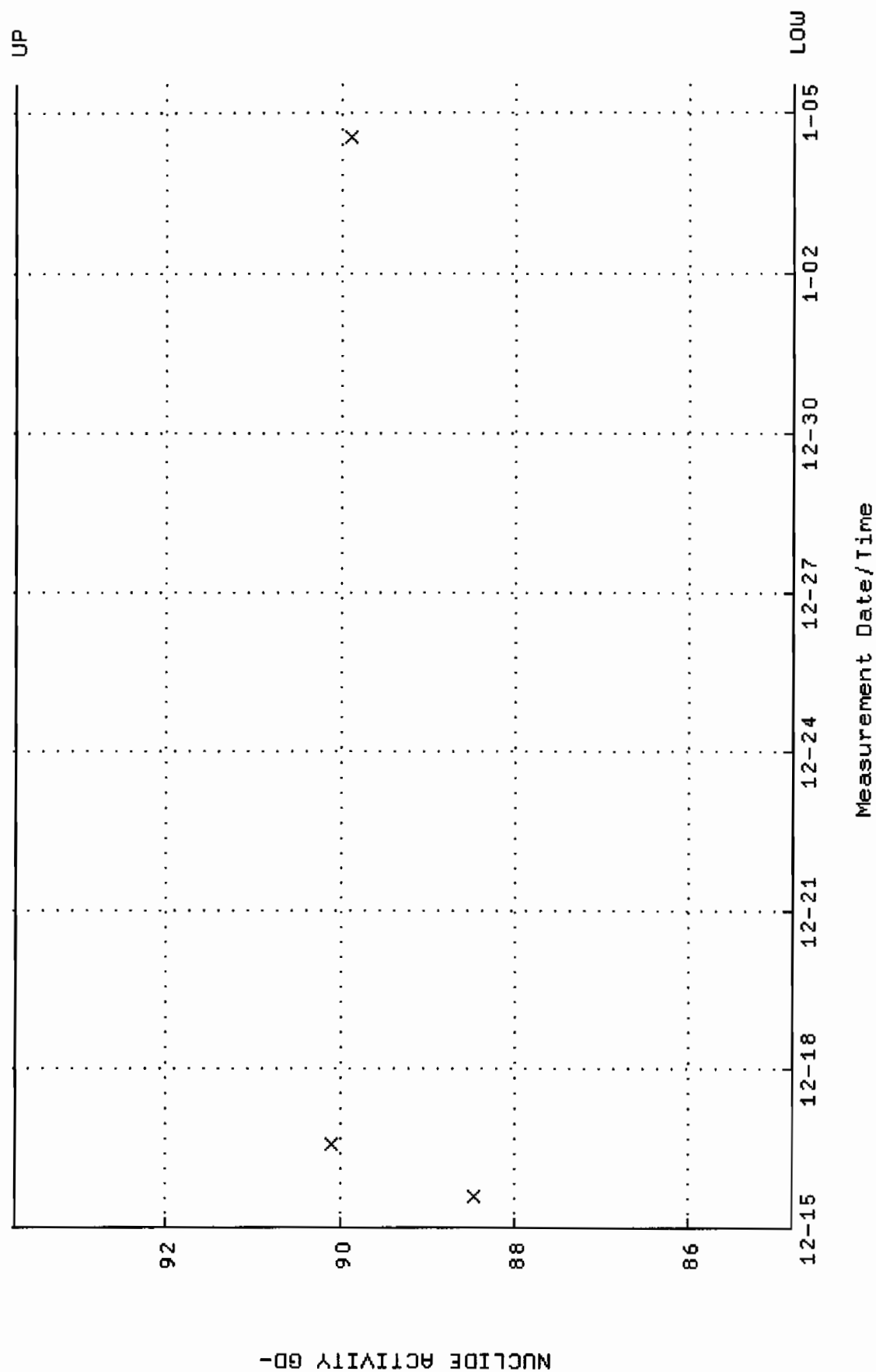
QA filename : DKA100:[ENV\_ALPHA.QA.B]B001.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 5-JUL-2009 15:11:54 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



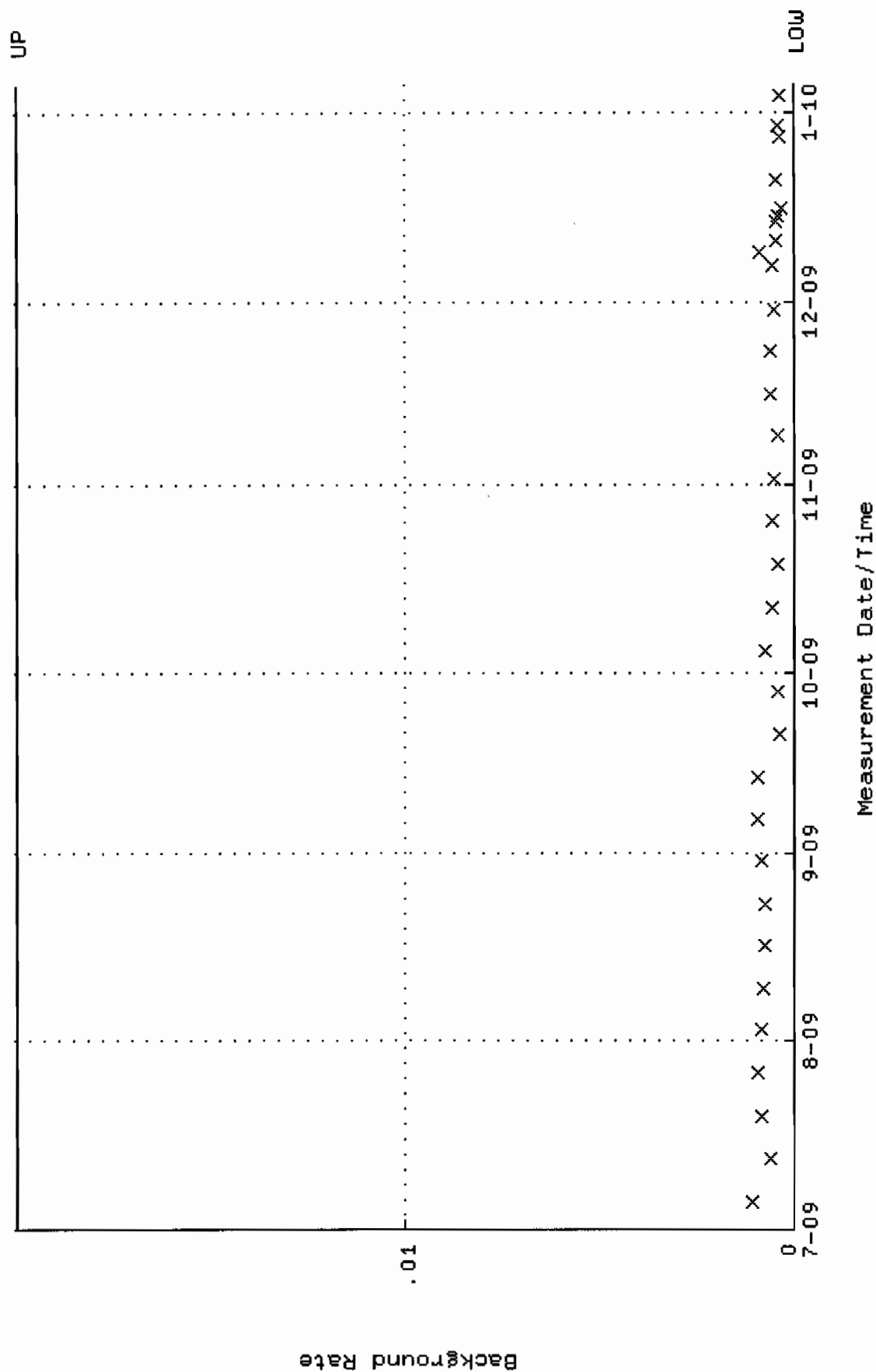
QA filename : DKA100:[ENV\_ALPHA.QA.W]W002.QAF;4  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 15-DEC-2009 14:48:34 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.283765 through 0.303765



QA filename : DKA100:[ENV\_ALPHA.QA.W]W002.QAF;4  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 15-DEC-2009 14:48:34 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 84.8037 through 93.7305

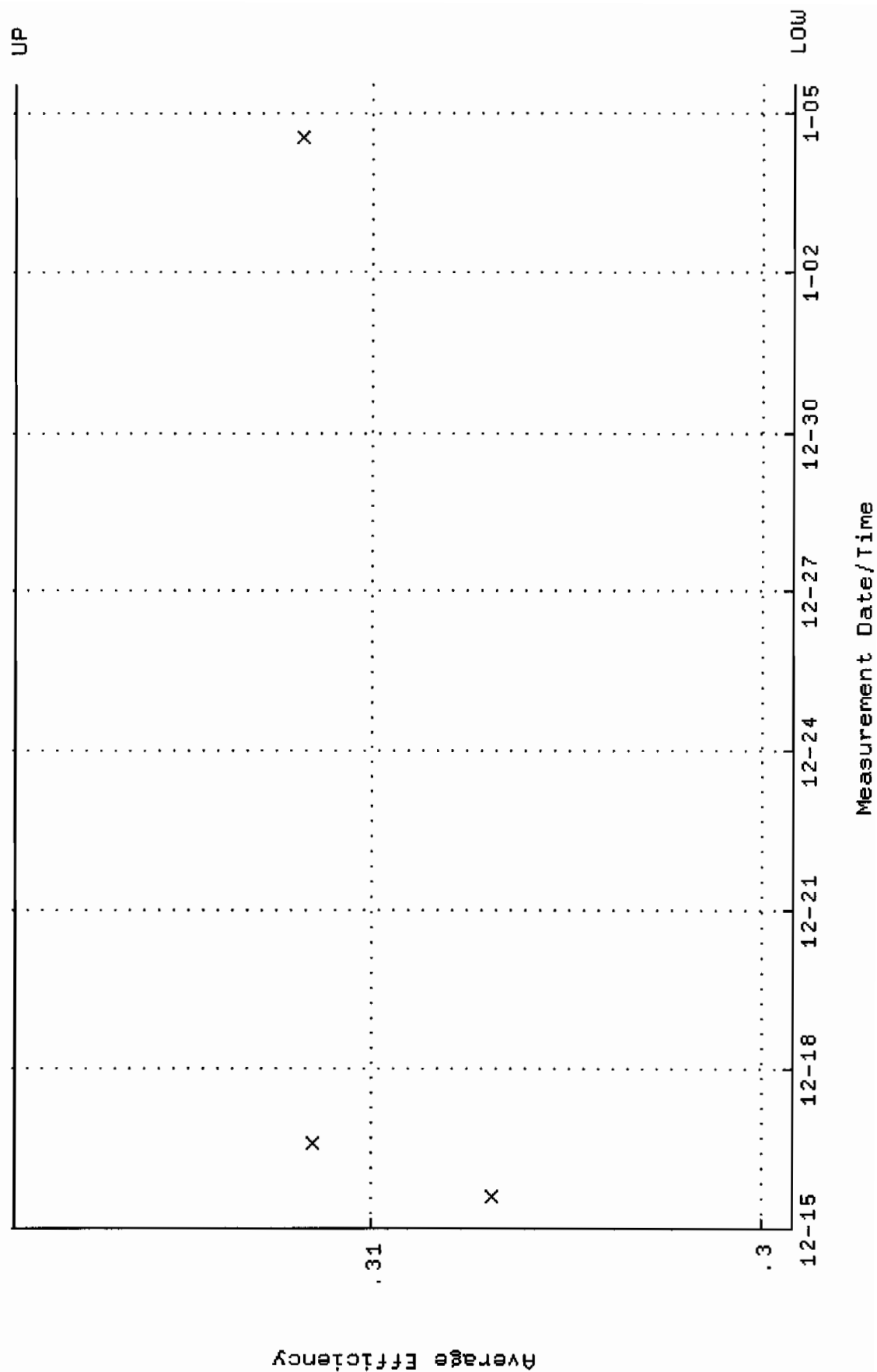


QA filename : DKA100:[ENV\_ALPHA.QA.B]B002.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 5-JUL-2009 15:11:54 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02

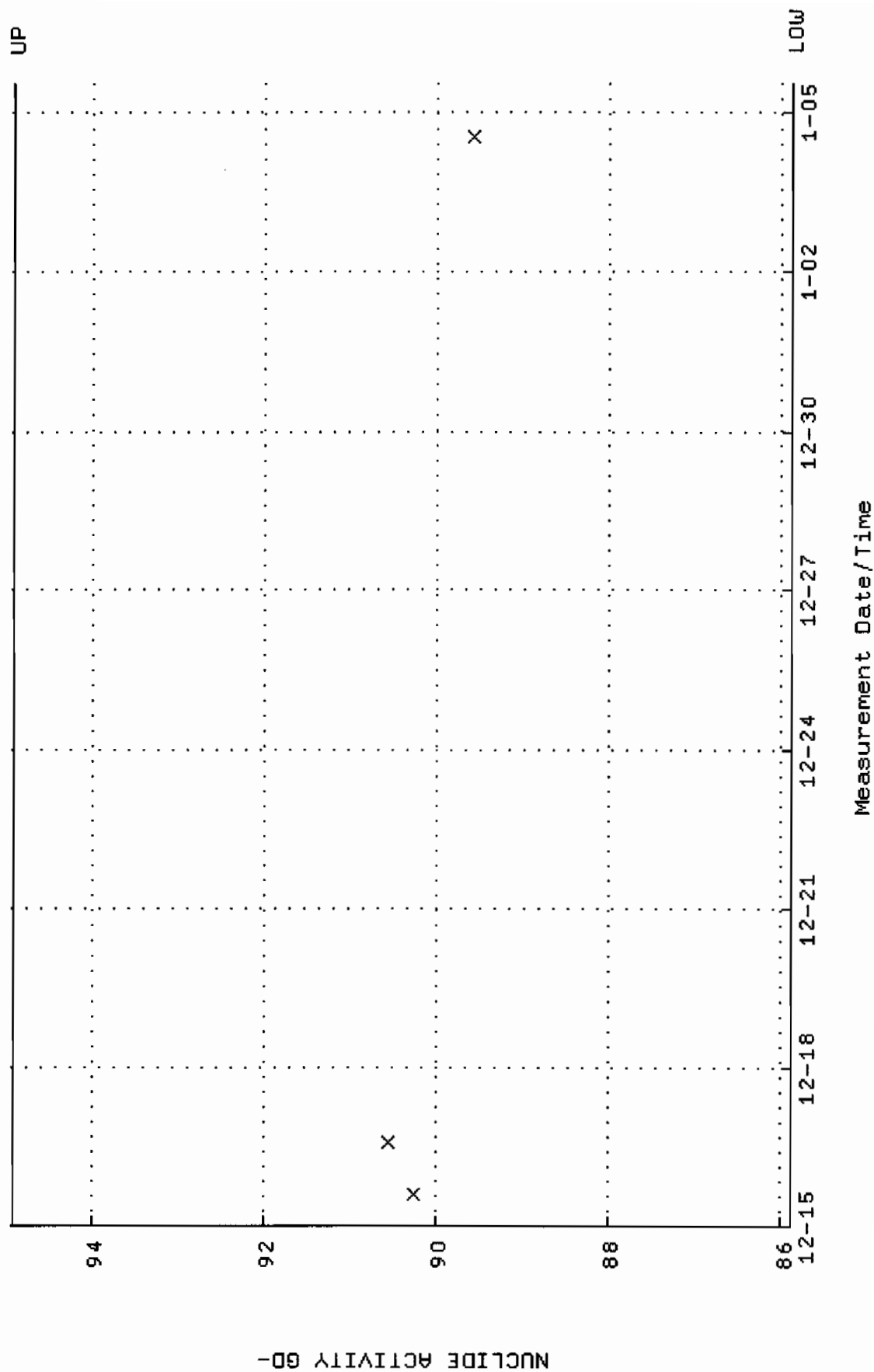




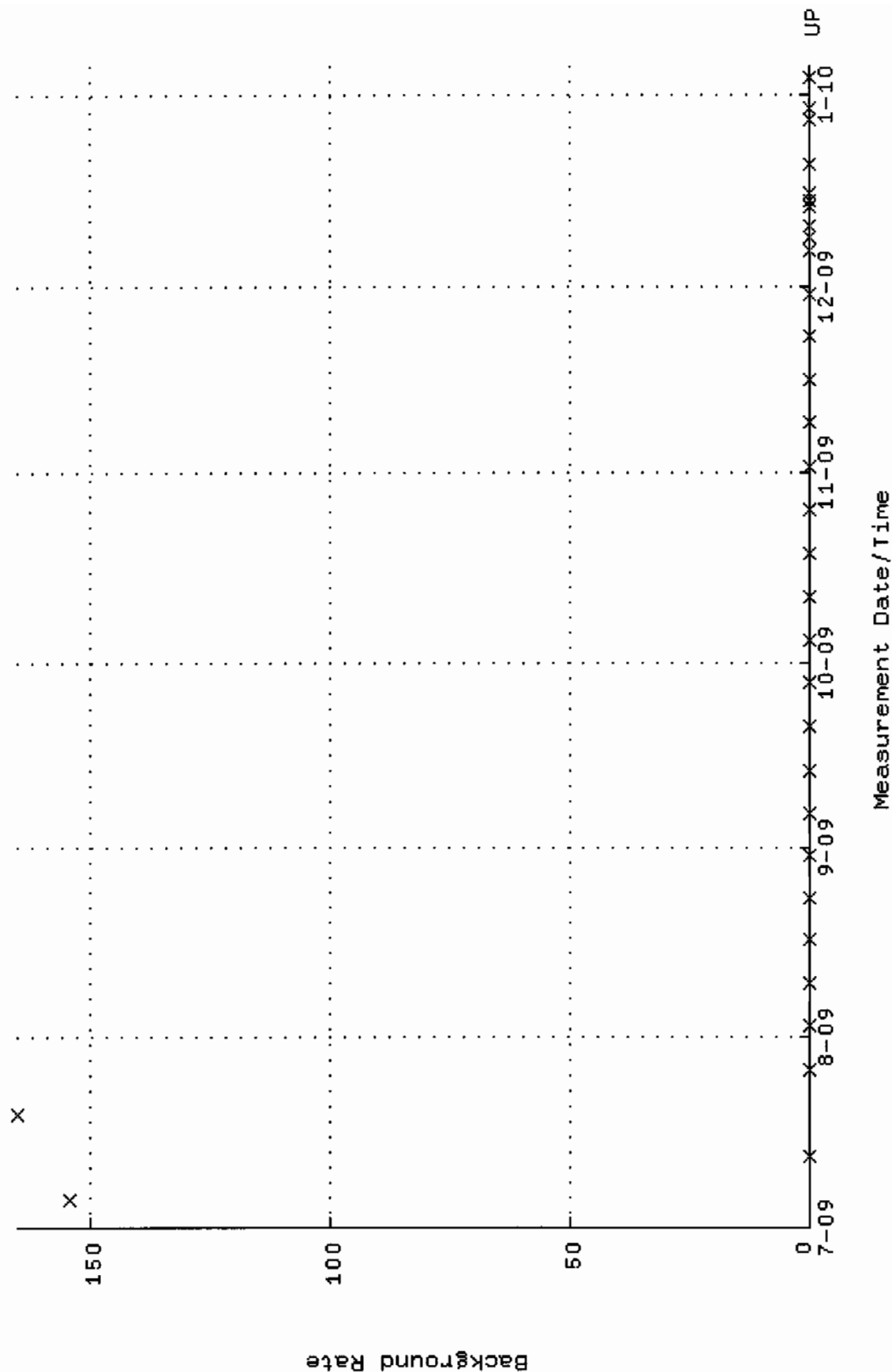
QA filename : DKA100:[ENV\_ALPHA.QA.W]WD003.QAF;5  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 15-DEC-2009 14:48:34 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.299193 through 0.319193



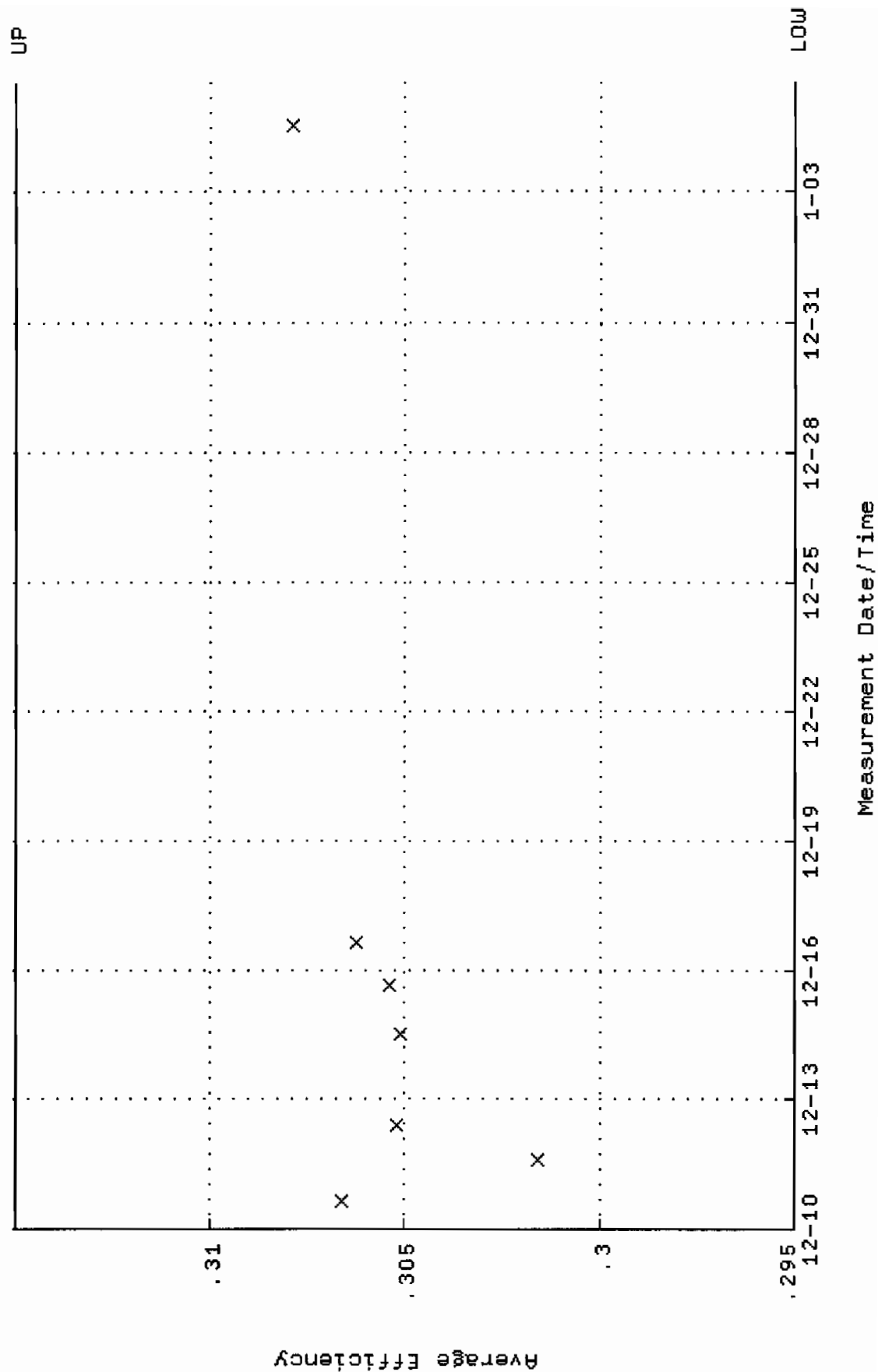
QA filename : DKA100:[ENV\_ALPHA.QA.W]W003.QAF;5  
Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
Start/End Dates : 15-DEC-2009 14:48:34 through 5-JAN-2010 12:00:00  
Lower/Upper Lmts: 85.8745 through 94.9139



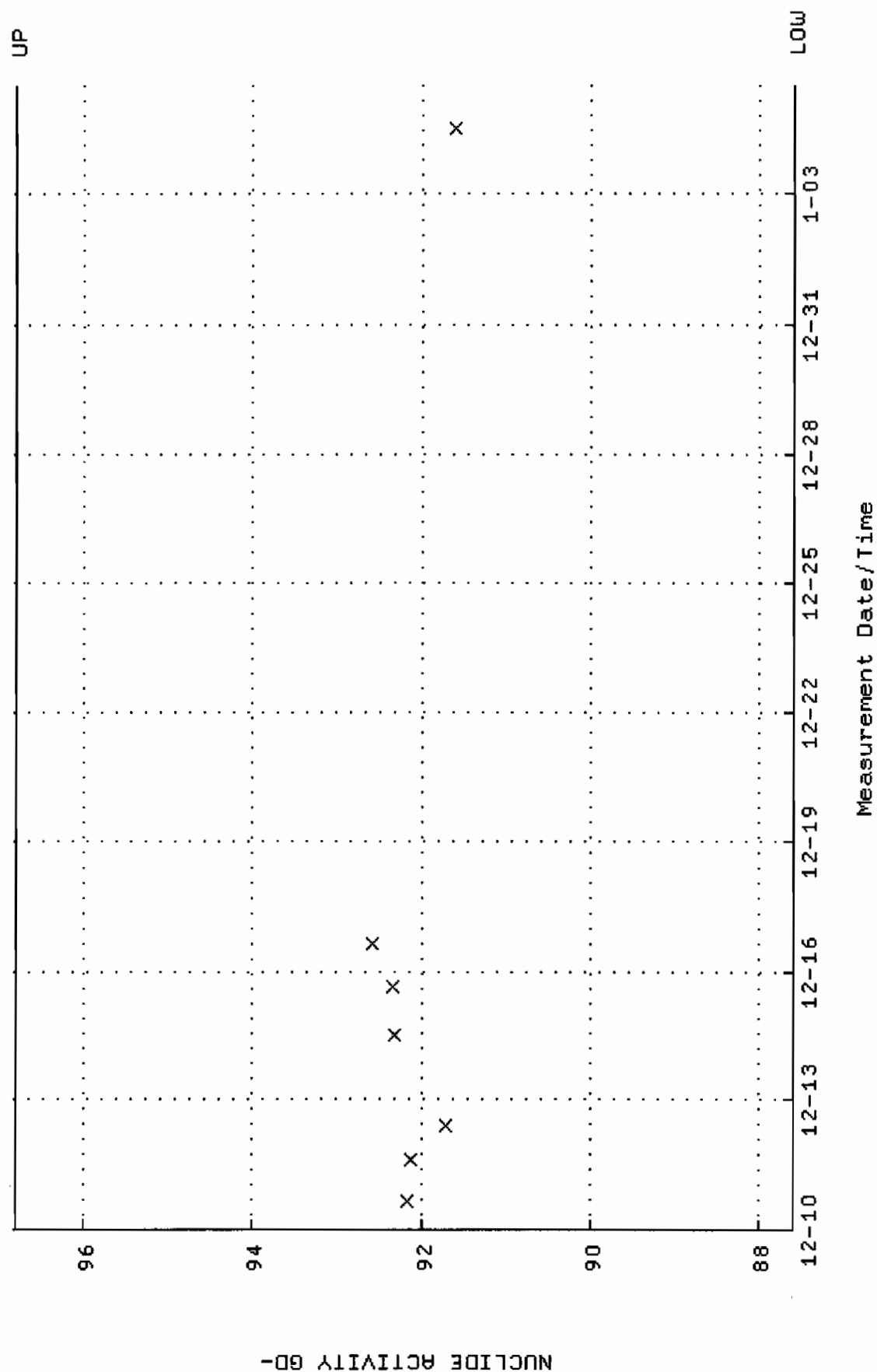
QA filename : DKA100:[ENV\_ALPHA.QA.B]B003.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 5-JUL-2009 15:11:54 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



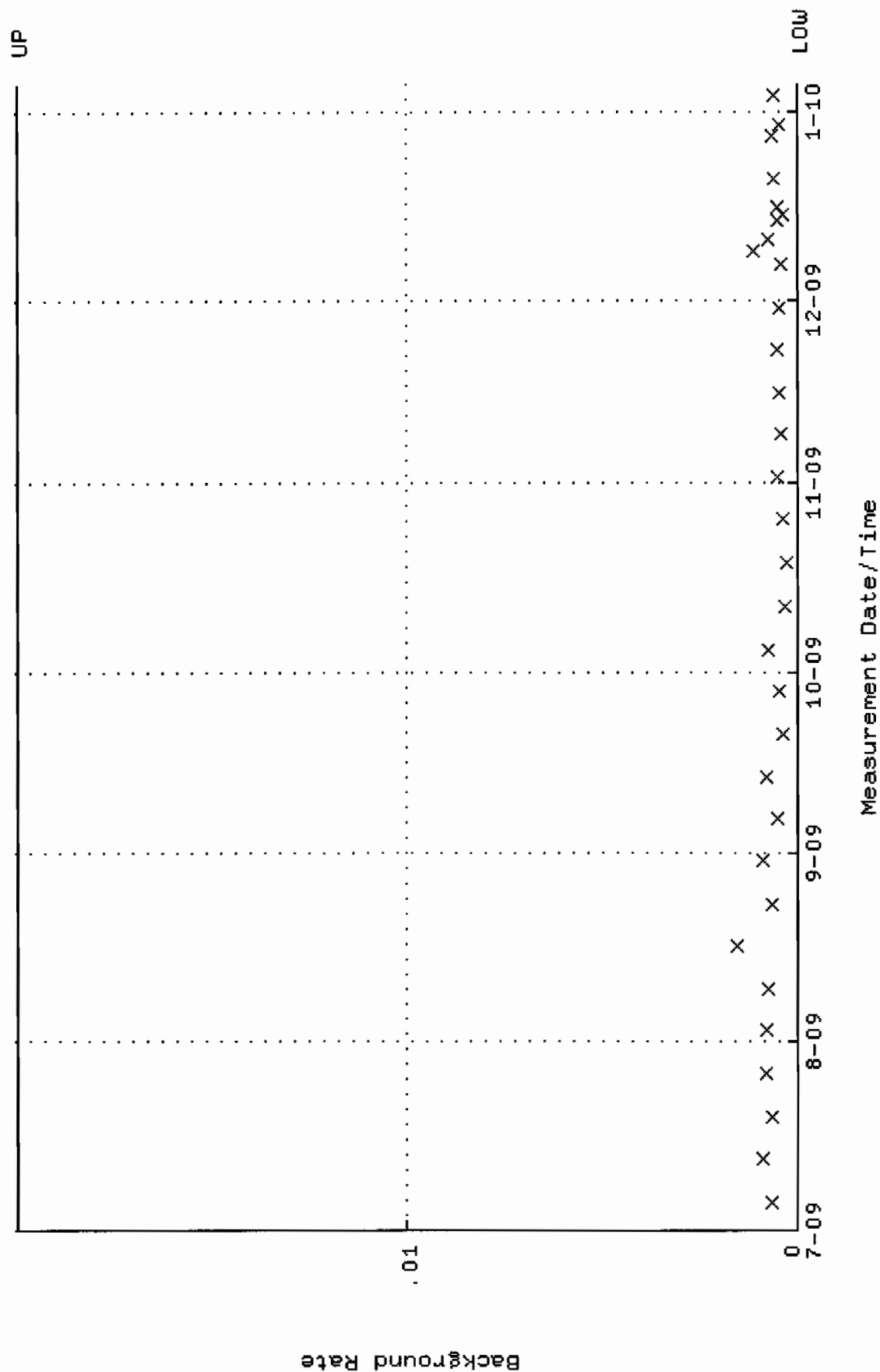
QA filename : DKA100:[ENV\_ALPHA.QA.W]W004.QAF;5  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 10-DEC-2009 15:29:34 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.294995 through 0.314995



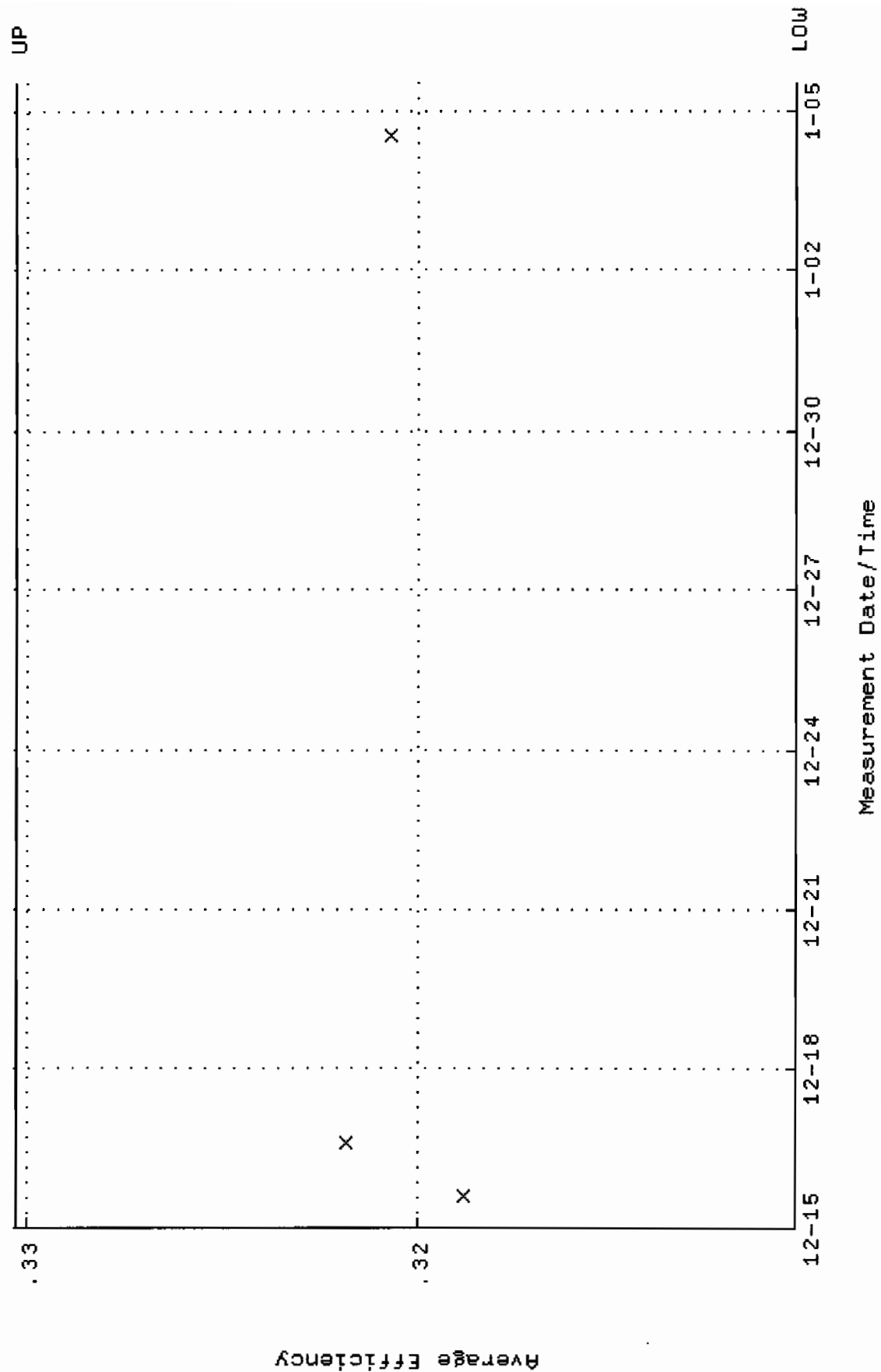
QA filename : DKA100:[ENV-ALPHA.QA.W]W004.QAF;5  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 10-DEC-2009 15:29:34 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 87.5863 through 96.8059



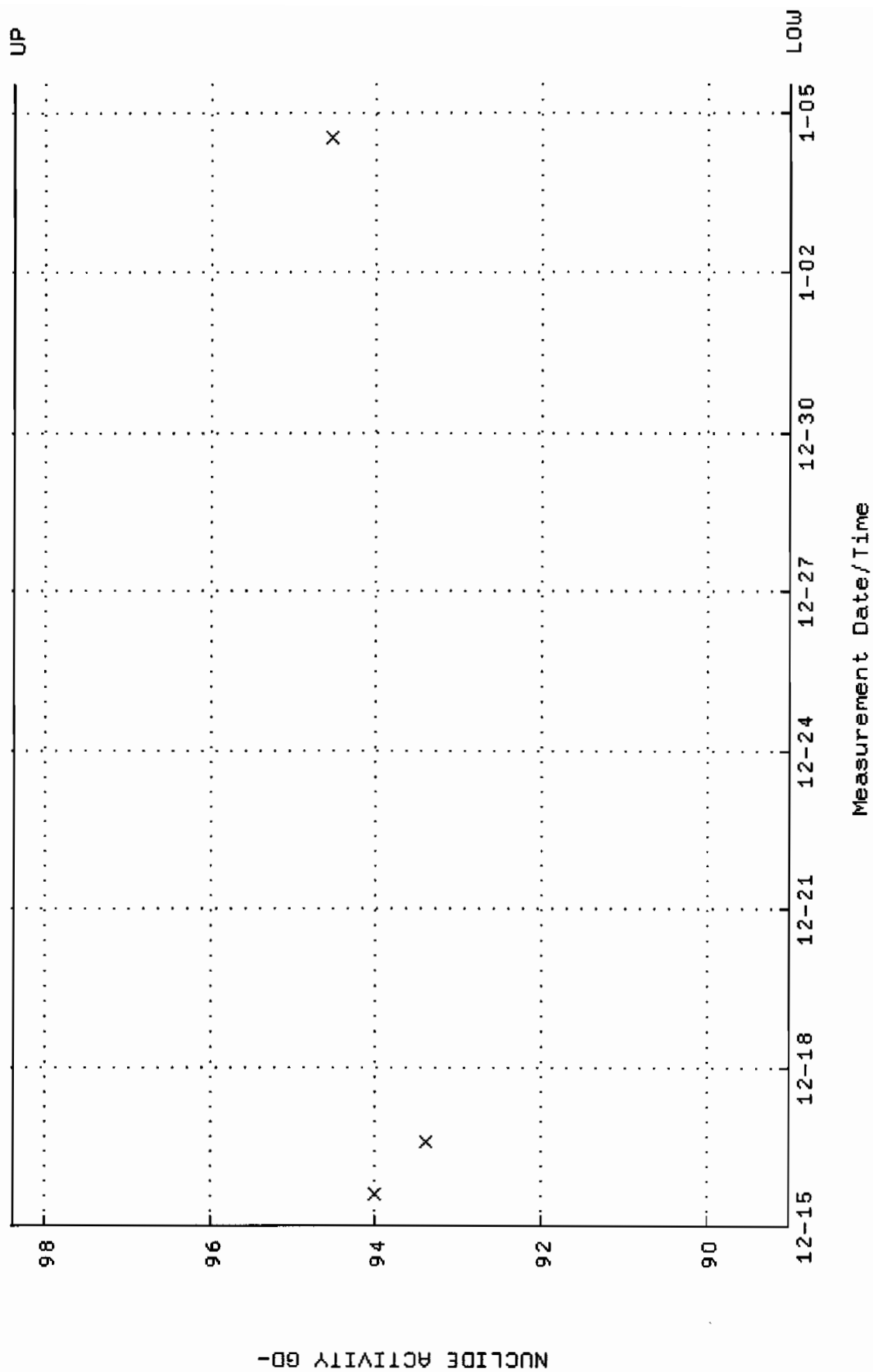
QA filename : DKA100:[ENV\_ALPHA.QA.B]B004.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 5-JUL-2009 15:11:54 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



QA filename : DKA100:[ENV\_ALPHA.QA.W]W005.QAF;6  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 15-DEC-2009 14:48:34 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.310305 through 0.330305

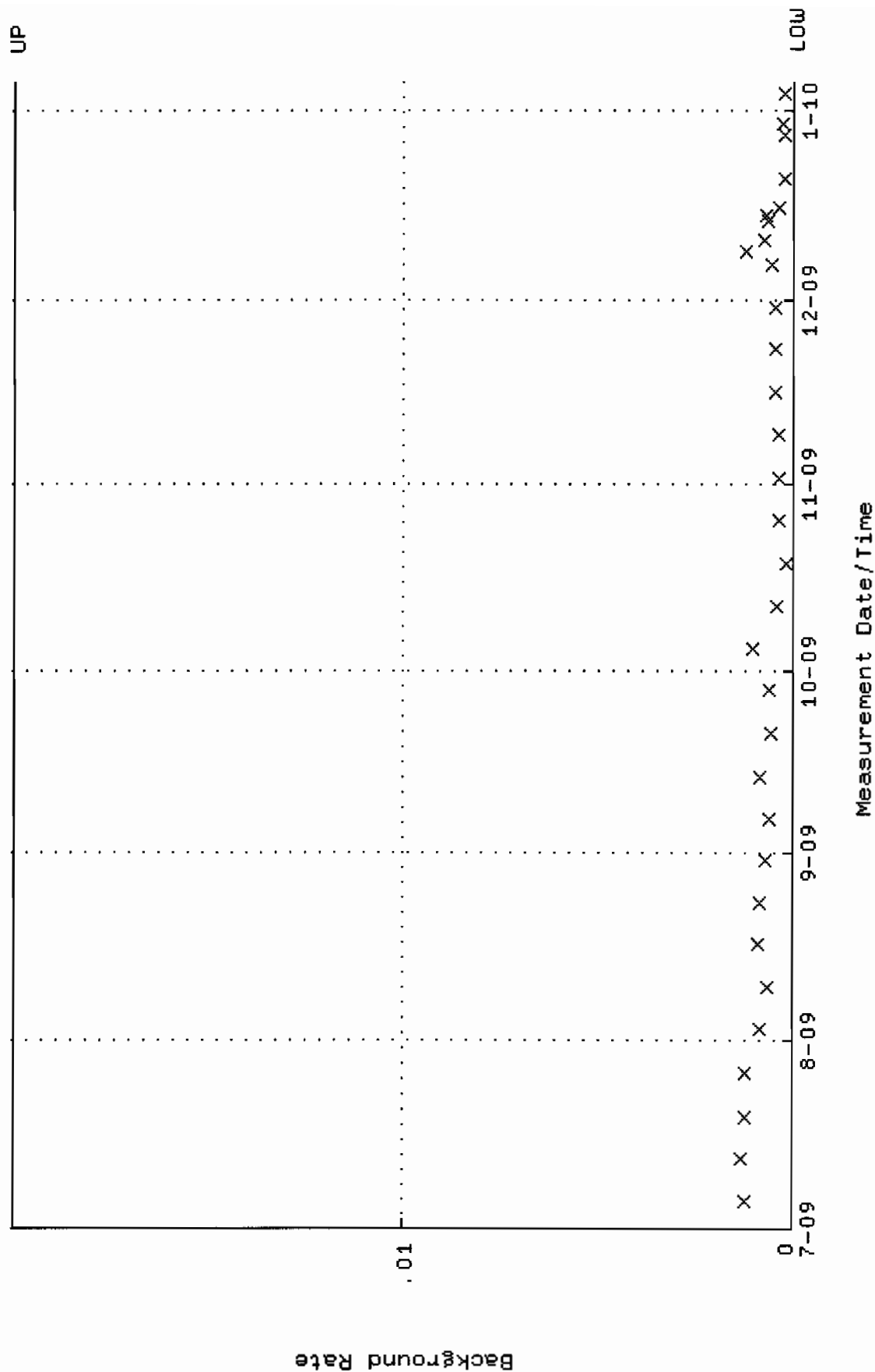


QA filename : DKA100:[ENV\_ALPHA.QA.W]W005.QAF;6  
Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
Start/End Dates : 15-DEC-2009 14:48:34 through 5-JAN-2010 12:00:00  
Lower/Upper Lmts: 89.0042 through 98.3730

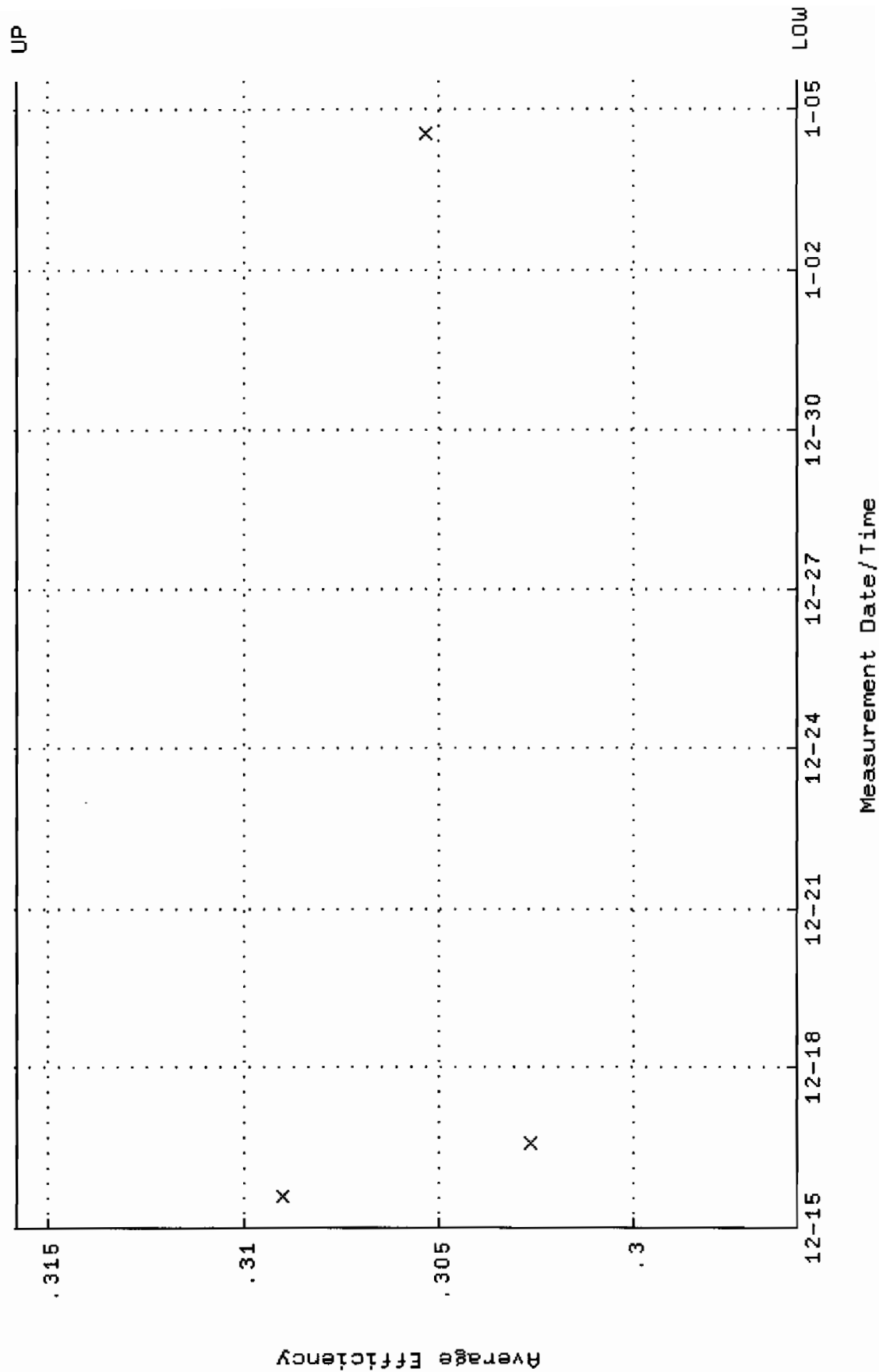




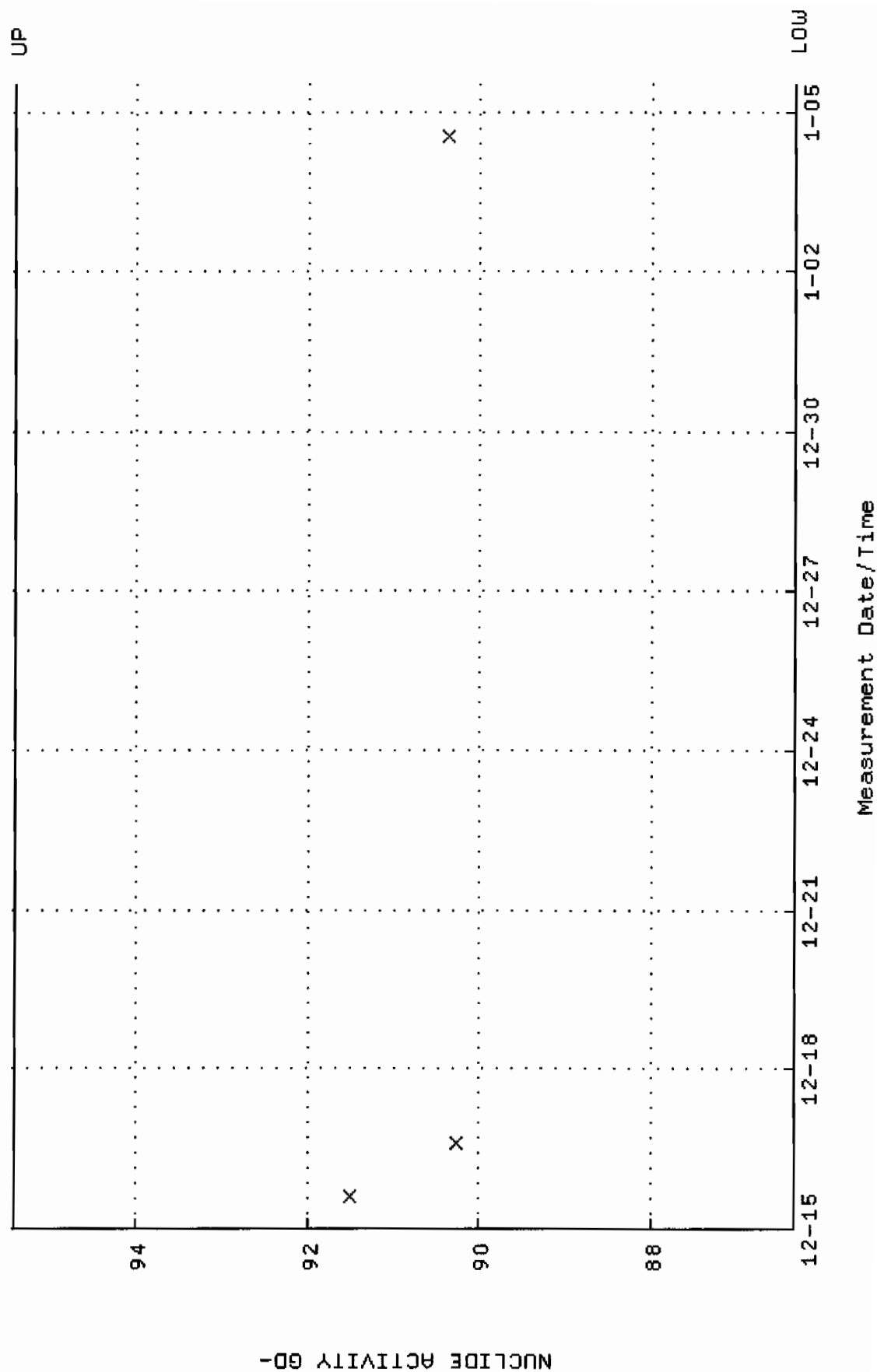
QA filename : DKA100:[ENV\_ALPHA.QA.B]B005.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 5-JUL-2009 15:11:54 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



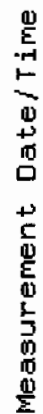
QA filename : DKA100:[ENV\_ALPHA.QA.W]W006.QAF;6  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 15-DEC-2009 14:48:34 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.295821 through 0.315821



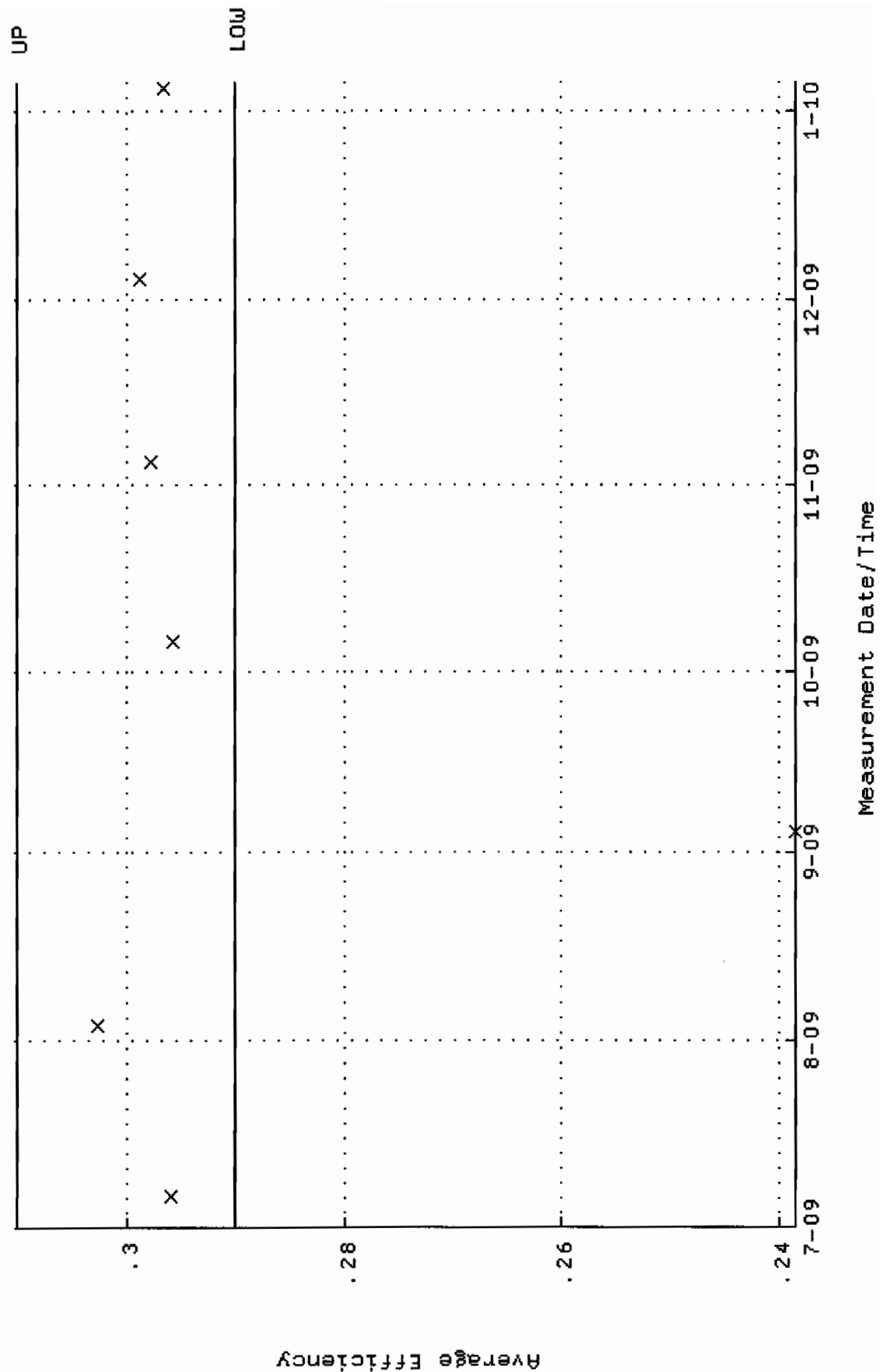
QA filename : DKA100:[ENV\_ALPHA.QA.W]W006.QAF;6  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 15-DEC-2009 14:48:34 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 86.3237 through 95.4105



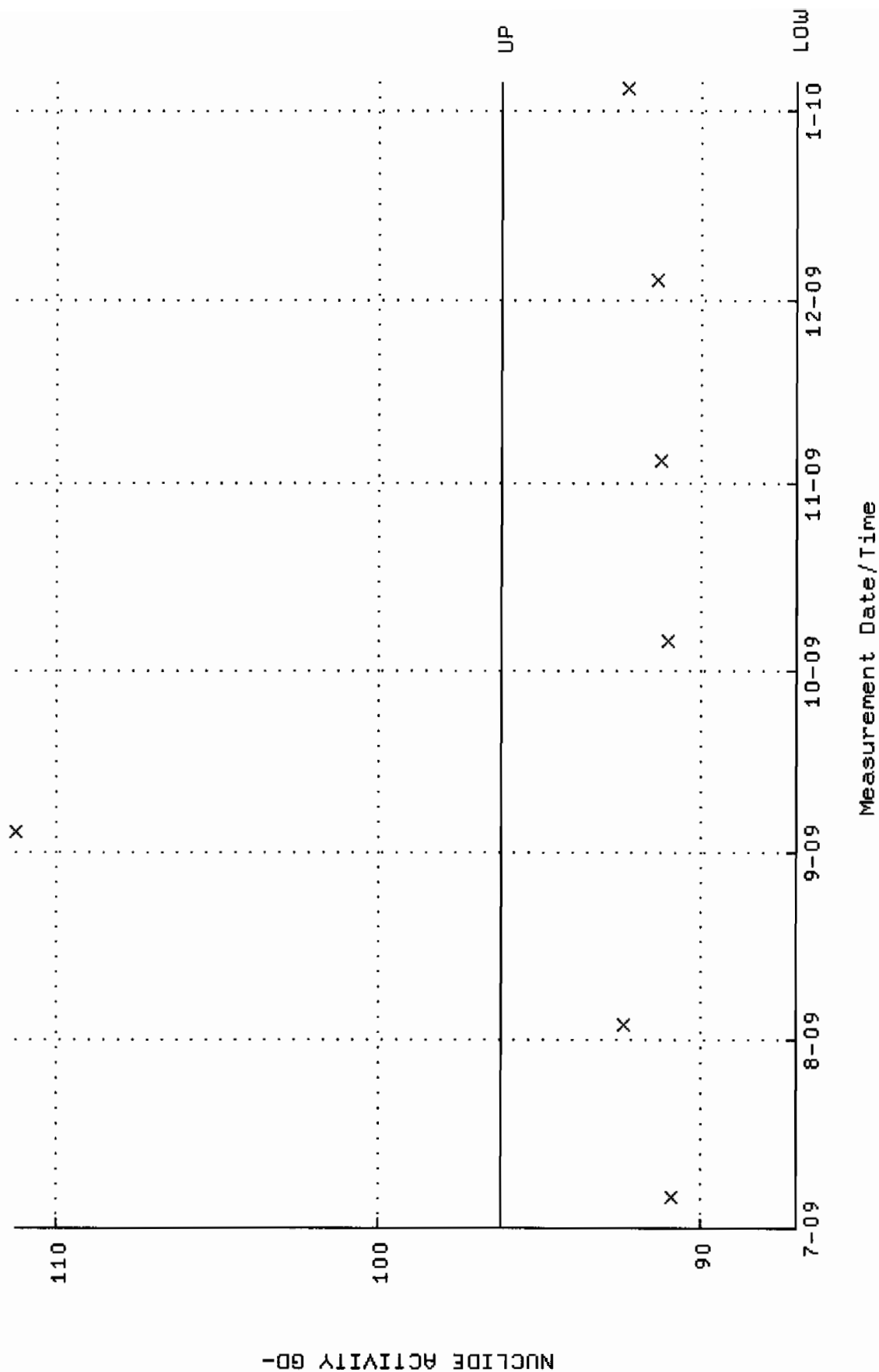
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



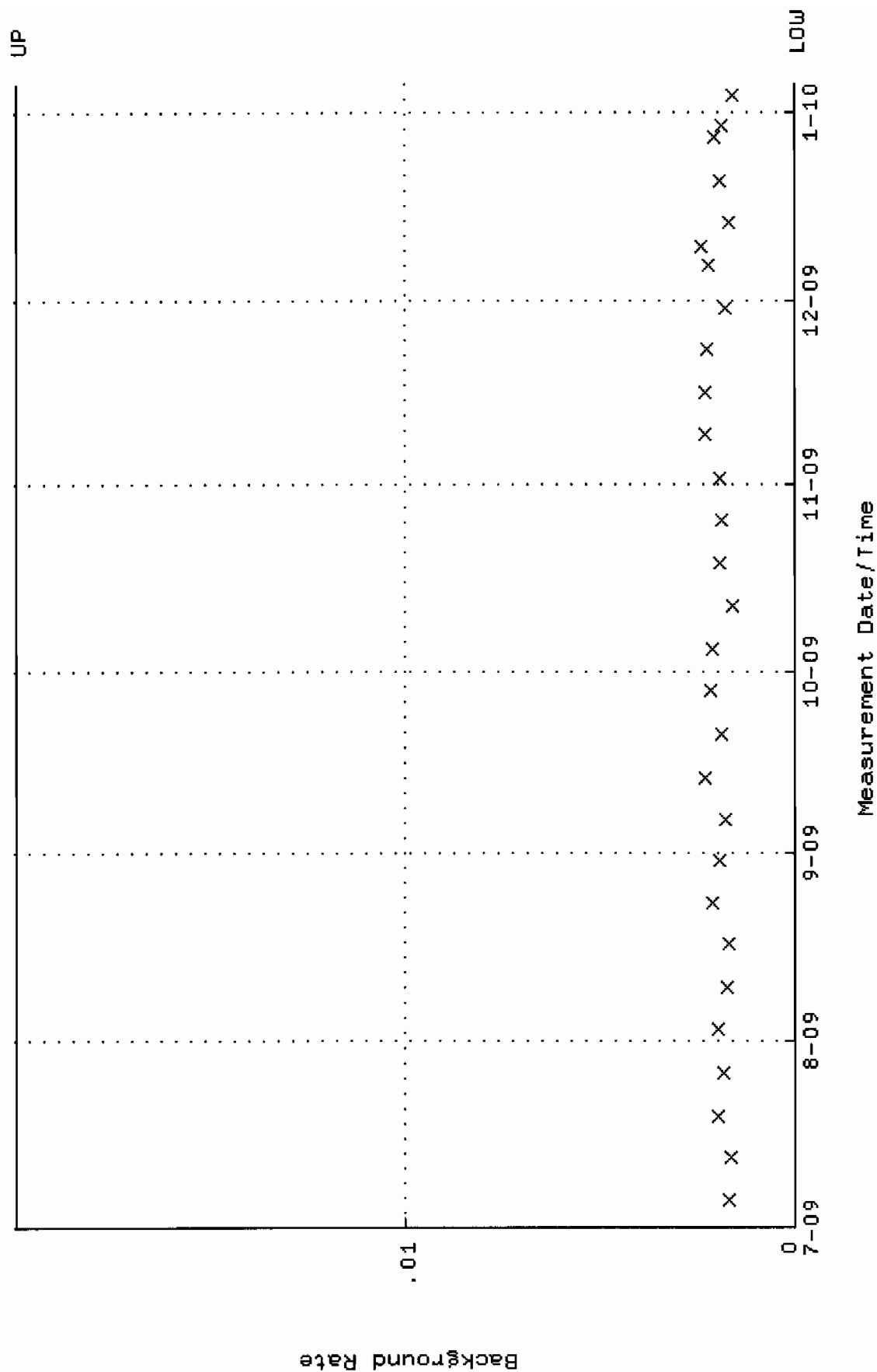
QA filename : DKA100:[ENV-ALPHA.QA.W]W007.QAF;3  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 6-JUL-2009 09:46:11 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.290108 through 0.310108



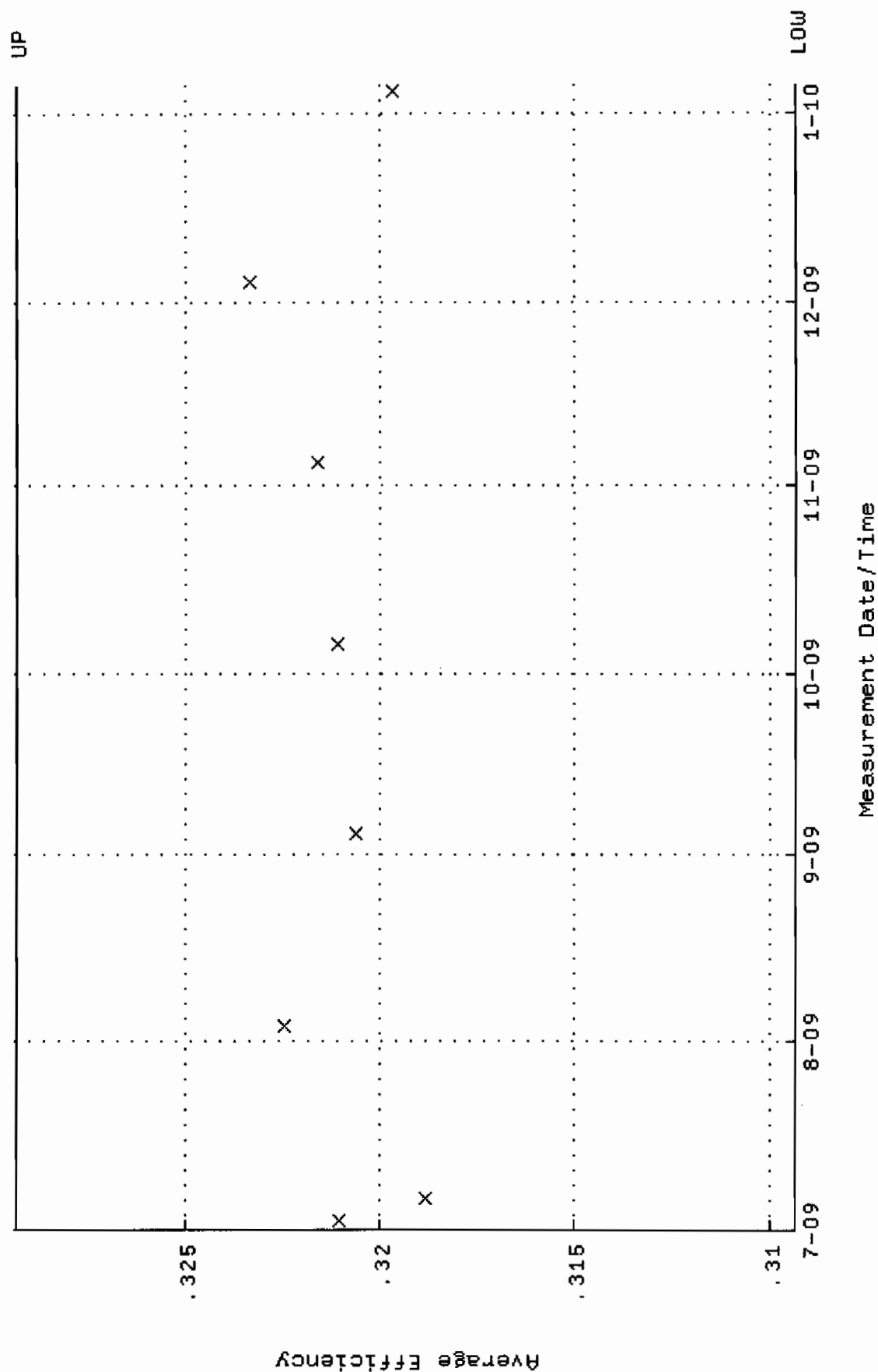
QA filename : DKA100:[ENV\_ALPHA.QA.W]W007.QAF;3  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 6-JUL-2009 09:46:11 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 87.0687 through 96.2339



QA filename : DKA100:[ENV\_ALPHA.QA.B]B007.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 5-JUL-2009 15:11:55 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02

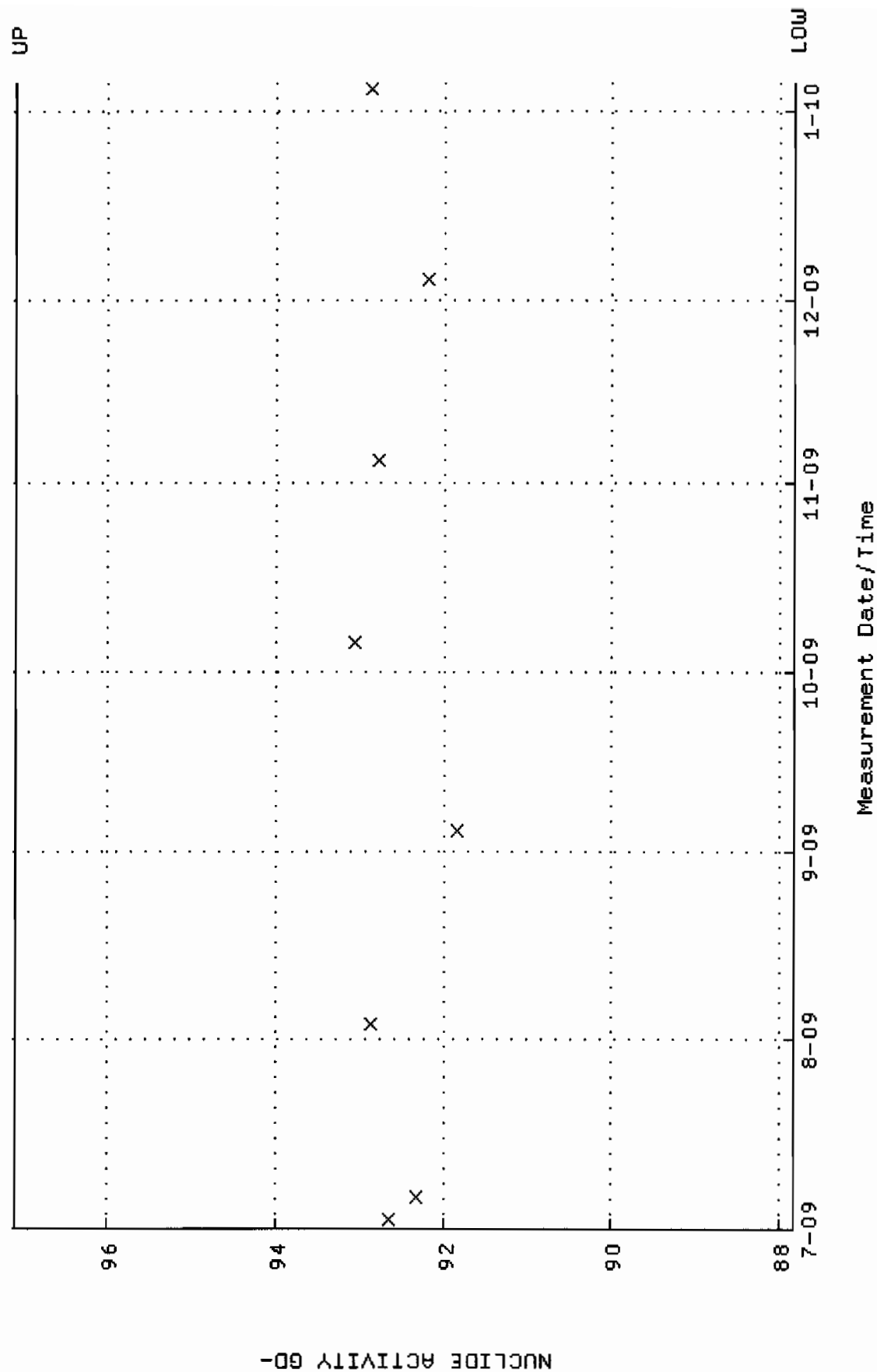


QA filename : DKA100:[ENV\_ALPHA.QA.W]W008.QAF;4  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUL-2009 15:04:11 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.309318 through 0.329318

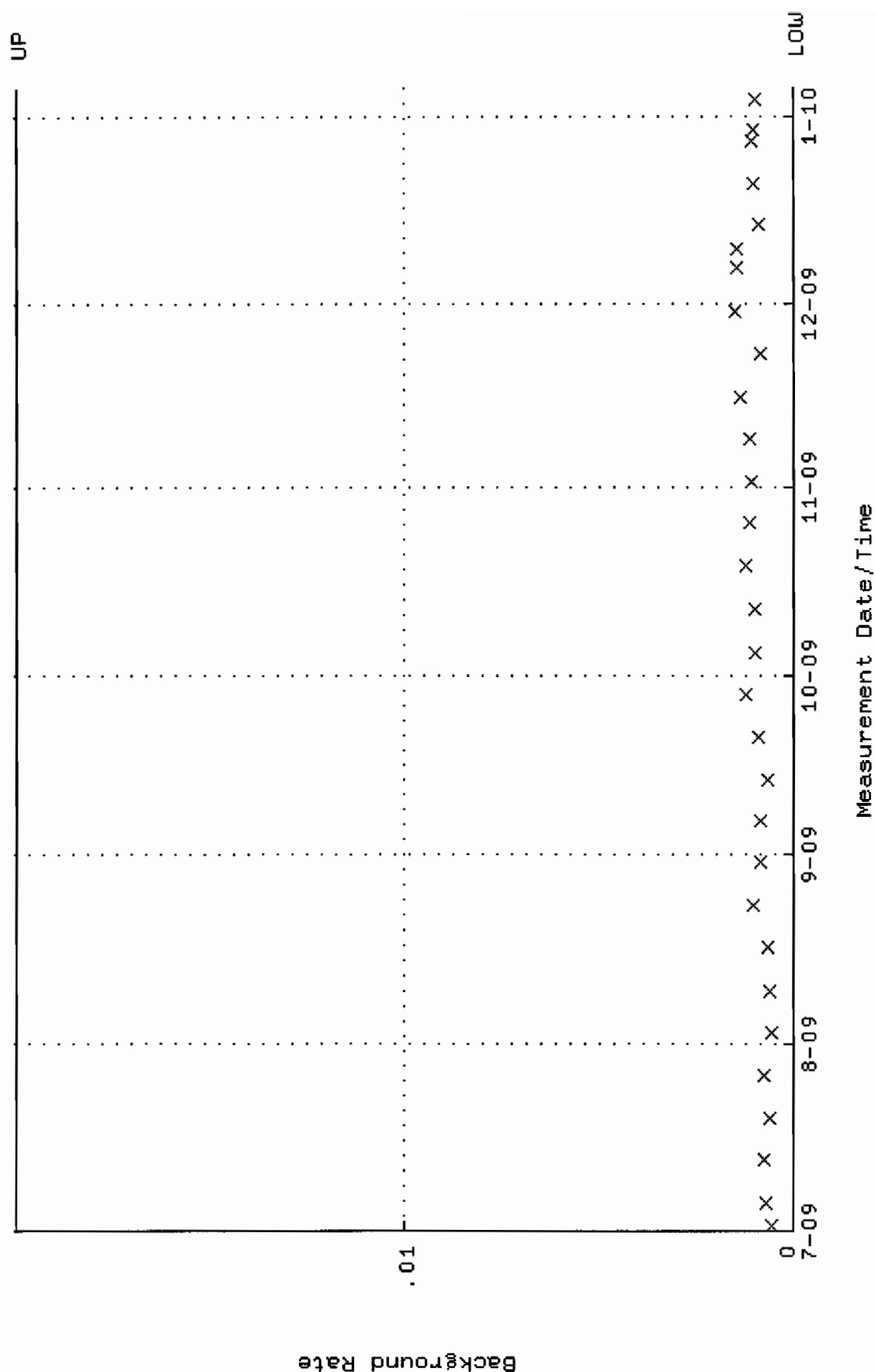




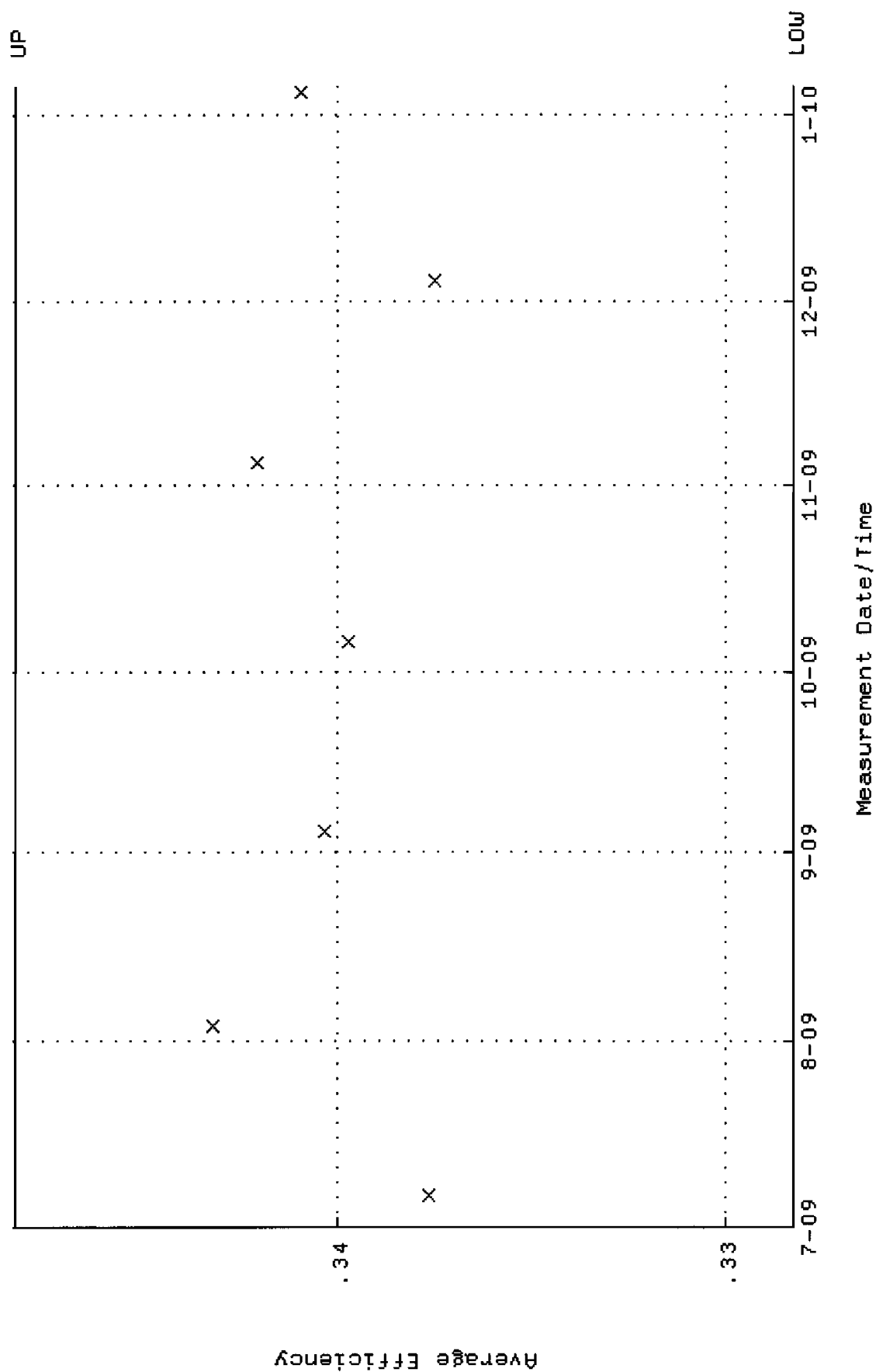
QA filename : DKA100:[ENV\_ALPHA.QA.W]W008.QAF;4  
Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
Start/End Dates : 2-JUL-2009 15:04:11 through 5-JAN-2010 12:00:00  
Lower/Upper Lmts: 87.8346 through 97.0804



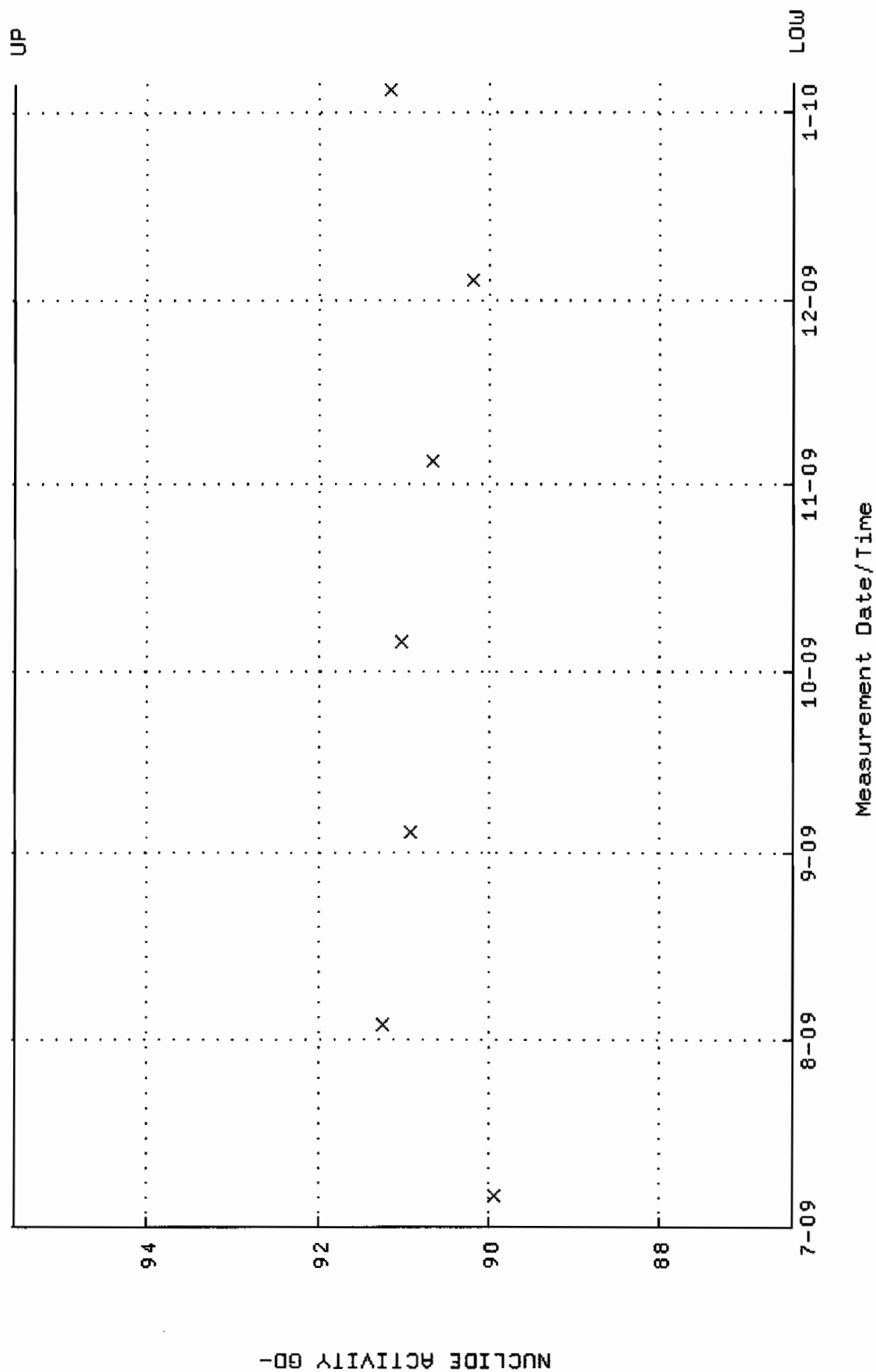
QA filename : DKA100:[ENV\_ALPHA.QA.B]B008.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUL-2009 21:39:55 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



QA filename : DKA100:[ENV\_ALPHA.QA.W]W009.QAF;3  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 6-JUL-2009 09:46:11 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.328261 through 0.348261



QA filename : DKA100:[ENV\_ALPHA.QA.W]W009.QAF;3  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 6-JUL-2009 09:46:11 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 86.4475 through 95.5473

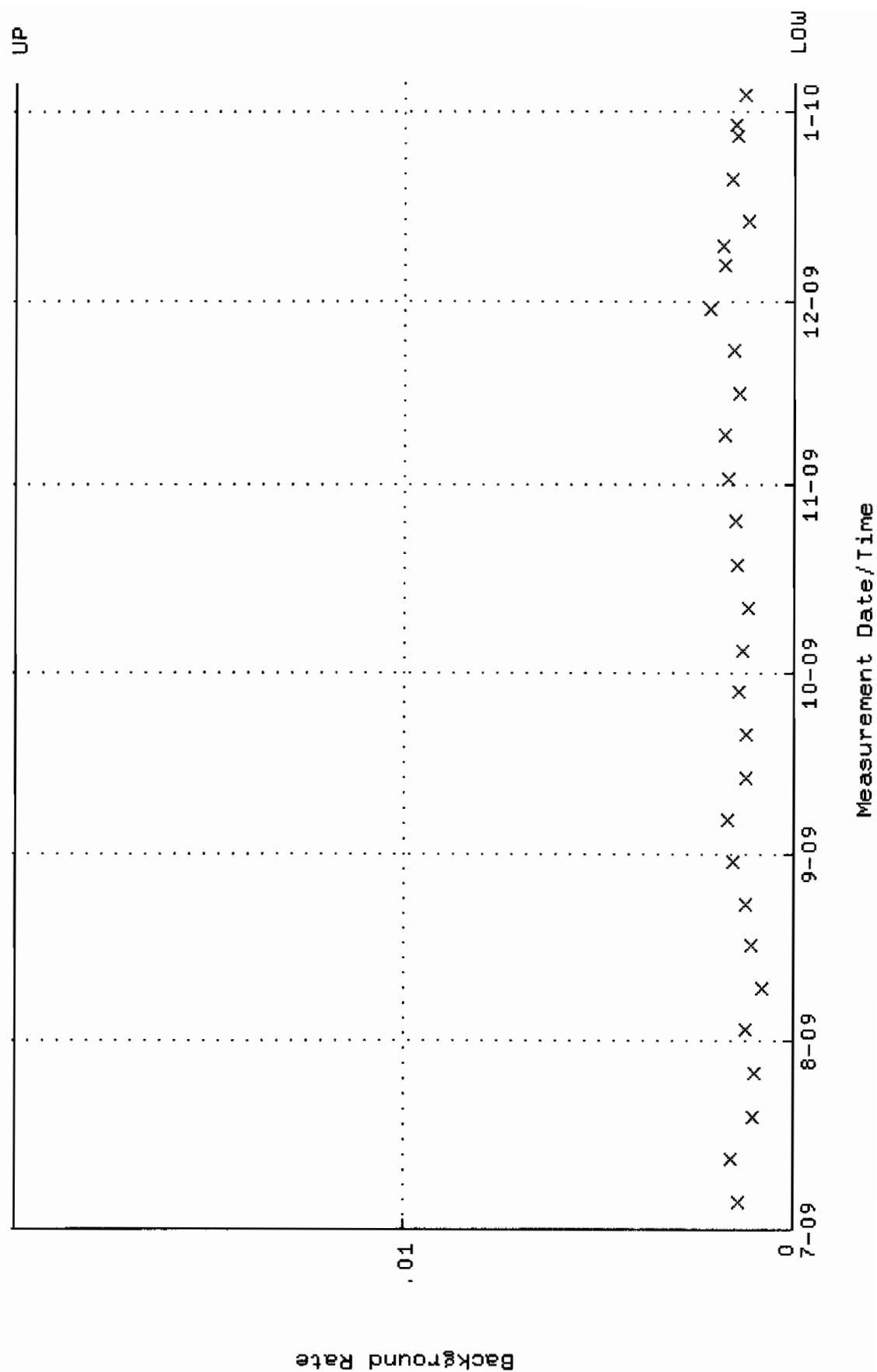


QA filename : DKA100:[ENV\_ALPHA.QA.B]B009.QAF;1

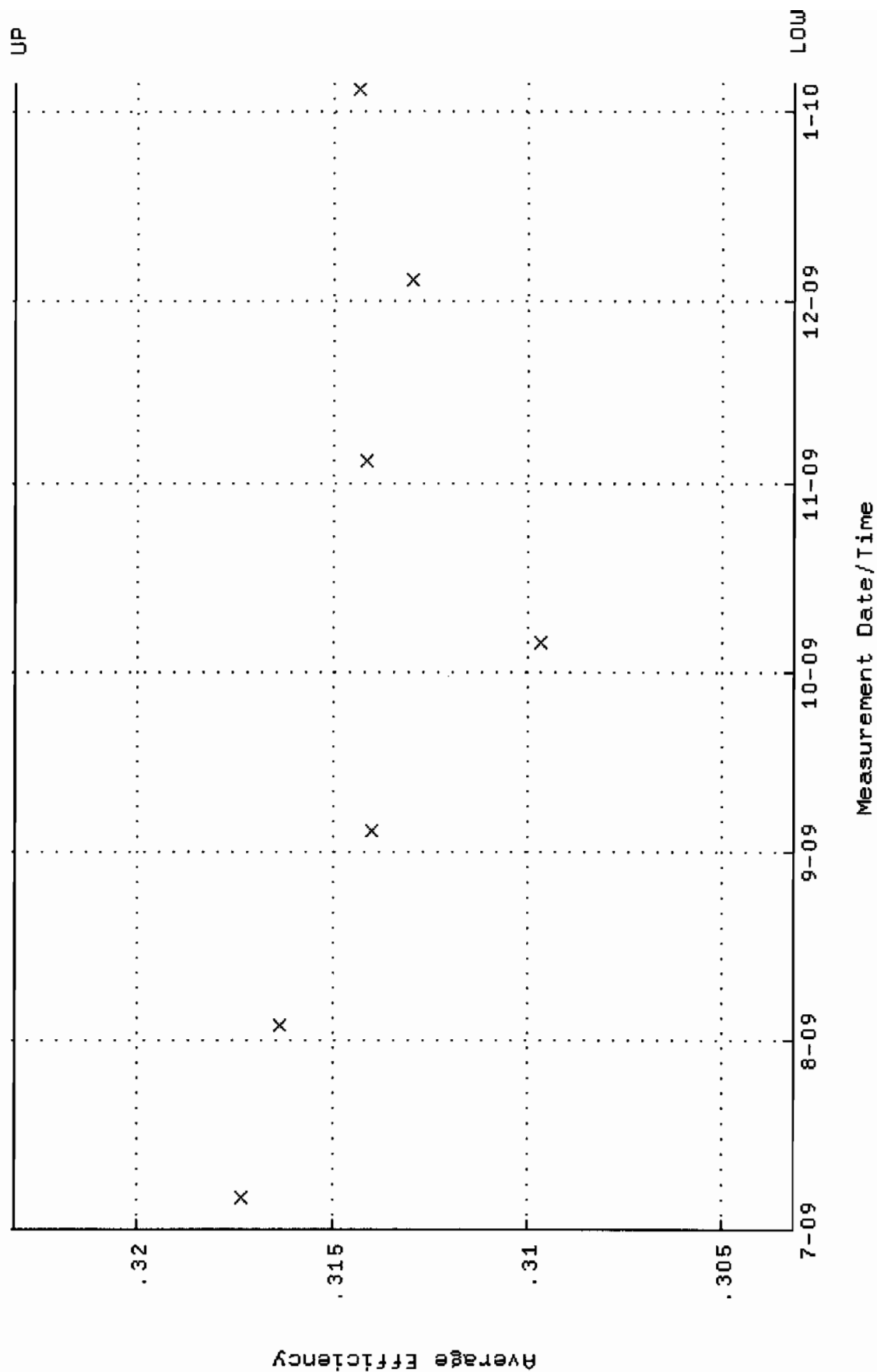
Parameter Name : BACKRATE (Background Rate)

Start/End Dates : 5-JUL-2009 15:11:55 through 5-JAN-2010 12:00:00

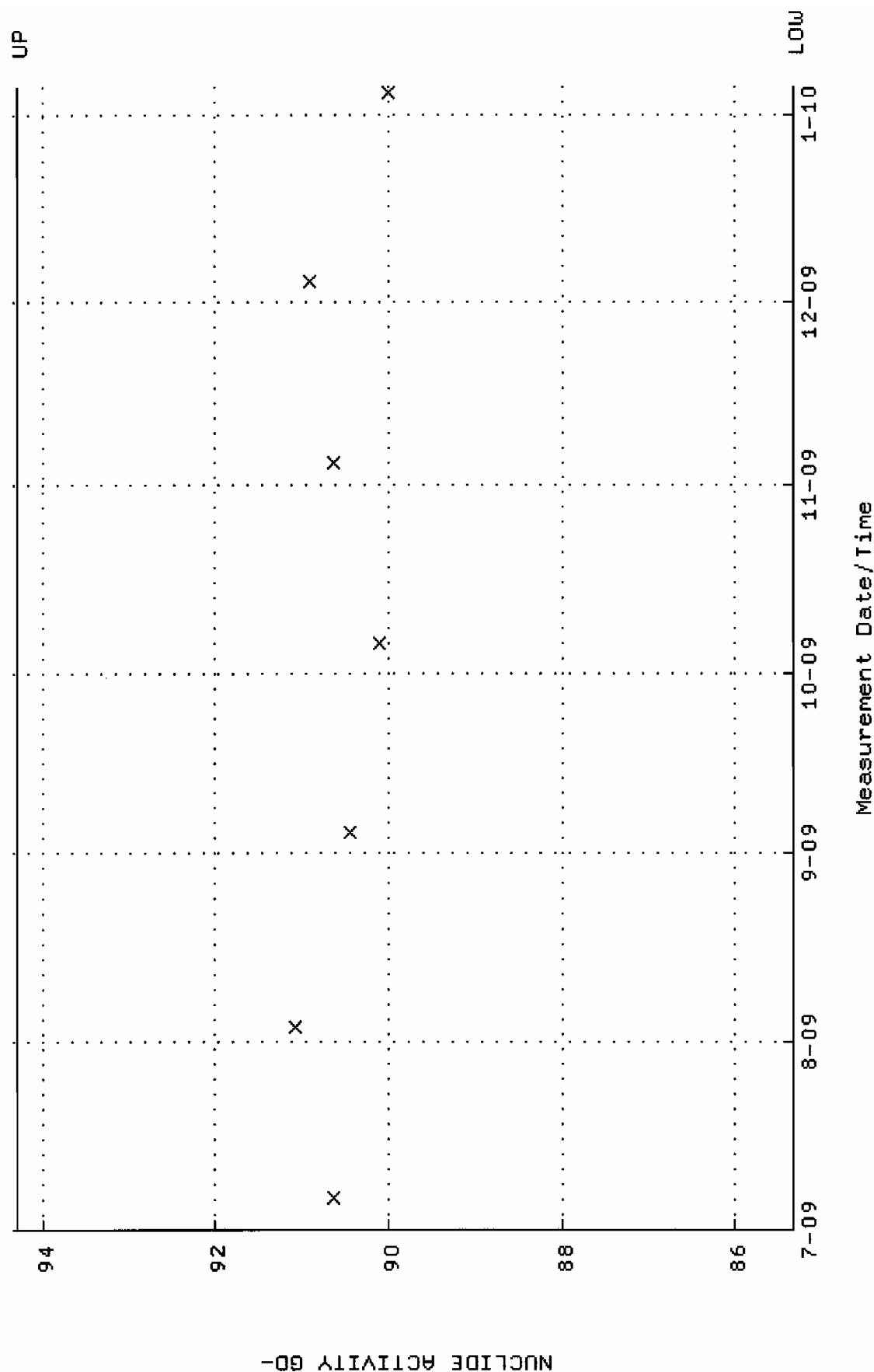
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



QA filename : DKA100:[ENV\_ALPHA.QA.W]W010.QAF;5  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 6-JUL-2009 09:46:11 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.303169 through 0.323169



QA filename : DKA100:[ENV\_ALPHA.QA.W]W010.QAF;5  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 6-JUL-2009 09:46:11 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 85.3273 through 94.3091

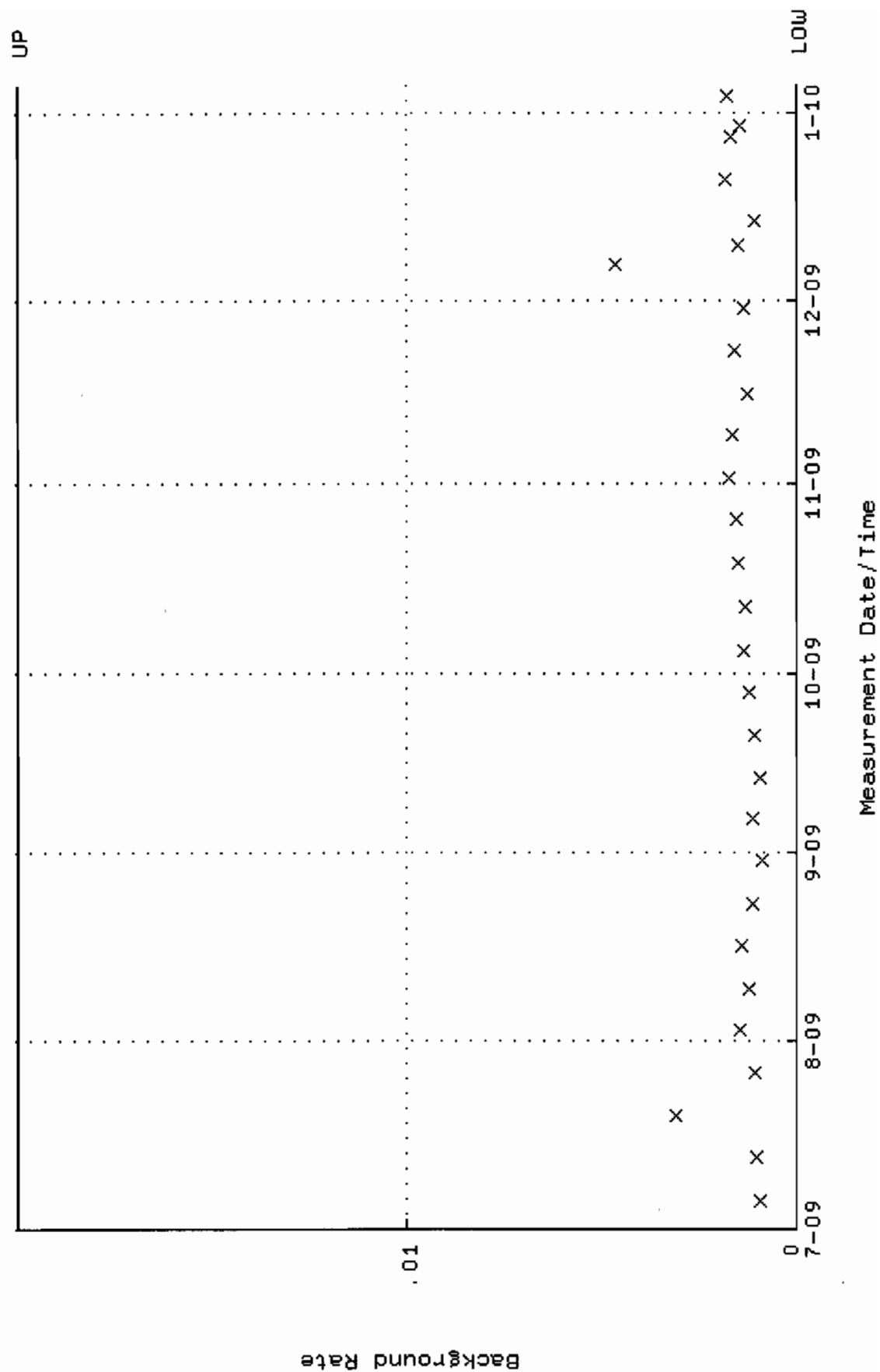


: DKA100:[ENV\_ALPHA.QA.B]B010.QAF;2

: BACKRATE (Background Rate)

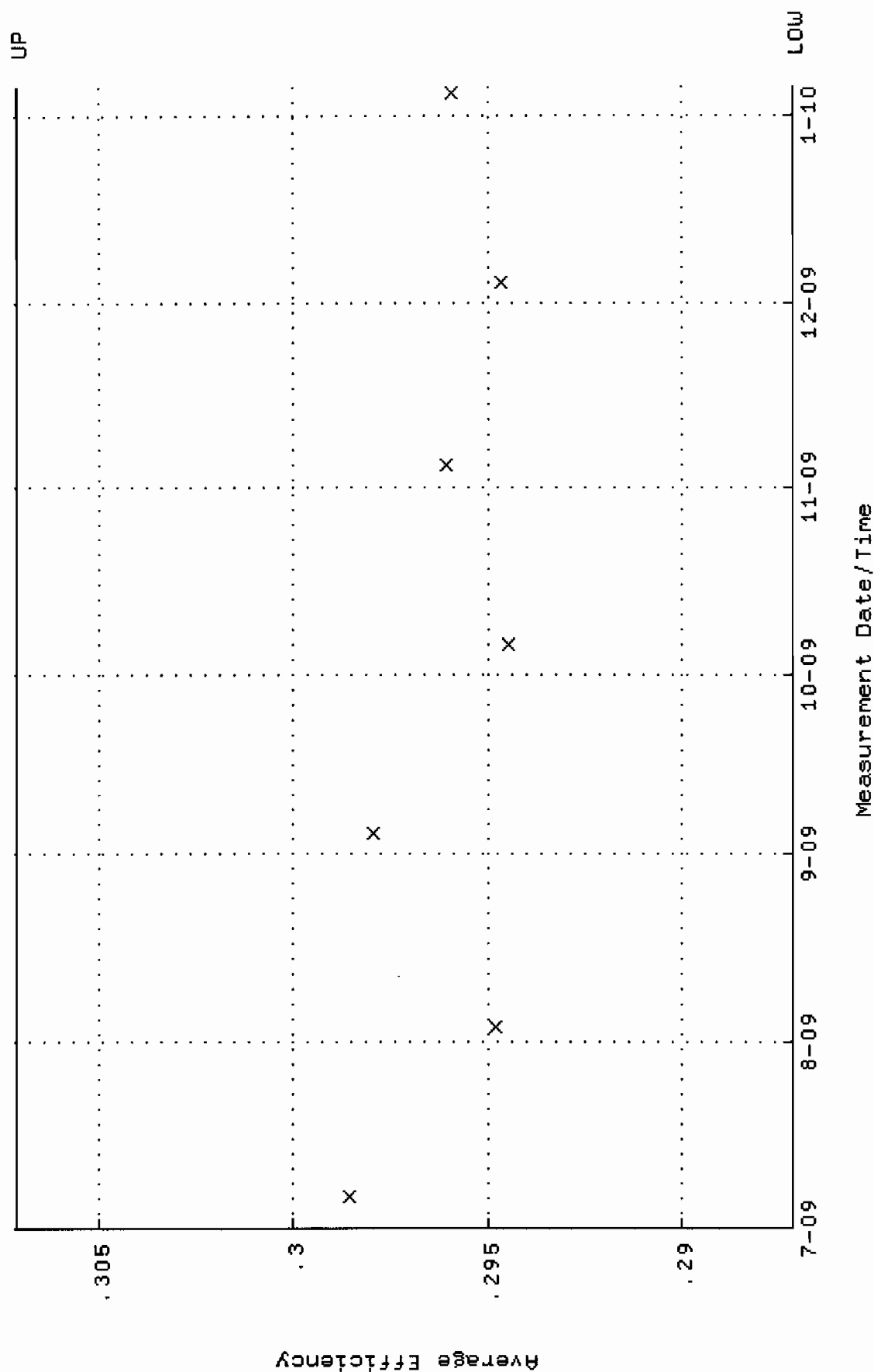
Start/End Dates : 5-JUL-2009 15:11:55 through 5-JAN-2010 12:00:00

Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02

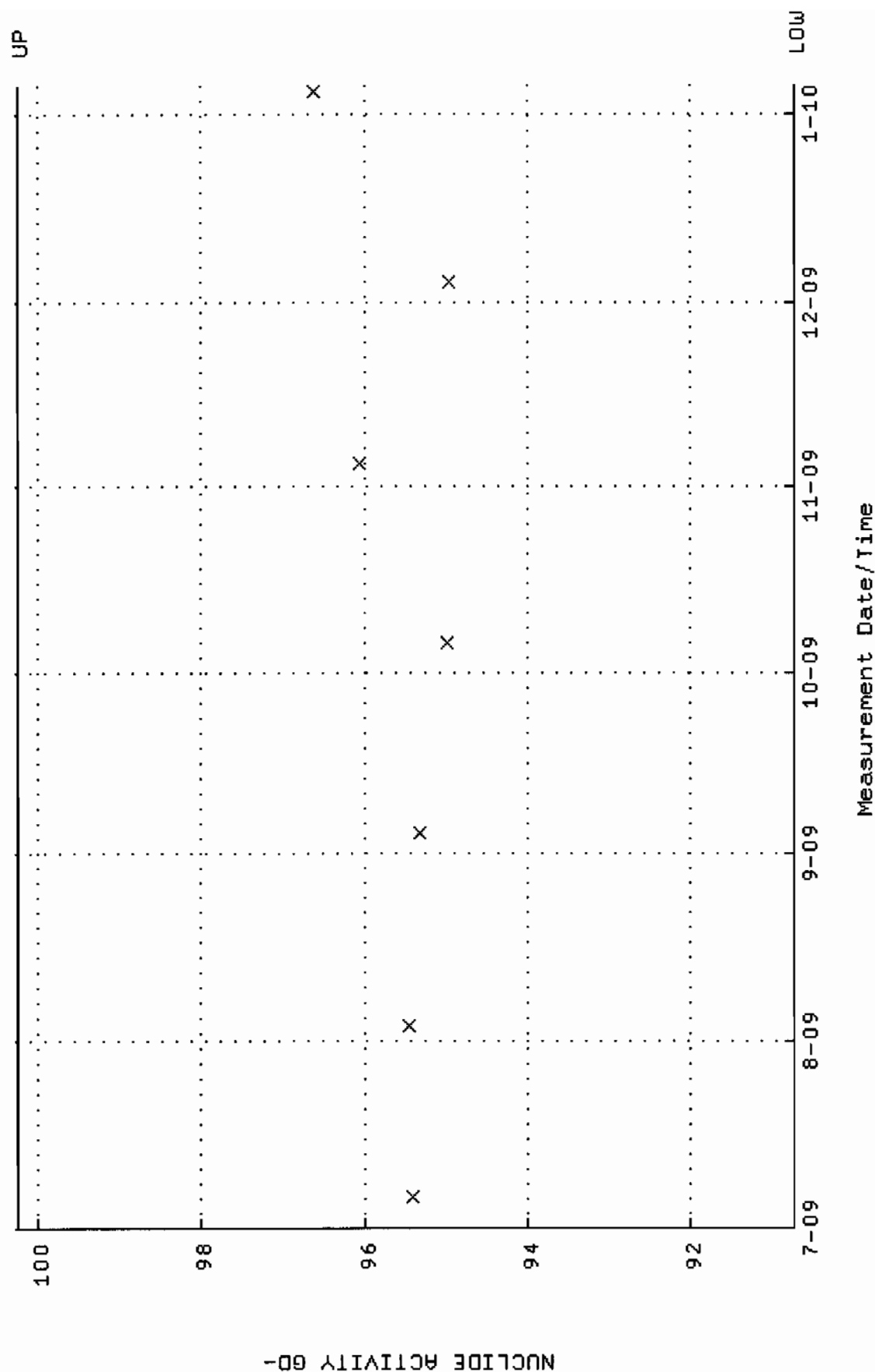




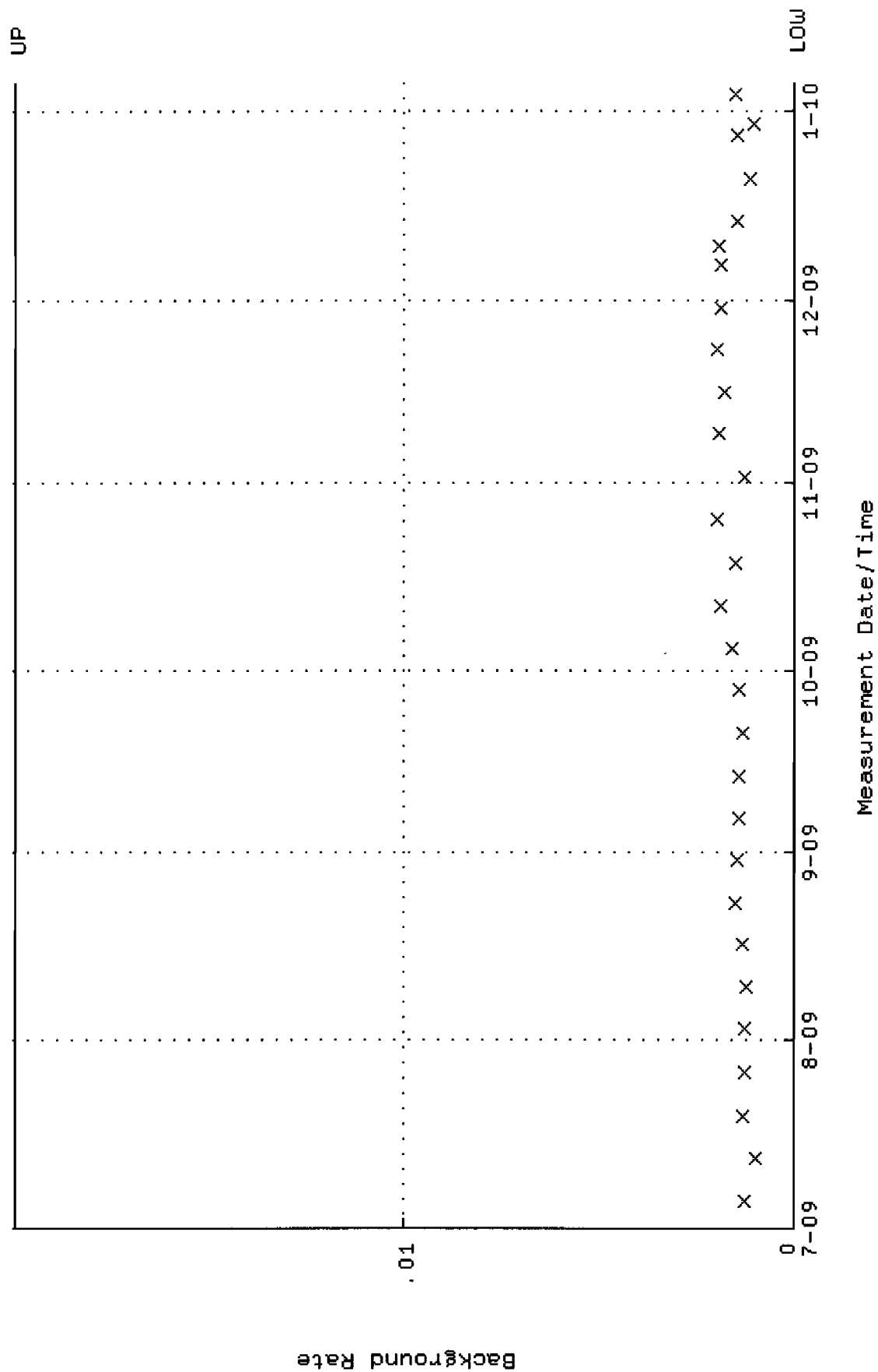
QA filename : DKA100:[ENV\_ALPHA.QA.W]W011.QAF;4  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 6-JUL-2009 09:46:11 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.287129 through 0.307129



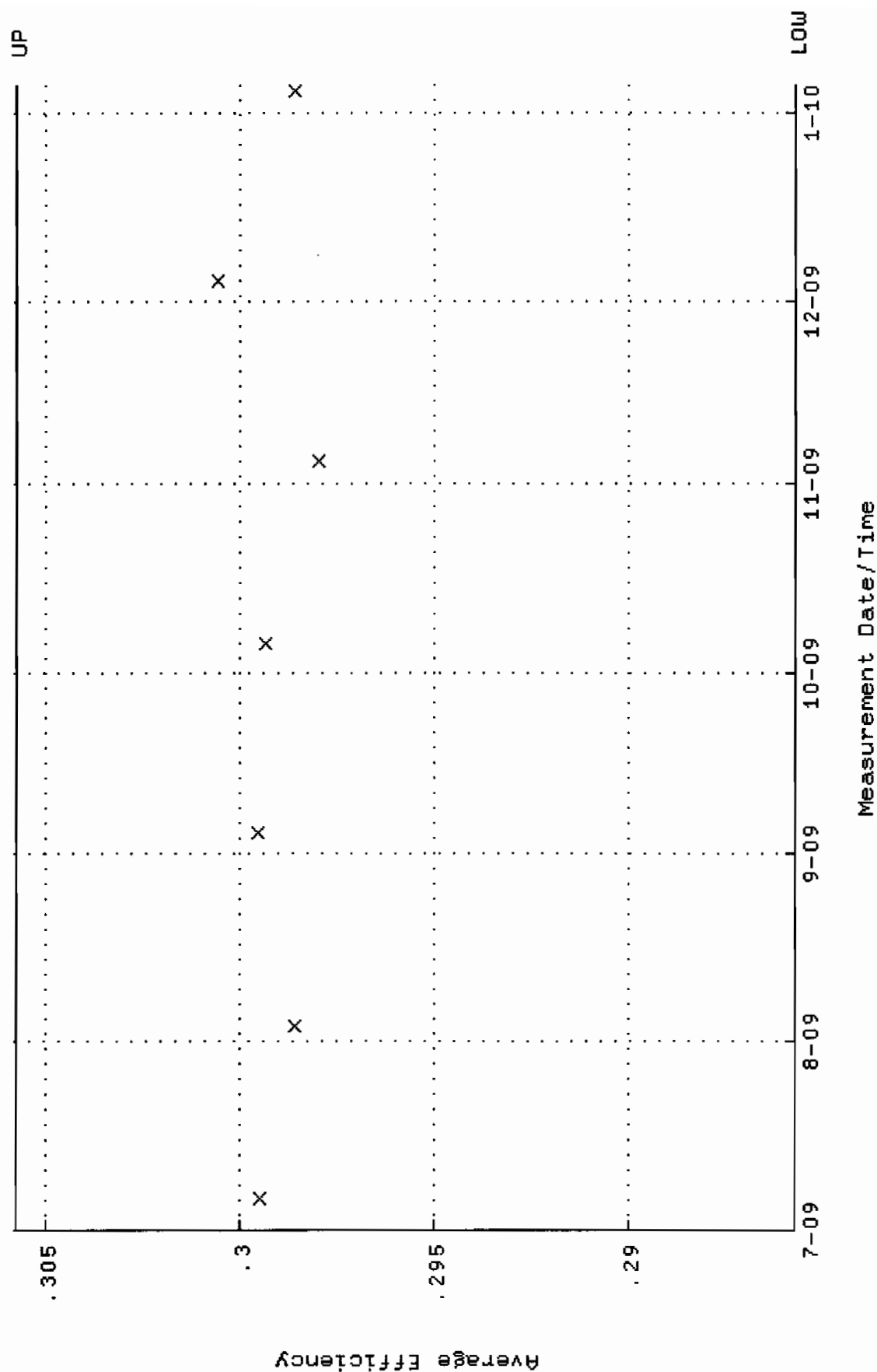
QA filename : DKA100:[ENV\_ALPHA.QA.W]W011.QAF;4  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 6-JUL-2009 09:46:11 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 90.7092 through 100.258



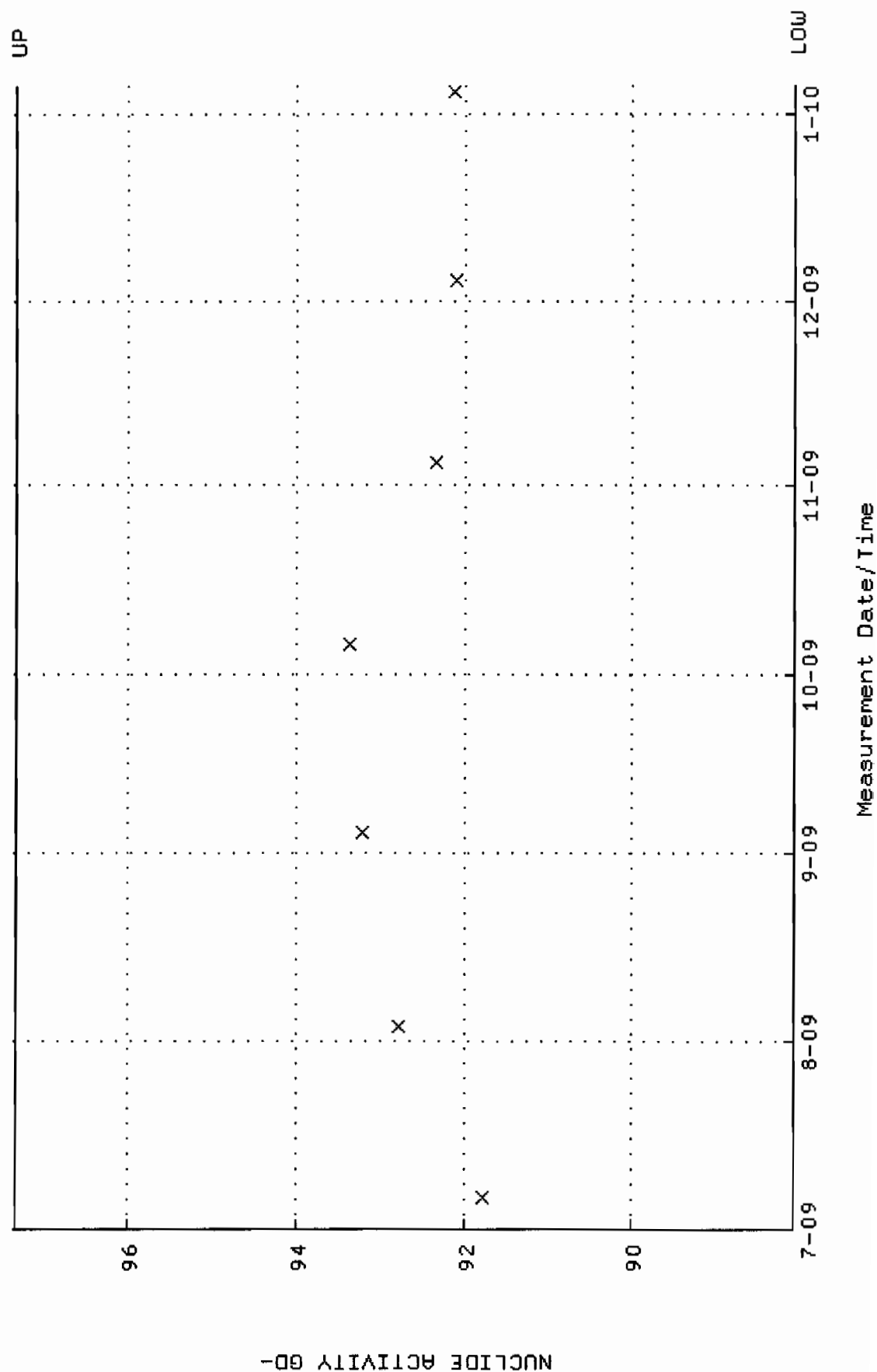
QA filename : DKA100:[ENV-ALPHA.QA.B]B011.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 5-JUL-2009 15:11:55 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



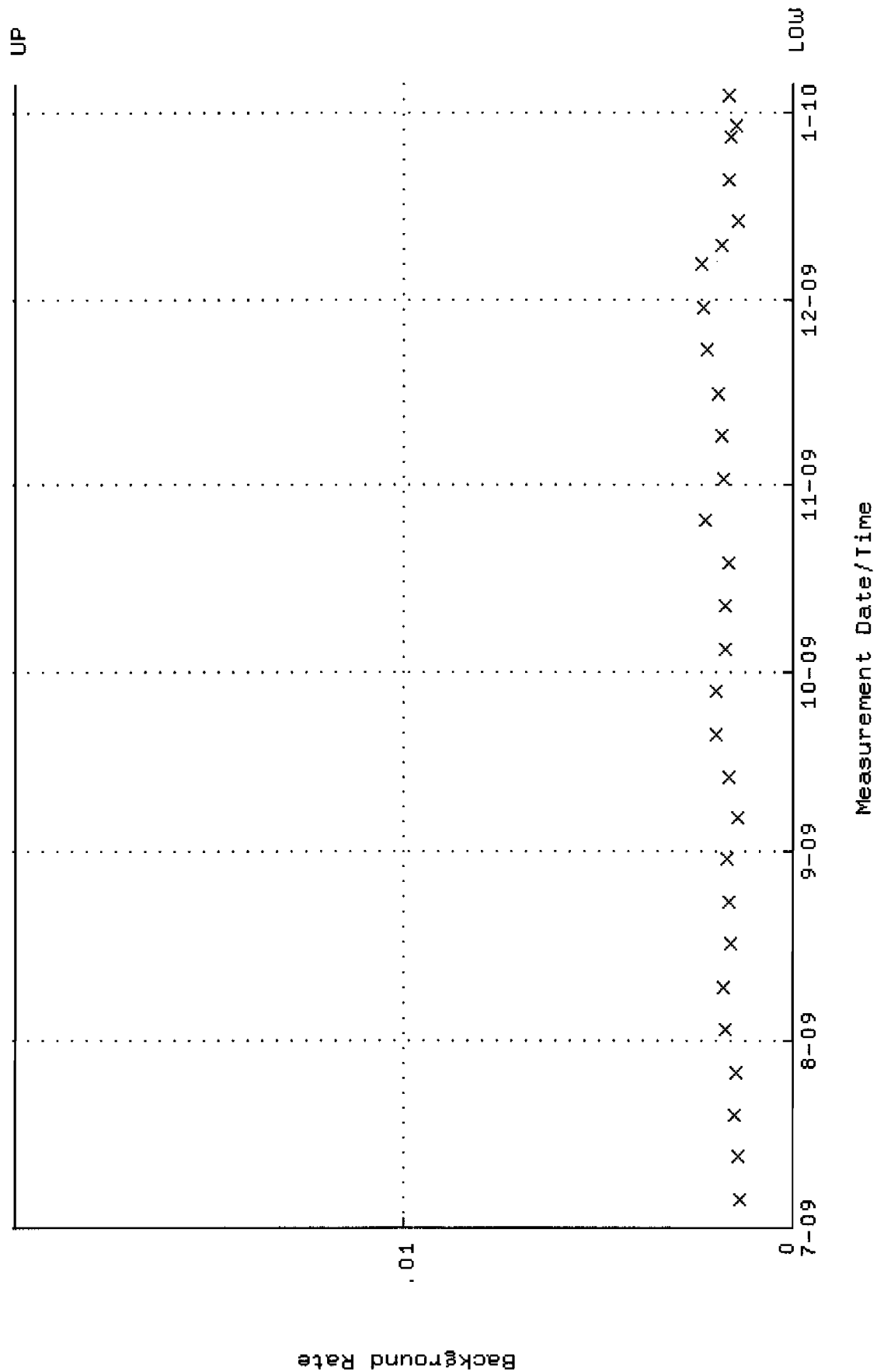
QA filename : DKA100:[ENV\_ALPHA.QA.W]W012.QAF;4  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 6-JUL-2009 09:46:11 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.285730 through 0.305730



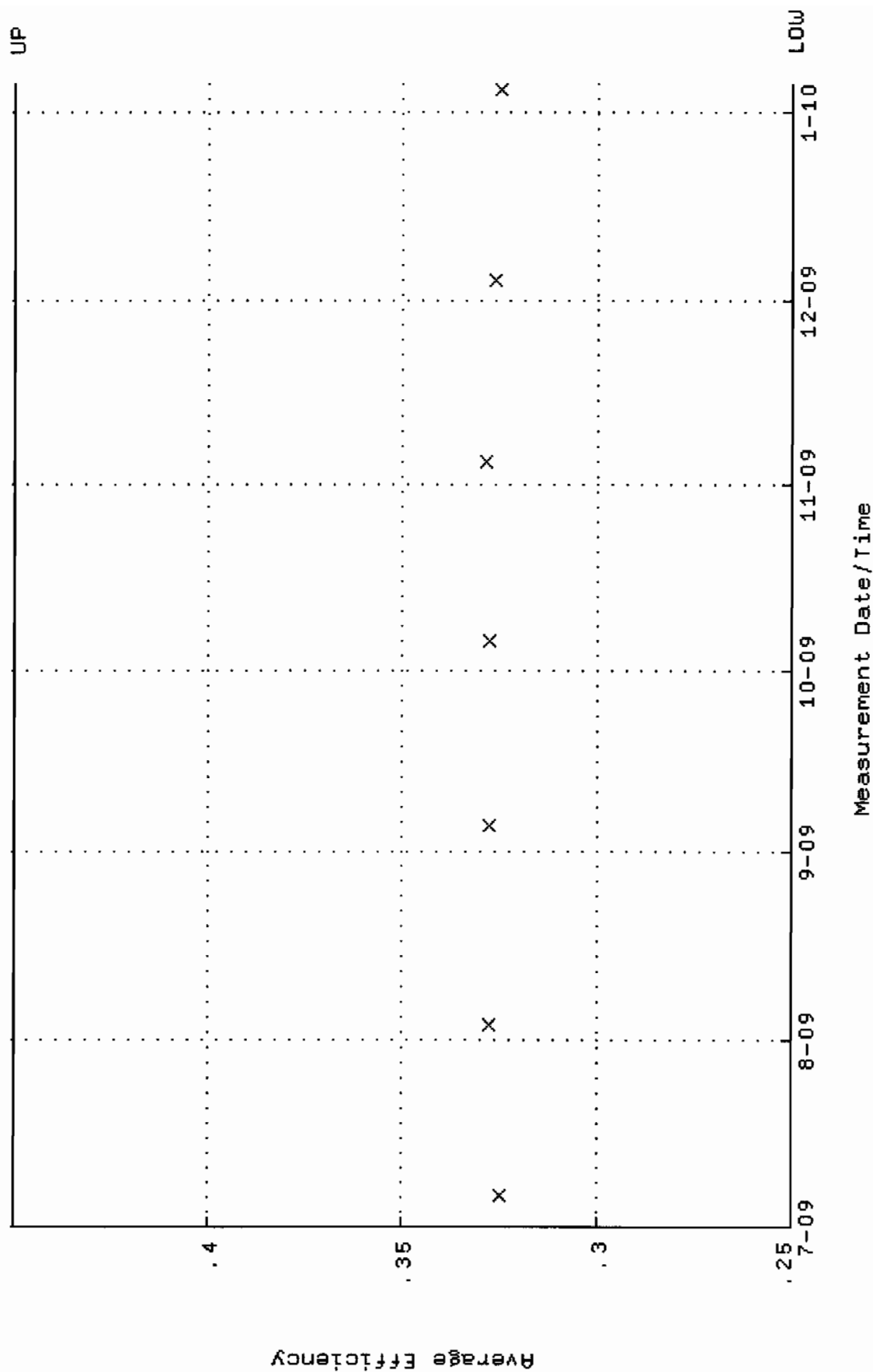
QA filename : DKA100:[ENV\_ALPHA.QA.W]W012.QAF;4  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 6-JUL-2009 09:46:11 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 88.0678 through 97.3382



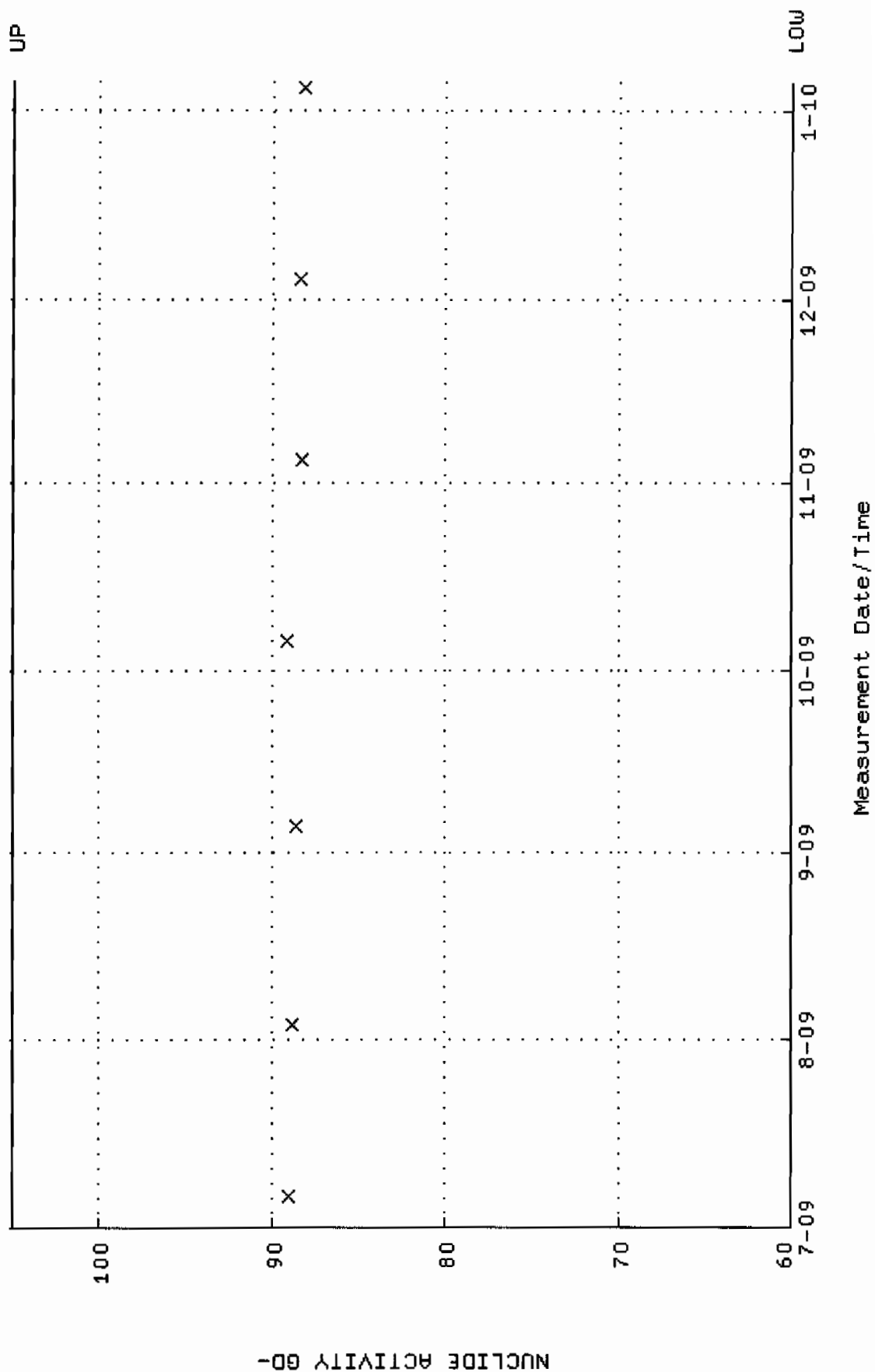
QA filename : DKA100:[ENV-ALPHA.QA.B]B012.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 5-JUL-2009 15:11:55 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



QA filename : DKA100:[ENV\_ALPHA.QA.W]W025.QAF;4  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 6-JUL-2009 09:46:14 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.250000 through 0.450000



QA filename : DKA100:[ENV\_ALPHA.QA.W]W025.QAF;4  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 6-JUL-2009 09:46:14 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 60.0000 through 105.000

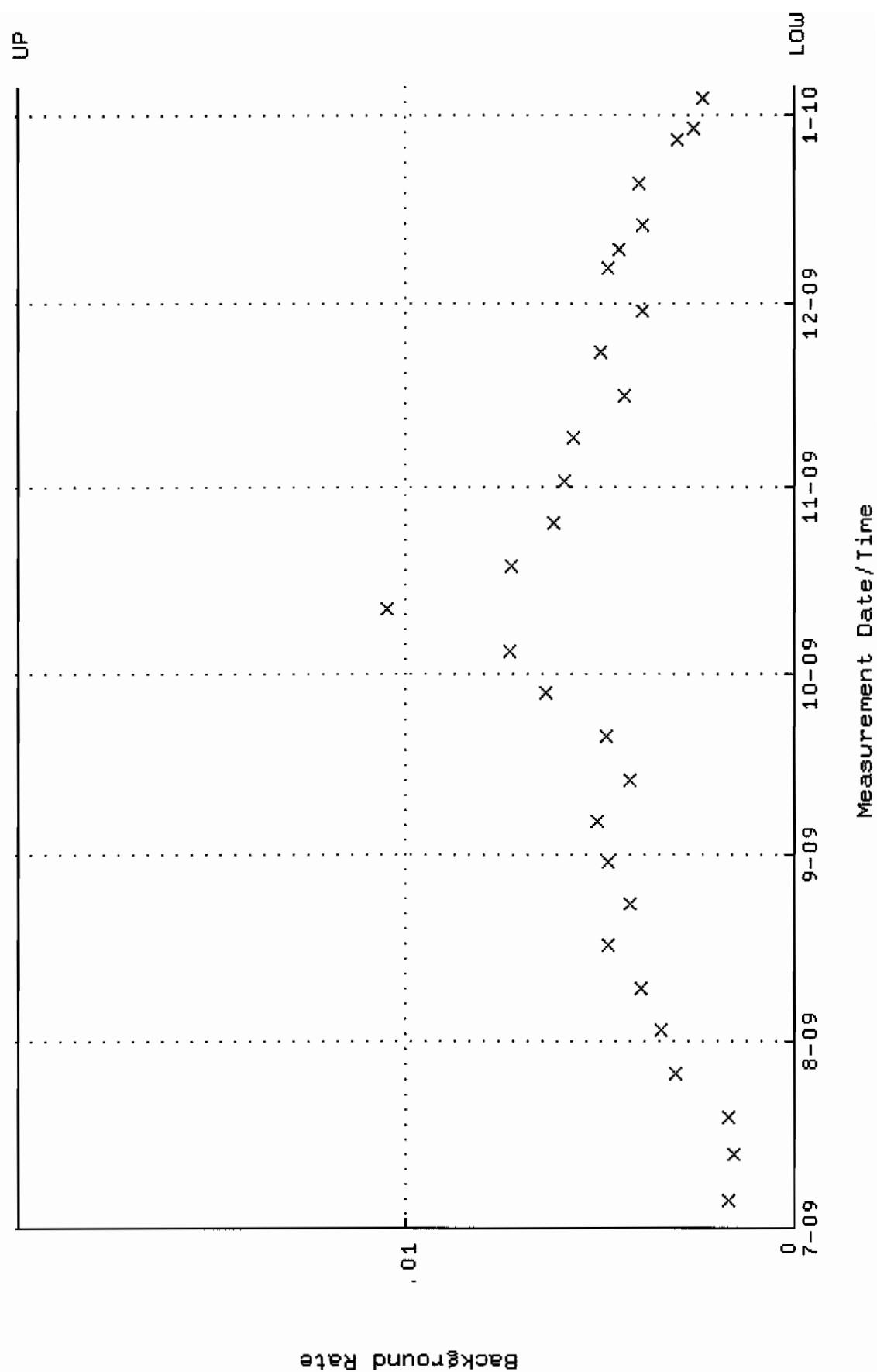




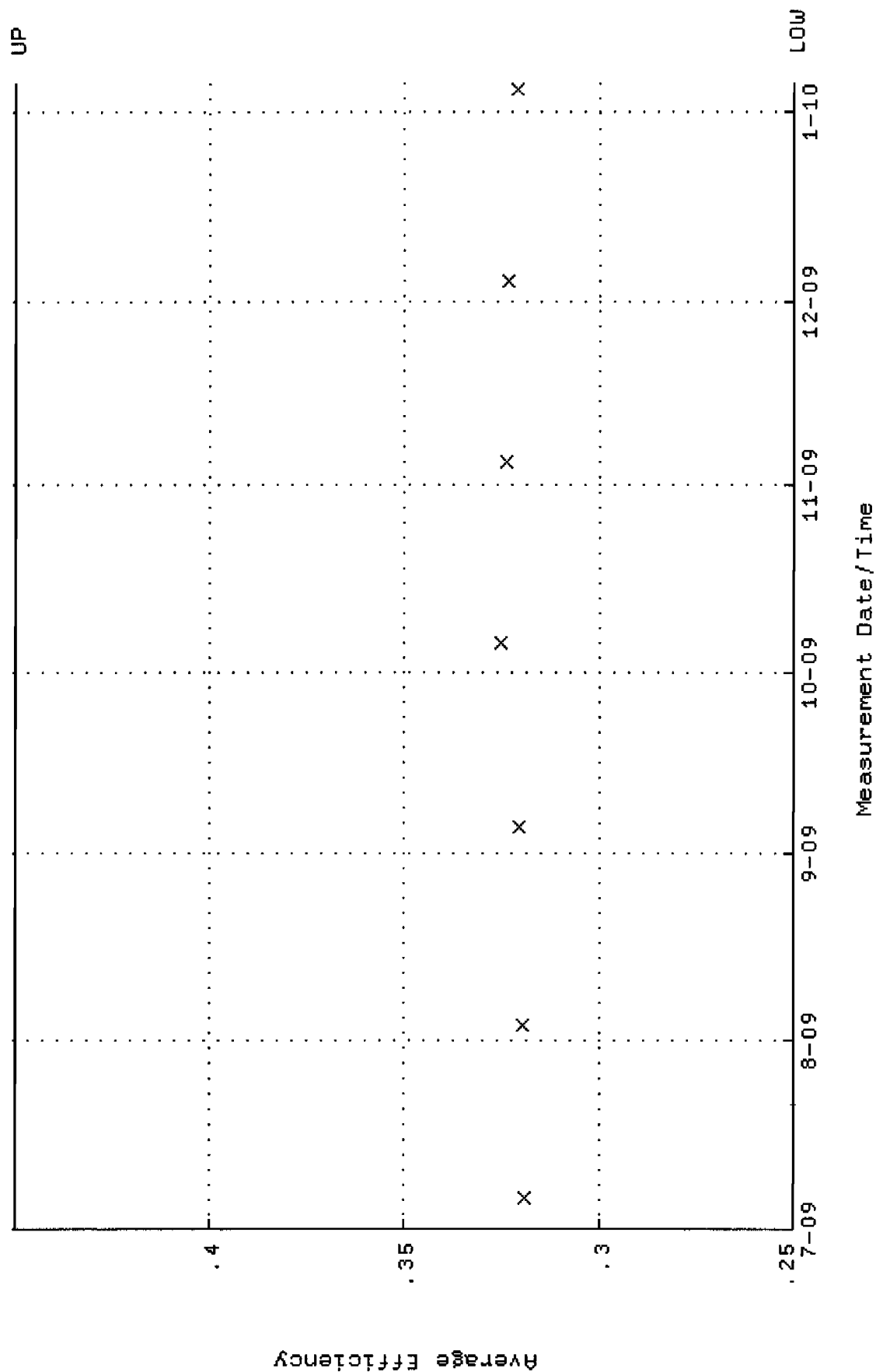
```

: DKA100:[ENV_ALPHA.QA.B]B025.QAF;2
: BACKRATE (Background Rate)
: 5-JUL-2009 15:11:58 through 5-JAN-
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02

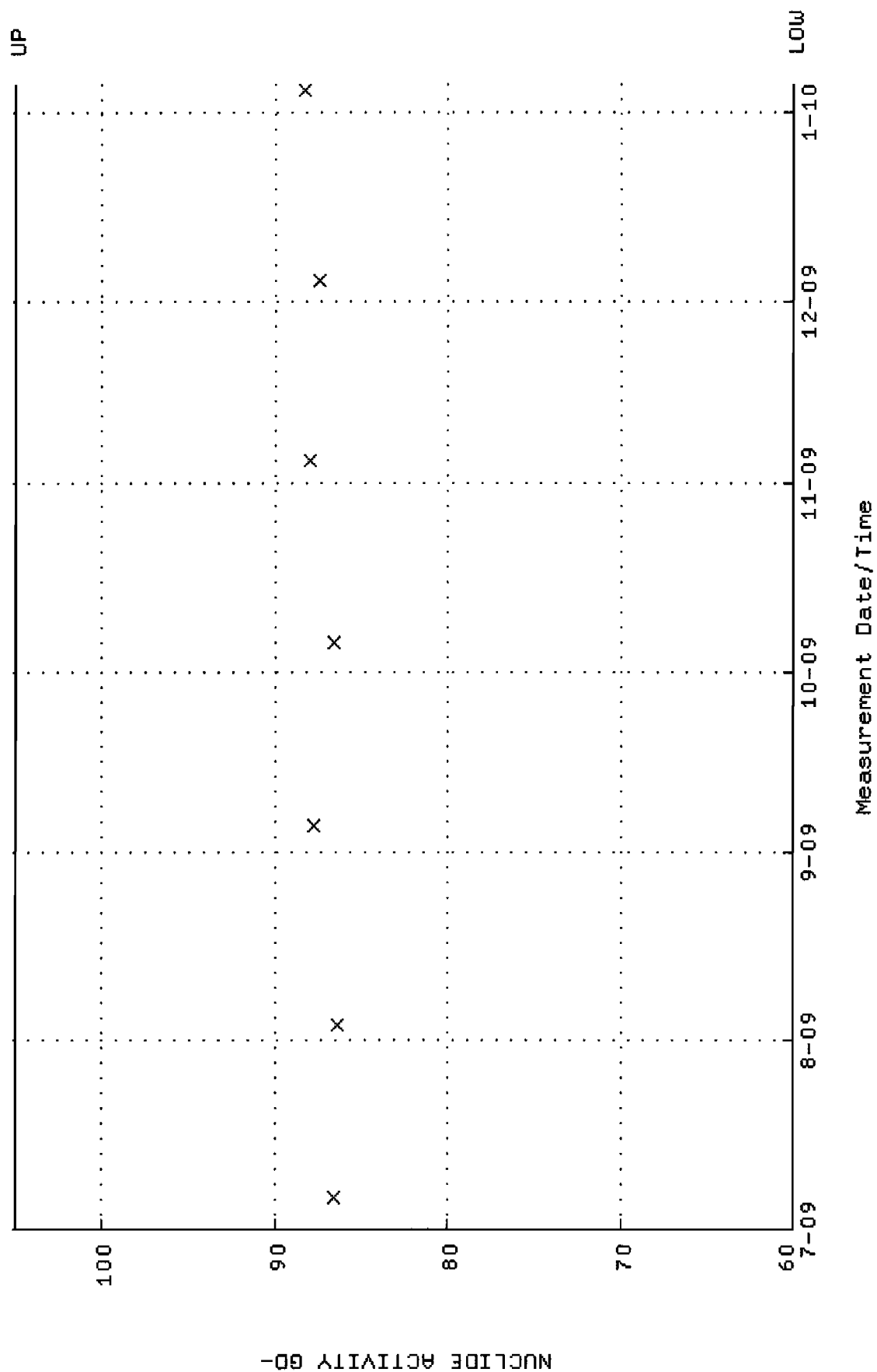
```



QA filename : DKA100:[ENV\_ALPHA.QA.W]W030.QAF;3  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 6-JUL-2009 09:46:14 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.250000 through 0.450000



QA filename : DKA100:[ENV\_ALPHA.QA.W]W030.QAF;3  
 Parameter Name : NLAactivity-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 6-JUL-2009 09:46:14 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 60.0000 through 105.000

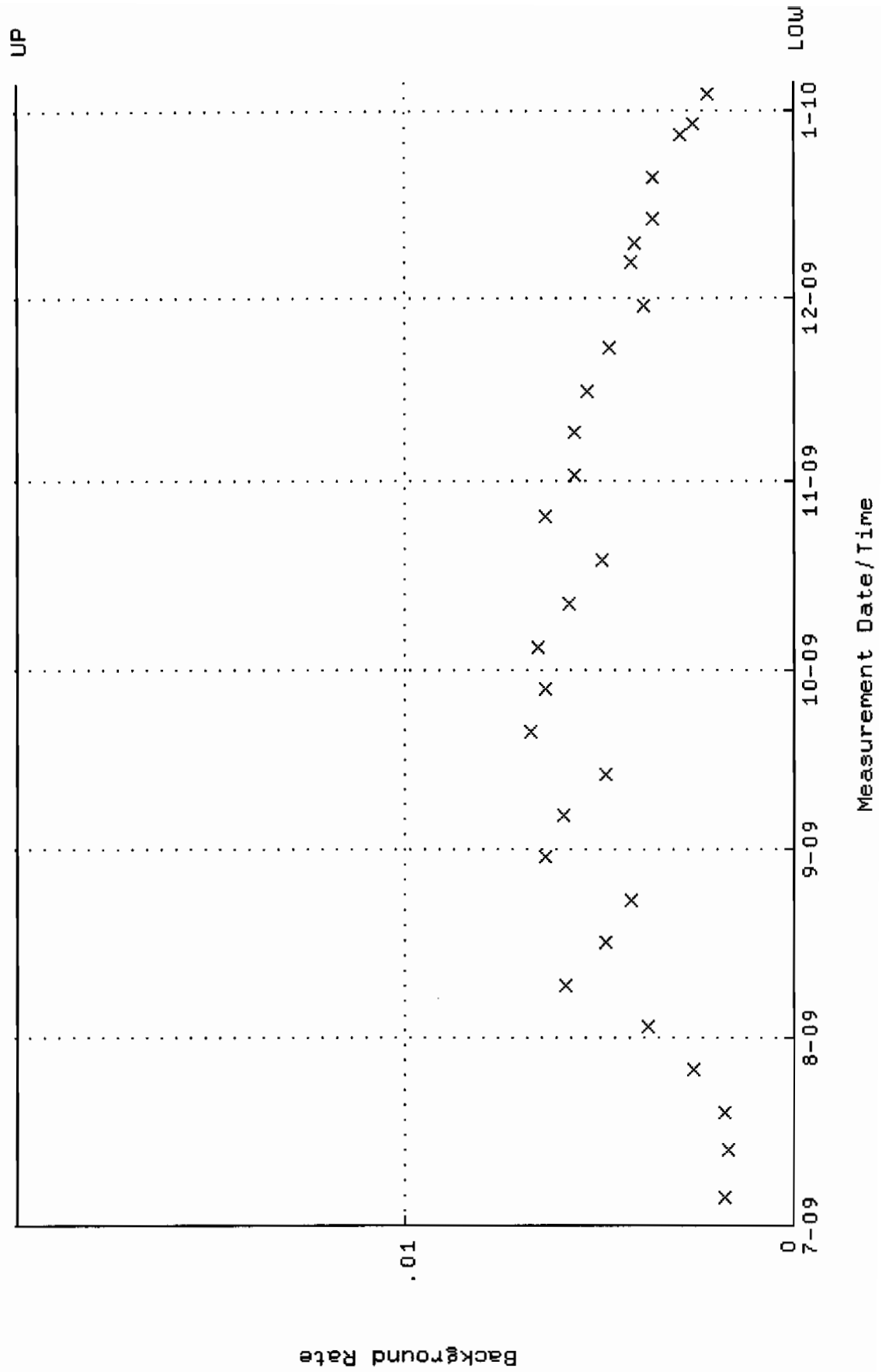


QA filename : DKA100:[ENV\_ALPHA.QA.B]B030.QAF;1

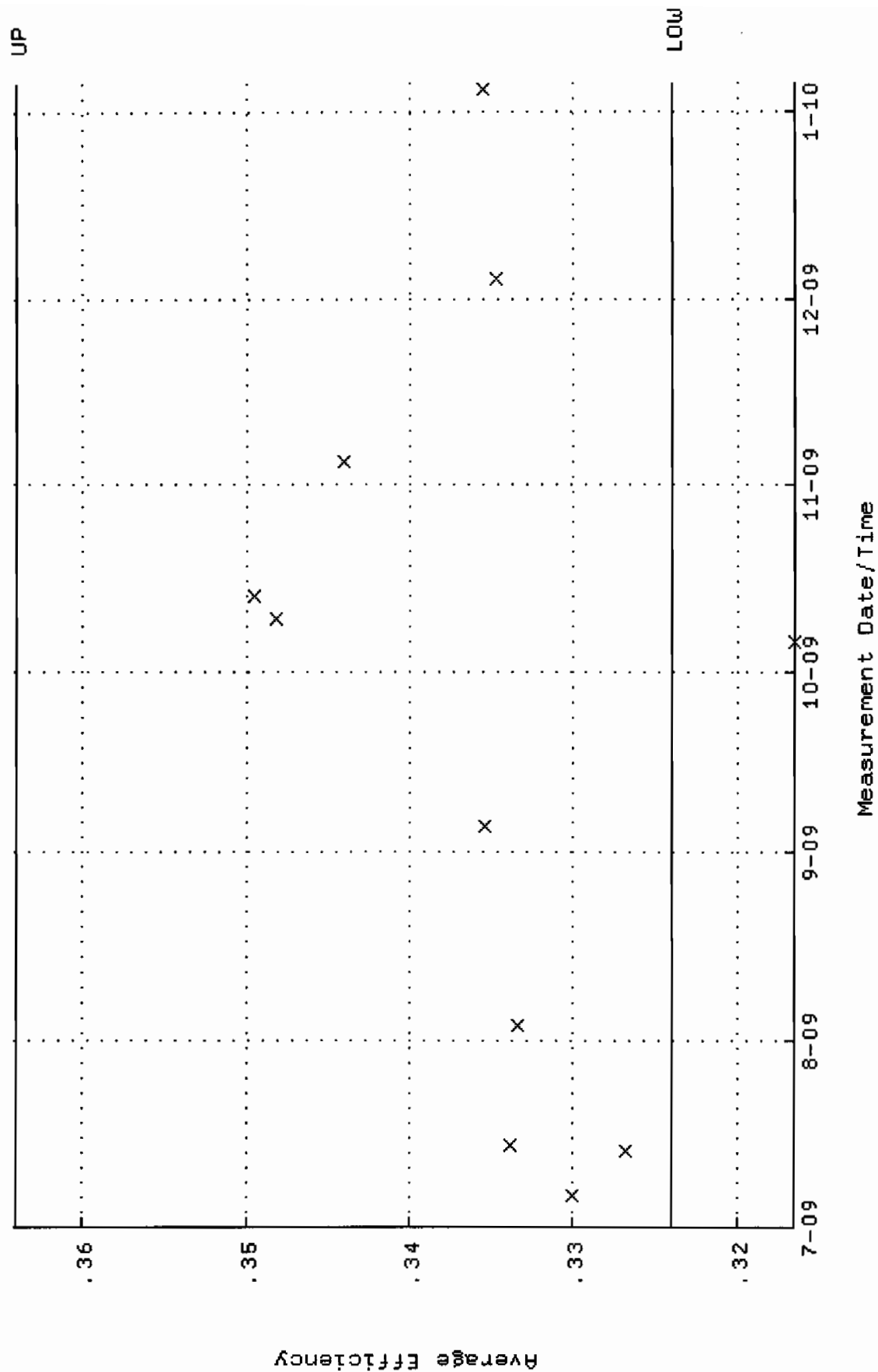
Parameter Name : BACKRATE (Background Rate)

Start/End Dates : 5-JUL-2009 15:11:58 through 5-JAN-2010 12:00:00

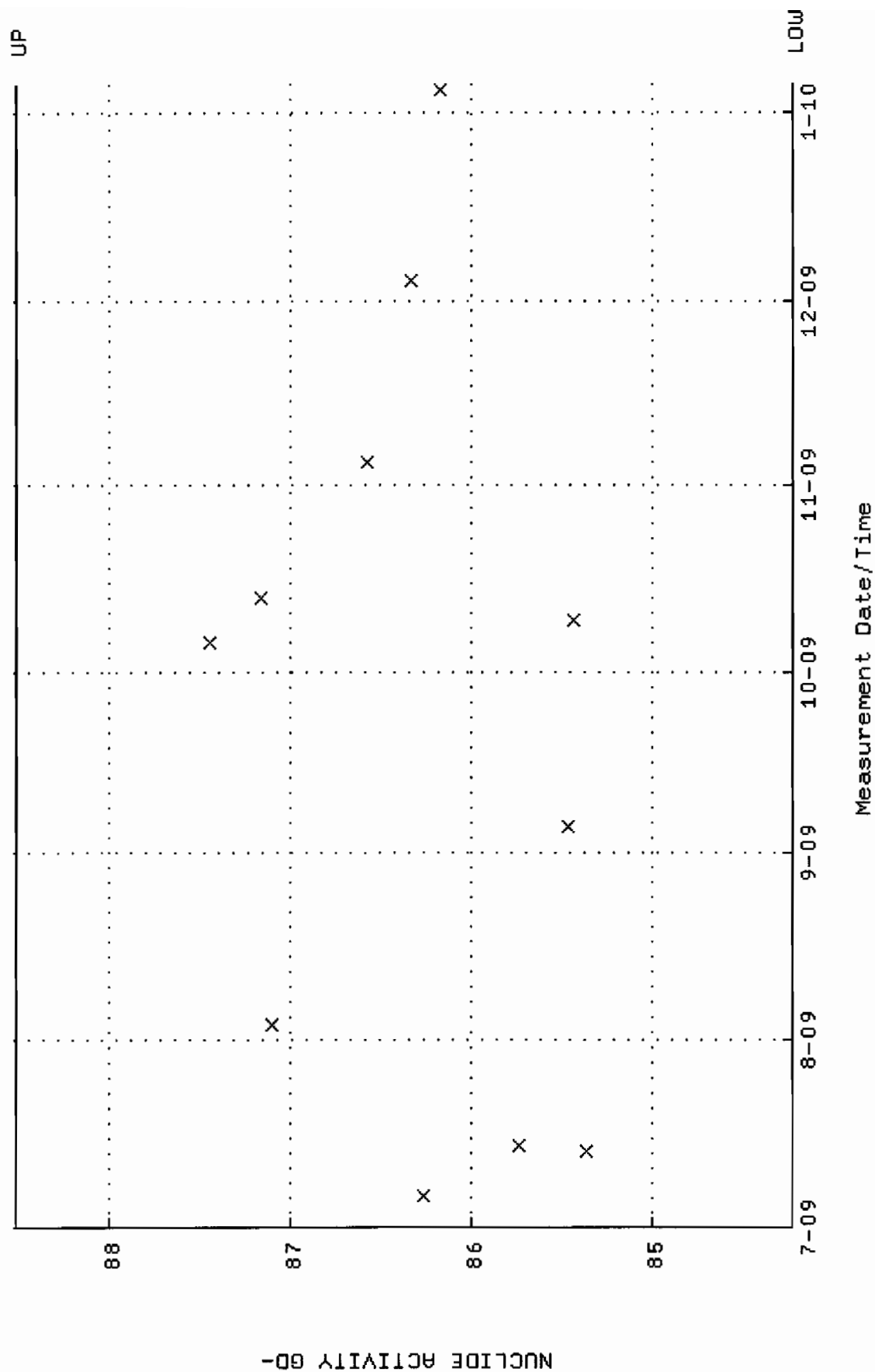
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



QA filename : DKA100:[ENV\_ALPHA.QA.W]W031.QAF;4  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 6-JUL-2009 09:46:15 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.324029 through 0.364065



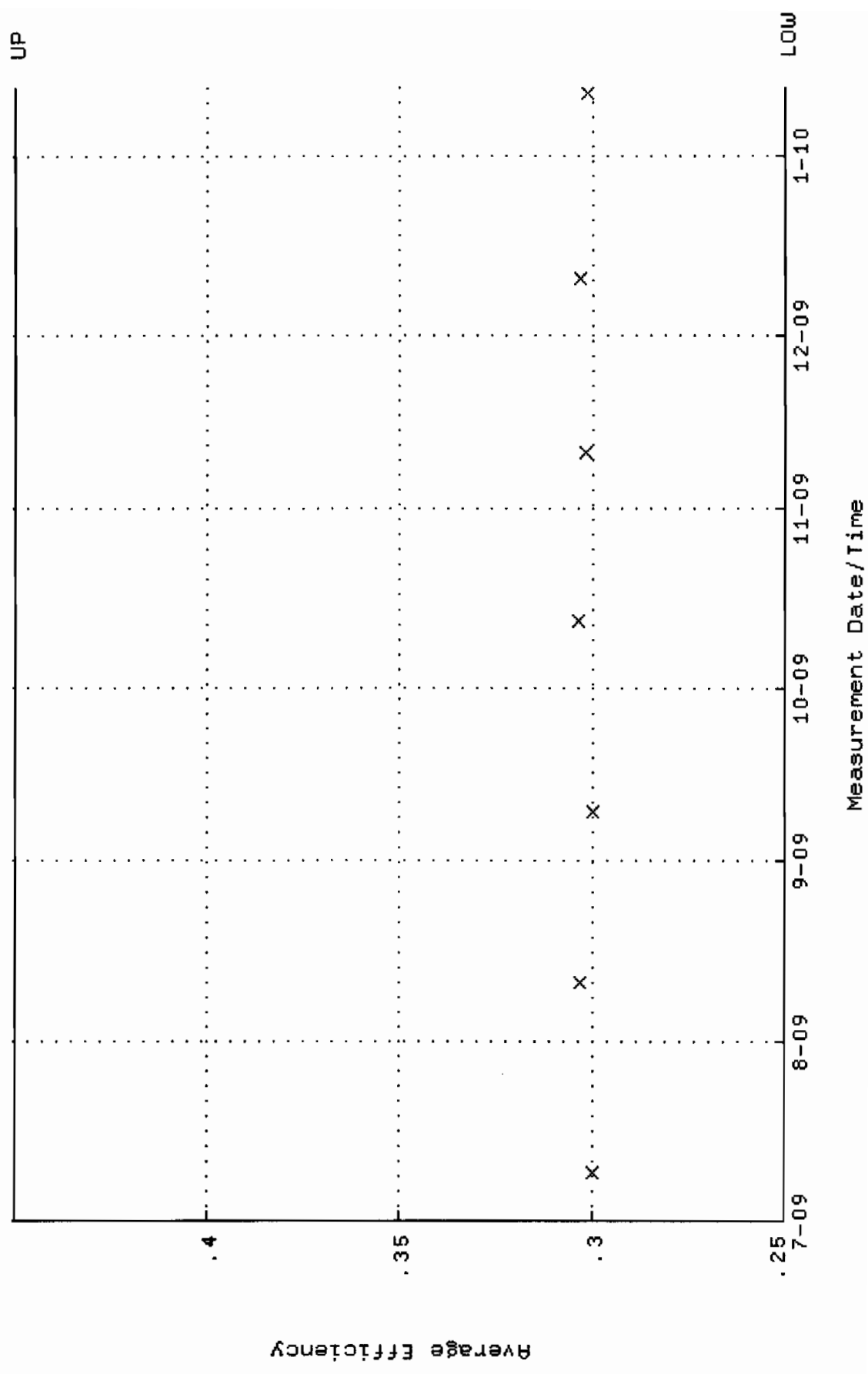
QA filename : DKA100:[ENV\_ALPHA.QA.W]W031.QAF;4  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 6-JUL-2009 09:46:15 through 5-JAN-2010 12:00:00  
 Lower/Upper Lmts: 84.2165 through 88.5165



Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02

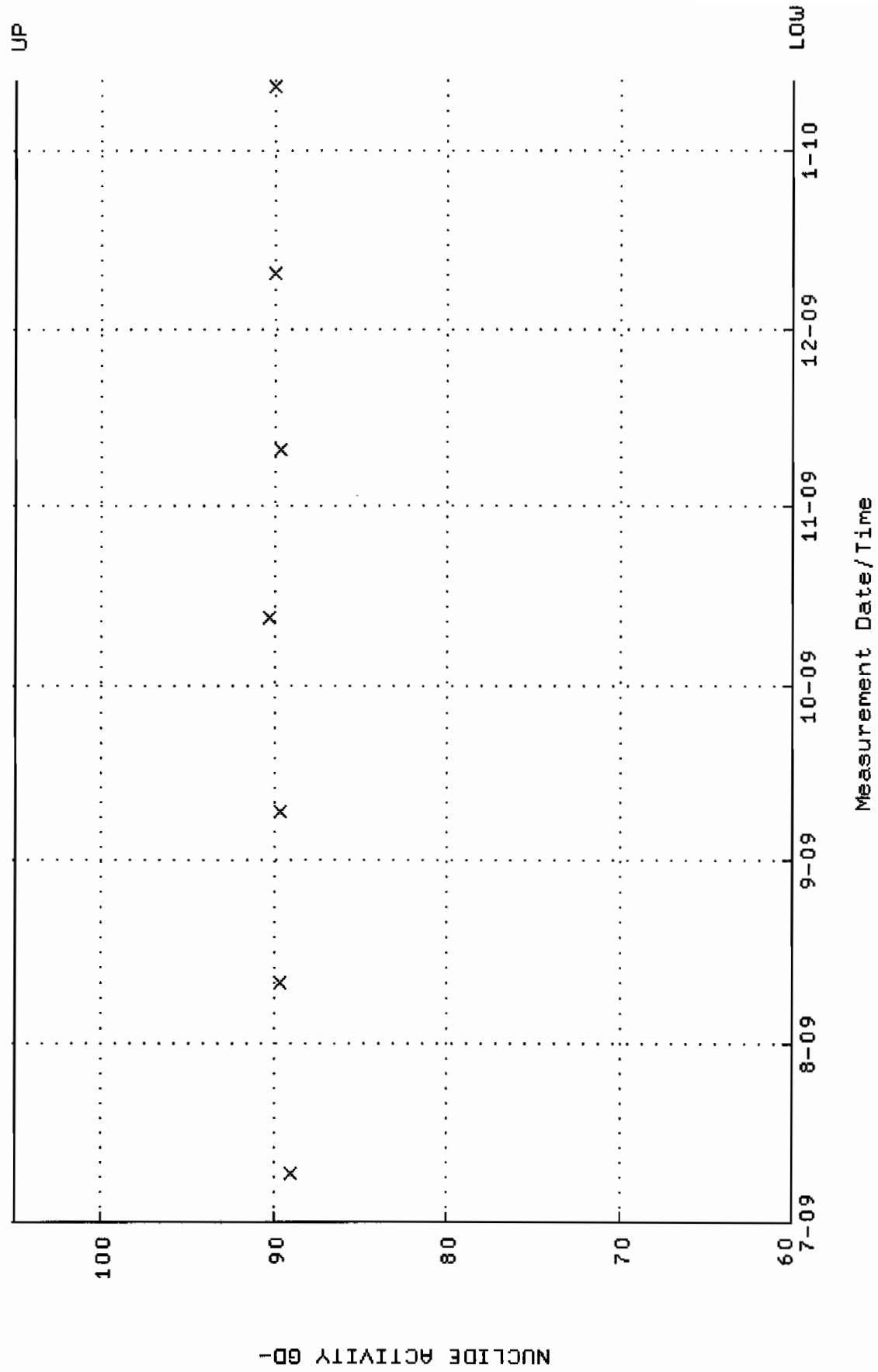


QA filename : DKA100:[ENV\_ALPHA.QA.W]w088.QAF;4  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-JUL-2009 08:08:12 through 12-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.250000 through 0.450000

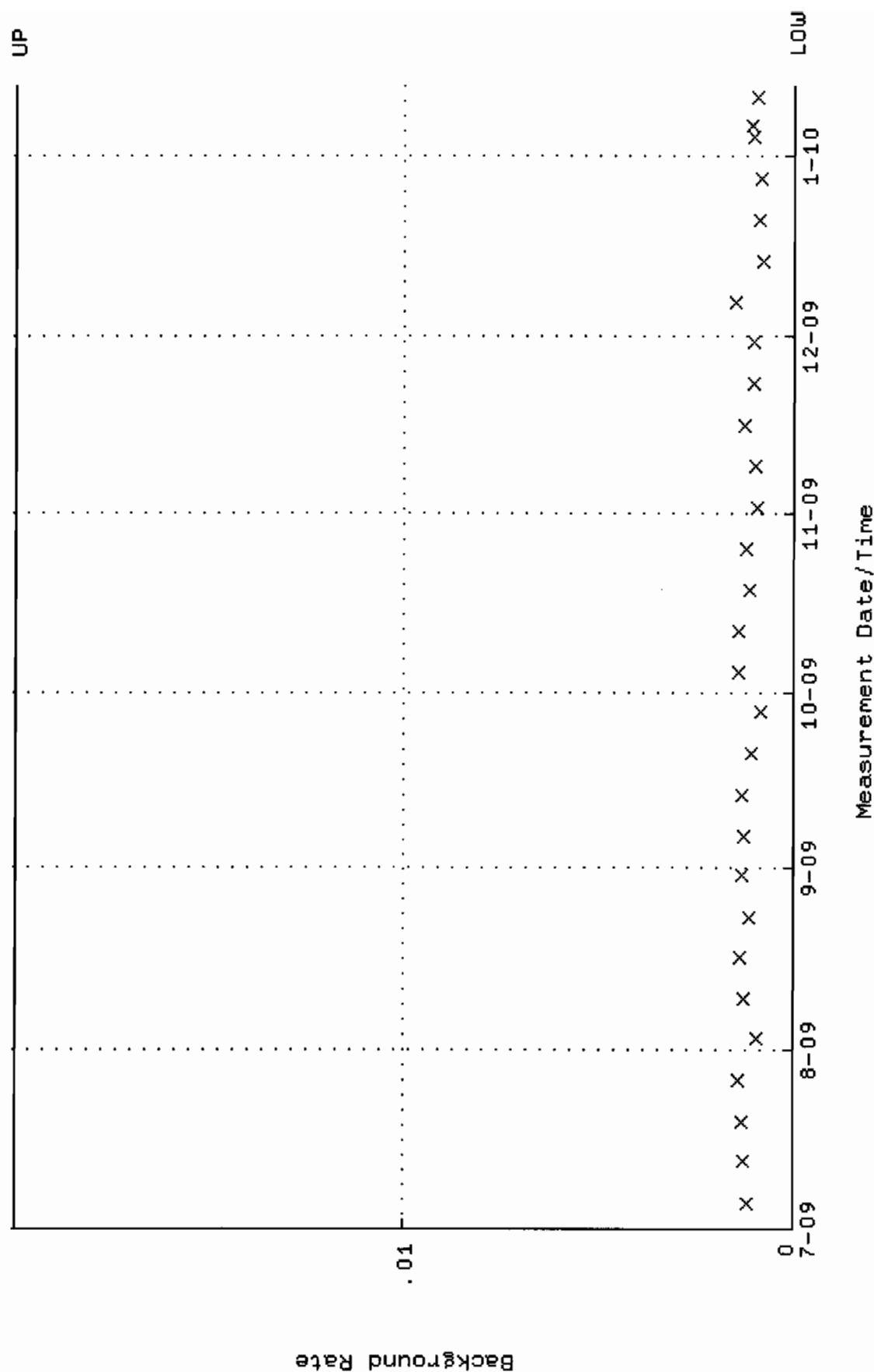




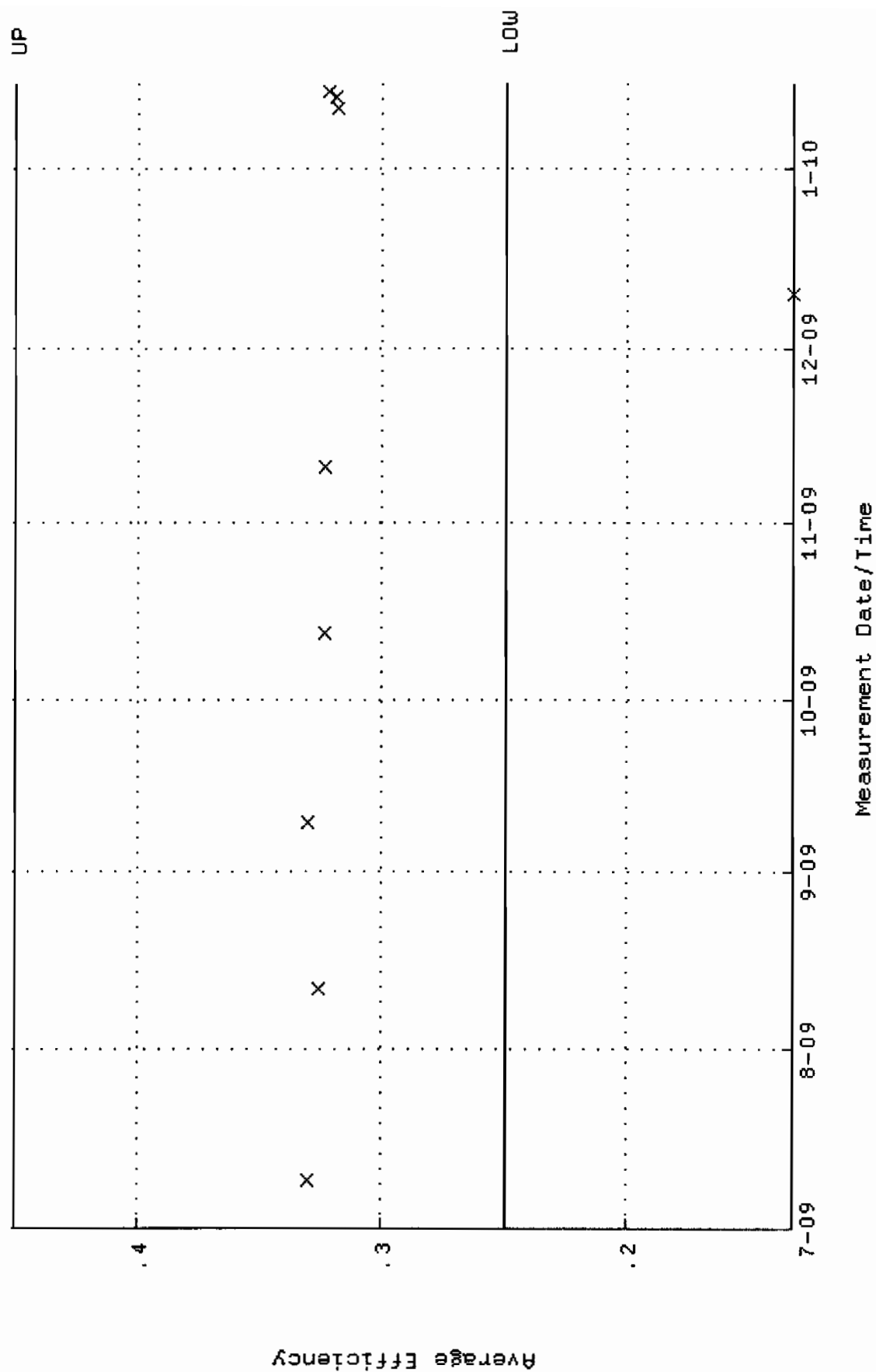
QA filename : DKA100:[ENV\_ALPHA.QA.W]W088.QAF;4  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-JUL-2009 08:08:12 through 12-JAN-2010 12:00:00  
 Lower/Upper Lmts: 60.0000 through 105.000



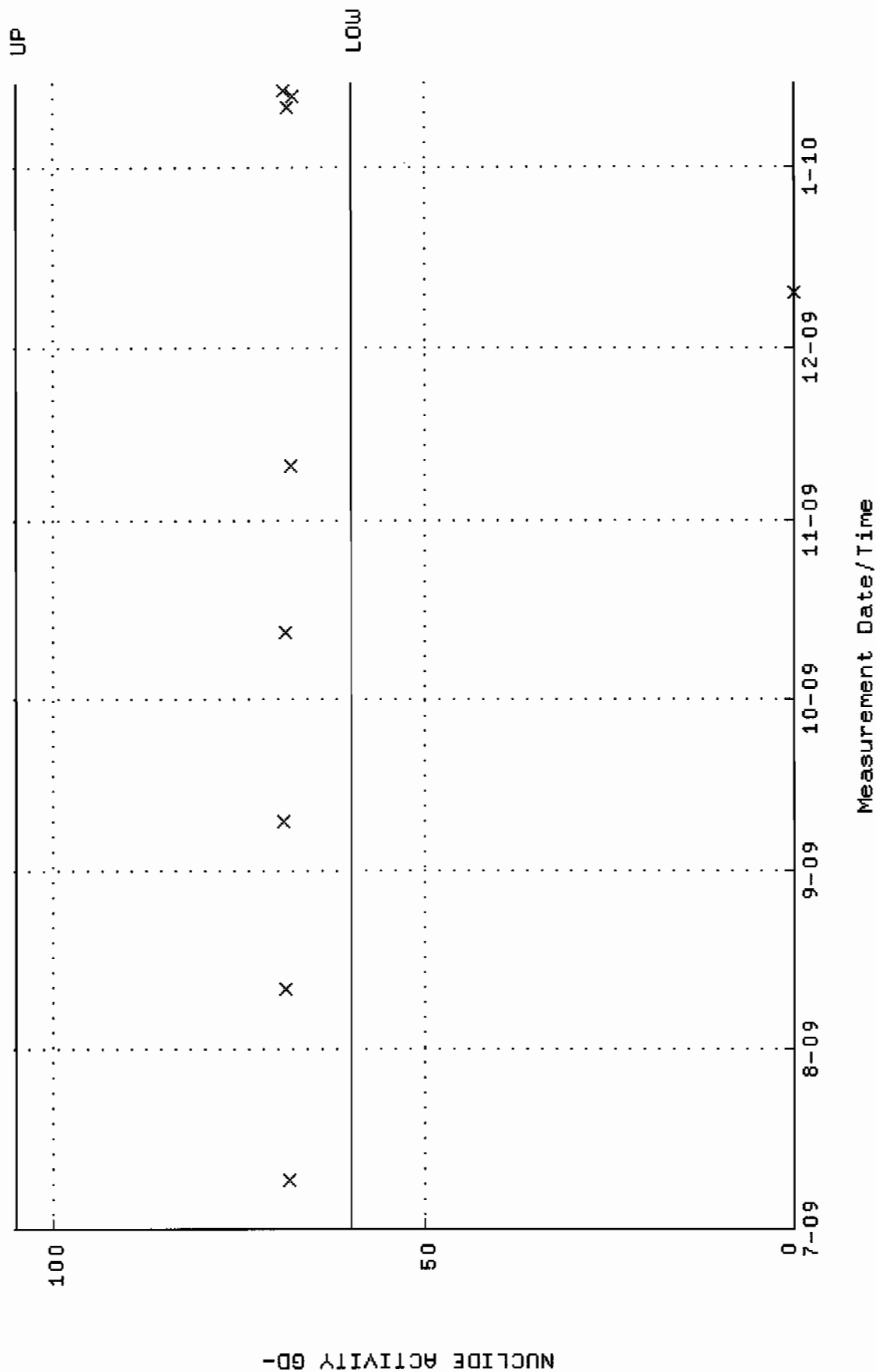
QA filename : DKA100:[ENV\_ALPHA.QA.B]B088.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 5-JUL-2009 15:12:04 through 12-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



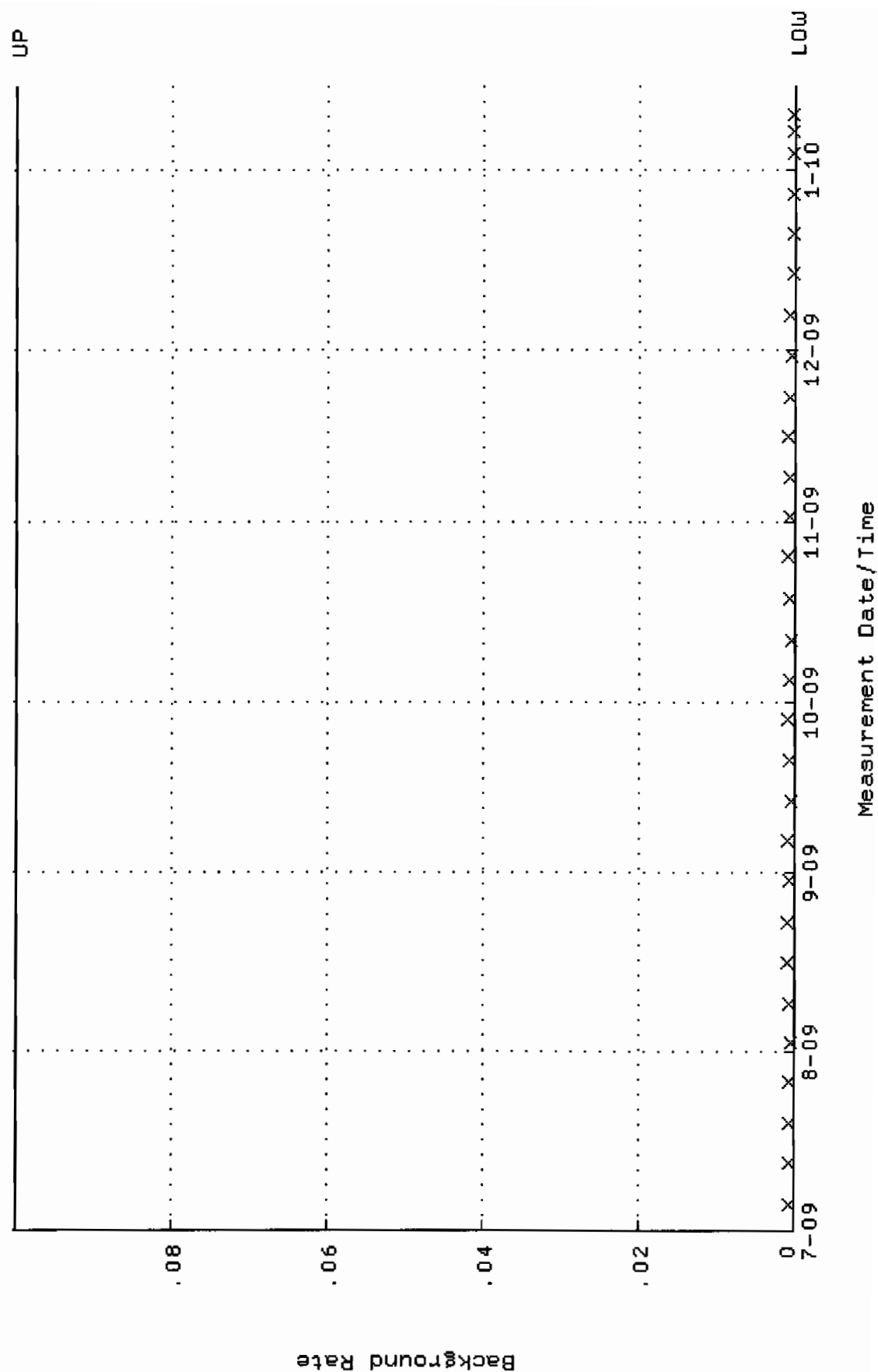
QA filename : DKA100:[ENV\_ALPHA.QA.W]W106.QAF;2  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-JUL-2009 08:08:15 through 15-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.250000 through 0.450000



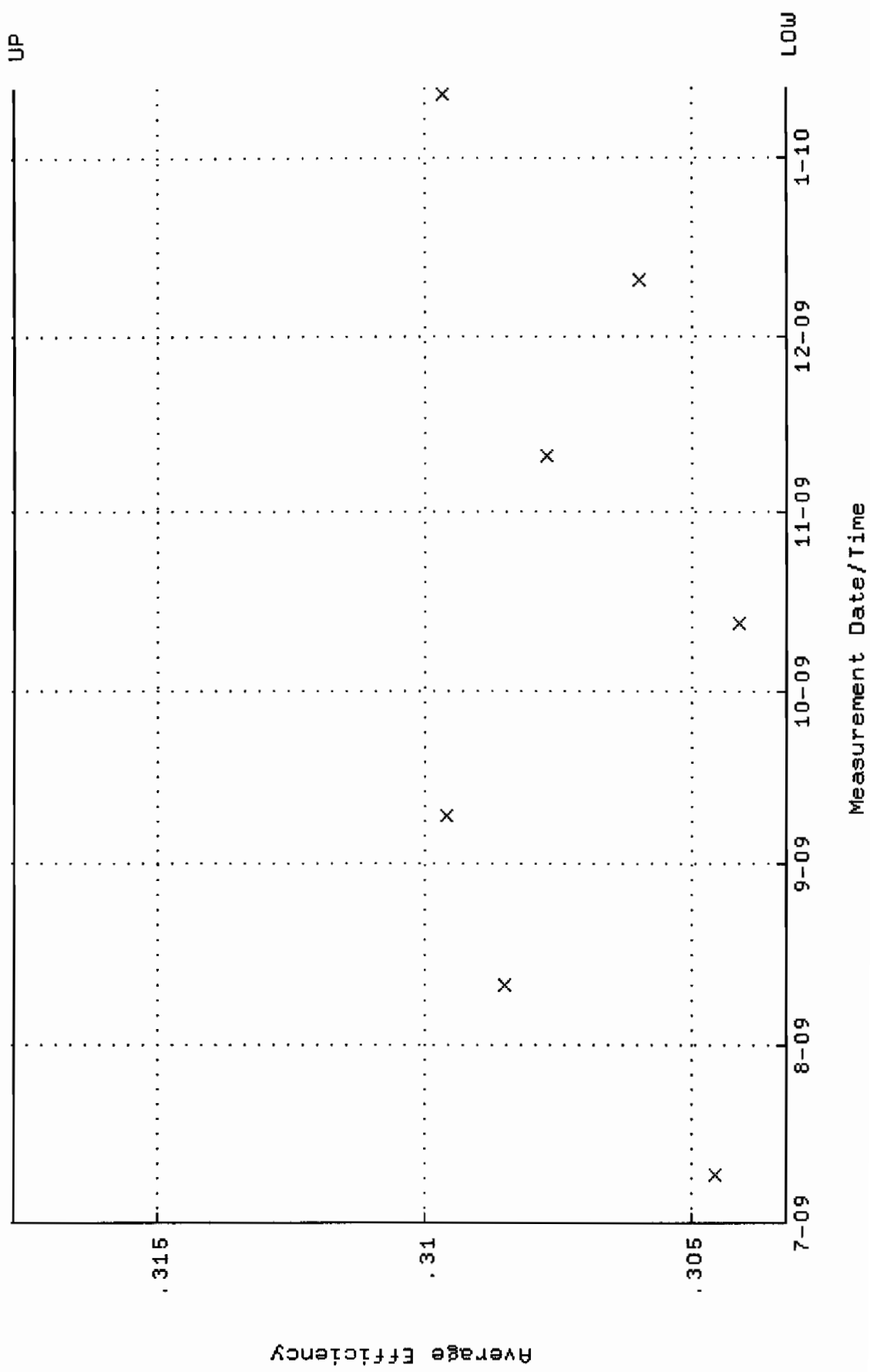
QA filename : DKA100:[ENV\_ALPHA.QA.W]w106.QAF;2  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-JUL-2009 08:08:15 through 15-JAN-2010 12:00:00  
 Lower/Upper Lmts: 60.0000 through 105.0000



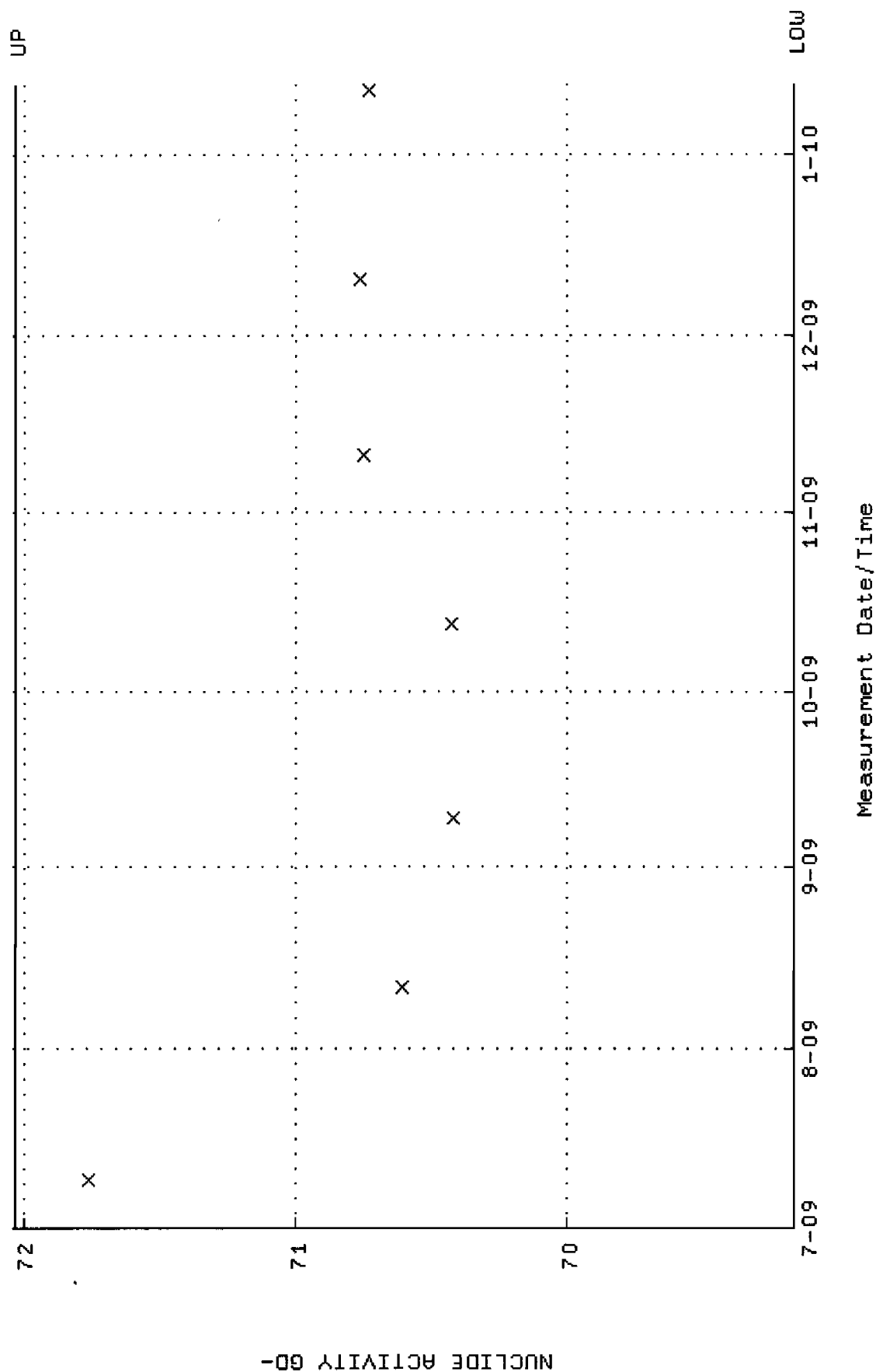
QA filename : DKA100:[ENV\_ALPHA.QA.B]B106.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 5-JUL-2009 15:12:06 through 15-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



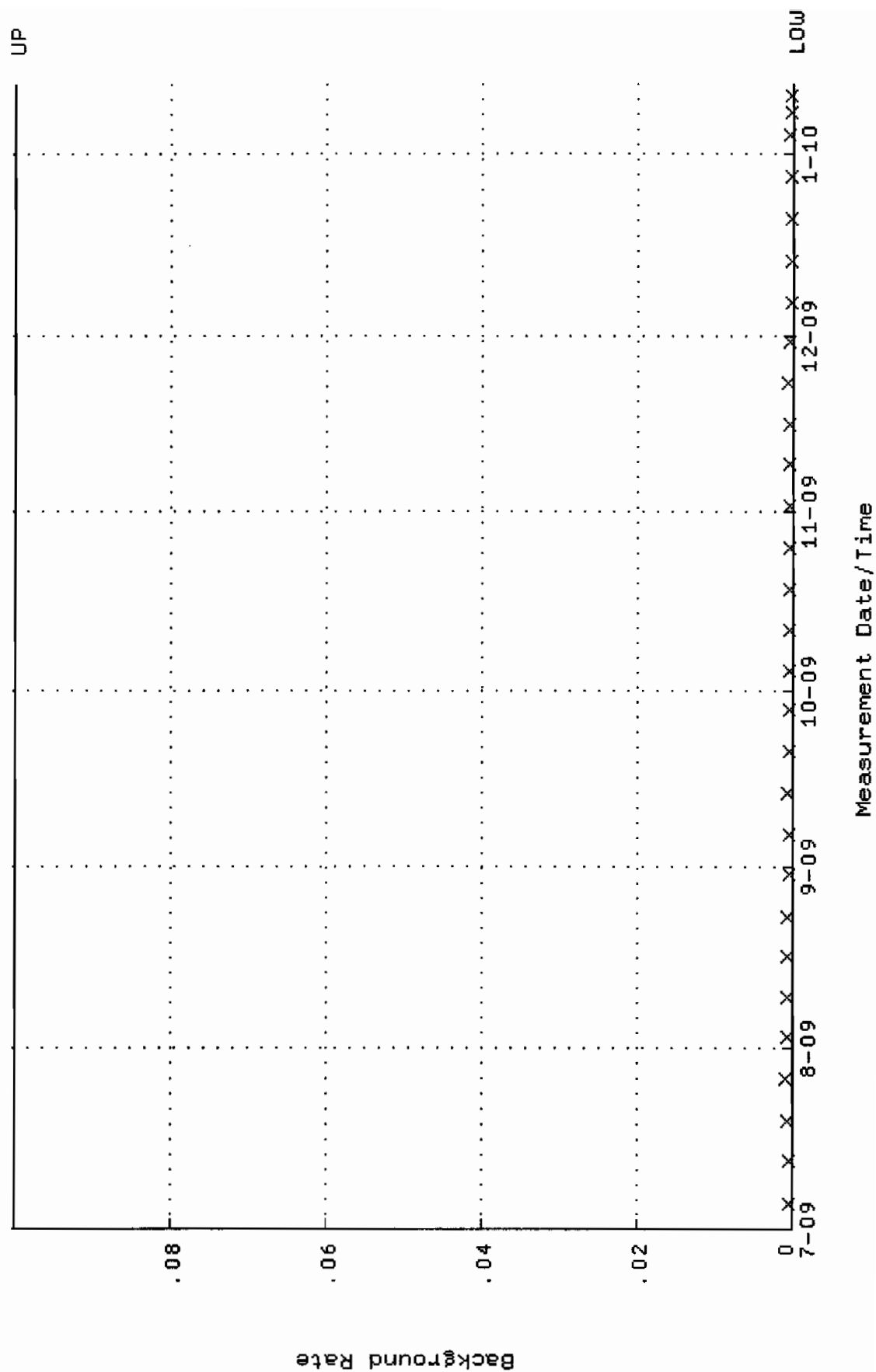
QA filename : DKA100:[ENV\_ALPHA.QA.W]W107.QAF;4  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-JUL-2009 08:08:16 through 12-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.303231 through 0.317703



QA filename : DKA100:[ENV\_ALPHA.QA.W]W107.QAF; 4  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-JUL-2009 08:08:16 through 12-JAN-2010 12:00:00  
 Lower/Upper Lmts: 69.1572 through 72.0358

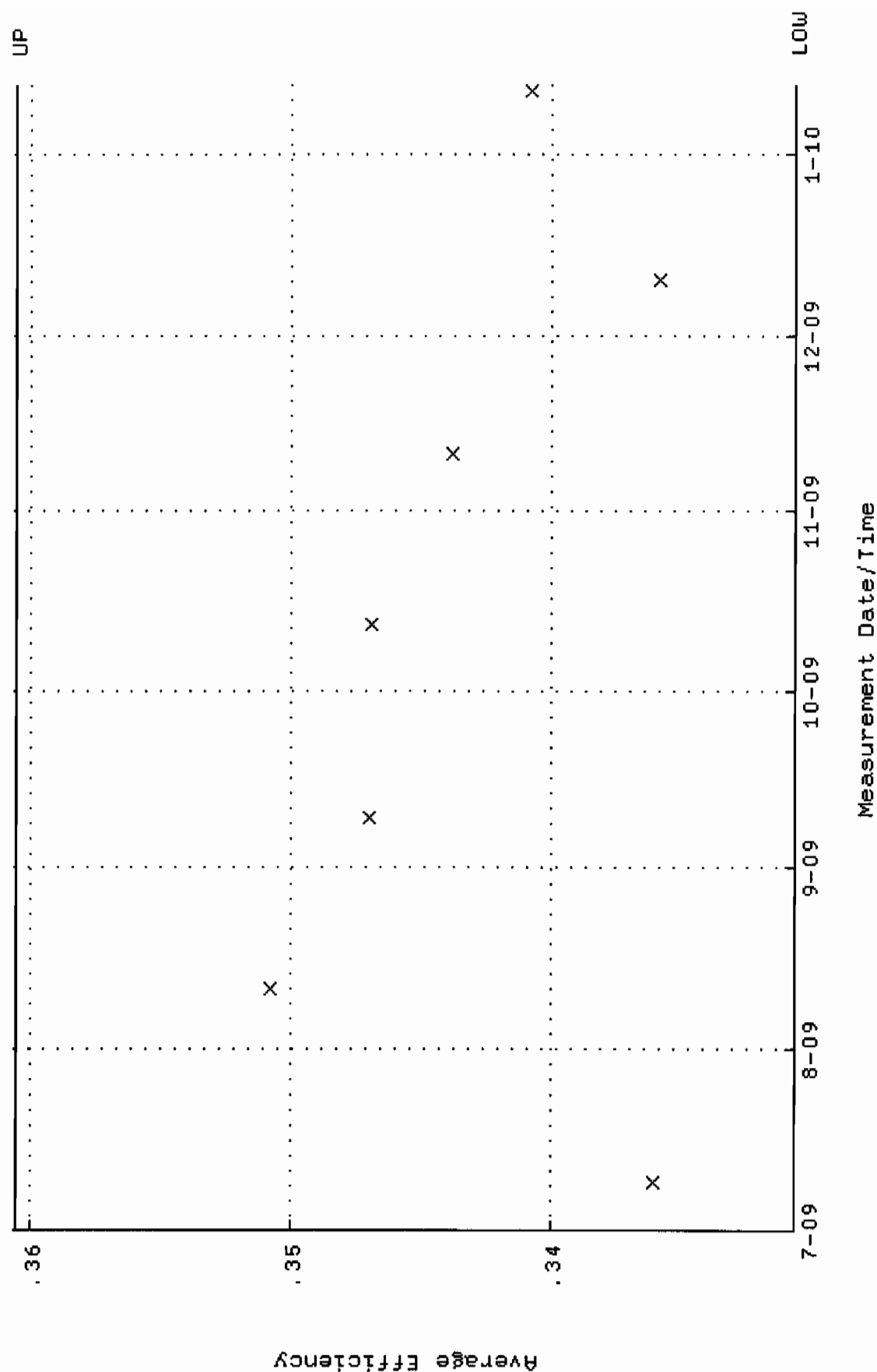


QA filename : DKA100:[ENV\_ALPHA.QA.B]B107.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 5-JUL-2009 15:12:07 through 12-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000

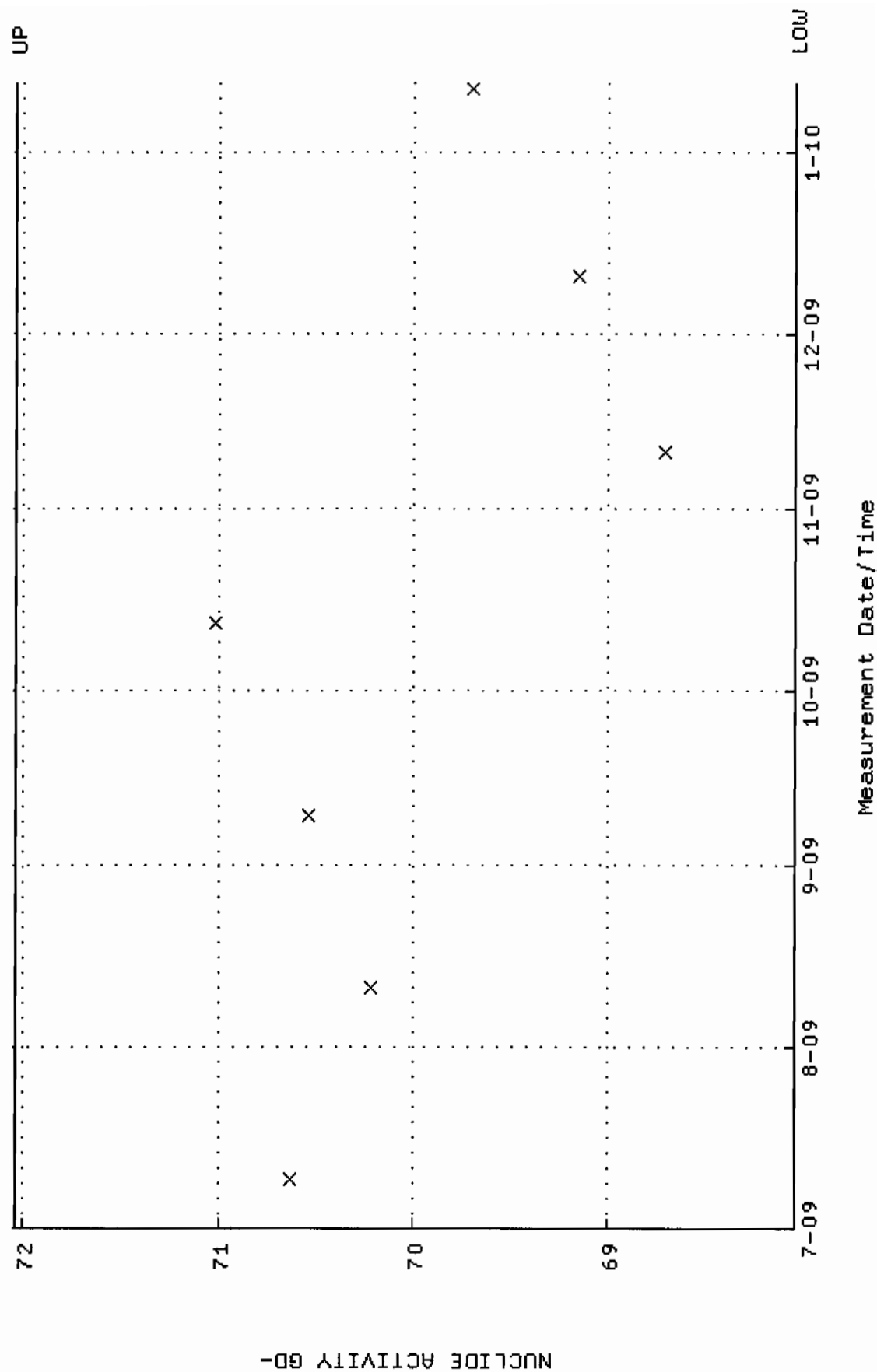




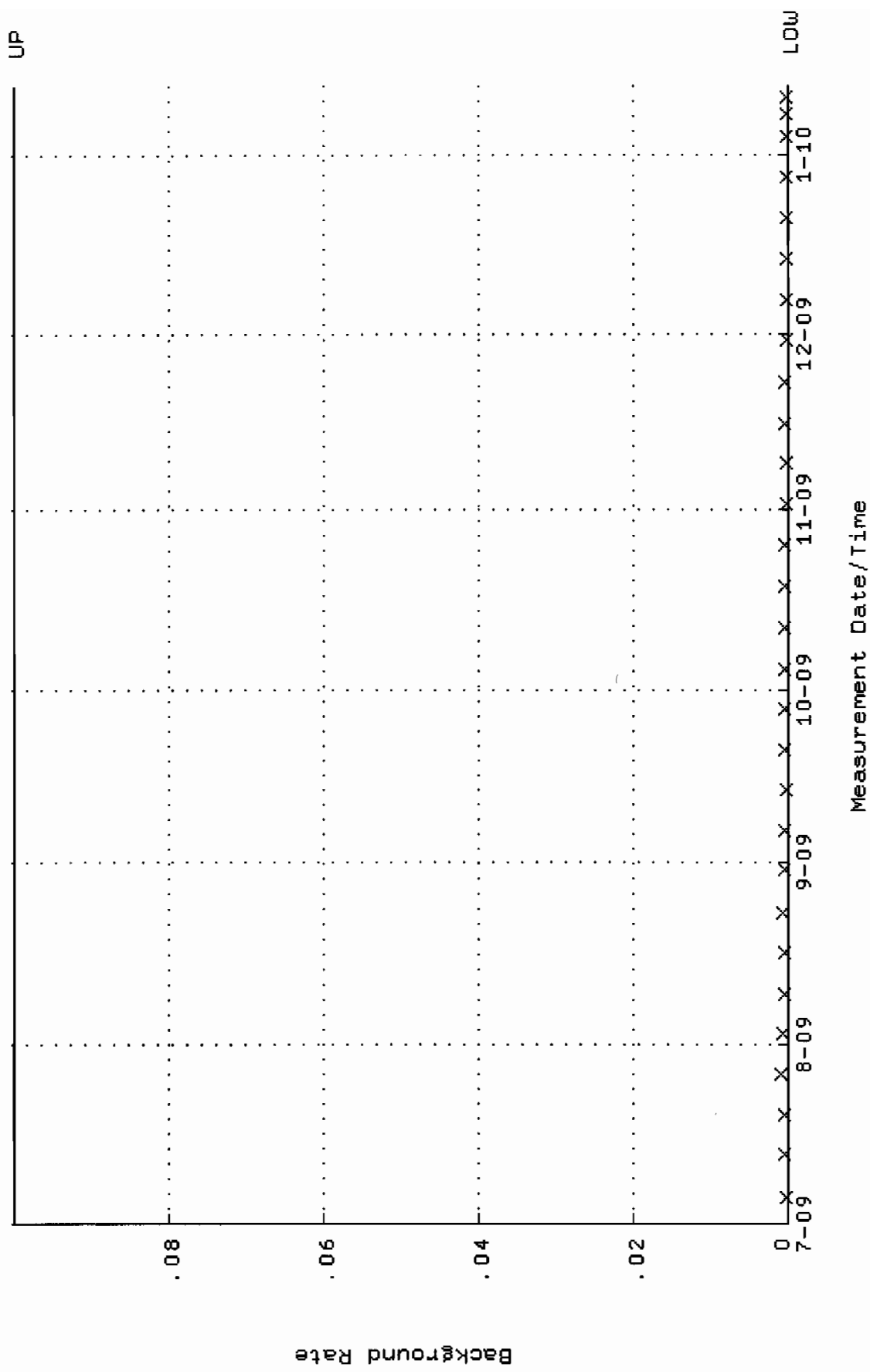
QA filename : DKA100:[ENV\_ALPHA.QA.W]W108.QAF;3  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-JUL-2009 08:08:16 through 12-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.330641 through 0.360561



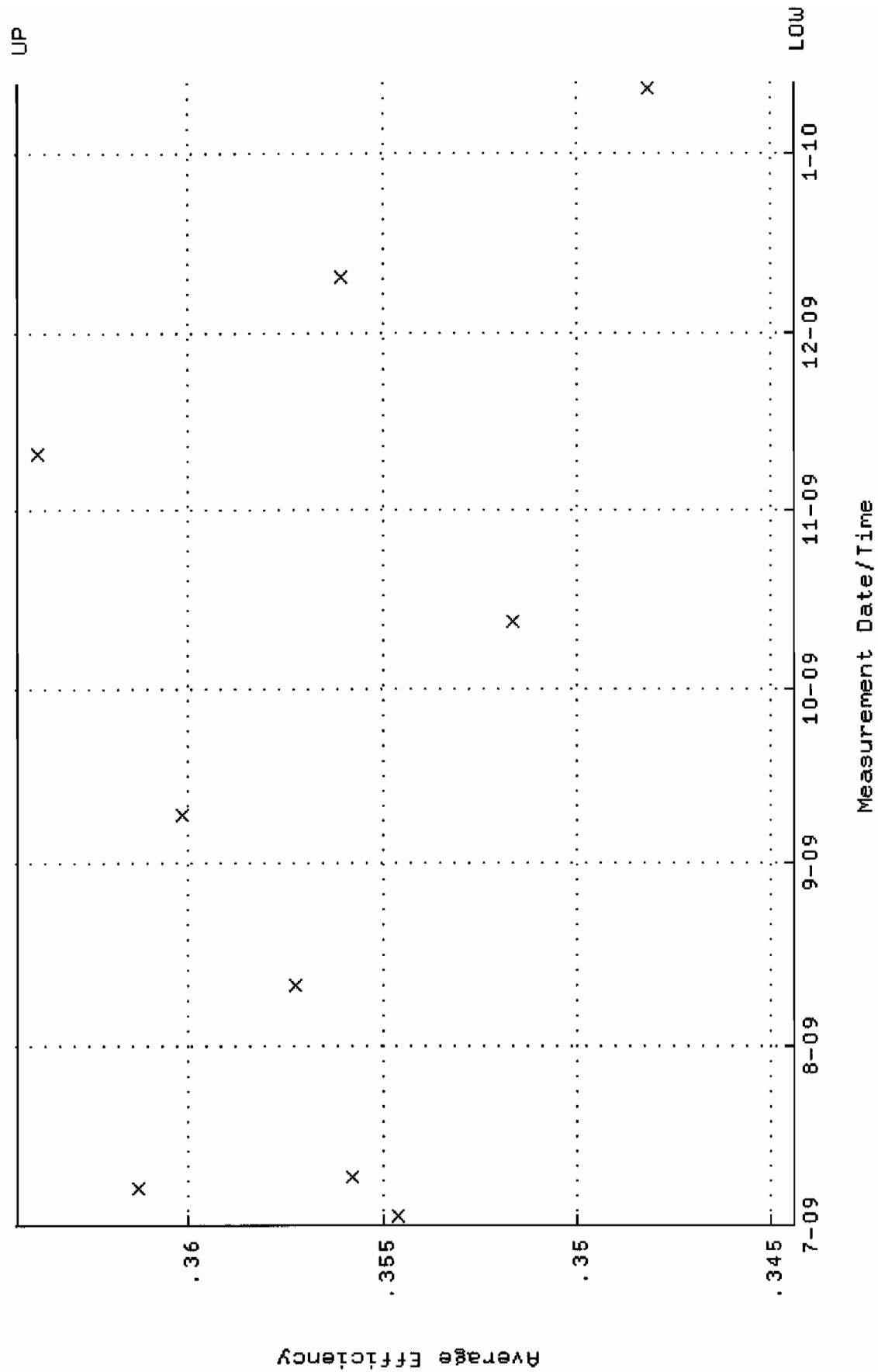
QA filename : DKA100:[ENV\_ALPHA.QA.W]W108.QAF;3  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-JUL-2009 08:08:16 through 12-JAN-2010 12:00:00  
 Lower/Upper Lmts: 68.0460 through 72.0402



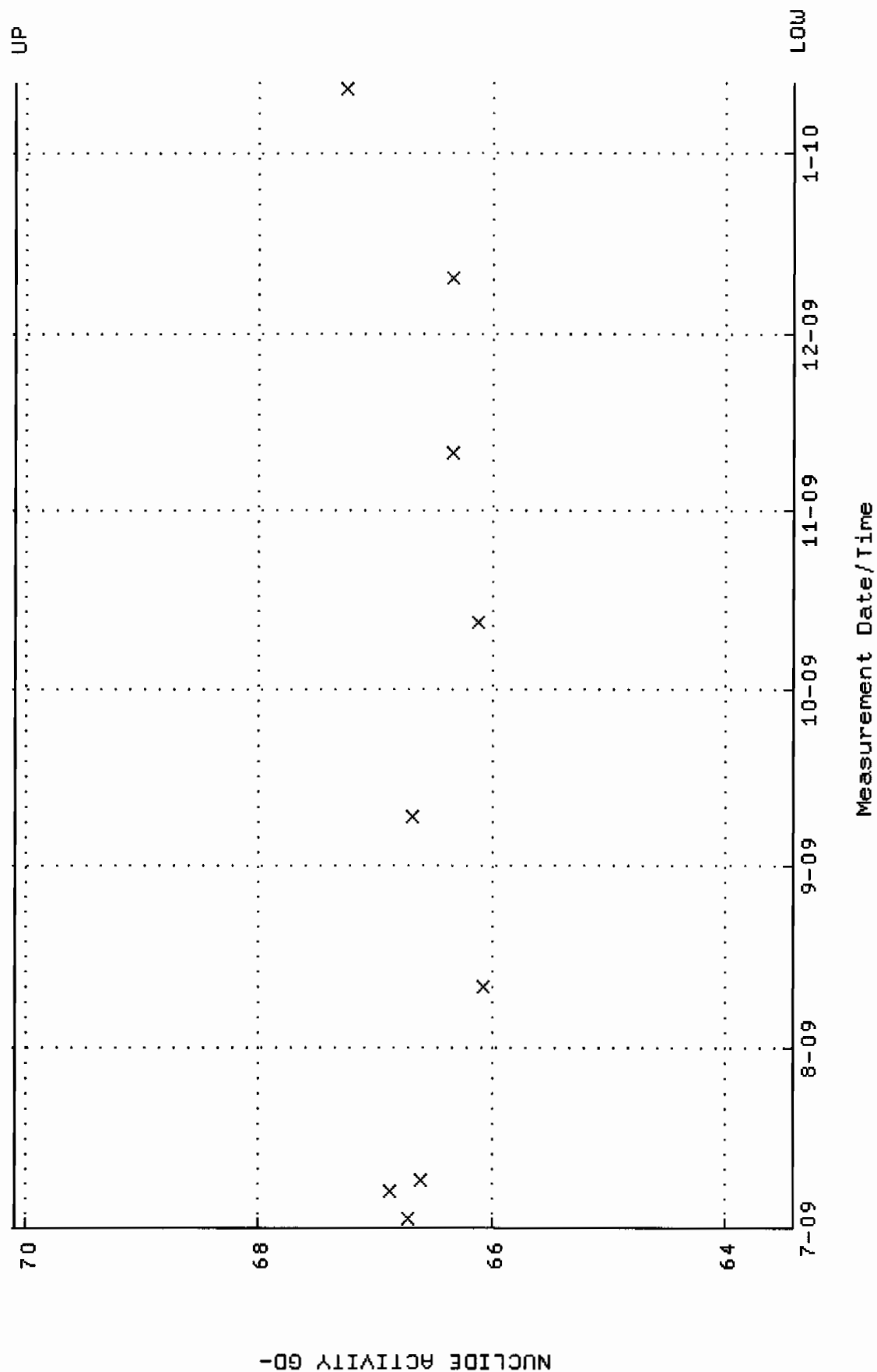
QA filename : DKA100:[ENV\_ALPHA.QA.B]B108.QAF;2  
Parameter Name : BACKRATE (Background Rate)  
Start/End Dates : 5-JUL-2009 15:12:07 through 12-JAN-2010 12:00:00  
Lower/Upper Lmts: 0.000000E+00 through 0.100000



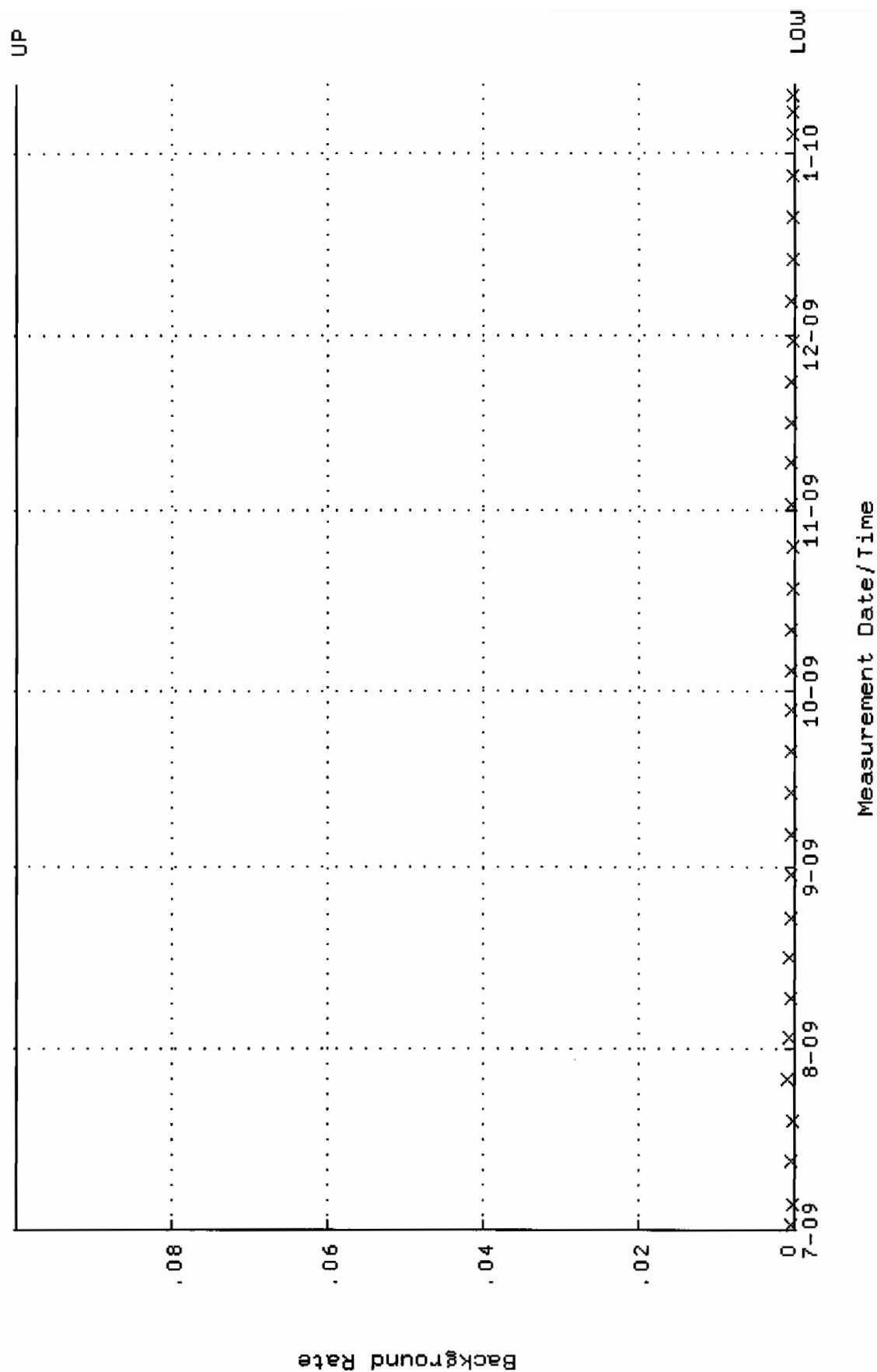
QA filename : DKA100:[ENV\_ALPHA.QA.W]W109.QAF;2  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUL-2009 15:04:17 through 12-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.344397 through 0.364397



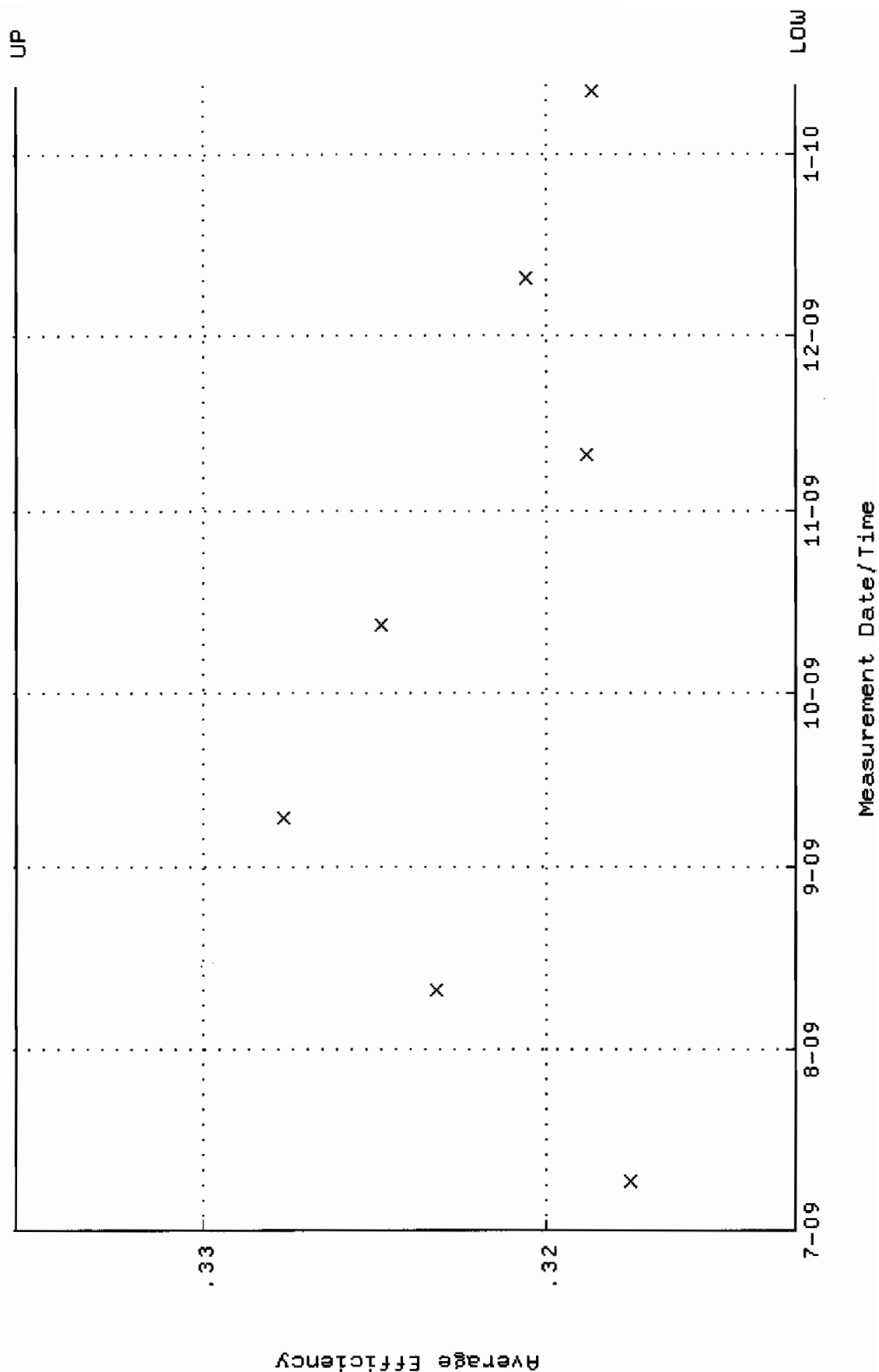
QA filename : DKA100:[ENV\_ALPHA.QA.W]W109.QAF;2  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUL-2009 15:04:17 through 12-JAN-2010 12:00:00  
 Lower/Upper Lmts: 63.4194 through 70.0952



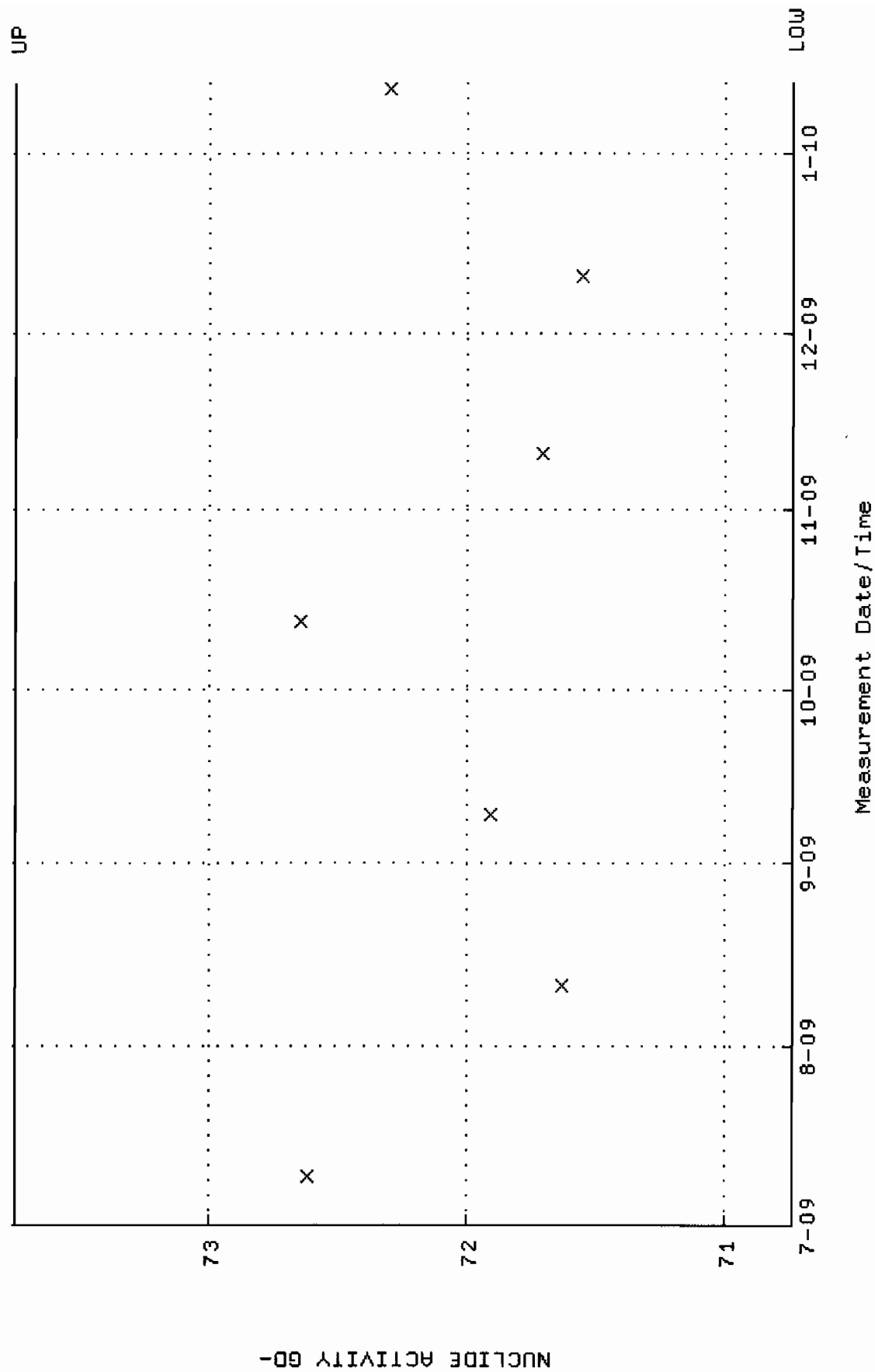
QA filename : DKA100:[ENV\_ALPHA.QA.B]B109.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUL-2009 21:40:02 through 12-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



QA filename : DKA100:[ENV\_ALPHA.QA.W]W110.QAF;3  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-JUL-2009 08:08:16 through 12-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.312683 through 0.335479

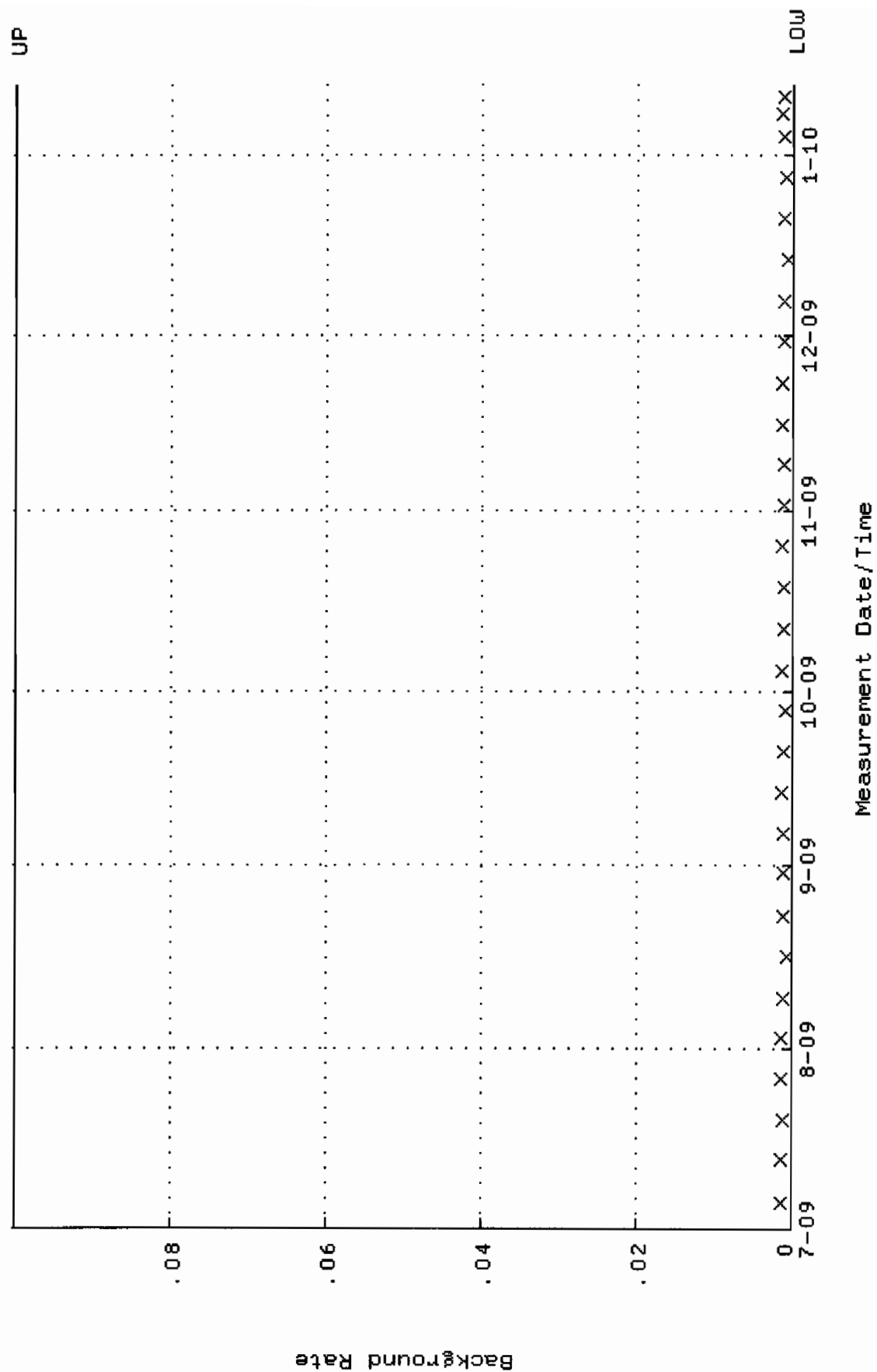


QA filename : DKA100:[ENV\_ALPHA.QA.W]W110.QAF;3  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-JUL-2009 08:08:16 through 12-JAN-2010 12:00:00  
 Lower/Upper Lmts: 70.7404 through 73.7542

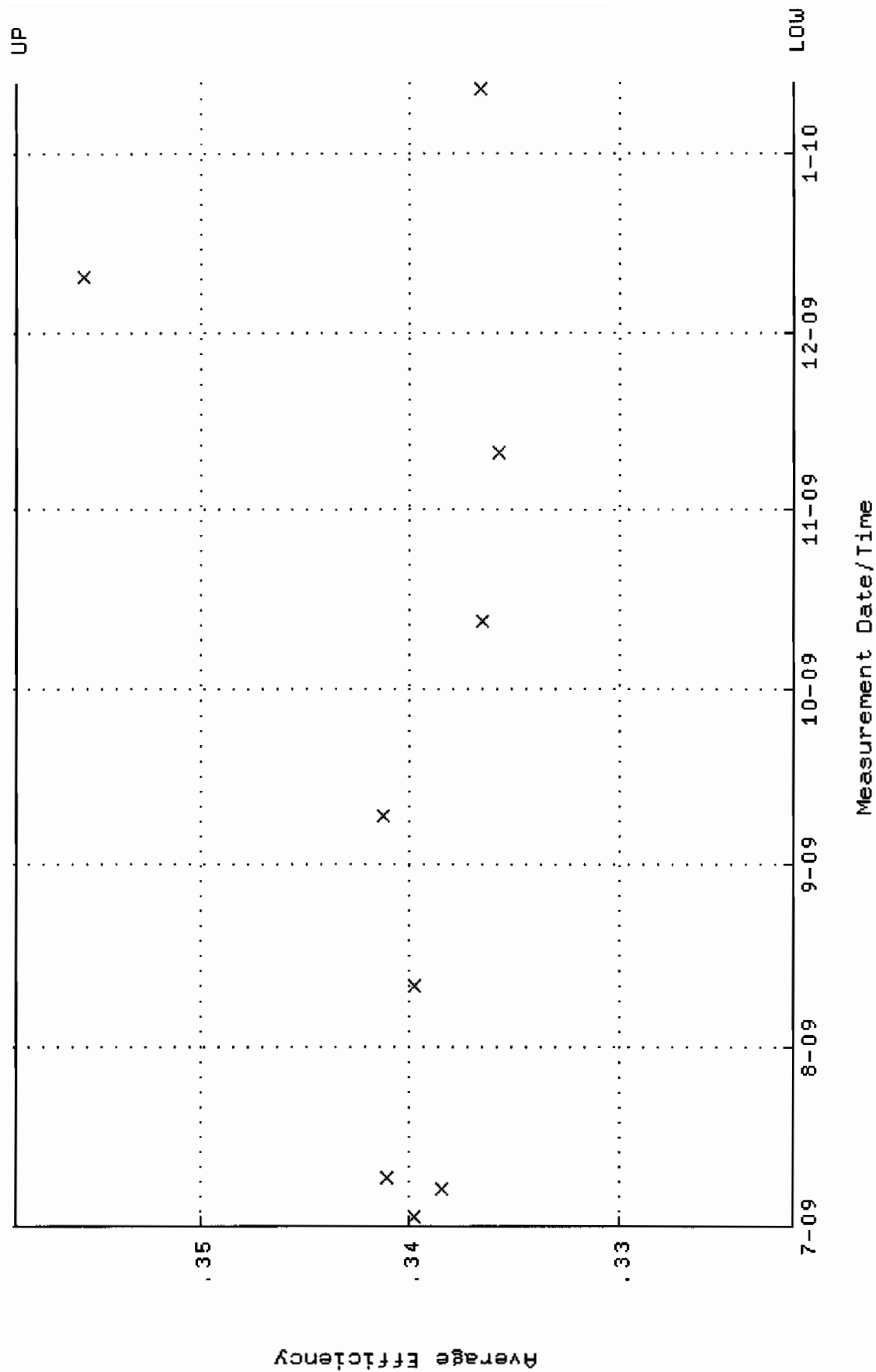




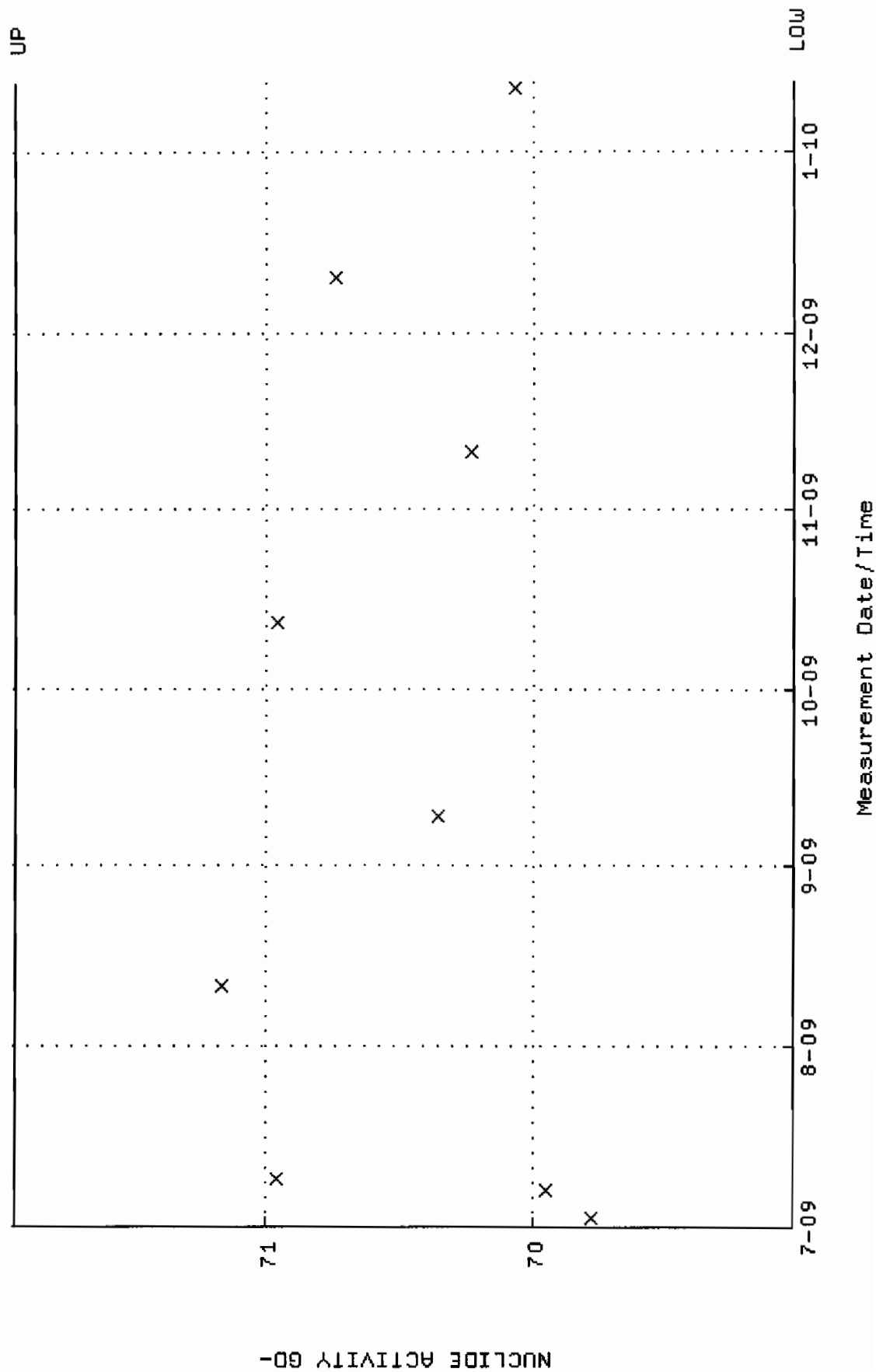
QA filename : DKA100:[ENV\_ALPHA,QA,B]B110.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 5-JUL-2009 15:12:07 through 12-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



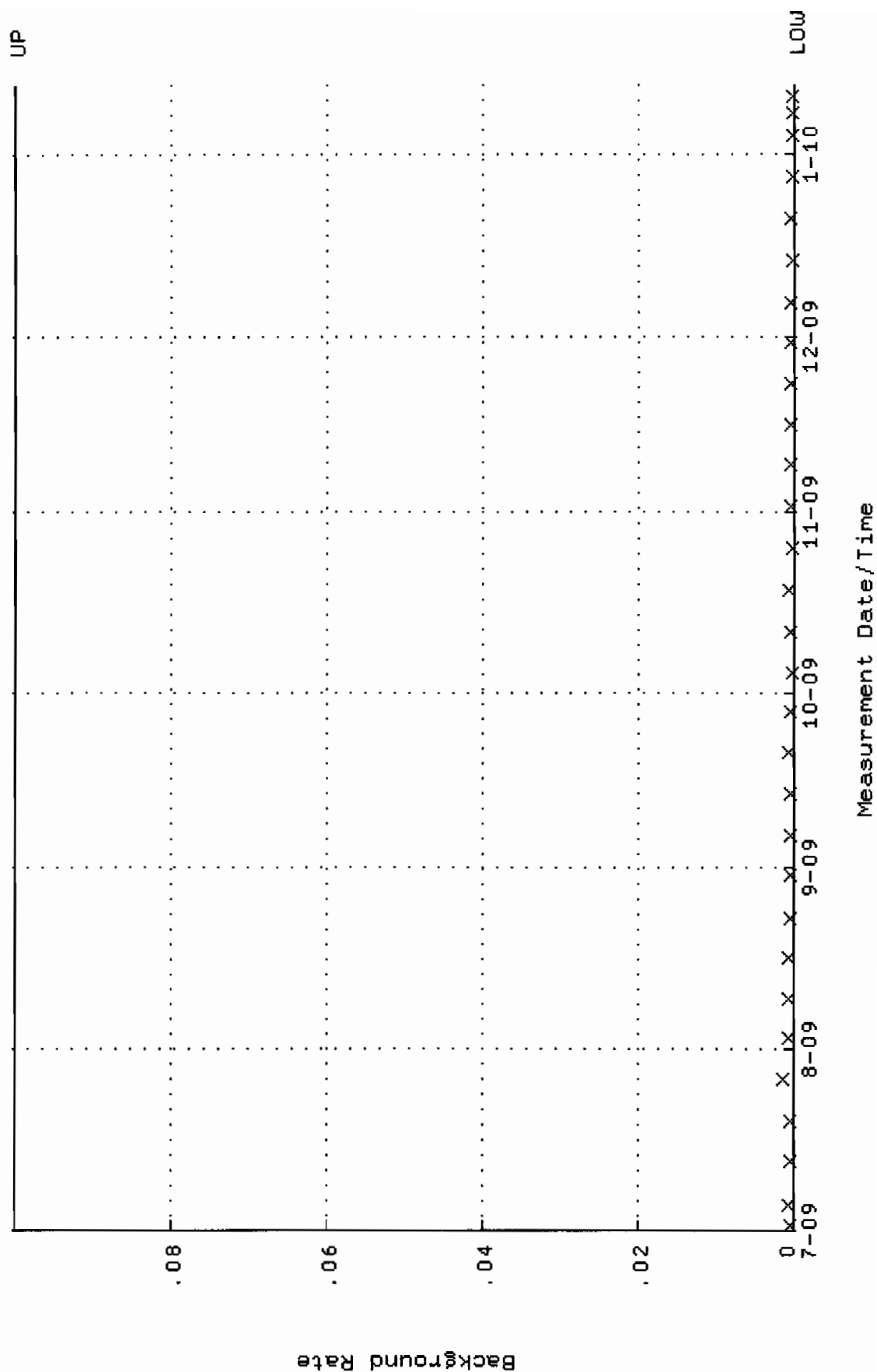
QA filename : DKA100:[ENV\_ALPHA.QA.W]W111.QAF;3  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUL-2009 15:04:17 through 12-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.321662 through 0.358794



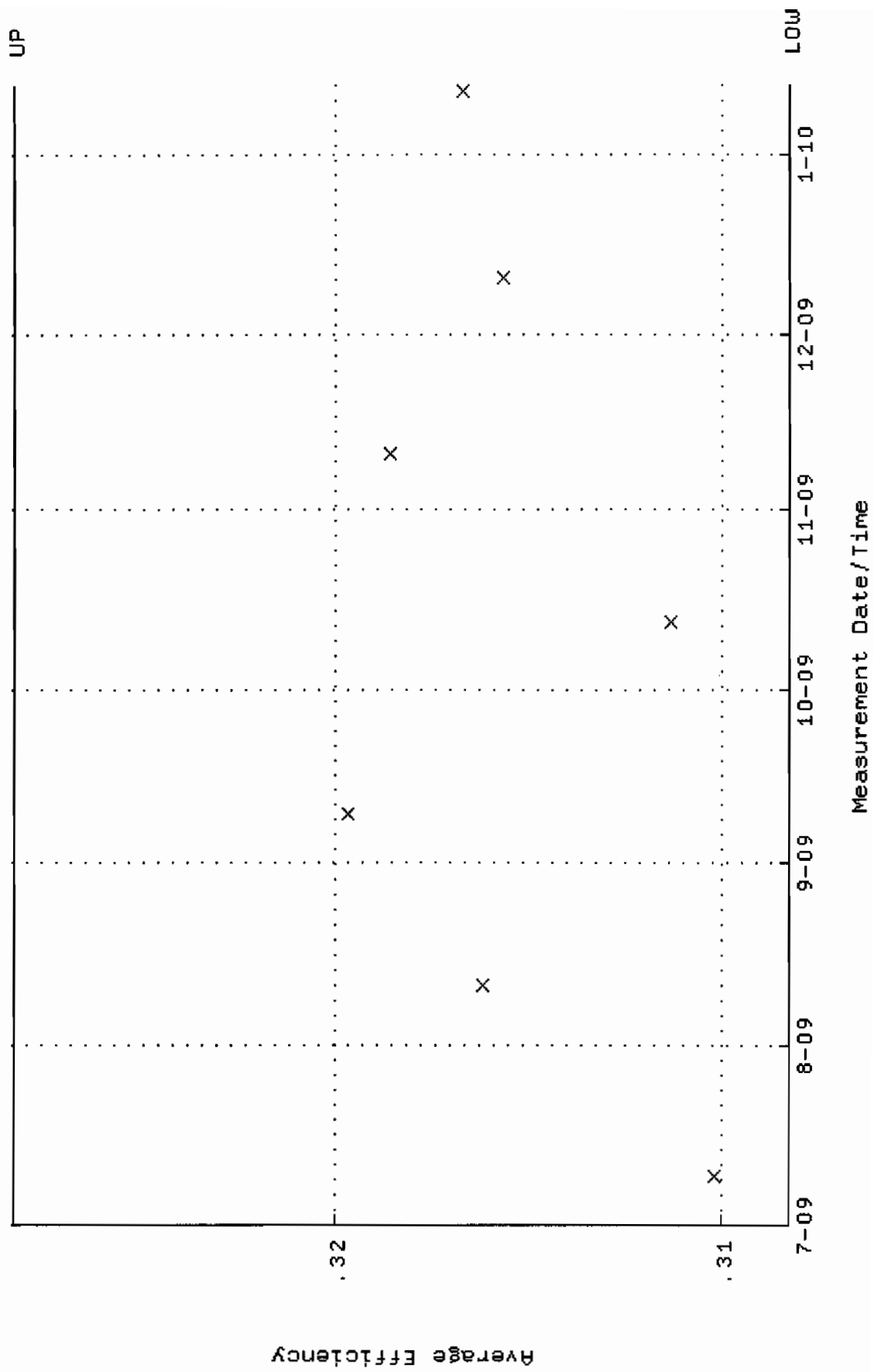
QA filename : DKA100:[ENV\_ALPHA.QA.W]W111.QAF;3  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUL-2009 15:04:17 through 12-JAN-2010 12:00:00  
 Lower/Upper Lmts: 69.0200 through 71.9448



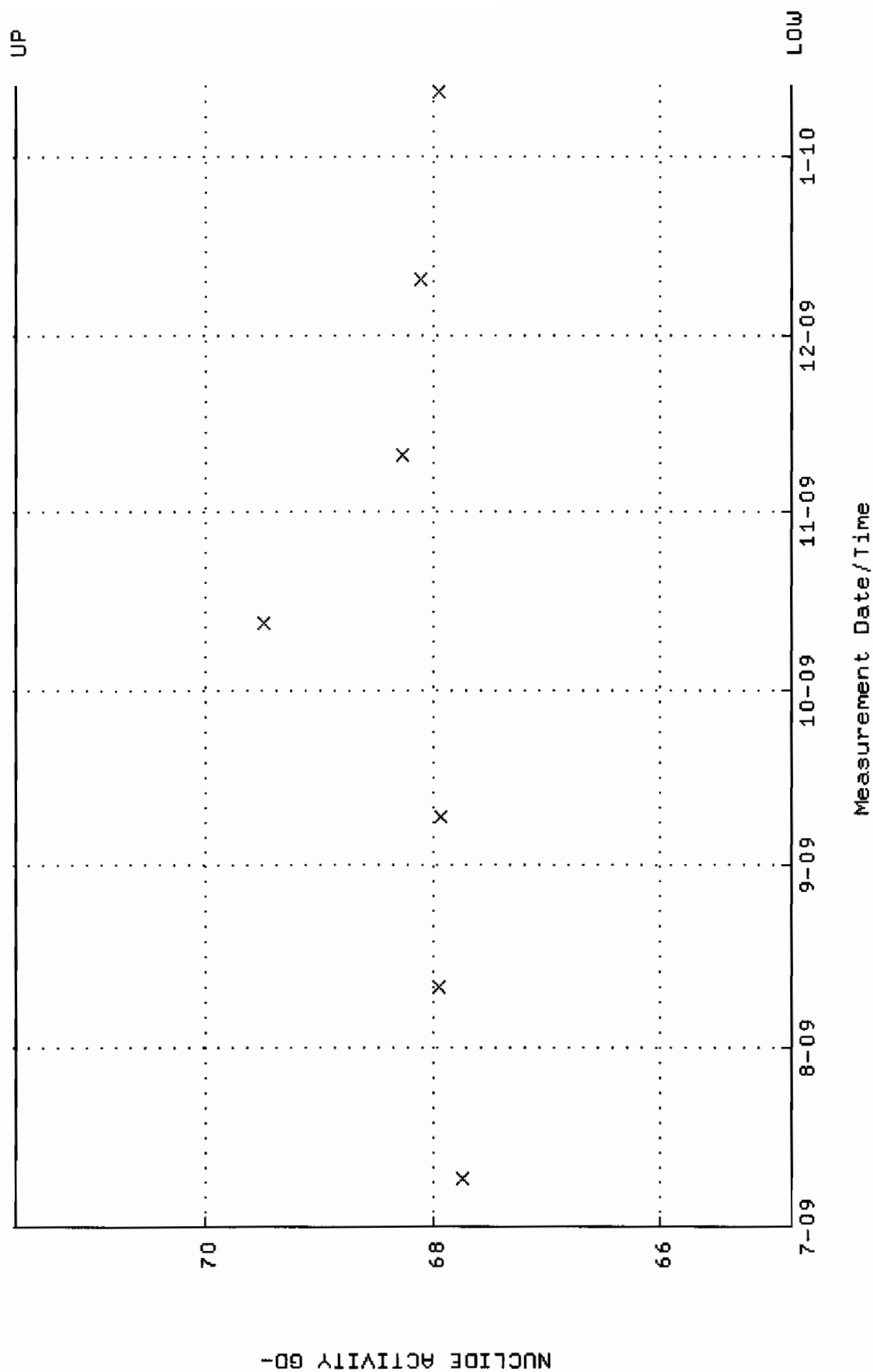
QA filename : DKA100:[ENV\_ALPHA.QA.B]B111.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUL-2009 21:40:02 through 12-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



QA filename : DKA100:[ENV\_ALPHA.QA.W]W112.QAF;3  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 9-JUL-2009 08:08:16 through 12-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.308263 through 0.328263



QA filename : DKA100:[ENV-ALPHA.QA.W]W112.QAF;3  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 9-JUL-2009 08:08:16 through 12-JAN-2010 12:00:00  
 Lower/Upper Lmts: 64.8451 through 71.6709

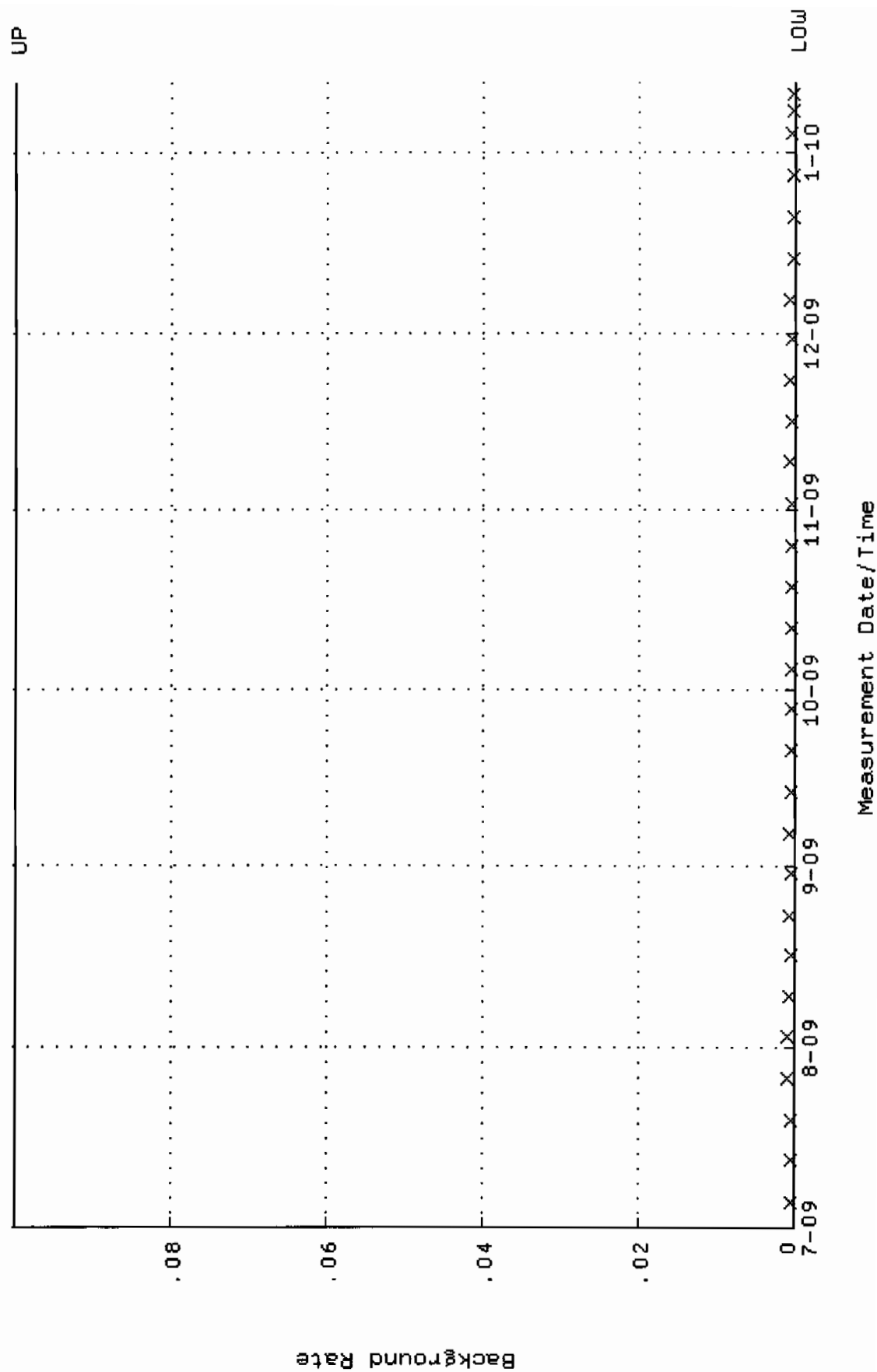


QA filename : DKA100:[ENV\_ALPHA.QA.B]B112.QAF;2

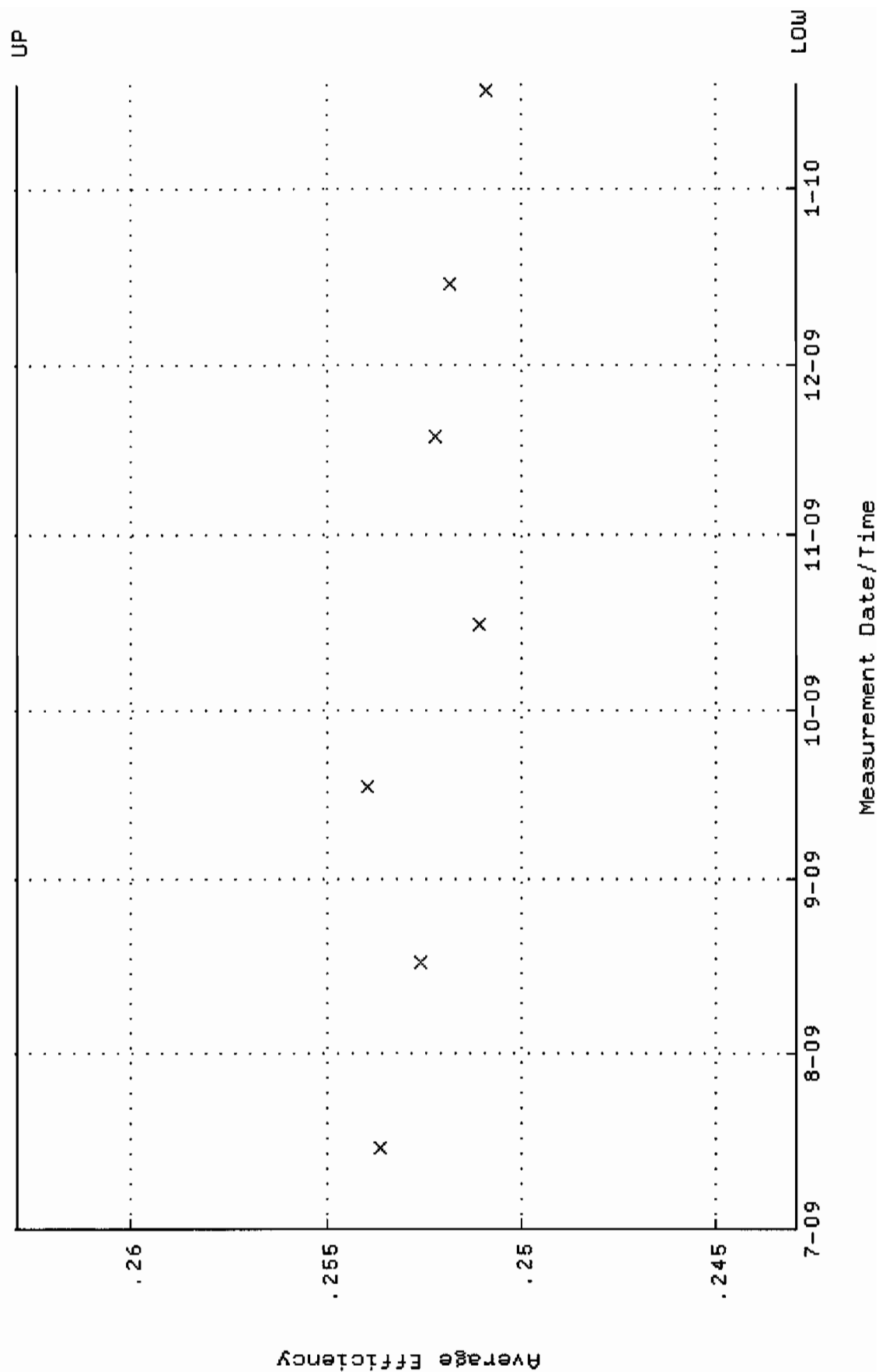
Parameter Name : BACKRATE (Background Rate)

Start/End Dates : 5-JUL-2009 15:12:07 through 12-JAN-2010 12:00:00

Lower/Upper Lmts: 0.000000E+00 through 0.100000

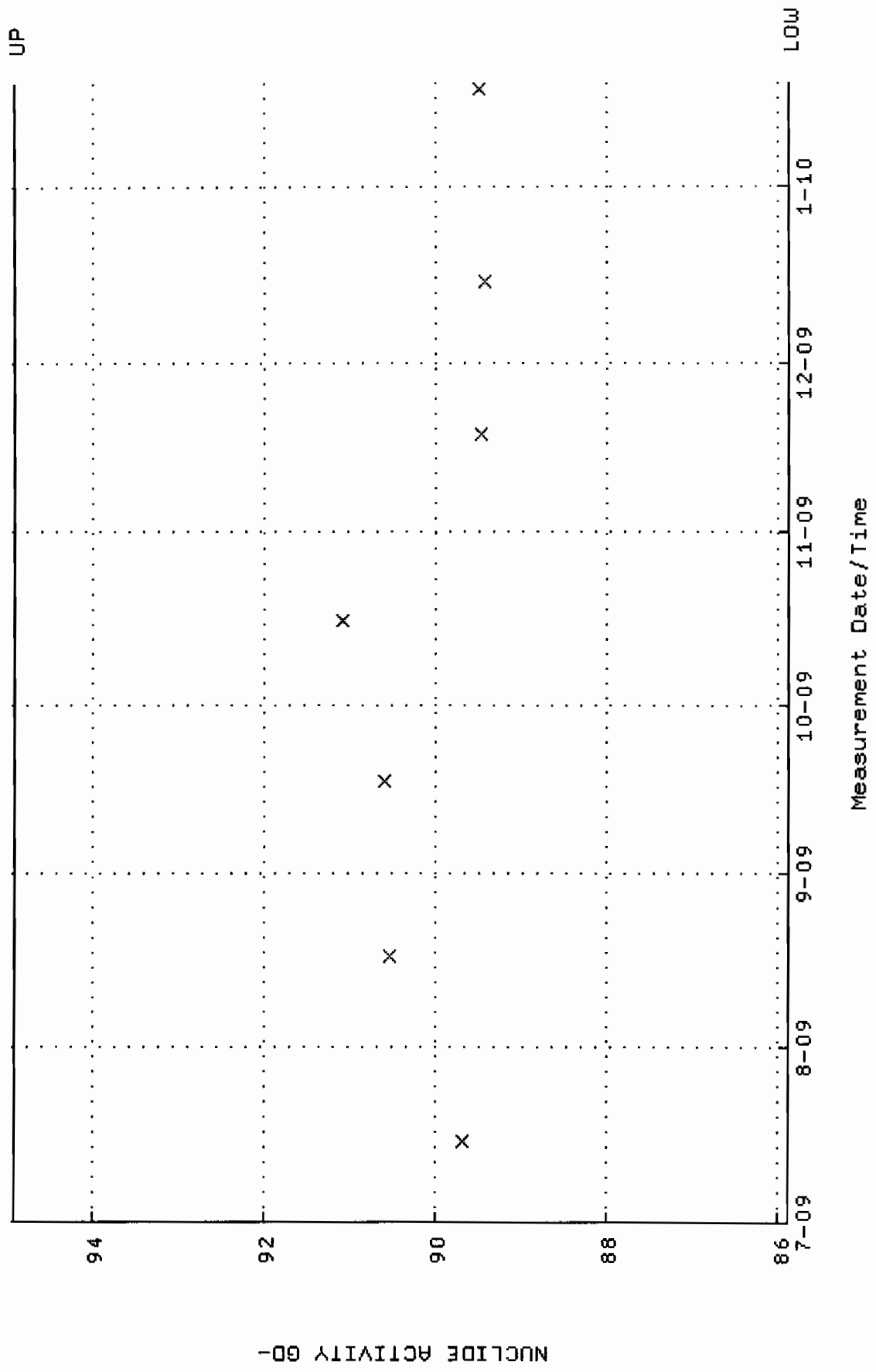


QA filename : DKA100:[ENV\_ALPHA.QA.W]W117.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 15-JUL-2009 08:38:07 through 19-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.242940 through 0.262940

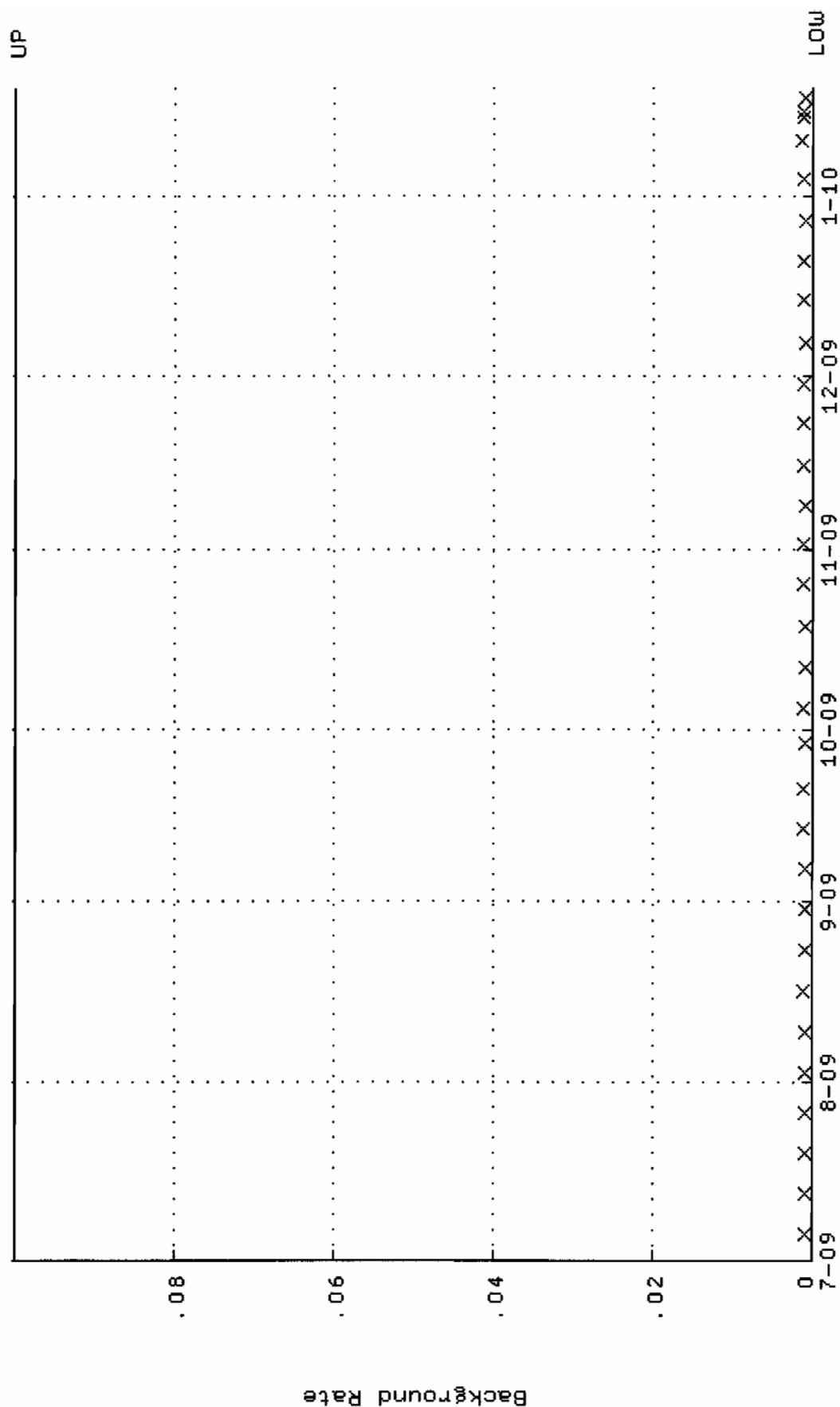




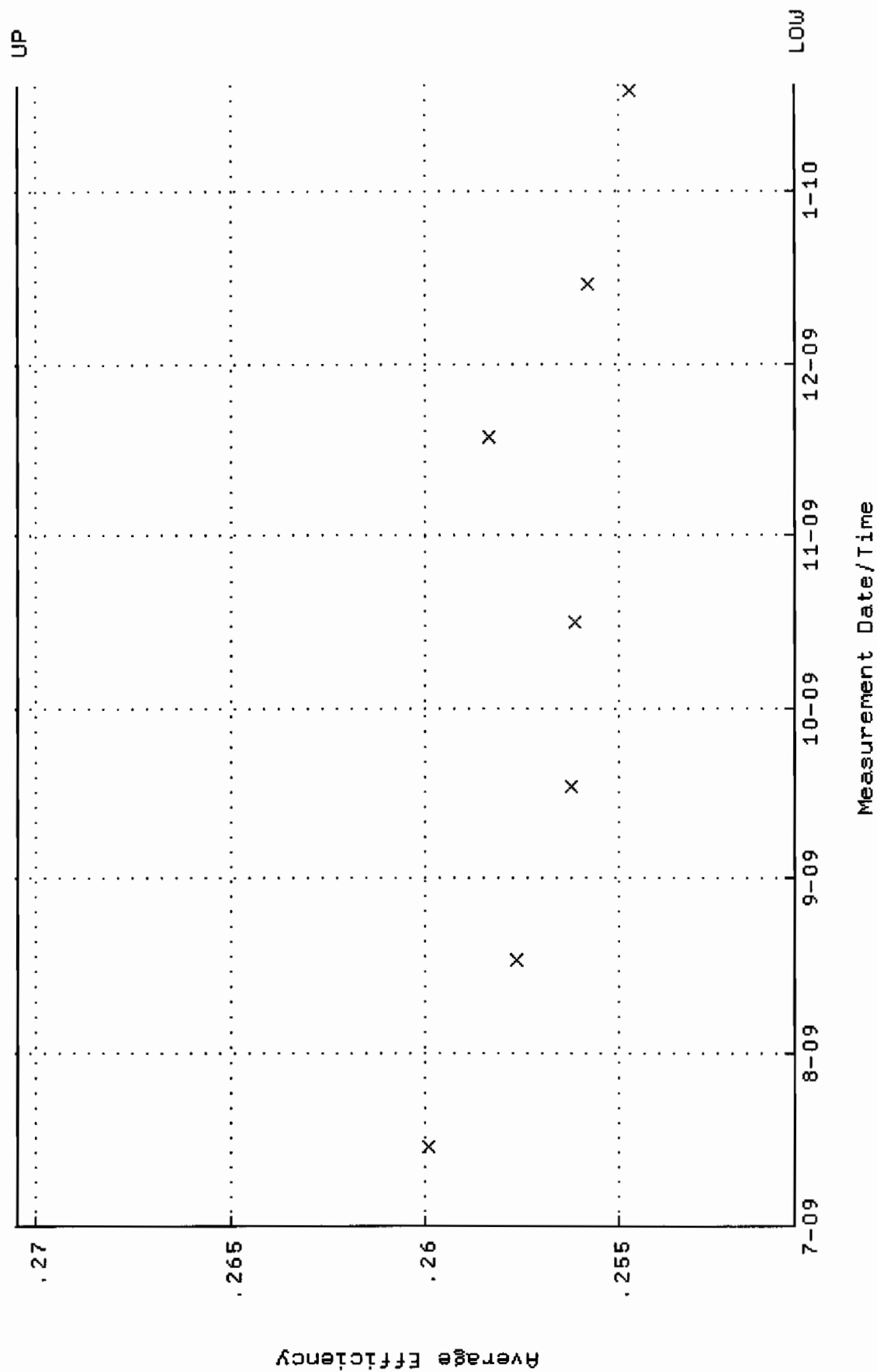
QA filename : DKA100:[ENV\_ALPHA.QA.W]W117.QAF;1  
Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
Start/End Dates : 15-JUL-2009 08:38:07 through 19-JAN-2010 12:00:00  
Lower/Upper Lmts: 85.8693 through 94.9081



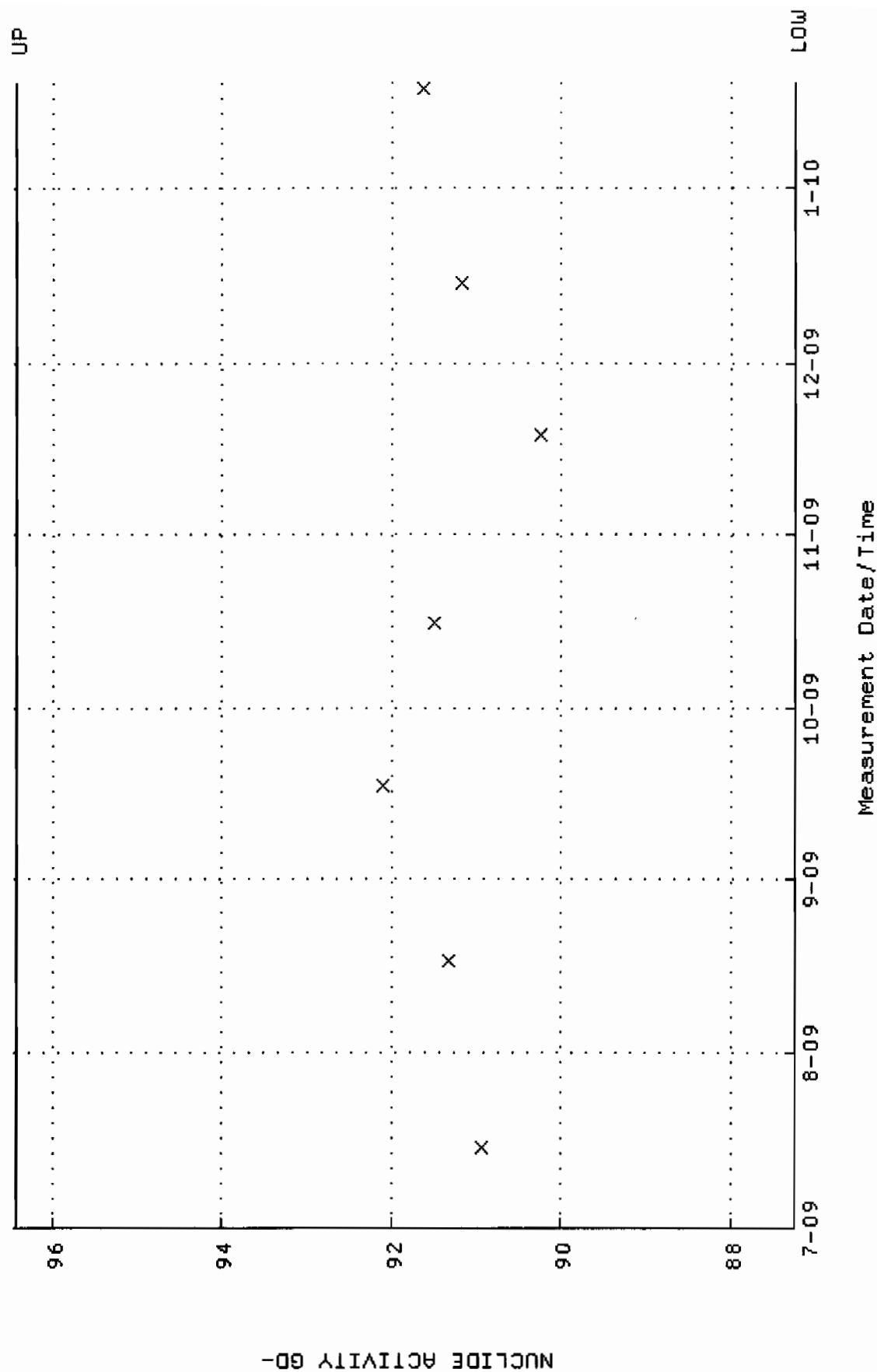
QA filename : DKA100:[ENV\_ALPHA.QA.B]B117.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 5-JUL-2009 14:55:03 through 19-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



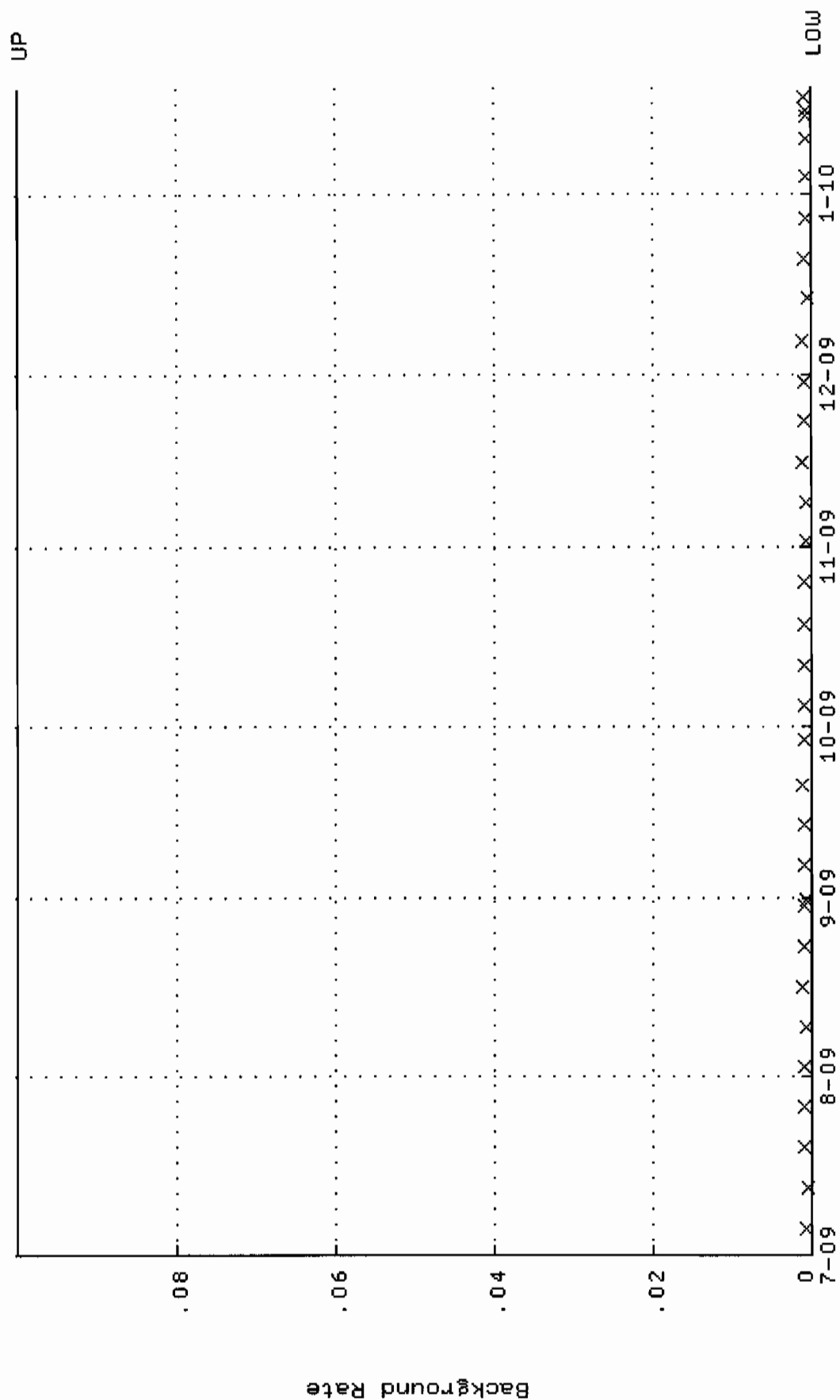
QA filename : DKA100:[ENV\_ALPHA.QA.W]w118.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 15-JUL-2009 08:38:11 through 19-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.250490 through 0.270490



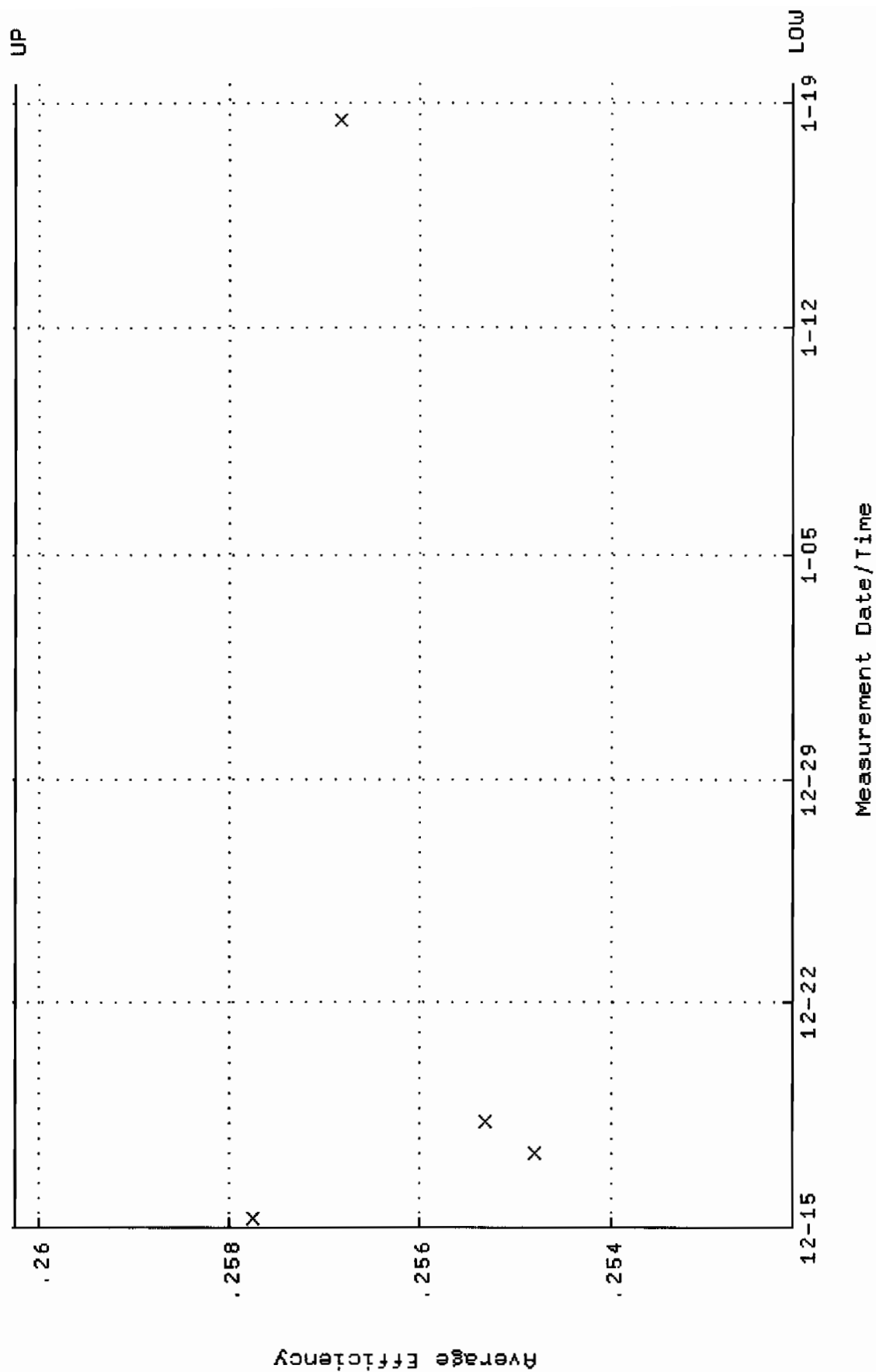
QA filename : DKA100:[ENV\_ALPHA.QA.W]W118.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 15-JUL-2009 08:38:11 through 19-JAN-2010 12:00:00  
 Lower/Upper Lmts: 87.2440 through 96.4276



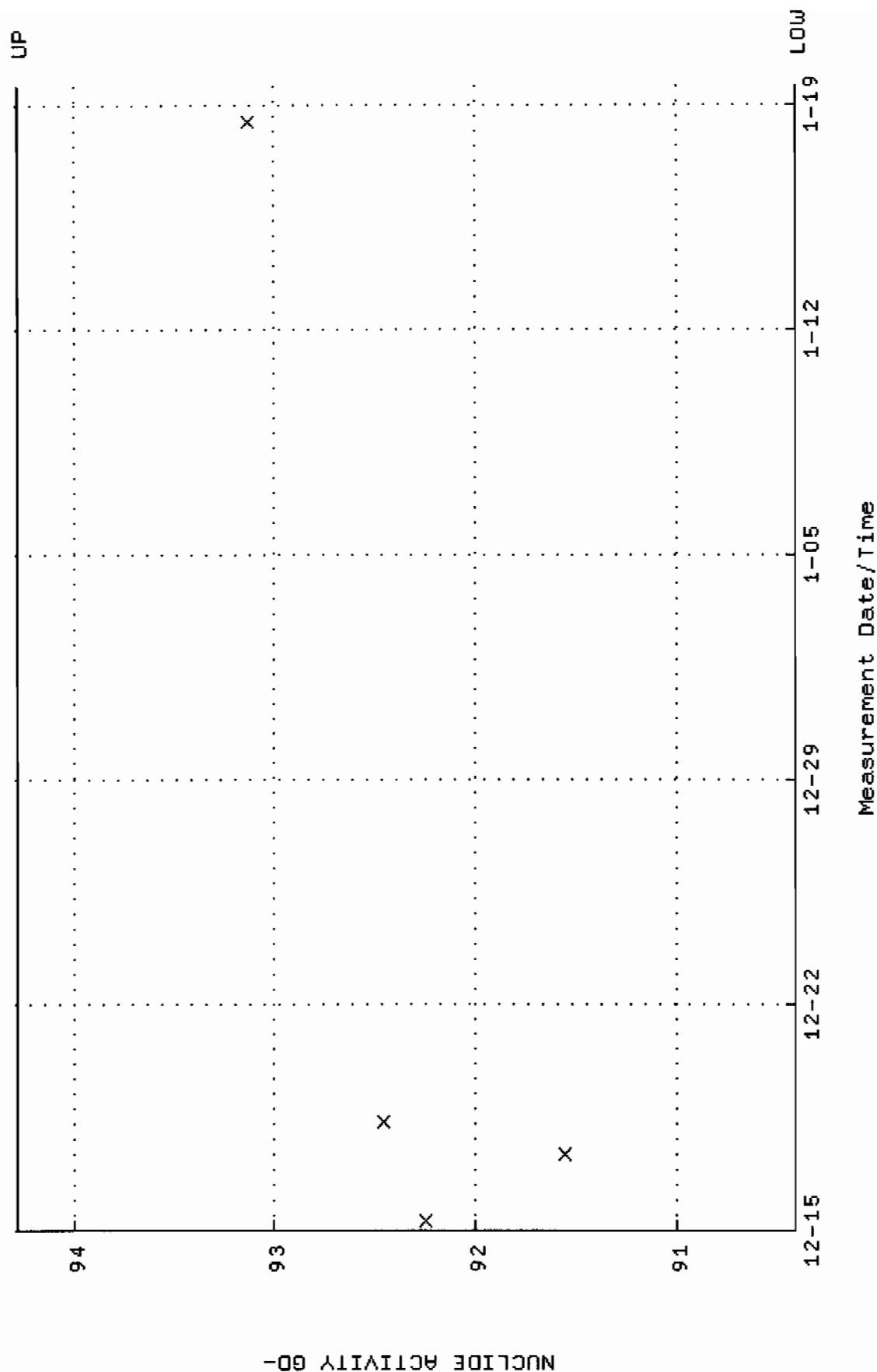
QA filename : DKA100:[ENV\_ALPHA.QA.B]B118.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 5-JUL-2009 14:55:08 through 19-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



QA filename : DKA100:[ENV\_ALPHA.QA.W]W119.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 15-DEC-2009 06:21:52 through 19-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.252093 through 0.260243



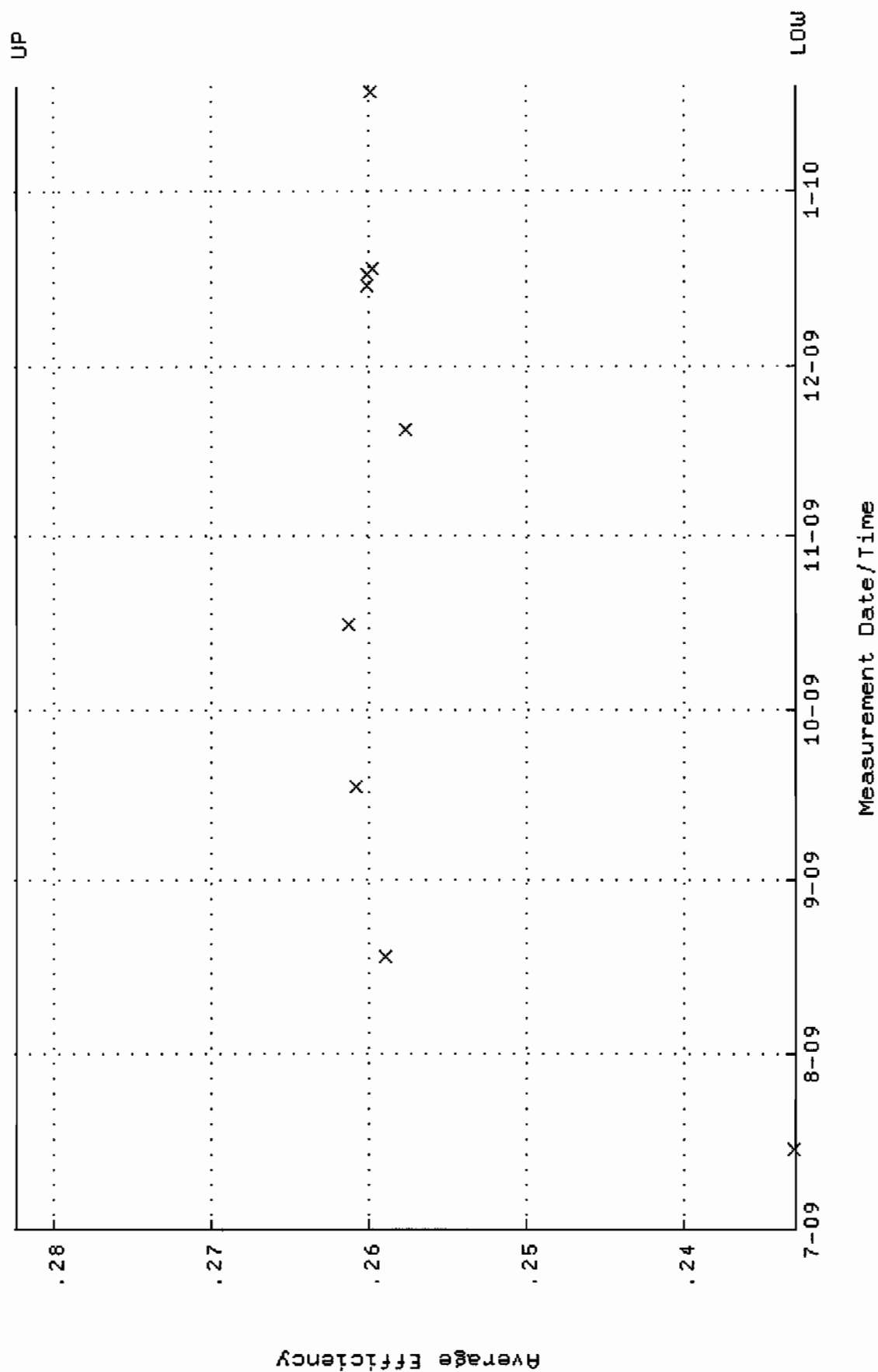
QA filename : DKA100:[ENV\_ALPHA.QA.W]W119.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 15-DEC-2009 06:21:52 through 19-JAN-2010 12:00:00  
 Lower/Upper Lmts: 90.4107 through 94.2781



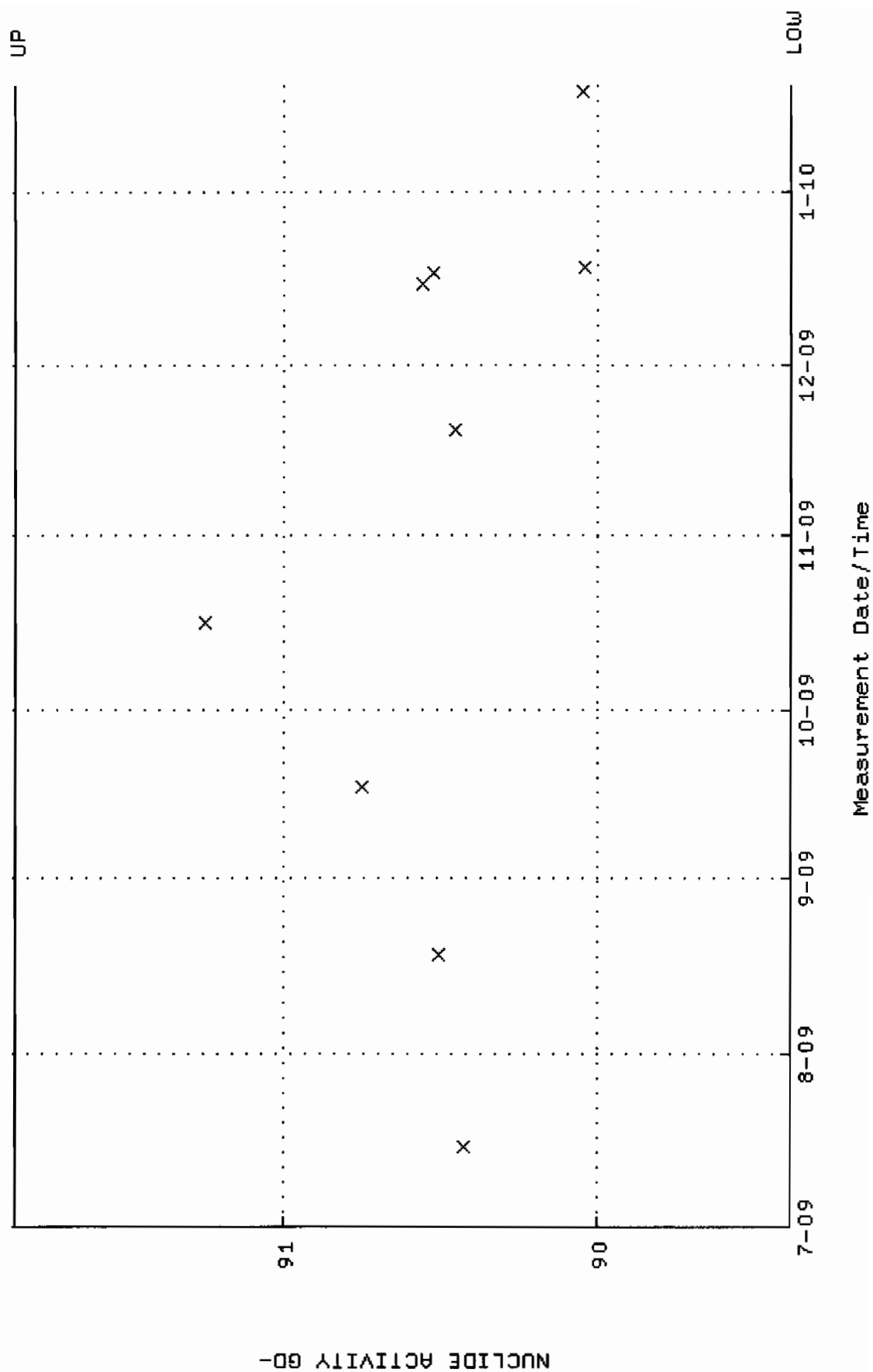




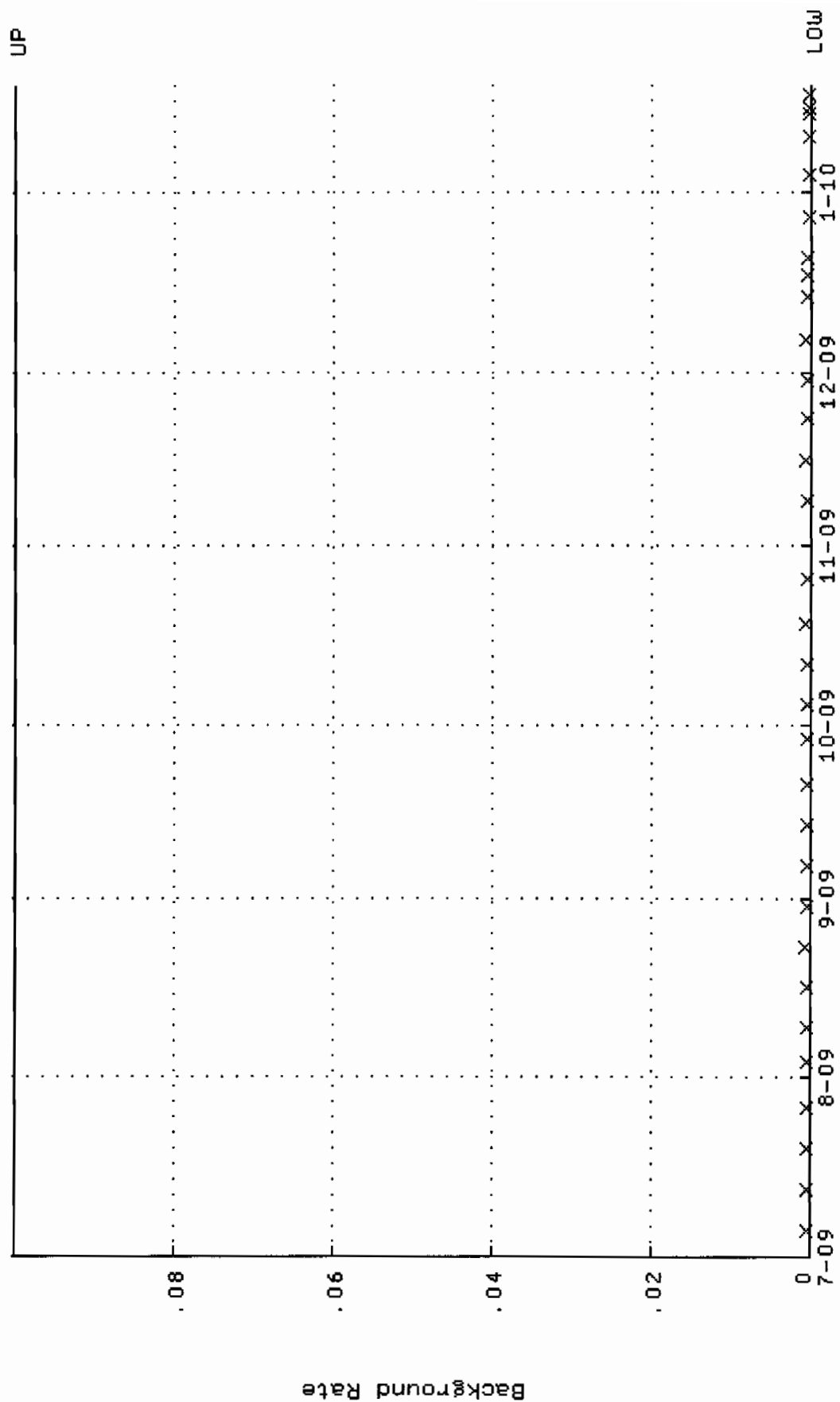
QA filename : DKA100:[ENV\_ALPHA.QA.W]W120.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 15-JUL-2009 08:38:20 through 19-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.232847 through 0.282381



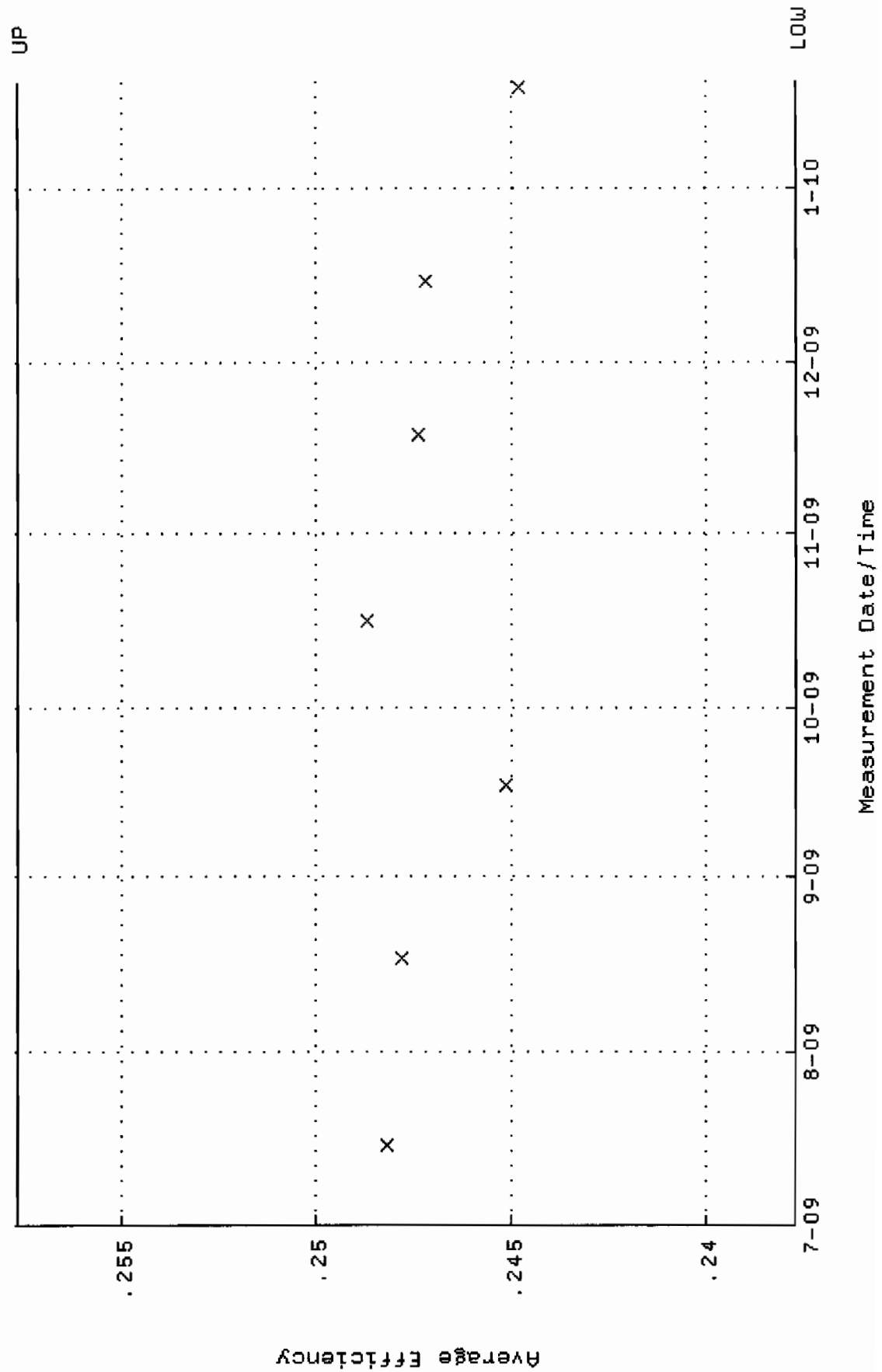
QA filename : DKA100:[ENV-ALPHA.QA.W]W120.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 15-JUL-2009 08:38:20 through 19-JAN-2010 12:00:00  
 Lower/Upper Lmts: 89.3881 through 91.8481



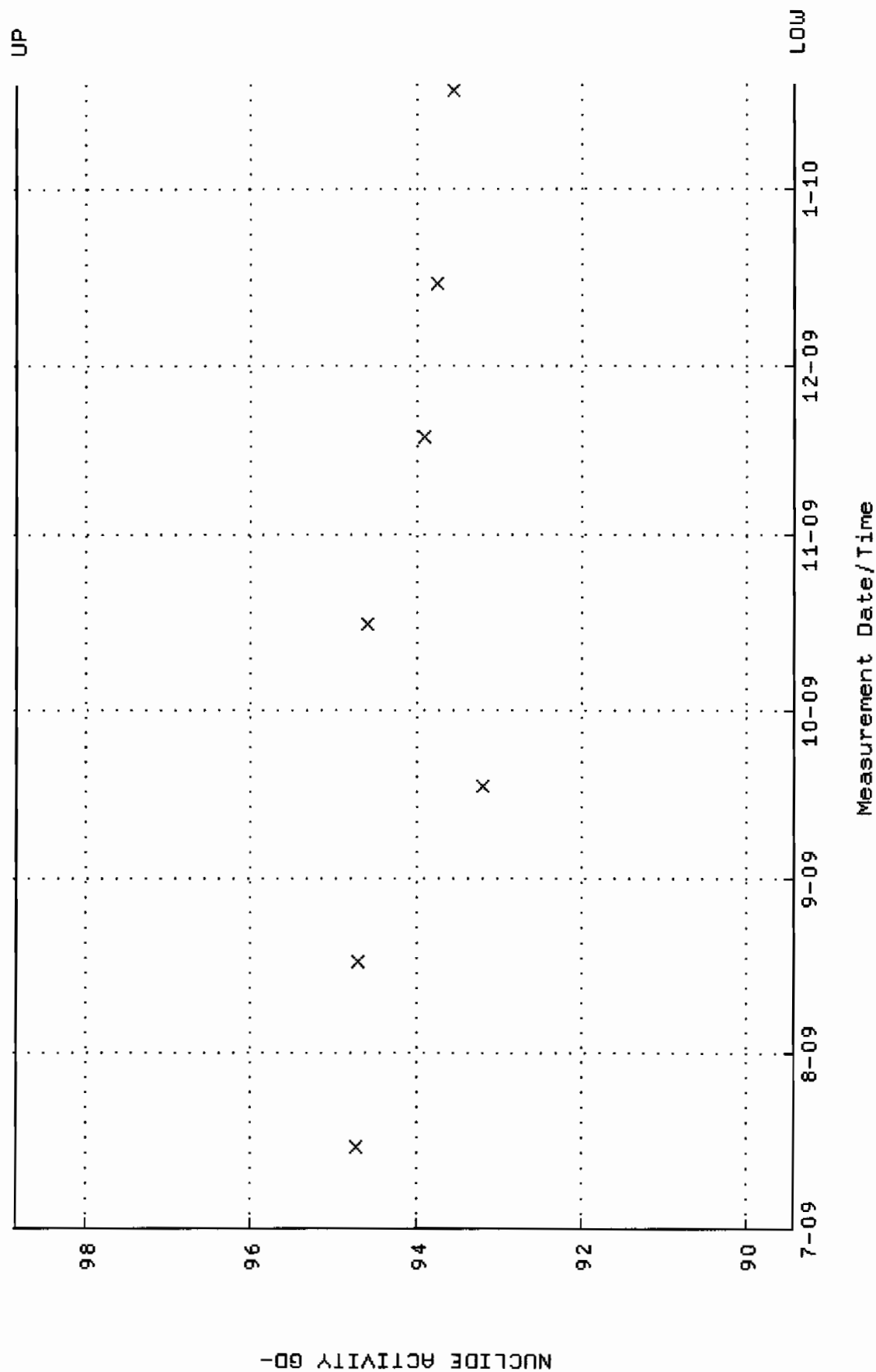
QA filename : DKA100:[ENV\_ALPHA.QA.B]B120.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 5-JUL-2009 14:55:20 through 19-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



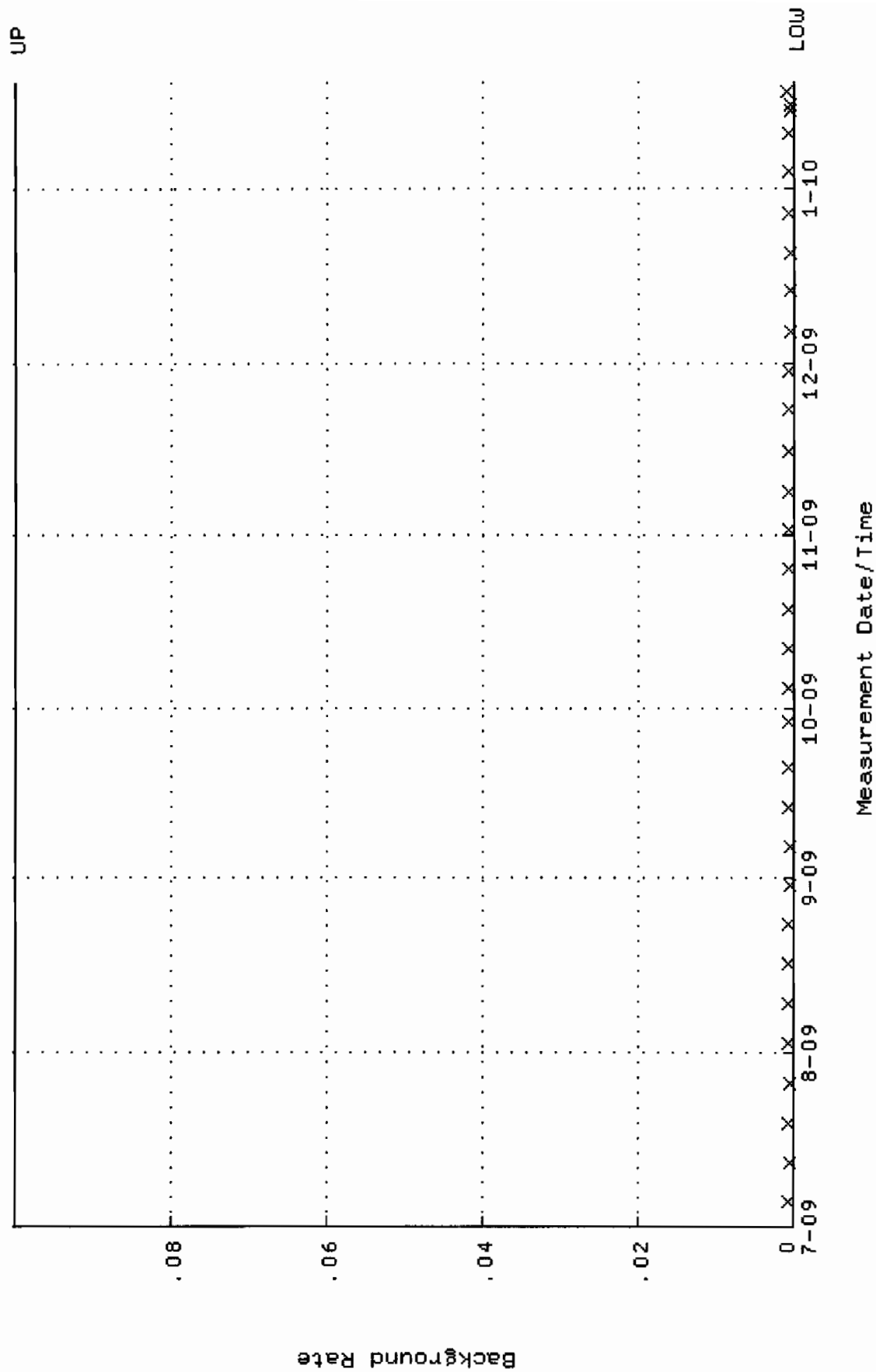
QA filename : DKA100:[ENV-ALPHA.QA.W]W121.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 15-JUL-2009 08:38:24 through 19-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.237686 through 0.257686



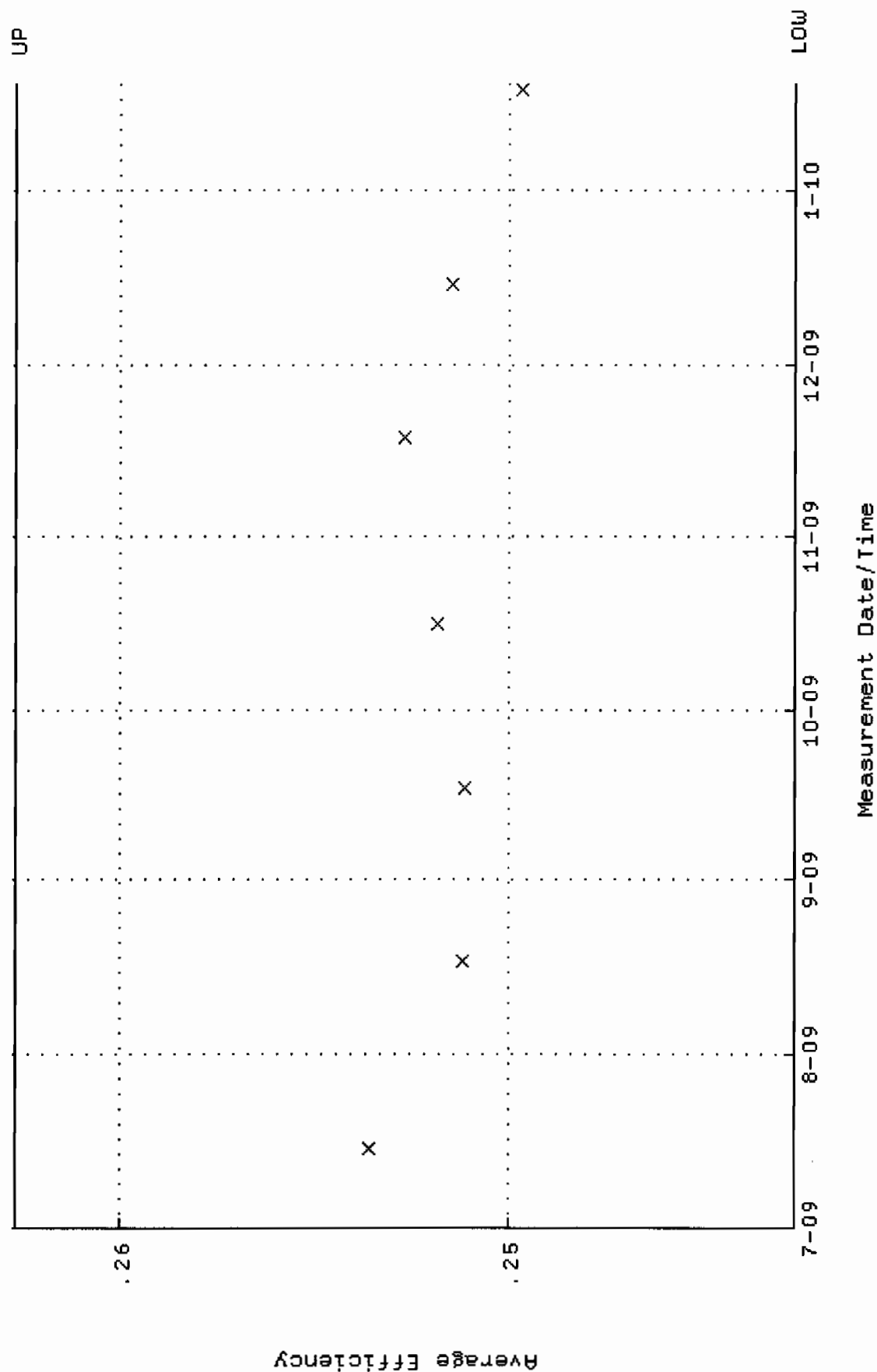
QA filename : DKA100:[ENV\_ALPHA.QA.W]W121.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 15-JUL-2009 08:38:24 through 19-JAN-2010 12:00:00  
 Lower/Upper Lmts: 89.4263 through 98.8395



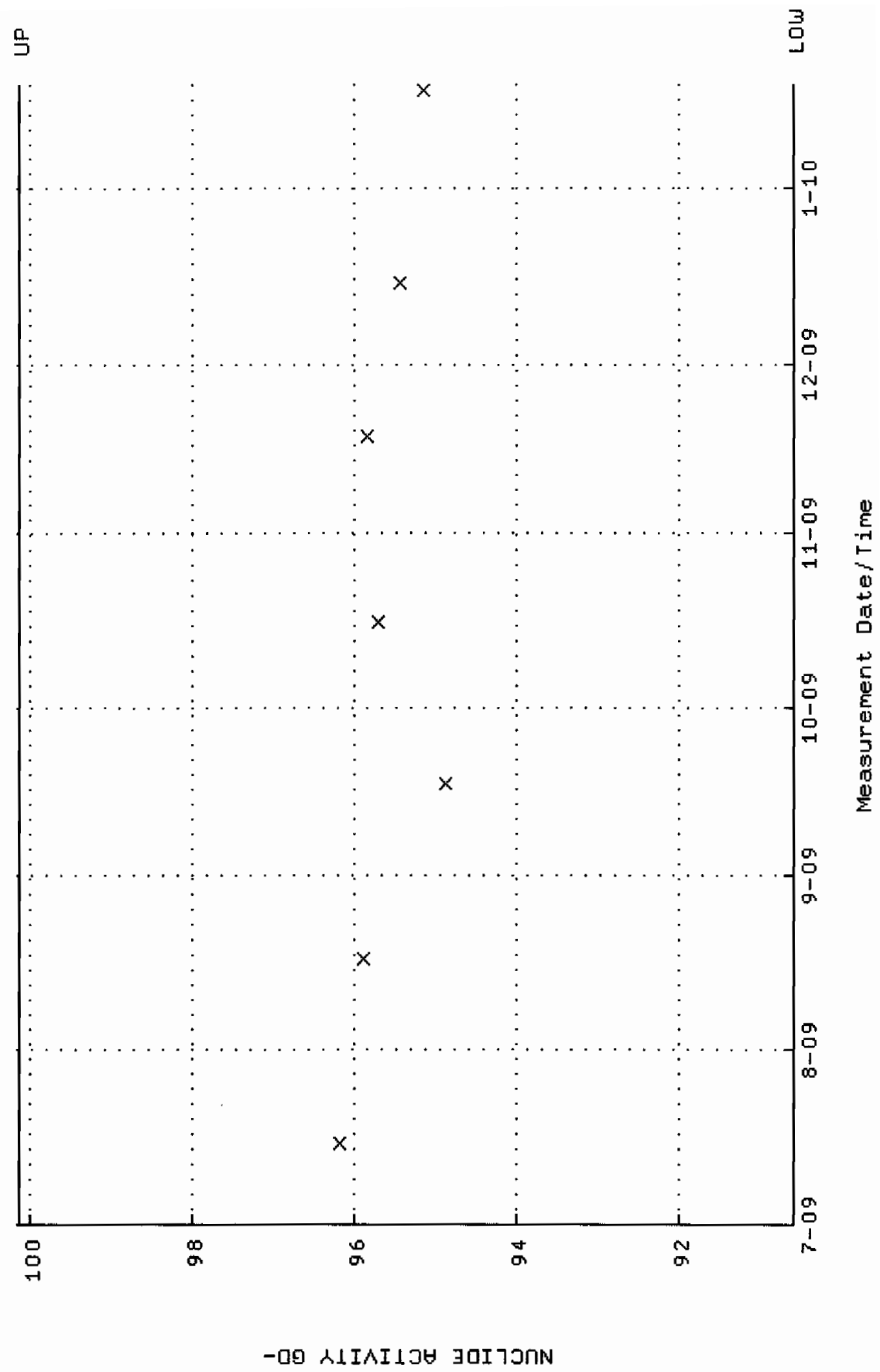
QA filename : DKA100:[ENV\_ALPHA.QA.B]B121.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 5-JUL-2009 14:55:25 through 19-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



QA filename : DKA100:[ENV\_ALPHA.QA.W]W122.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 15-JUL-2009 08:38:29 through 19-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.242659 through 0.262659

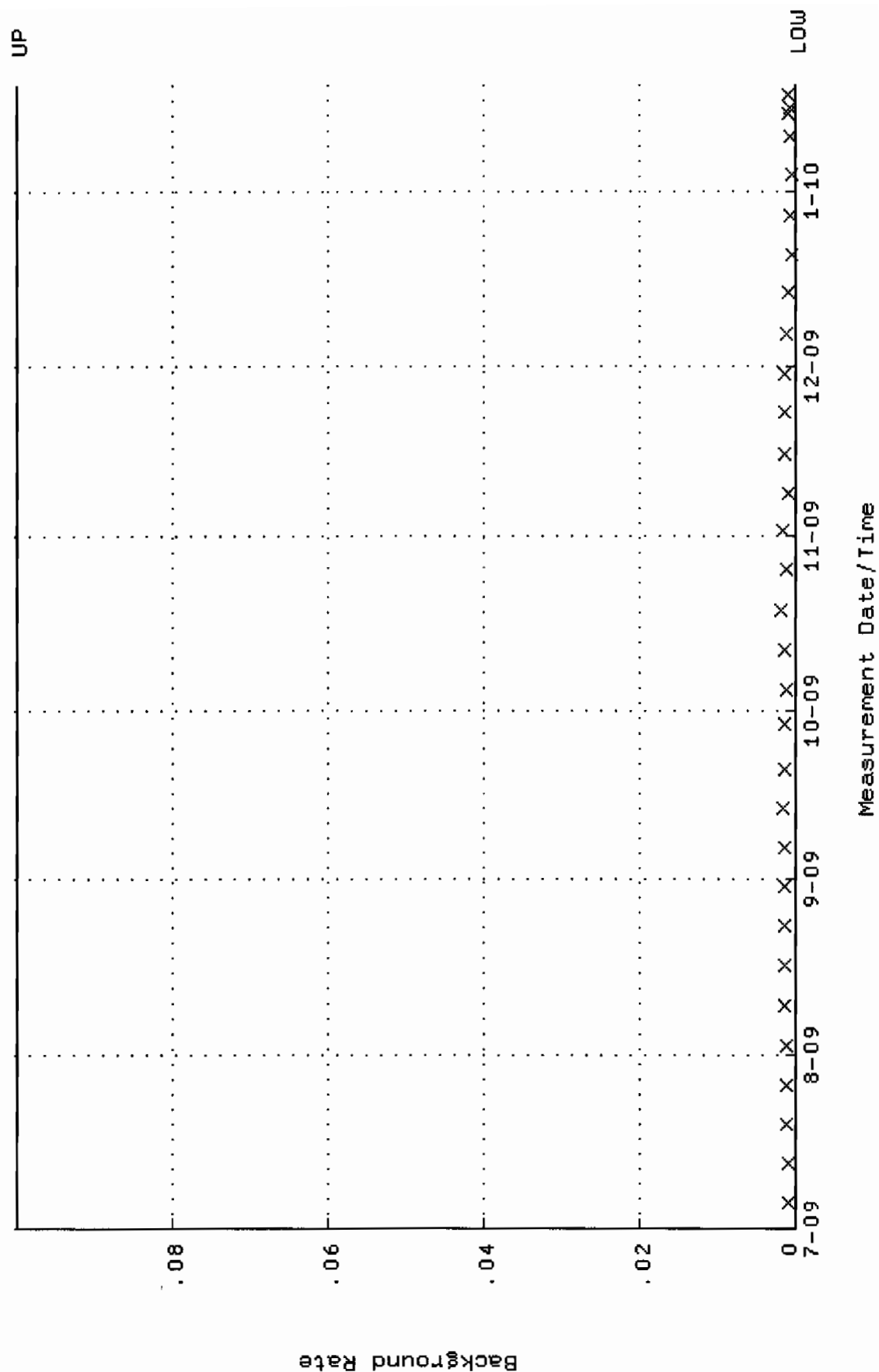


QA filename : DKA100:[ENV\_ALPHA.QA.W]w122.QAF;1  
 Parameter Name : NLACTVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 15-JUL-2009 08:38:29 through 19-JAN-2010 12:00:00  
 Lower/Upper Lmts: 90.5949 through 100.131

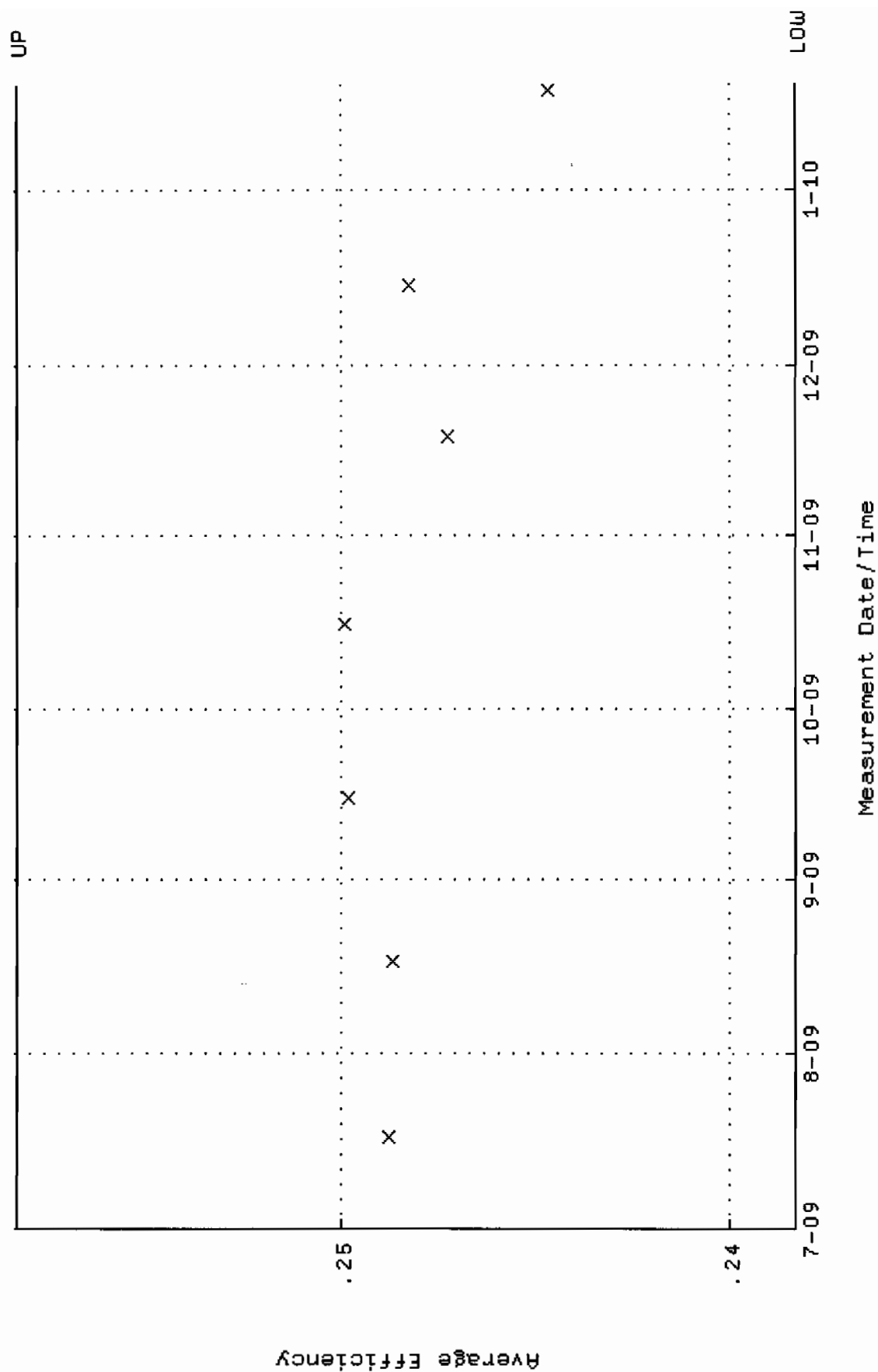




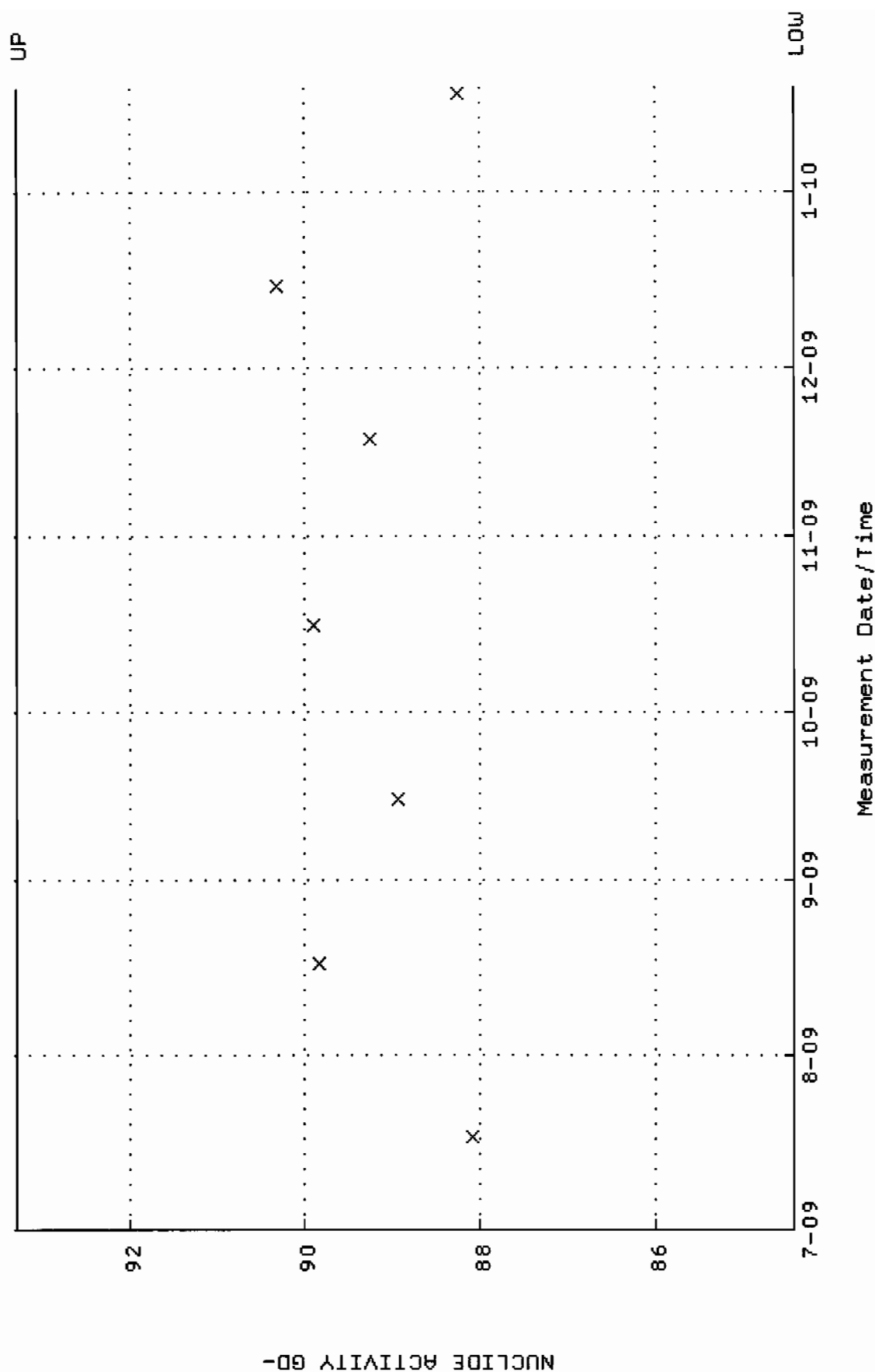
QA filename : DKA100:[ENV\_ALPHA.QA.B]B122.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 5-JUL-2009 14:55:30 through 19-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



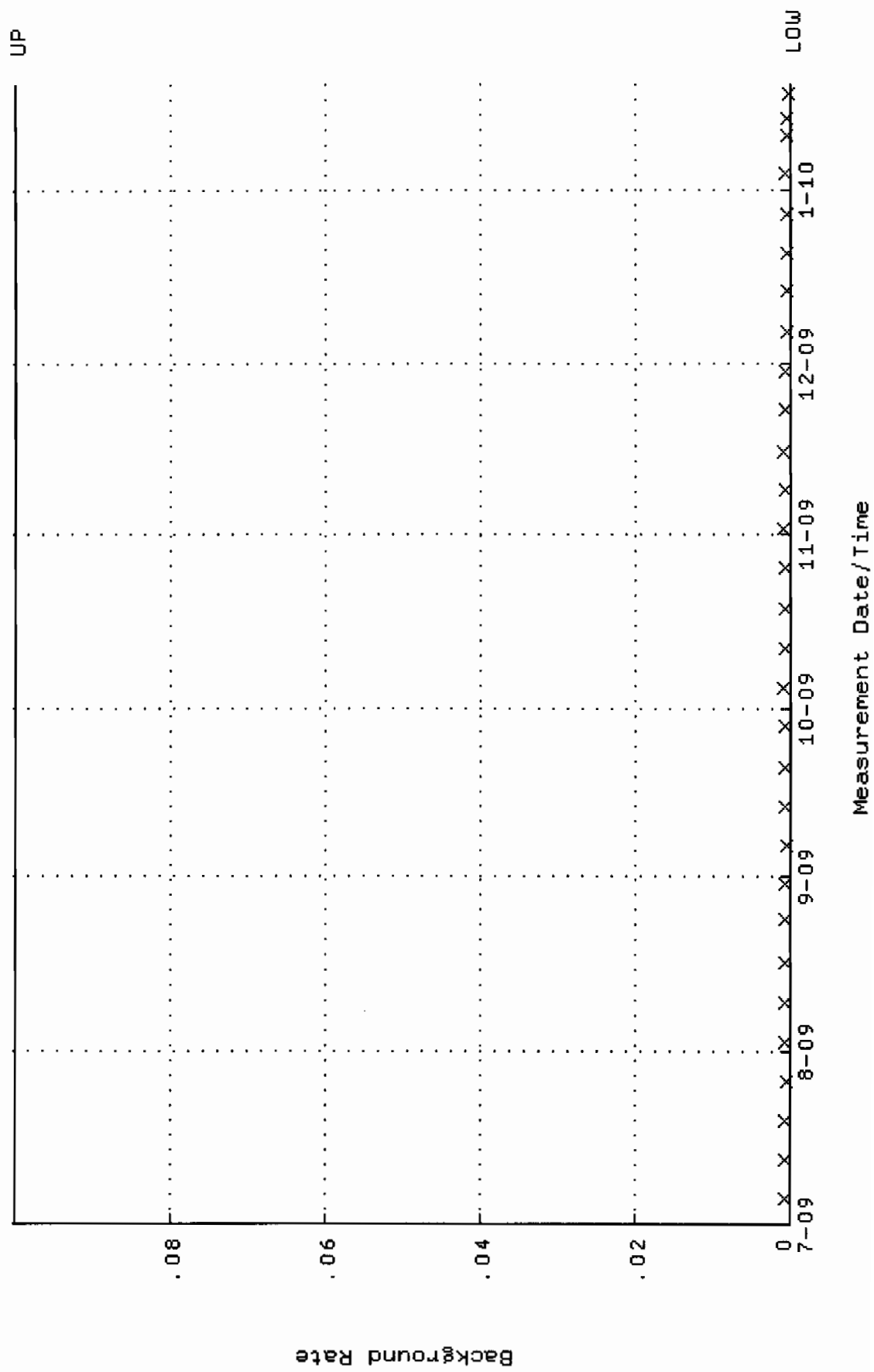
QA filename : DKA100:[ENV\_ALPHA.QA.W]W150.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 17-JUL-2009 09:13:44 through 19-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.238314 through 0.258314



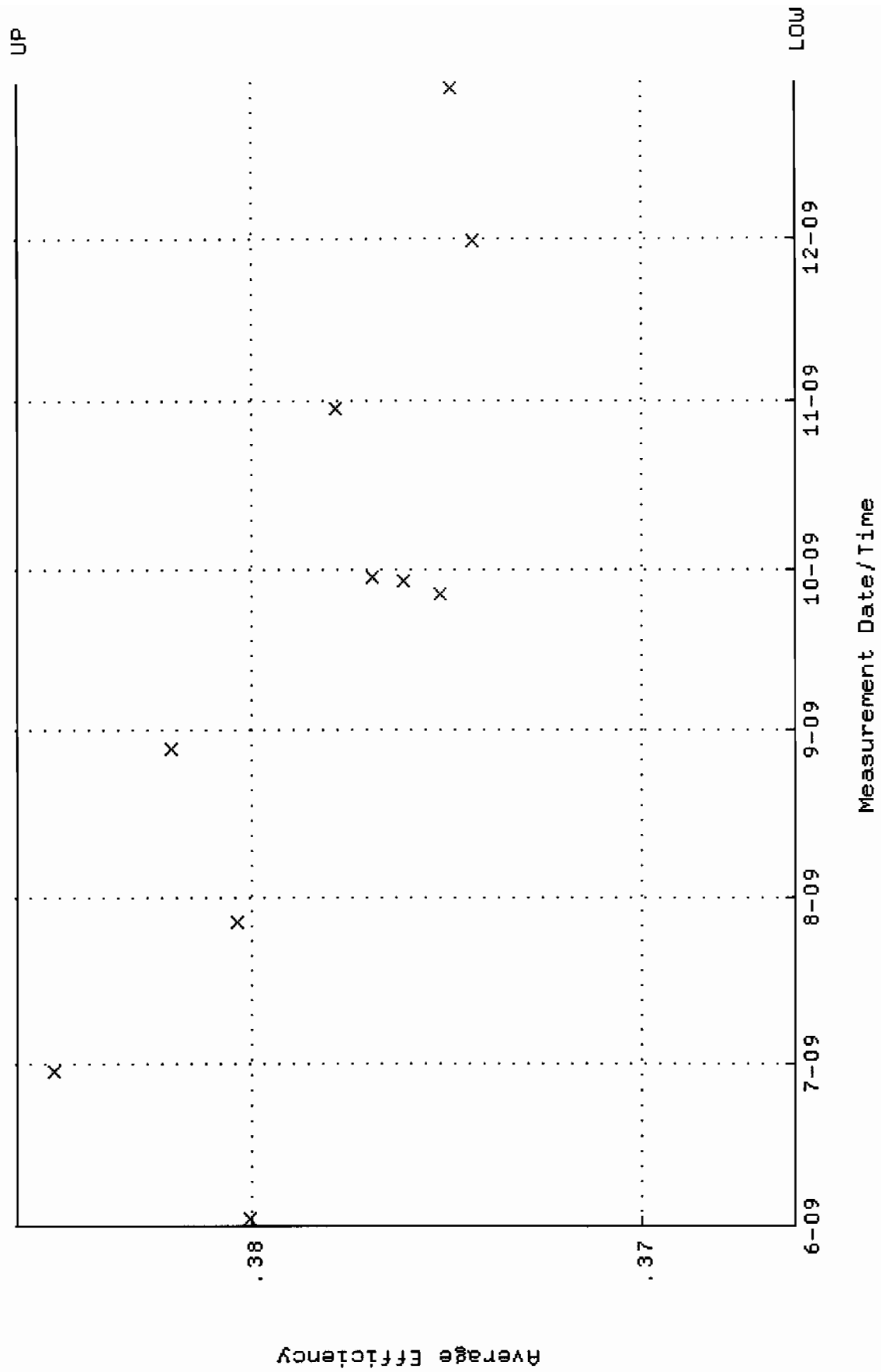
QA filename : DKA100:[ENV-ALPHA.QA.W]W150.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 17-JUL-2009 09:13:44 through 19-JAN-2010 12:00:00  
 Lower/Upper Lmts: 84.4039 through 93.2885



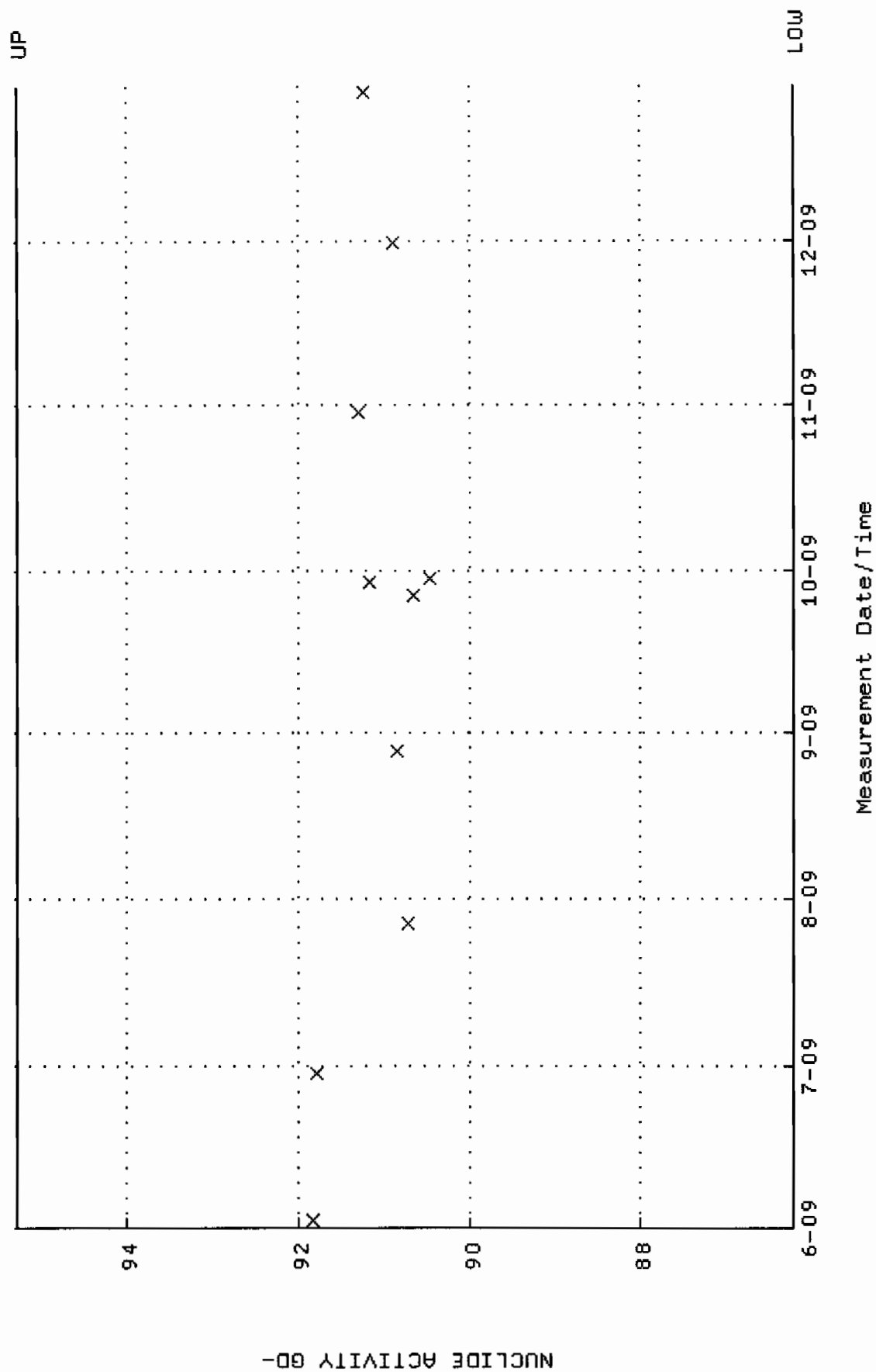
QA filename : DKA100:[ENV\_ALPHA.QA.B]B150.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 5-JUL-2009 14:57:48 through 19-JAN-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



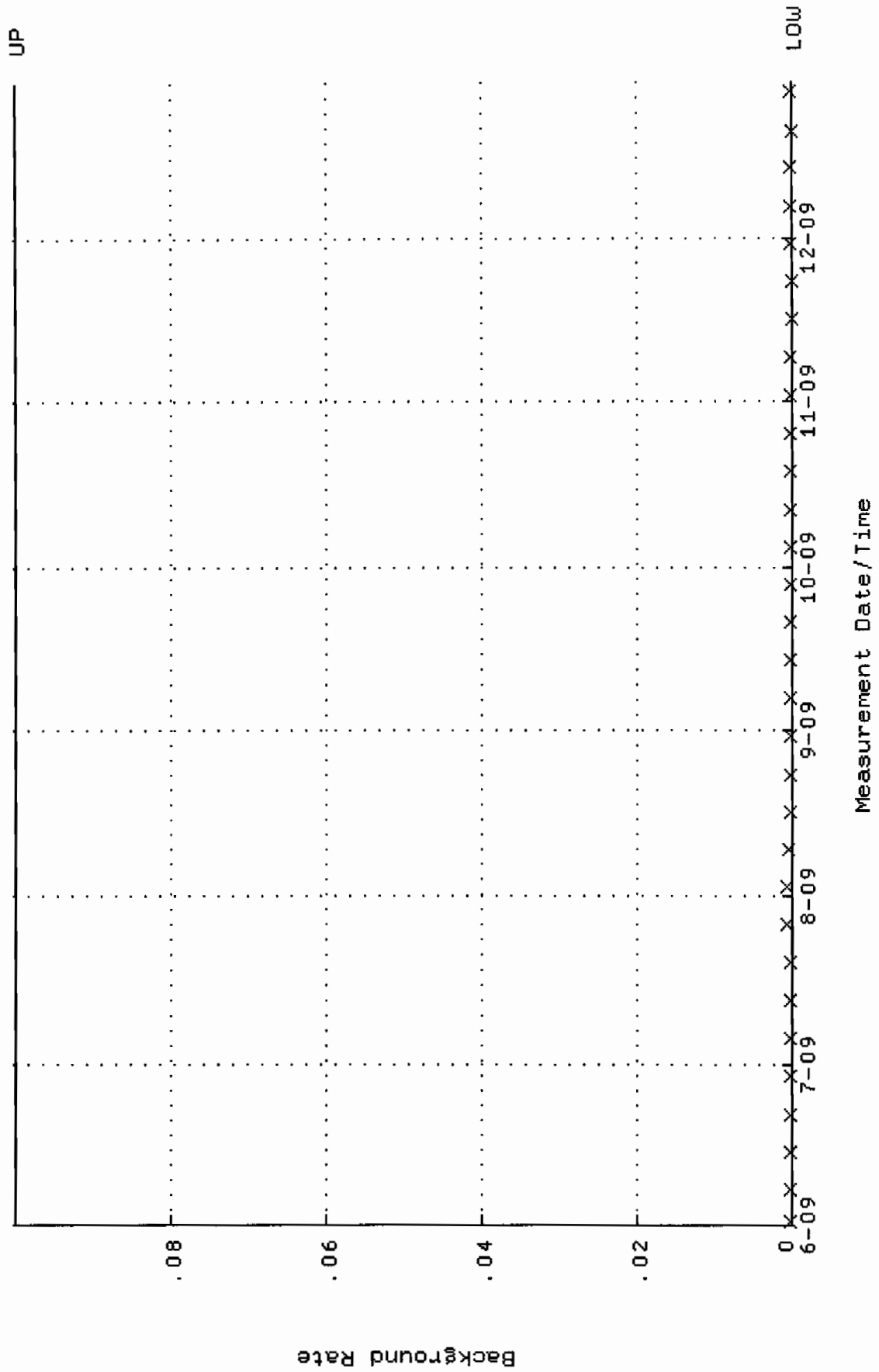
QA filename : DKA100:[ENV\_ALPHA.QA.W]W215.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUN-2009 11:17:38 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.366025 through 0.386025



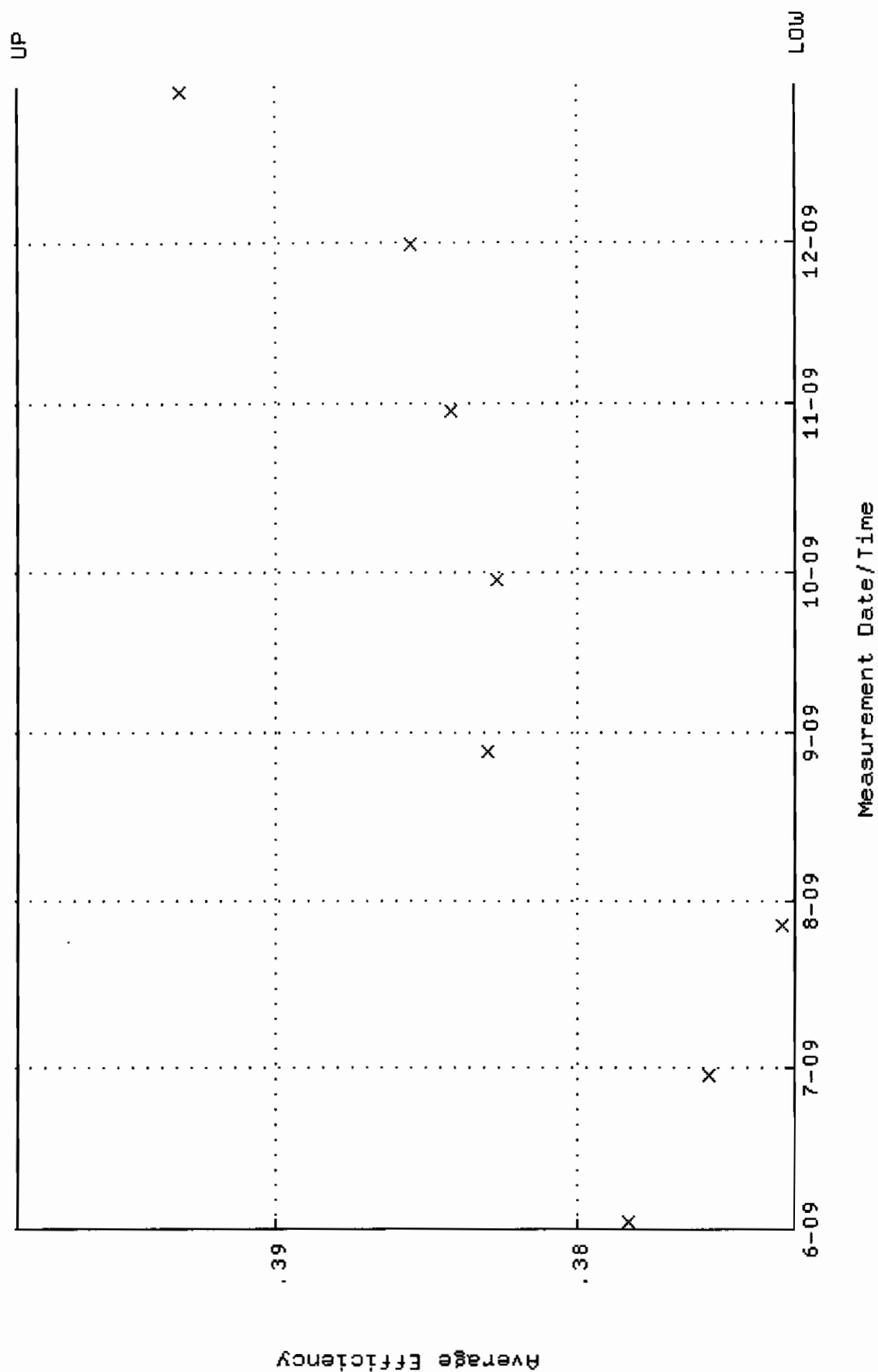
QA filename : DKA100:[ENV\_ALPHA.QA.W]W215.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:17:38 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 86.2153 through 95.2905



QA filename : DKA100:[ENV\_ALPHA.QA.B]B215.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:43:58 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000

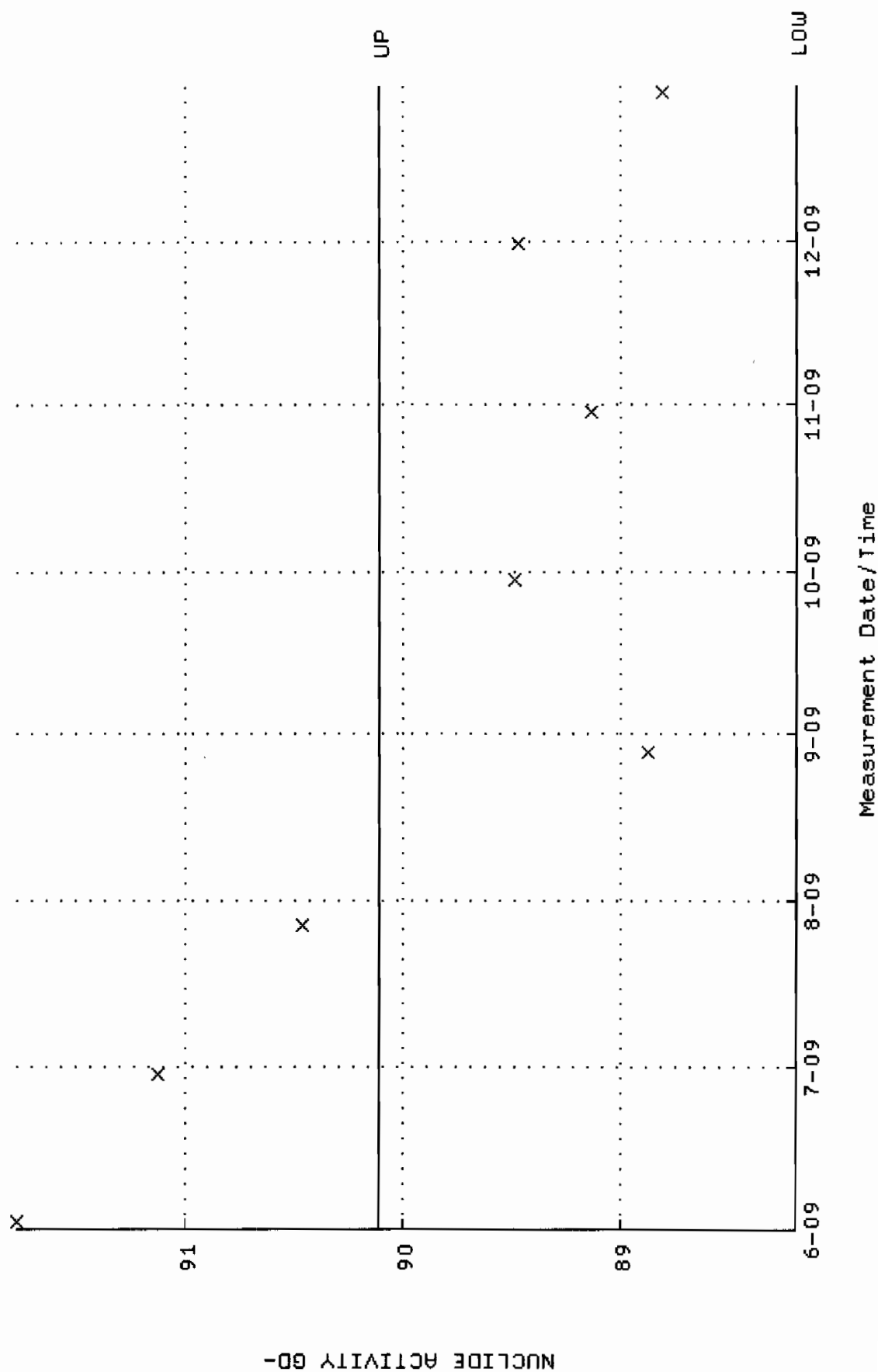


QA filename : DKA100:[ENV\_ALPHA.QA.W]W216.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUN-2009 11:17:43 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.372749 through 0.398591

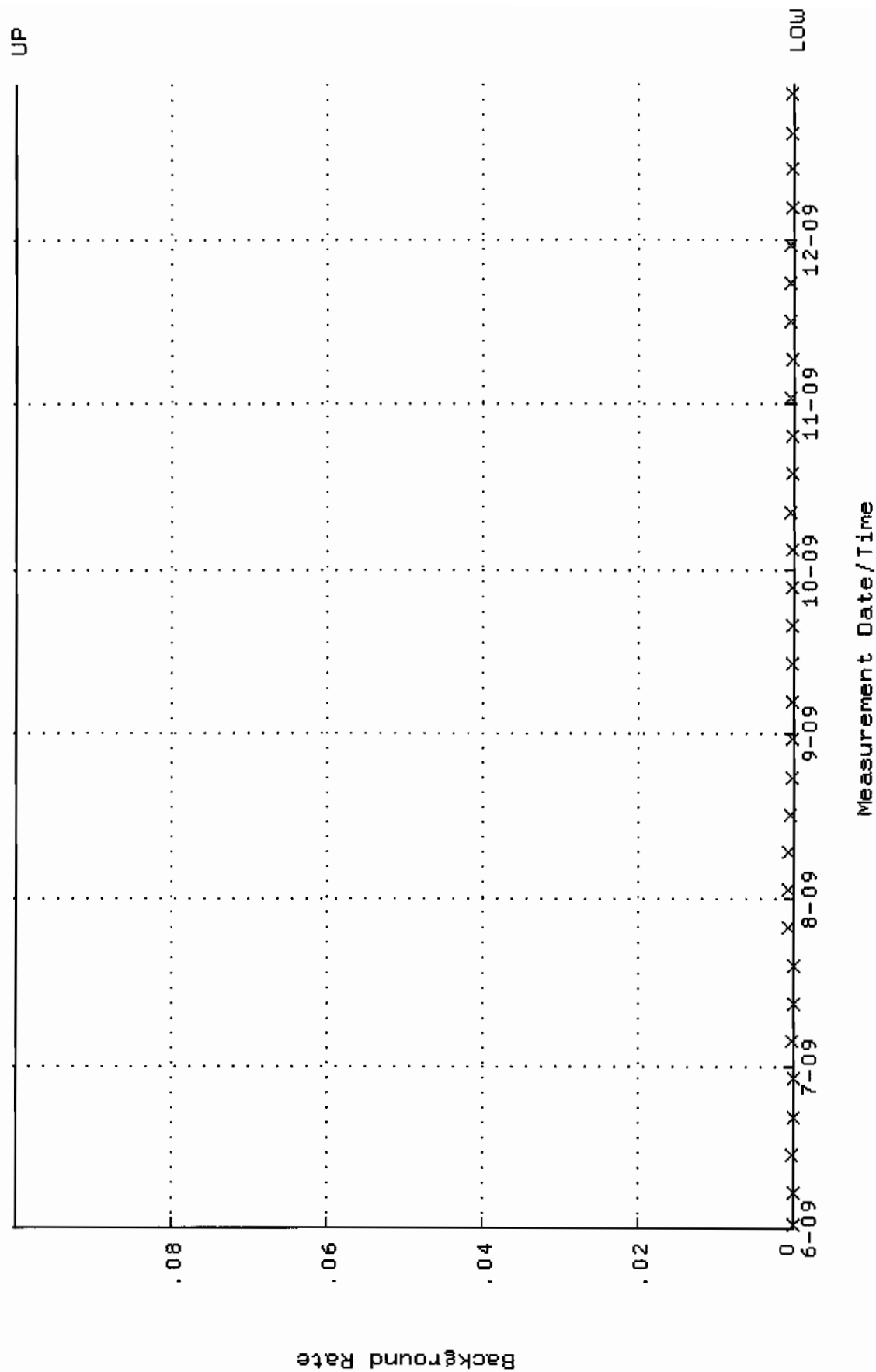




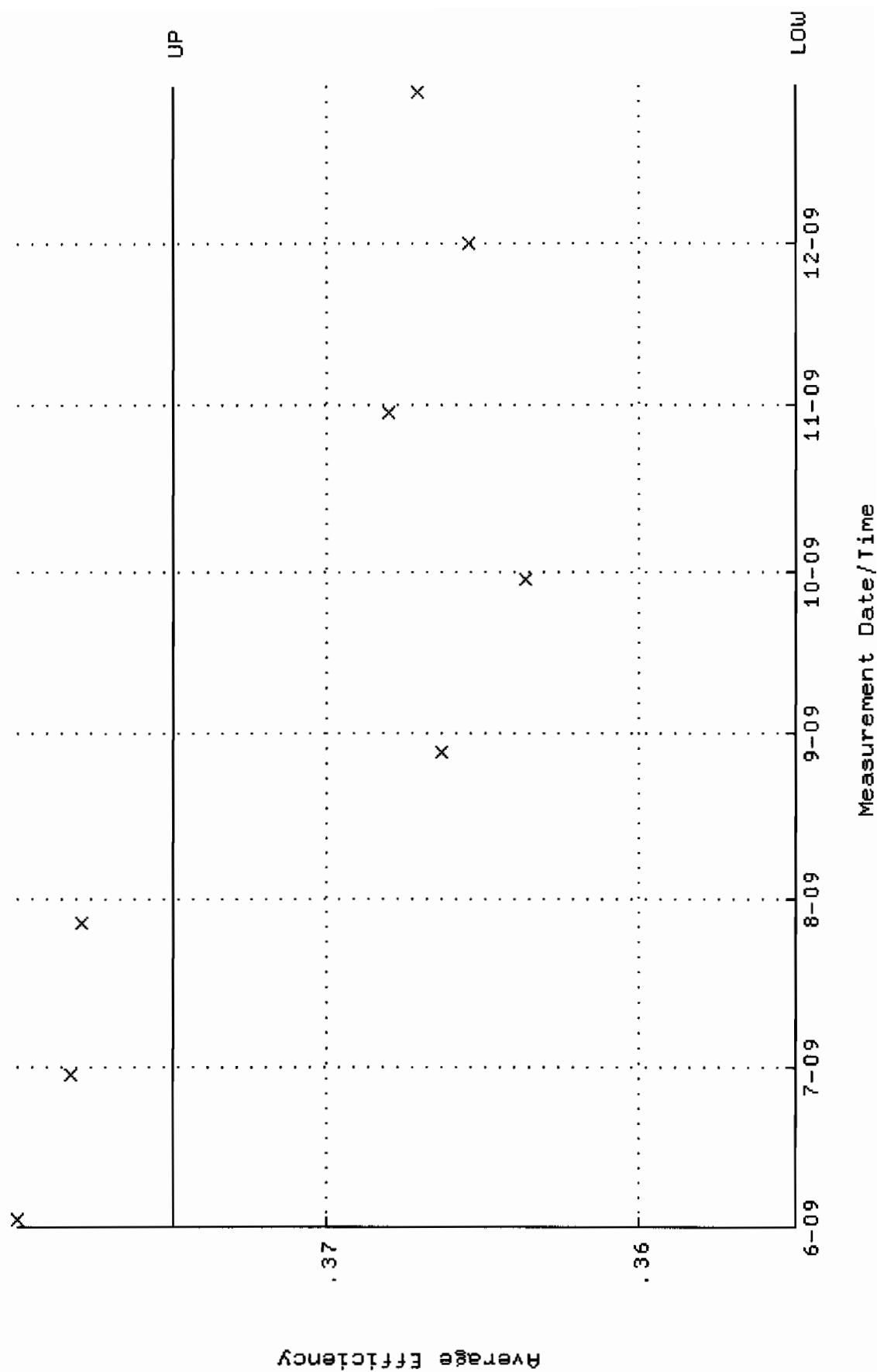
QA filename : DKA100:[ENV\_ALPHA.QA.W]w216.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:17:43 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 88.1955 through 90.1147



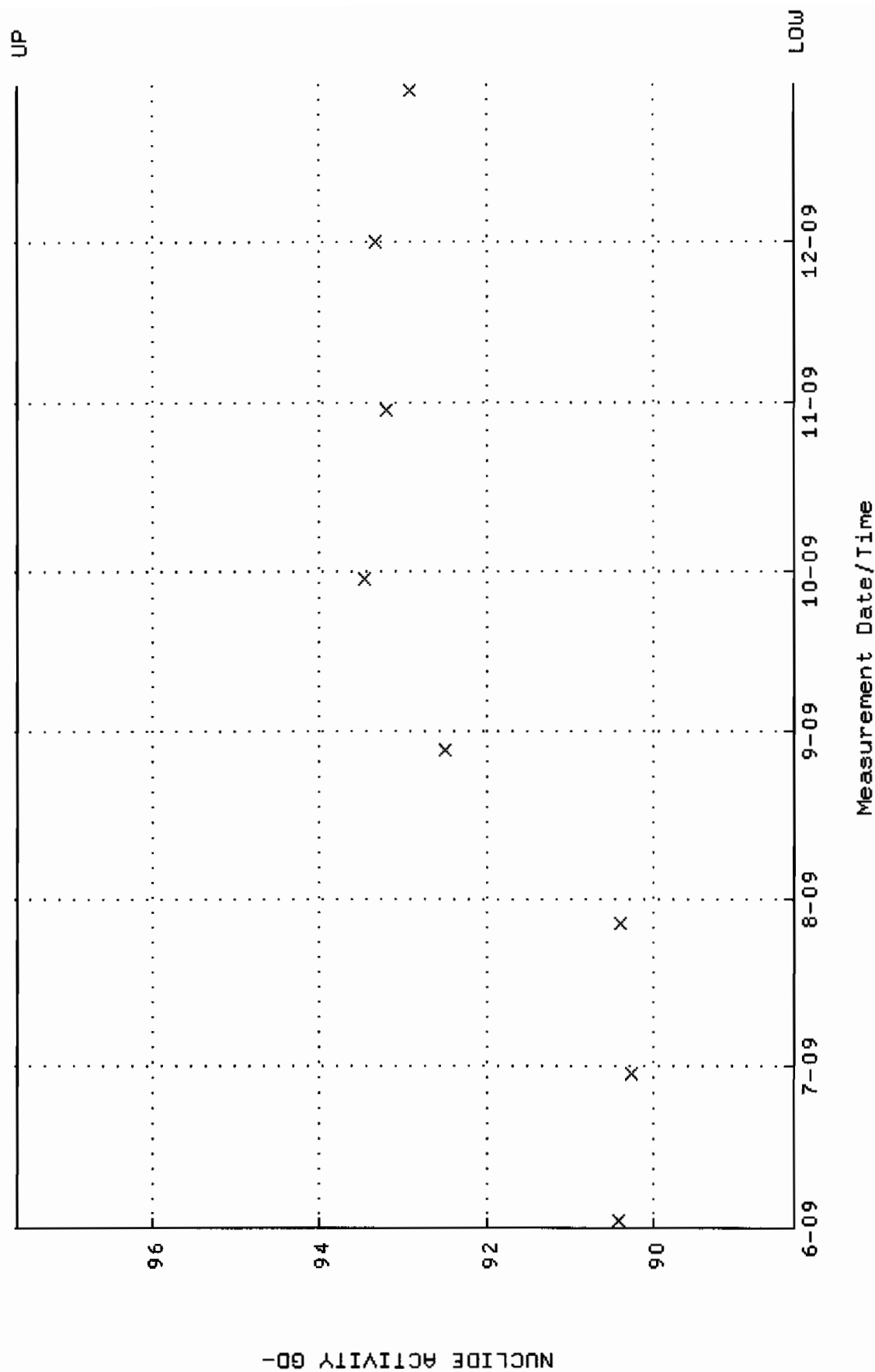
QA filename : DKA100:[ENV\_ALPHA.QA.B]8216.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:44:02 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



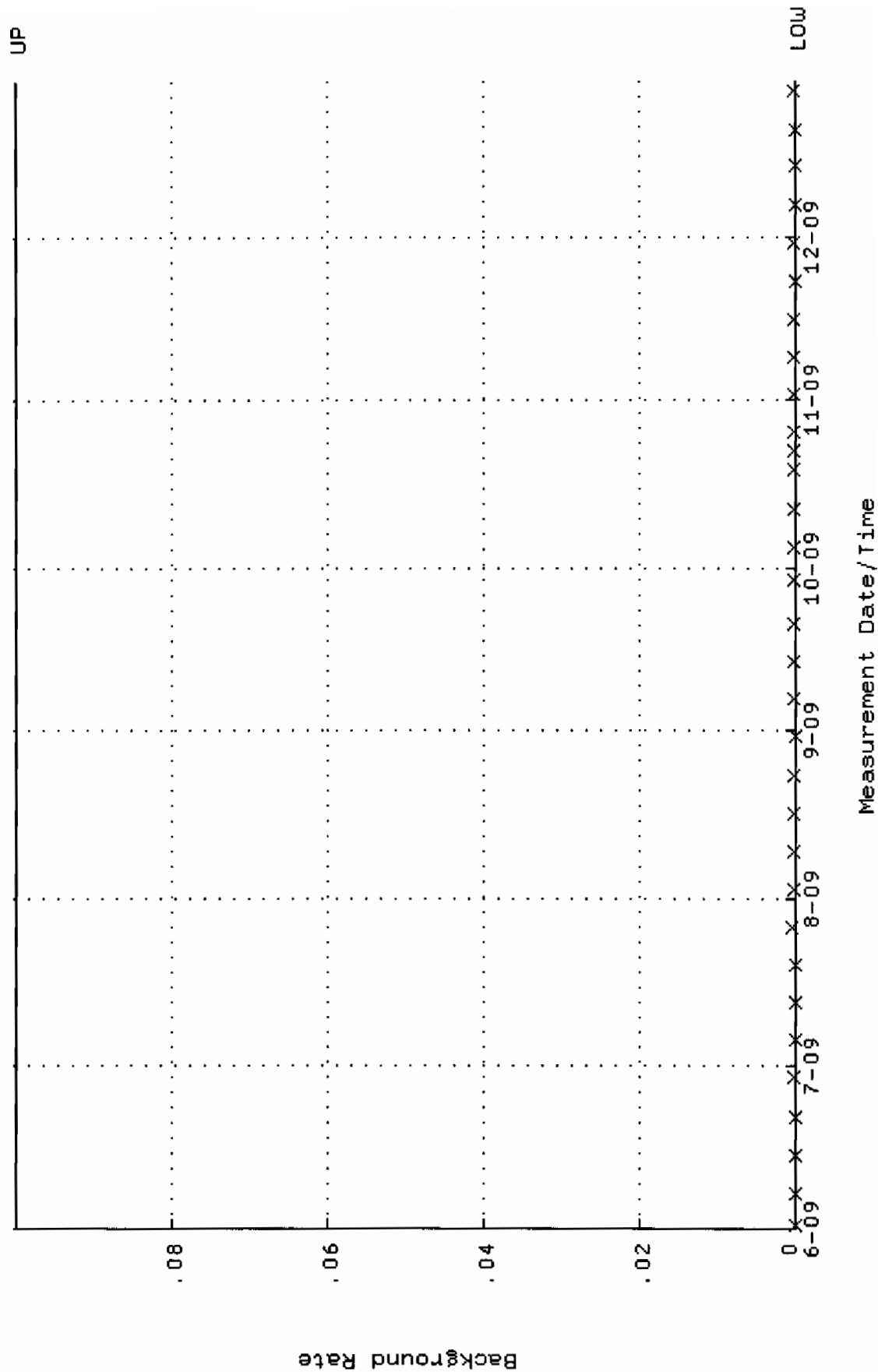
QA filename : DKA100:[ENV\_ALPHA.QA.W]W217.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUN-2009 11:17:48 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.354934 through 0.374934



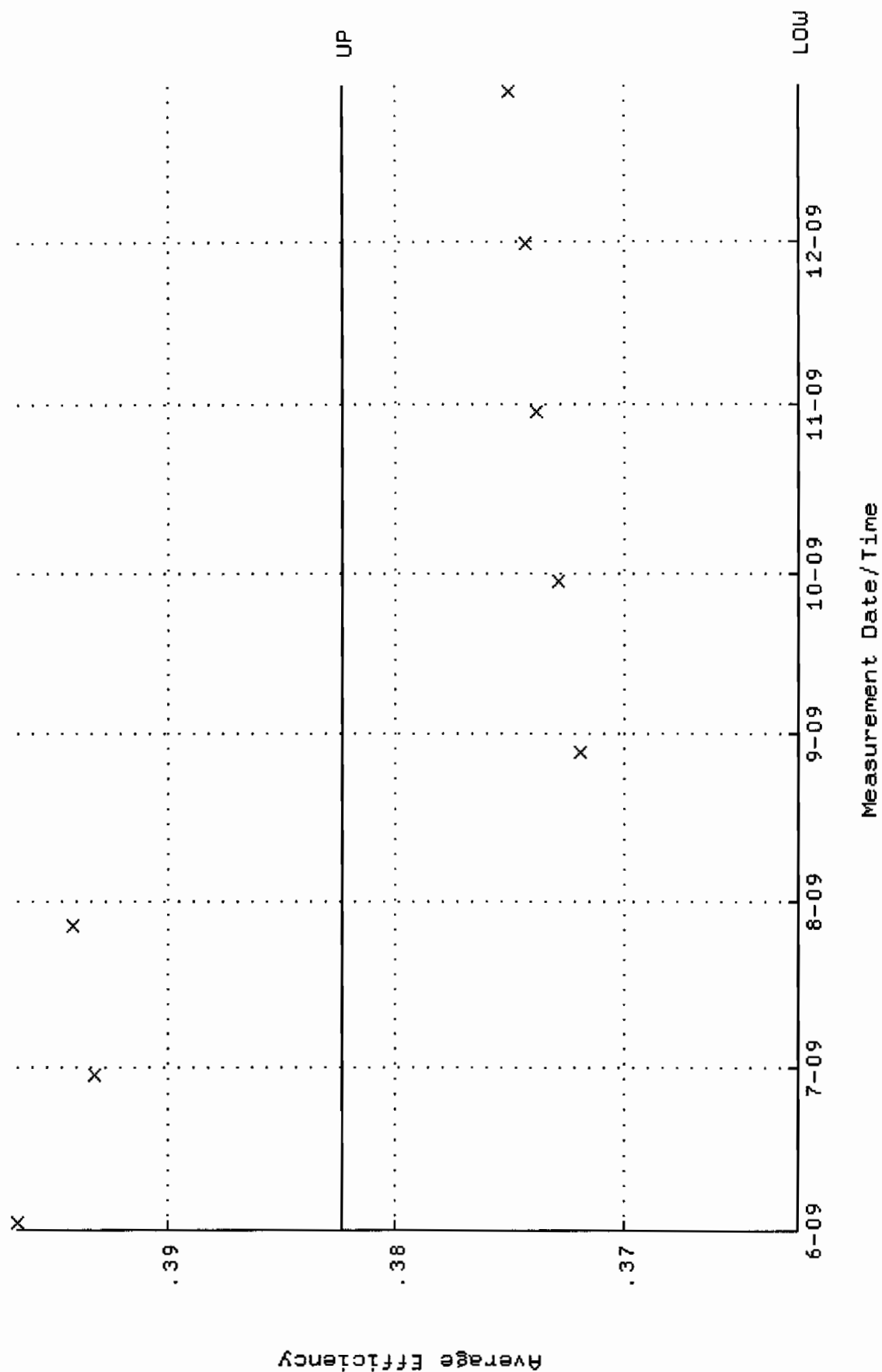
QA filename : DKA100:[ENV\_ALPHA.QA.W]W217.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:17:48 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 88.3174 through 97.6140



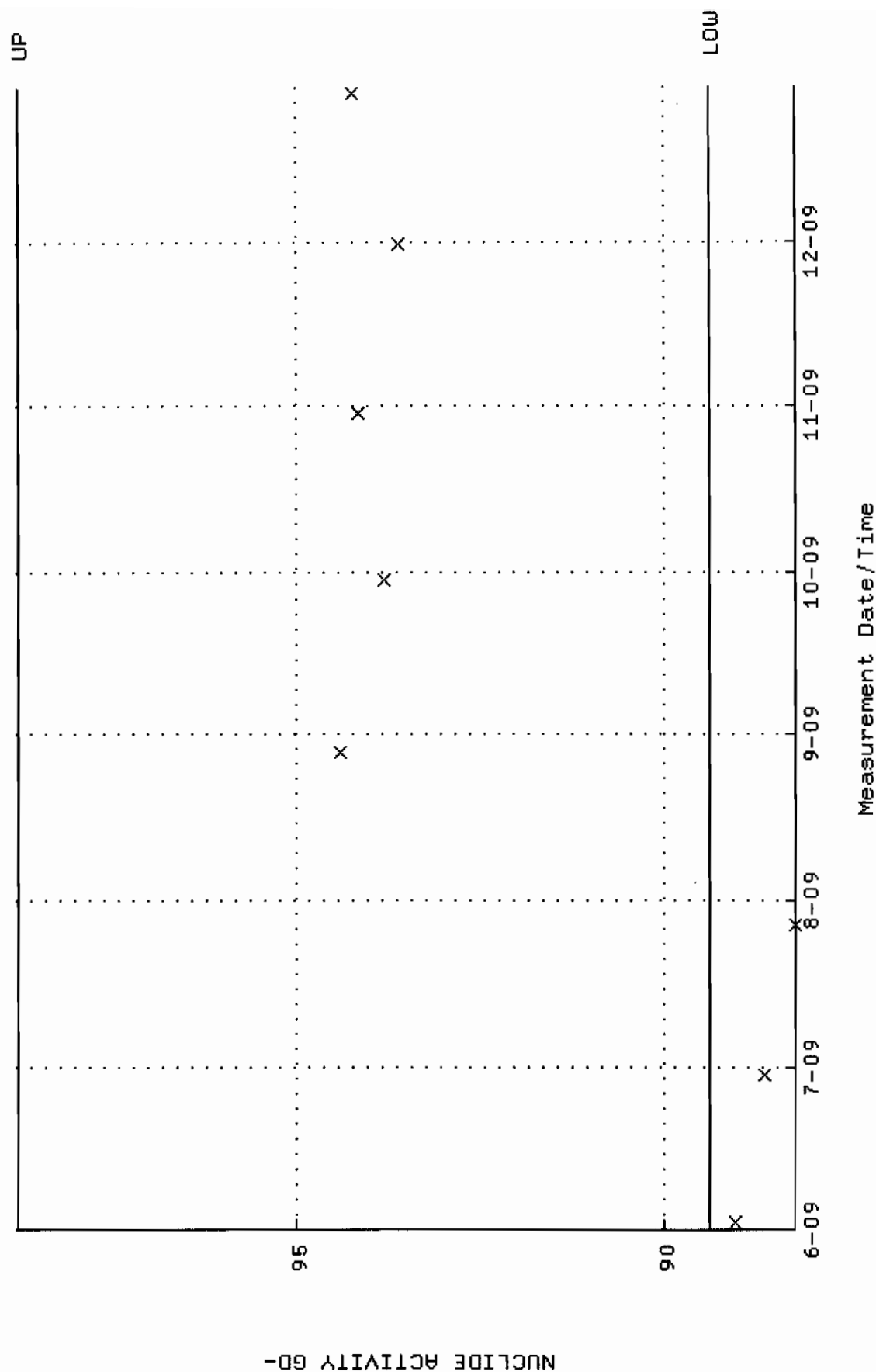
QA filename : DKA100:[ENV\_ALPHA.QA.B]B217.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:44:07 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



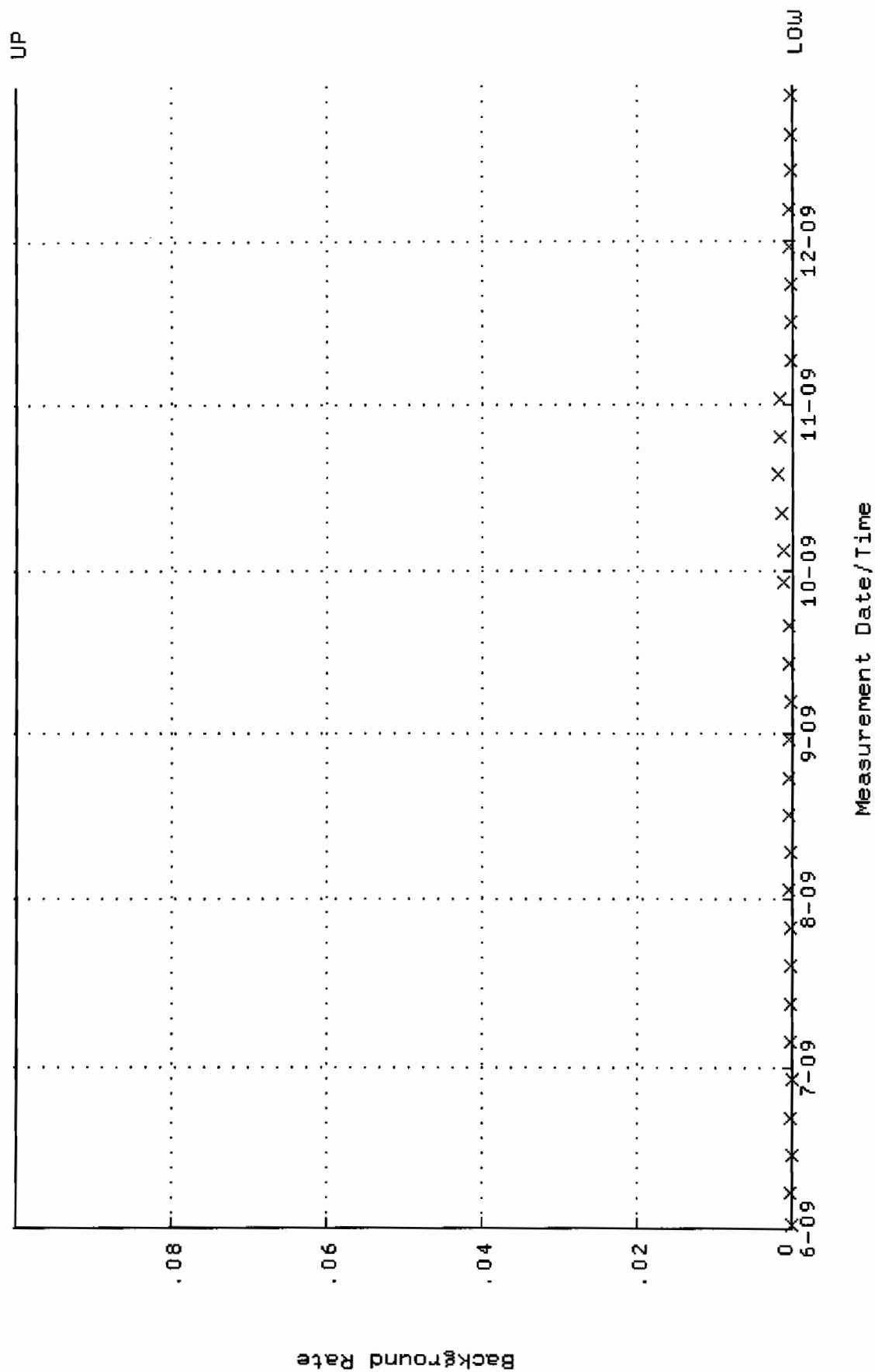
QA filename : DKA100:[ENV\_ALPHA.QA.W]W218.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUN-2009 11:17:54 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.362380 through 0.382380



QA filename : DKA100:[ENV\_ALPHA.QA.W]W218.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:17:54 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 89.3892 through 98.7986

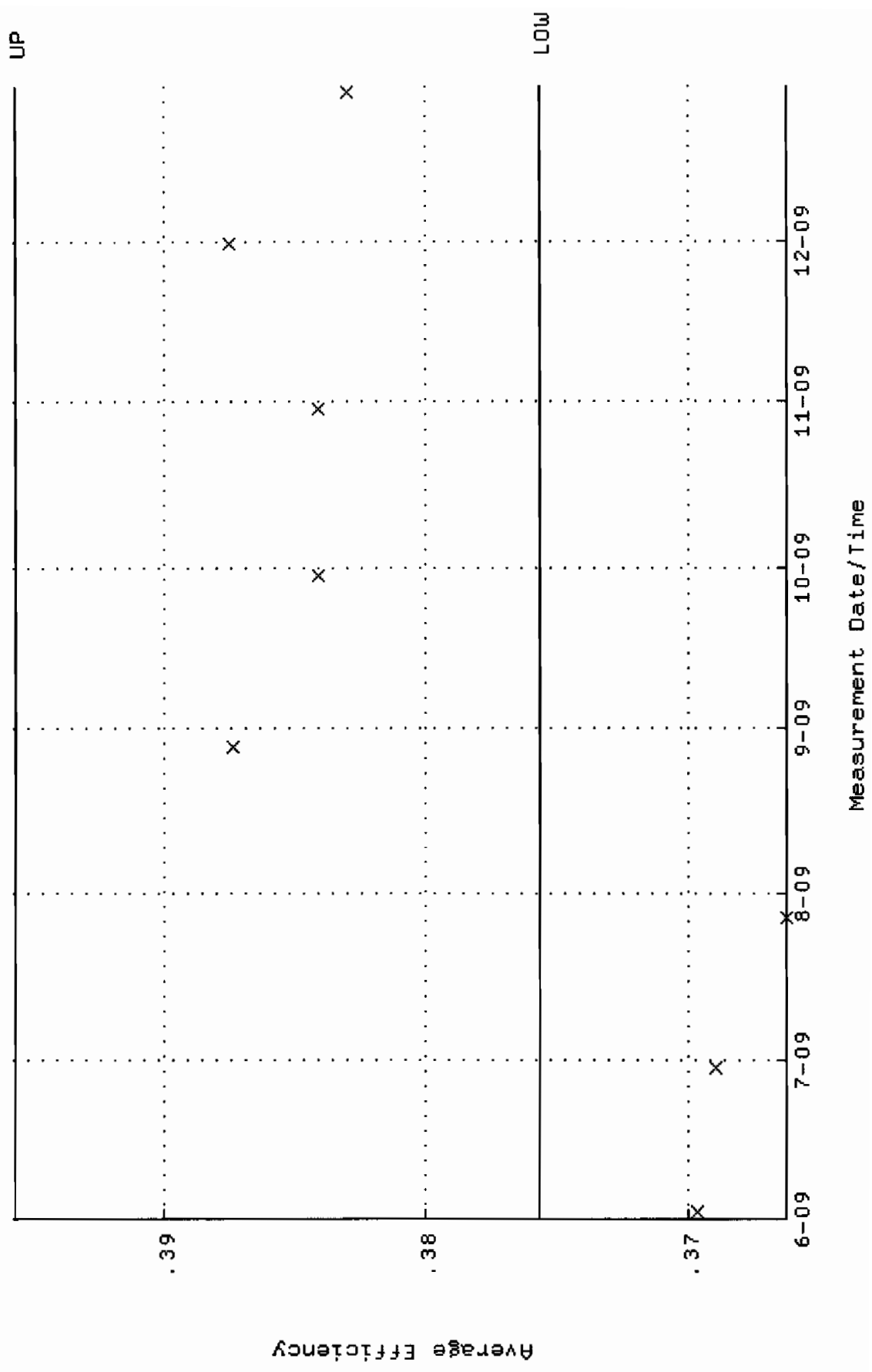


QA filename : DKA100:[ENV\_ALPHA.QA.B]B218.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:44:11 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000

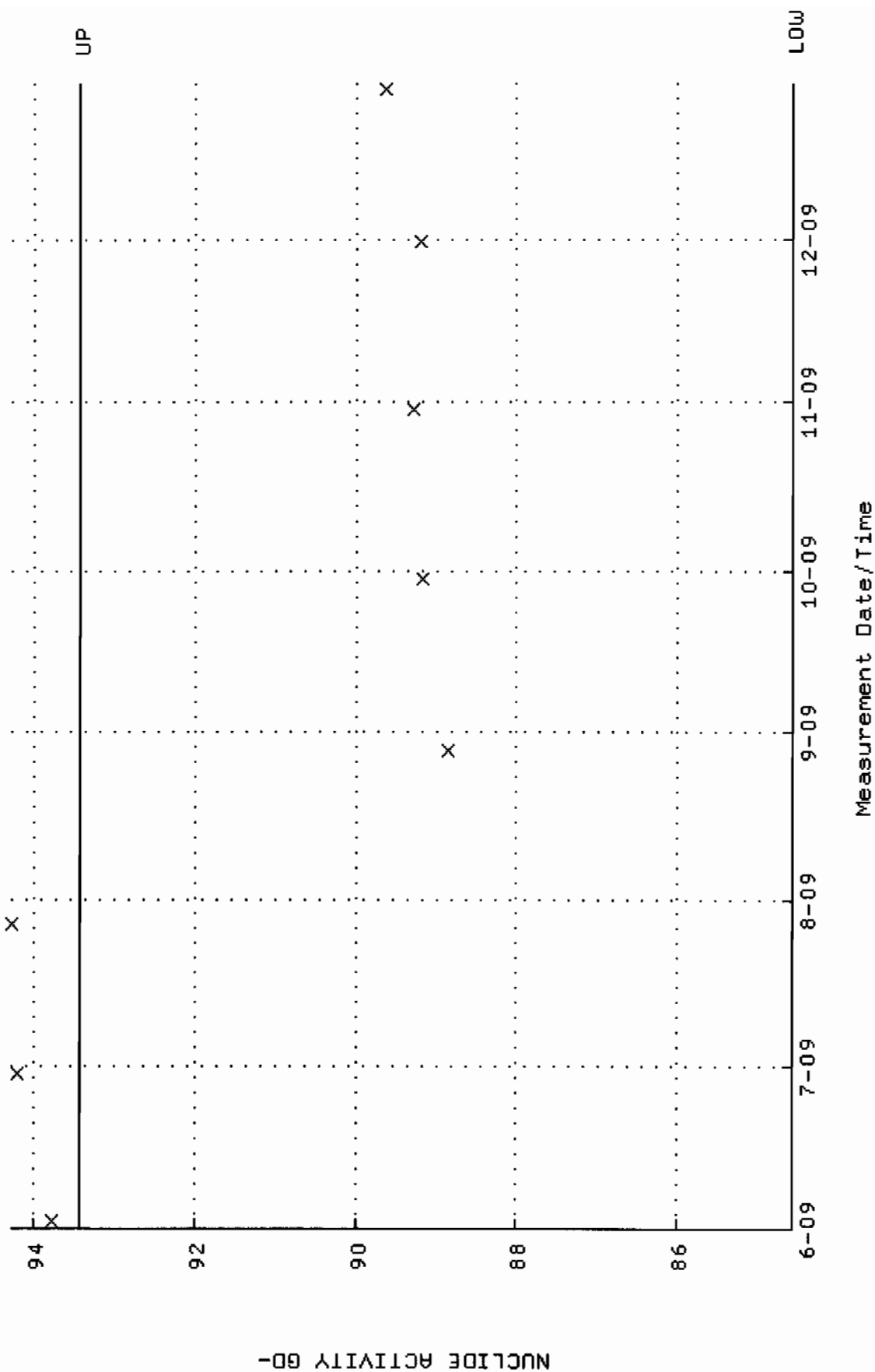




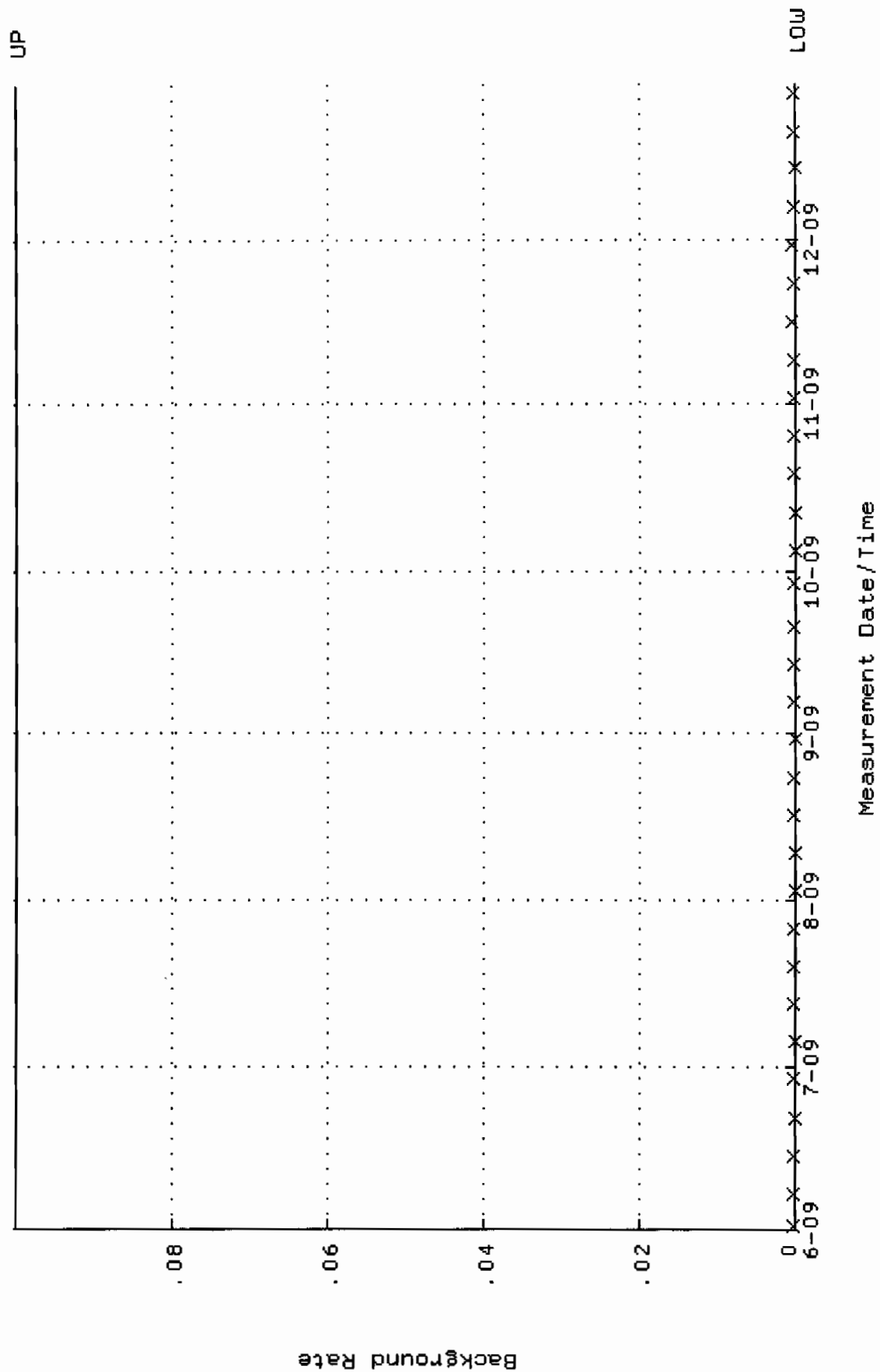
QA filename : DKA100:[ENV\_ALPHA.QA.W]w219.QAF;1  
Parameter Name : AVRGEFF (Average Efficiency)  
Start/End Dates : 2-JUN-2009 11:17:59 through 29-DEC-2009 12:00:00  
Lower/Upper Lmts: 0.375667 through 0.395667



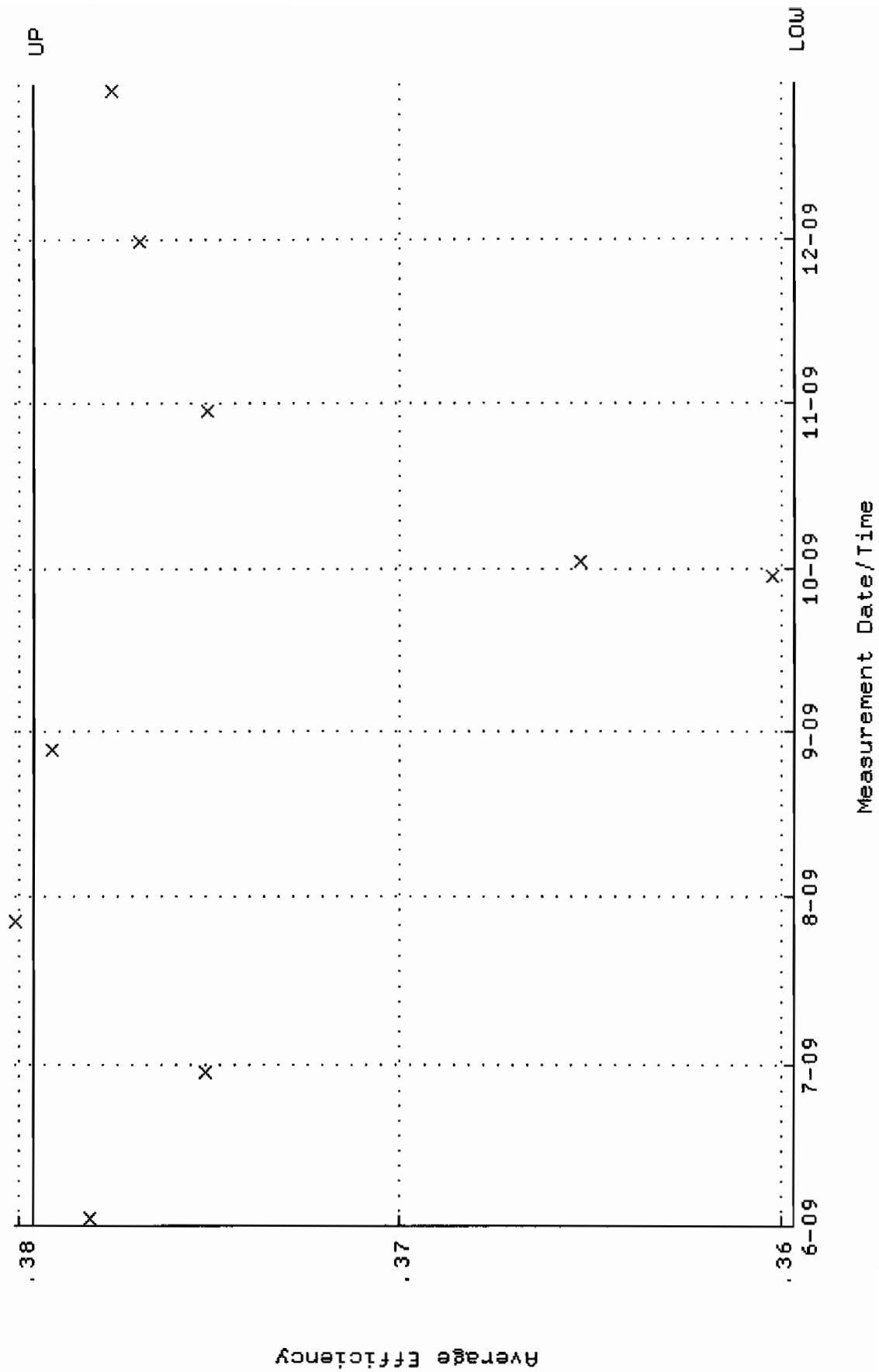
QA filename : DKA100:[ENV\_ALPHA.QA.W]W219.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:17:59 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 84.5518 through 93.4520



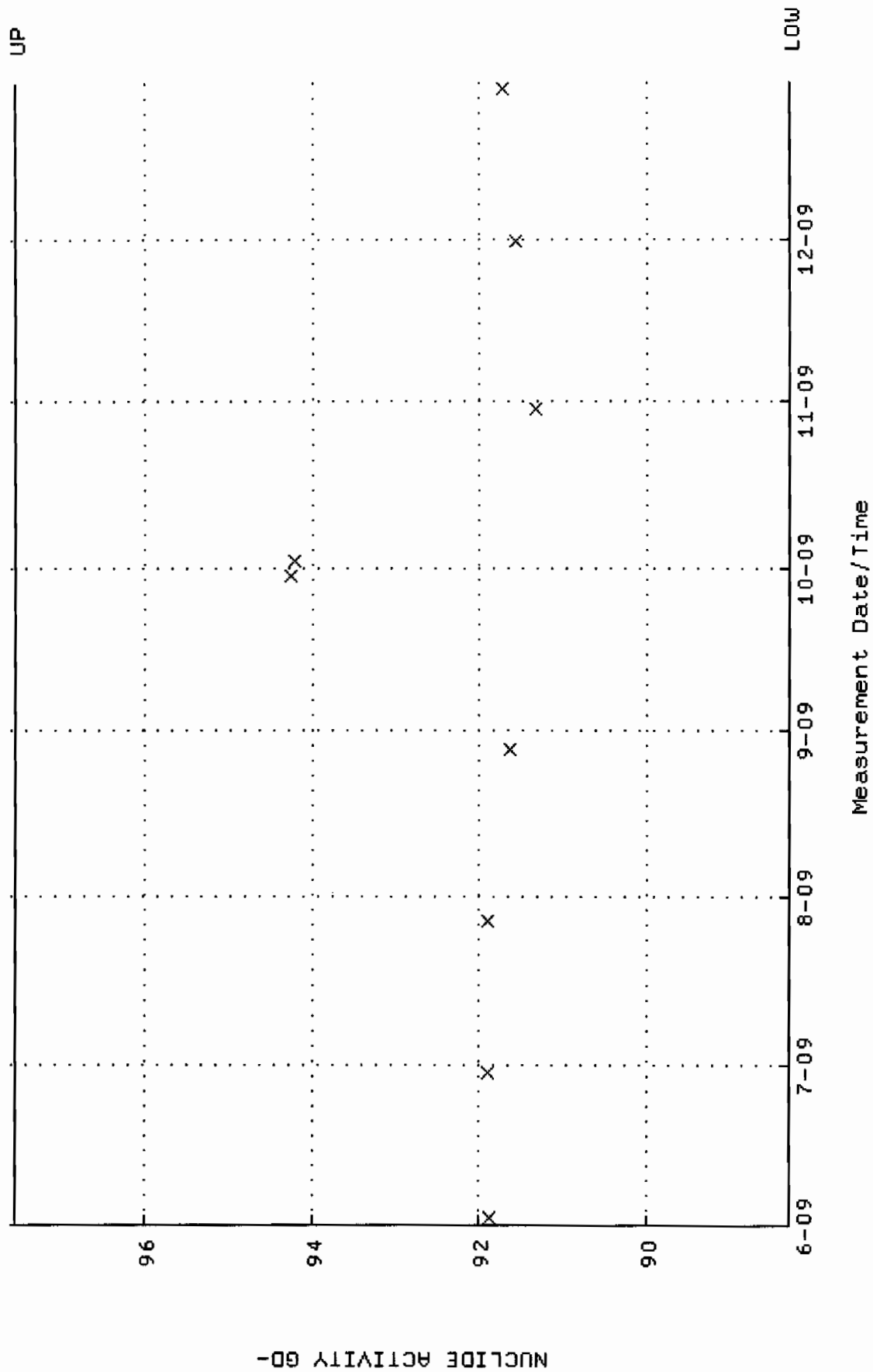
QA filename : DKA100:[ENV\_ALPHA.QA.B]B219.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:44:16 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



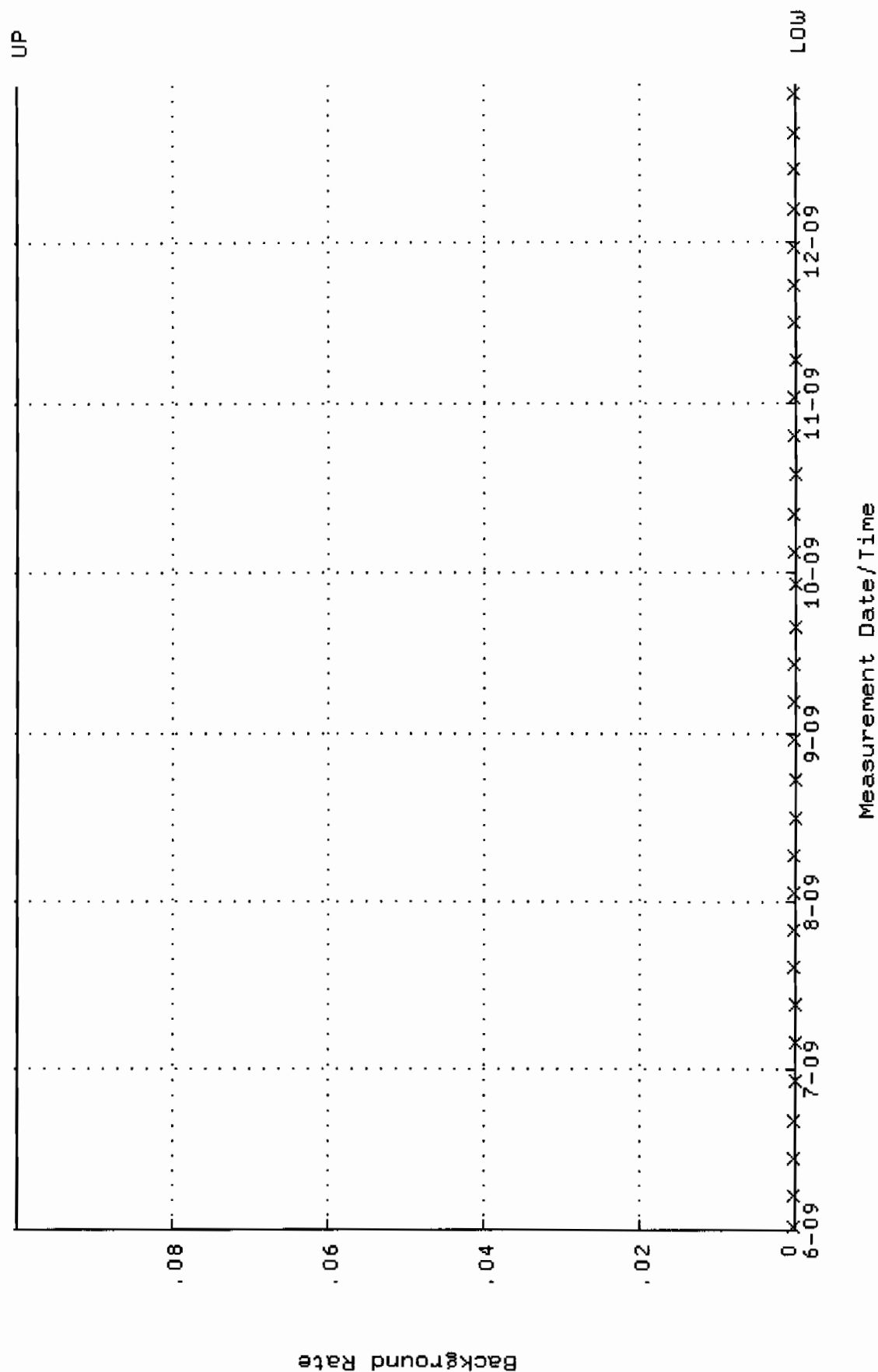
QA filename : DKA100:[ENV\_ALPHA.QA.W]W220.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUN-2009 11:18:04 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.359644 through 0.379644



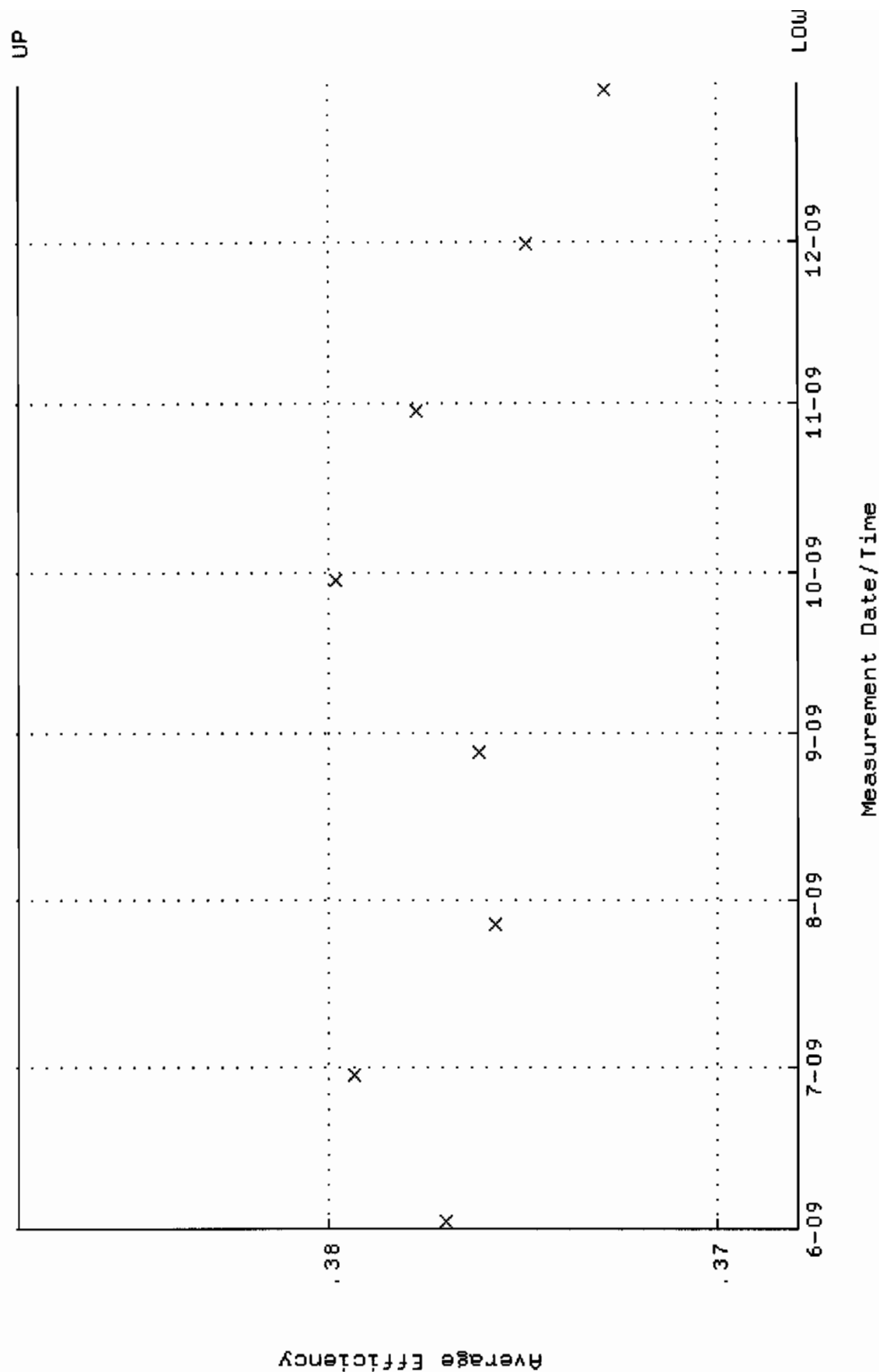
QA filename : DKA100:[ENV\_ALPHA.QA.W]W220.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:18:04 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 88.2863 through 97.5795



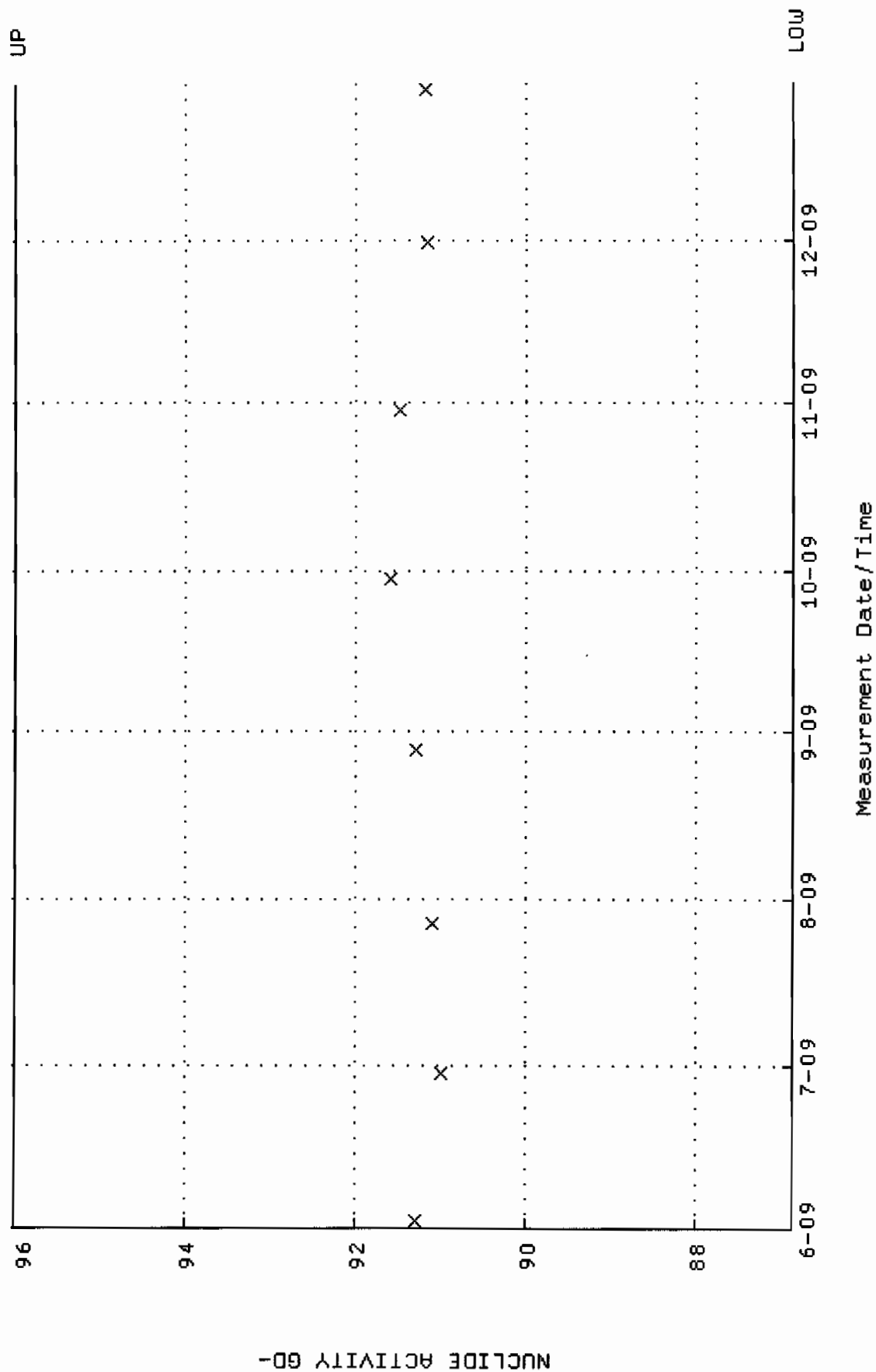
QA filename : DKA100:[ENV\_ALPHA.QA.B]B220.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:44:21 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



QA filename : DKA100:[ENV\_ALPHA.QA.W]U221.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUN-2009 11:18:10 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.367948 through 0.387948

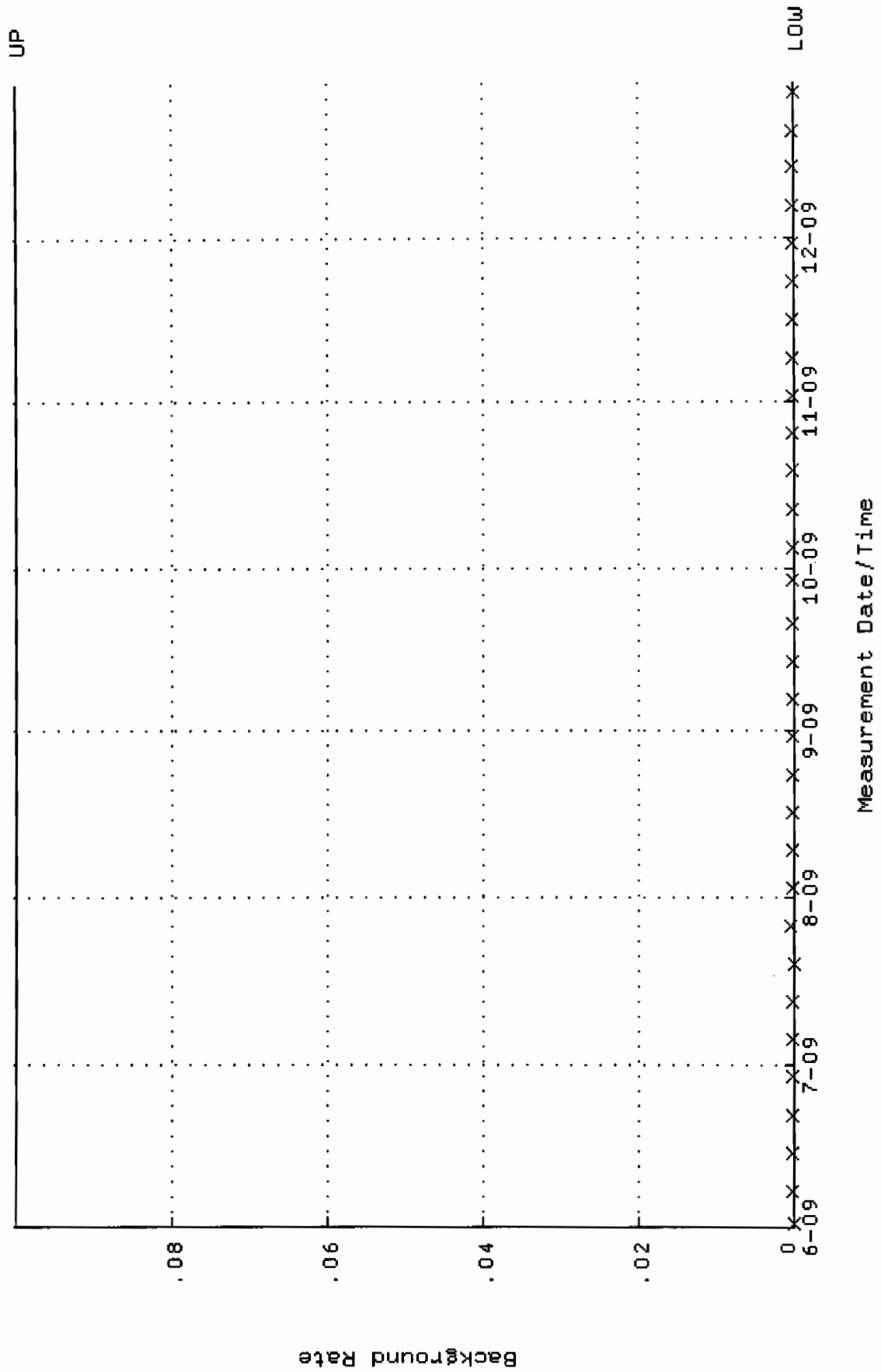


QA filename : DKA100:[ENV\_ALPHA.QA.W]W221.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:18:10 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 86.8591 through 96.0021

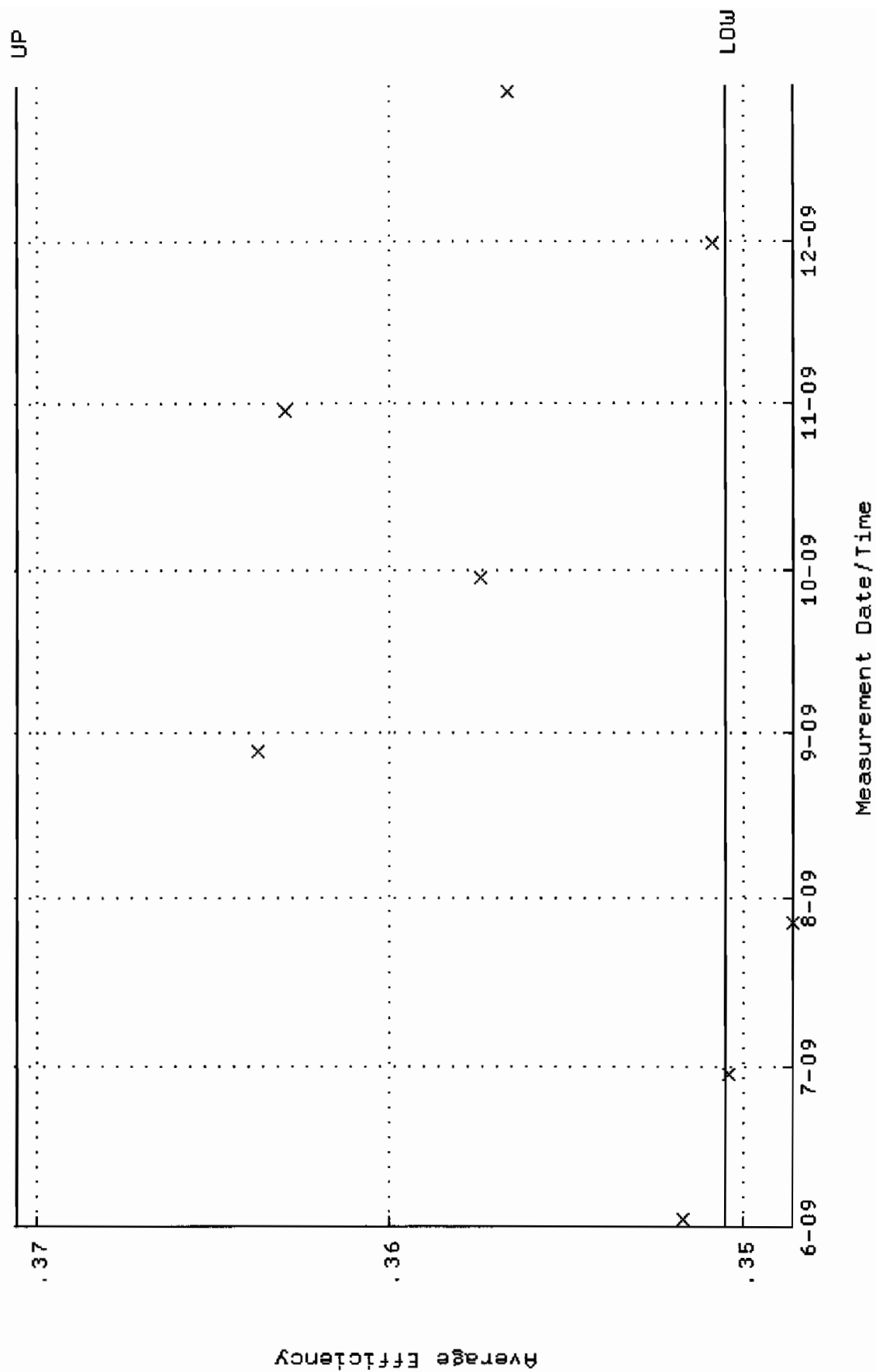




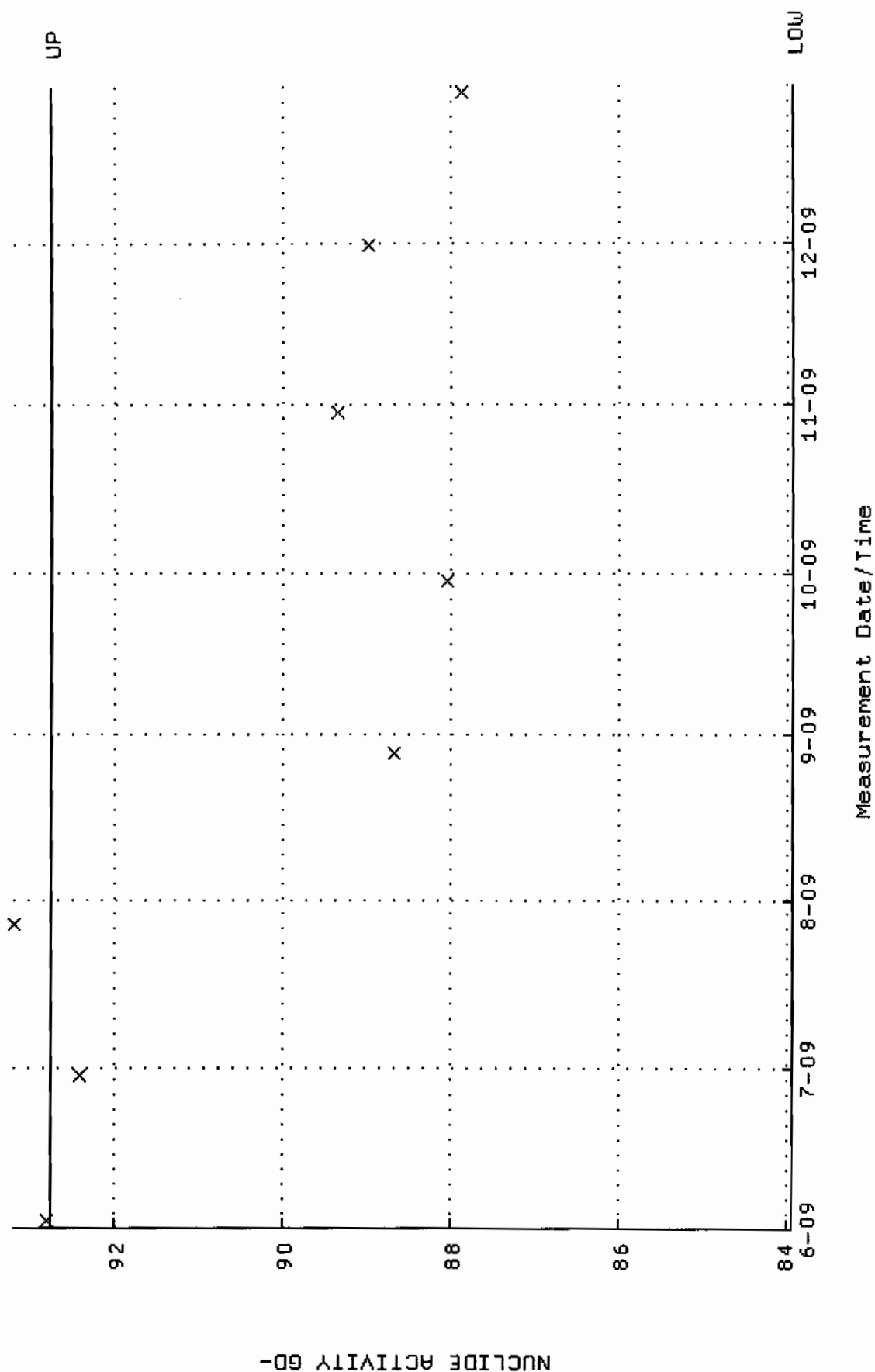
QA filename : DKA100:[ENV\_ALPHA.QA.B]B221.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:44:25 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



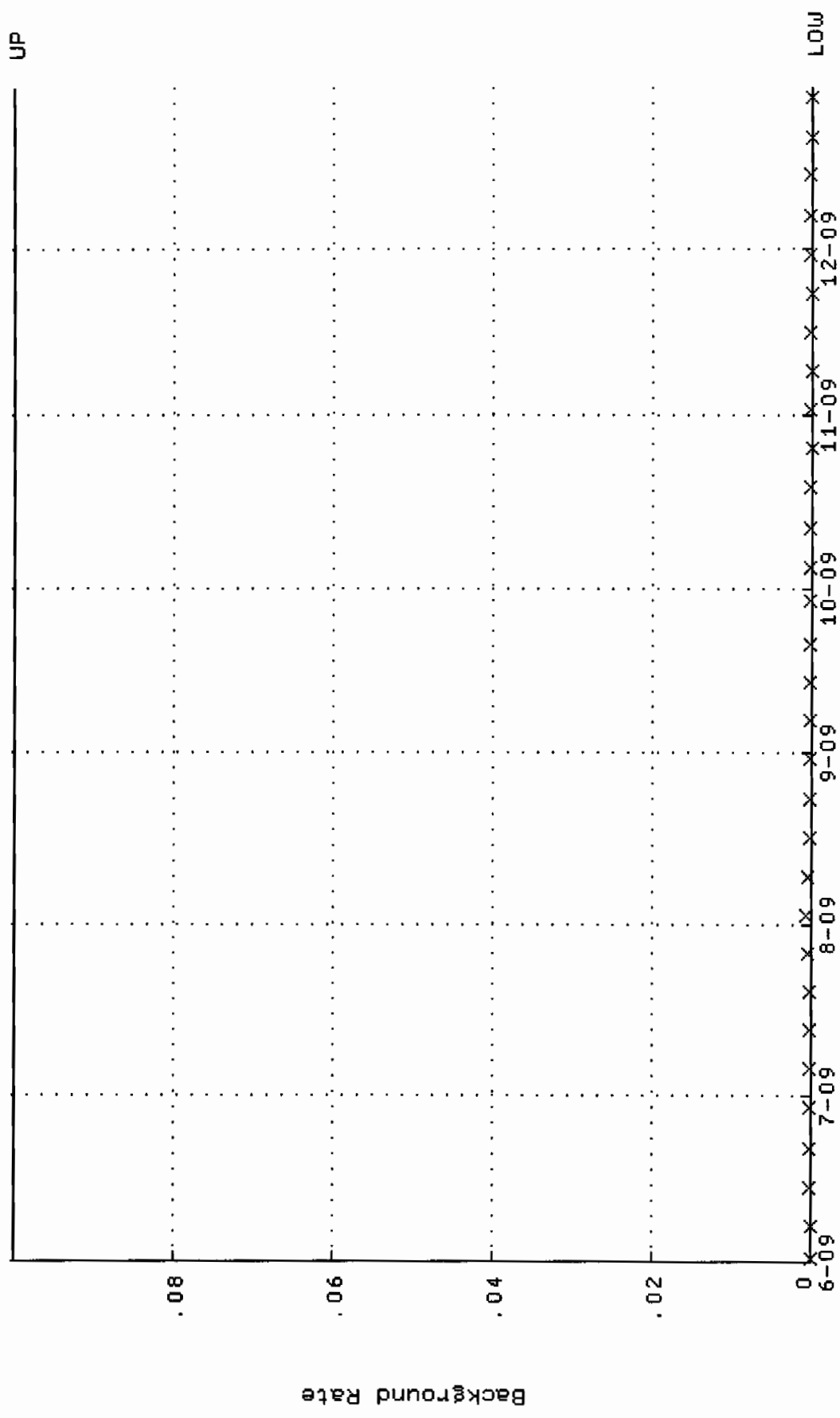
QA filename : DKA100: [ENV\_ALPHA.QA.W]W222.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUN-2009 11:18:15 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.350566 through 0.370566



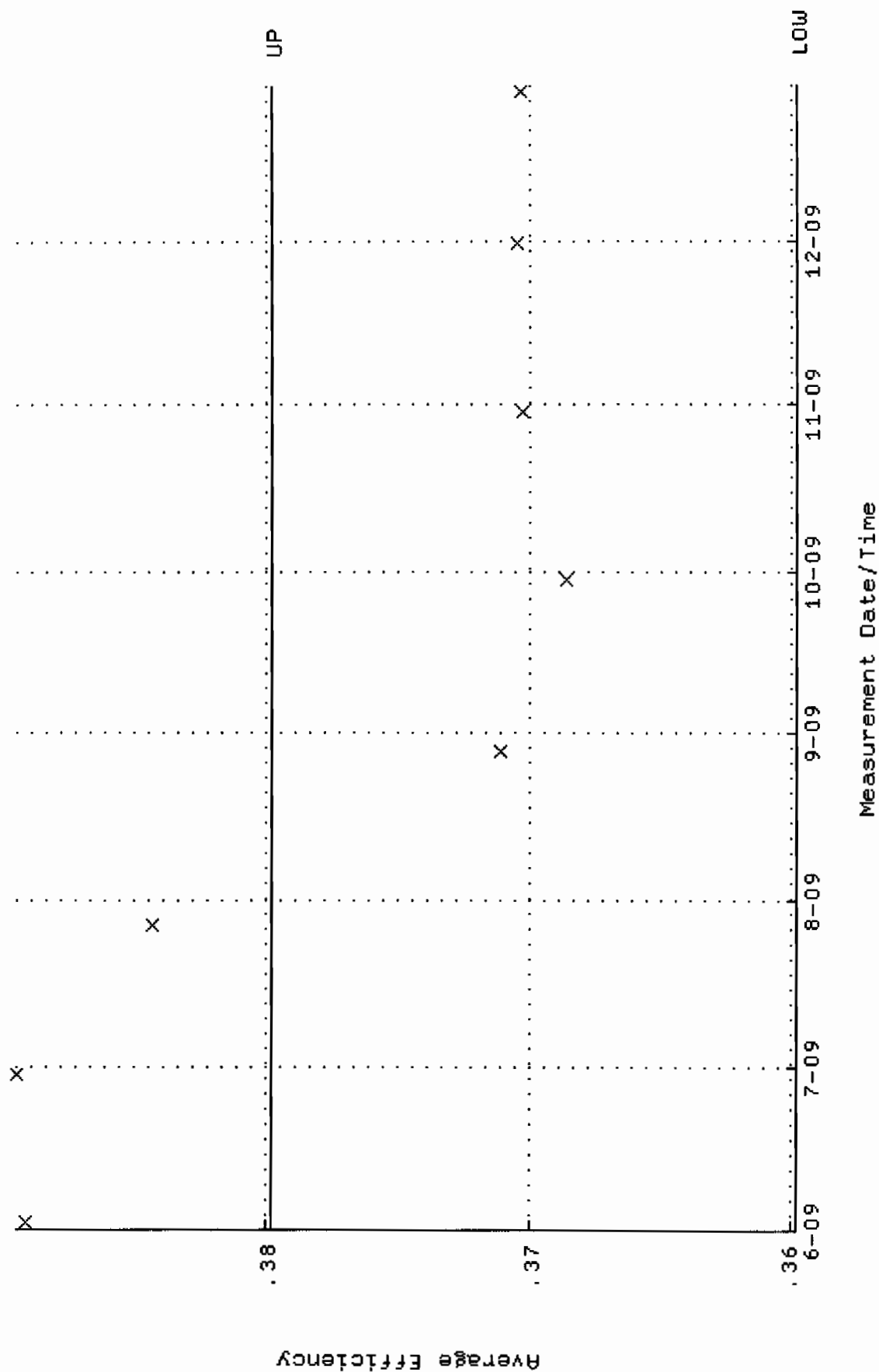
QA filename : DKA100:[ENV\_ALPHA.QA.W]W222.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:18:15 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 83.9445 through 92.7807



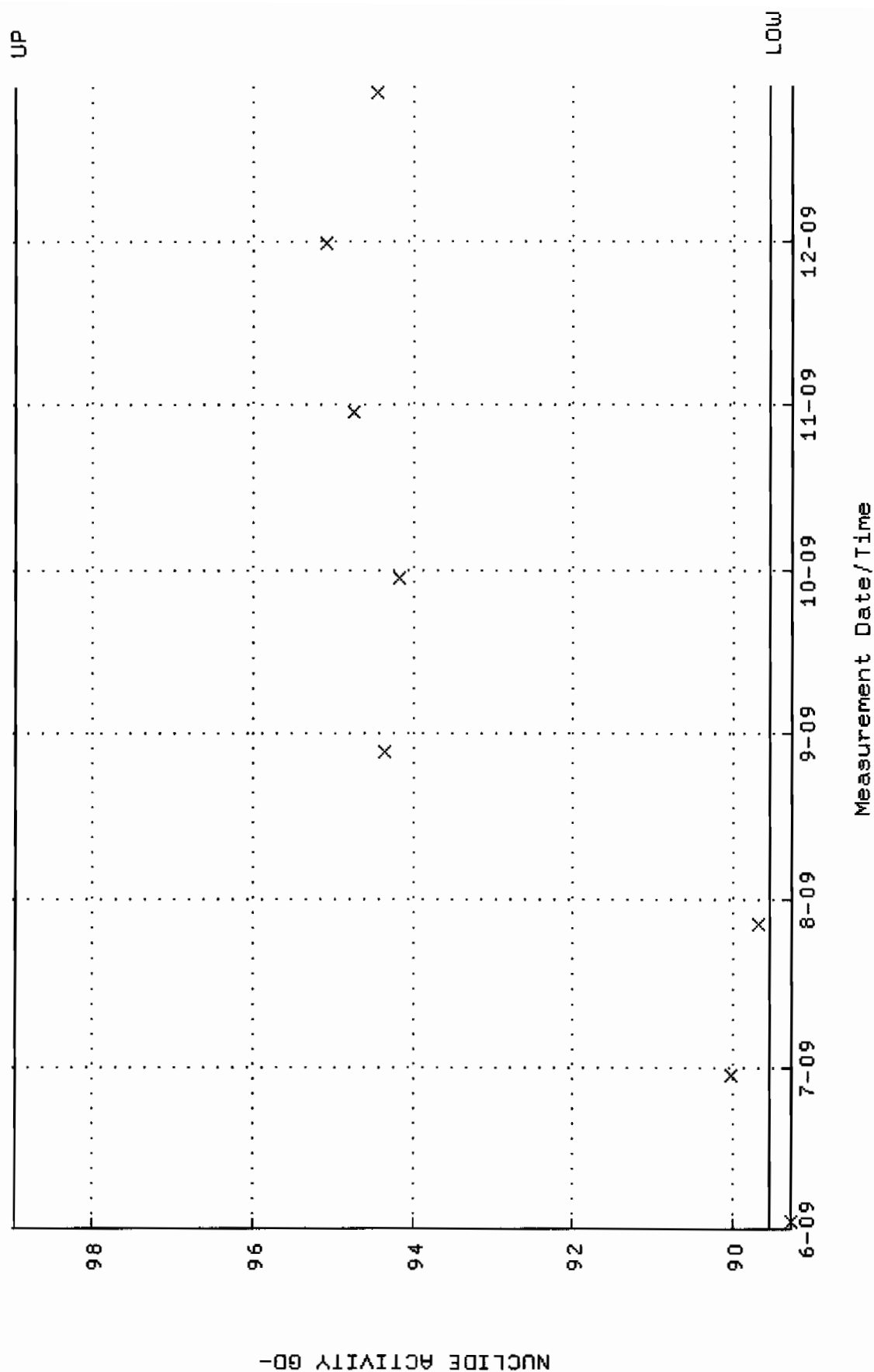
QA filename : DKA100:[ENV\_ALPHA.QA.B]B222.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:44:30 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



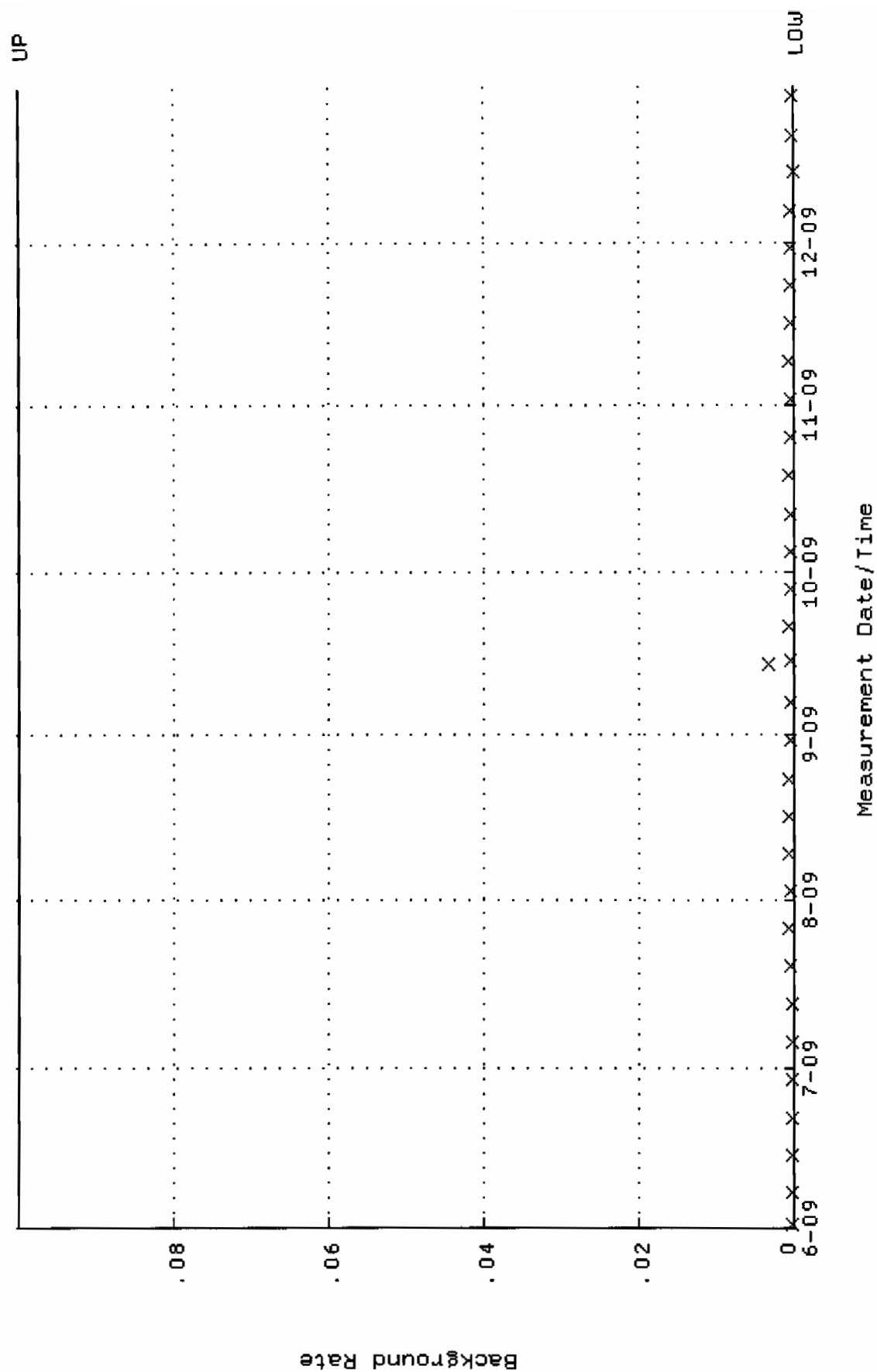
QA filename : DKA100:[ENV\_ALPHA.QA.W]W223.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUN-2009 11:18:20 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.359804 through 0.379804



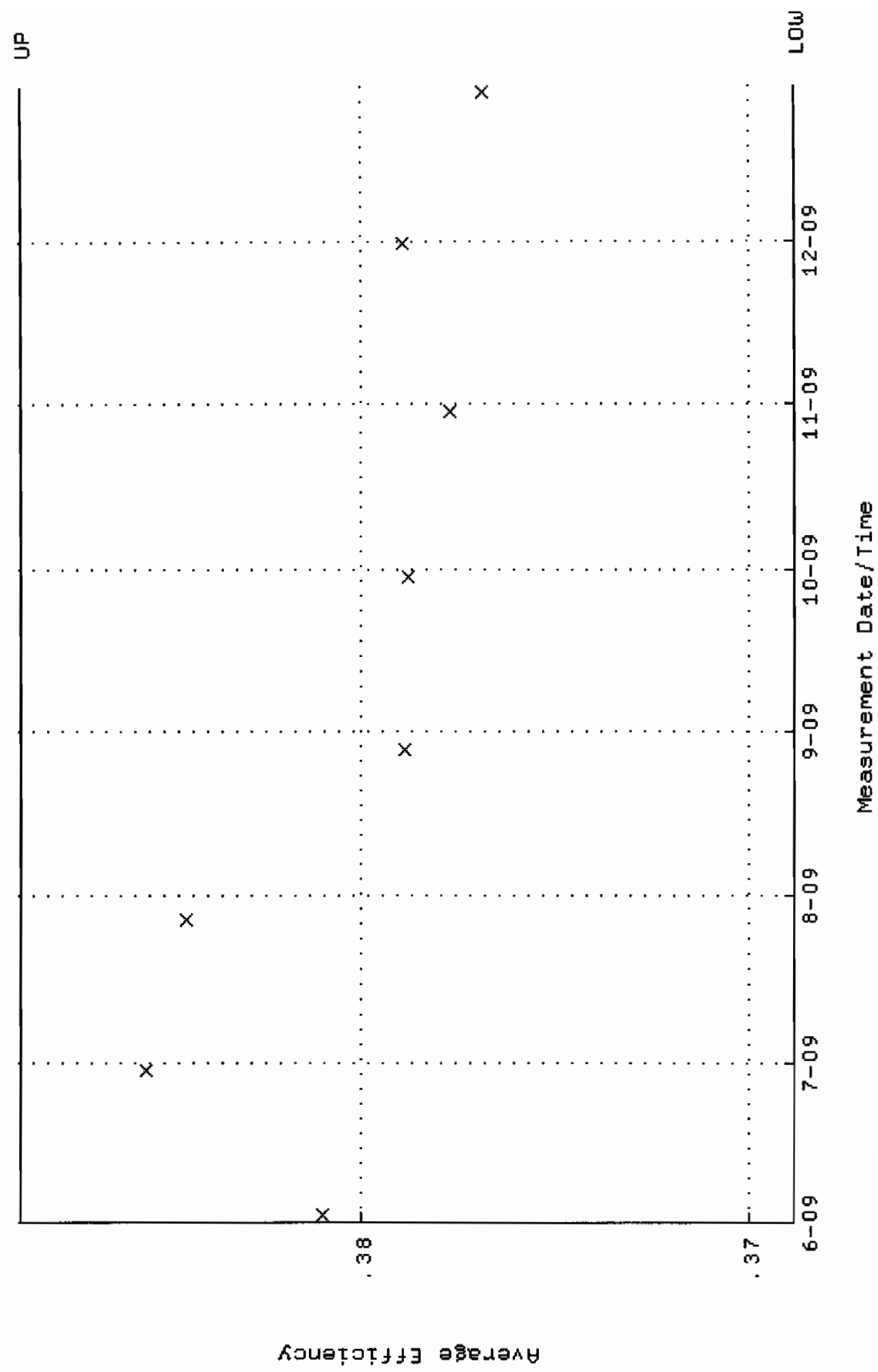
QA filename : DKA100:[ENV\_ALPHA.QA.W]W223.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:18:20 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 89.5441 through 98.9697



QA filename : DKA100:[ENV\_ALPHA.QA.B]B223.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:44:34 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000

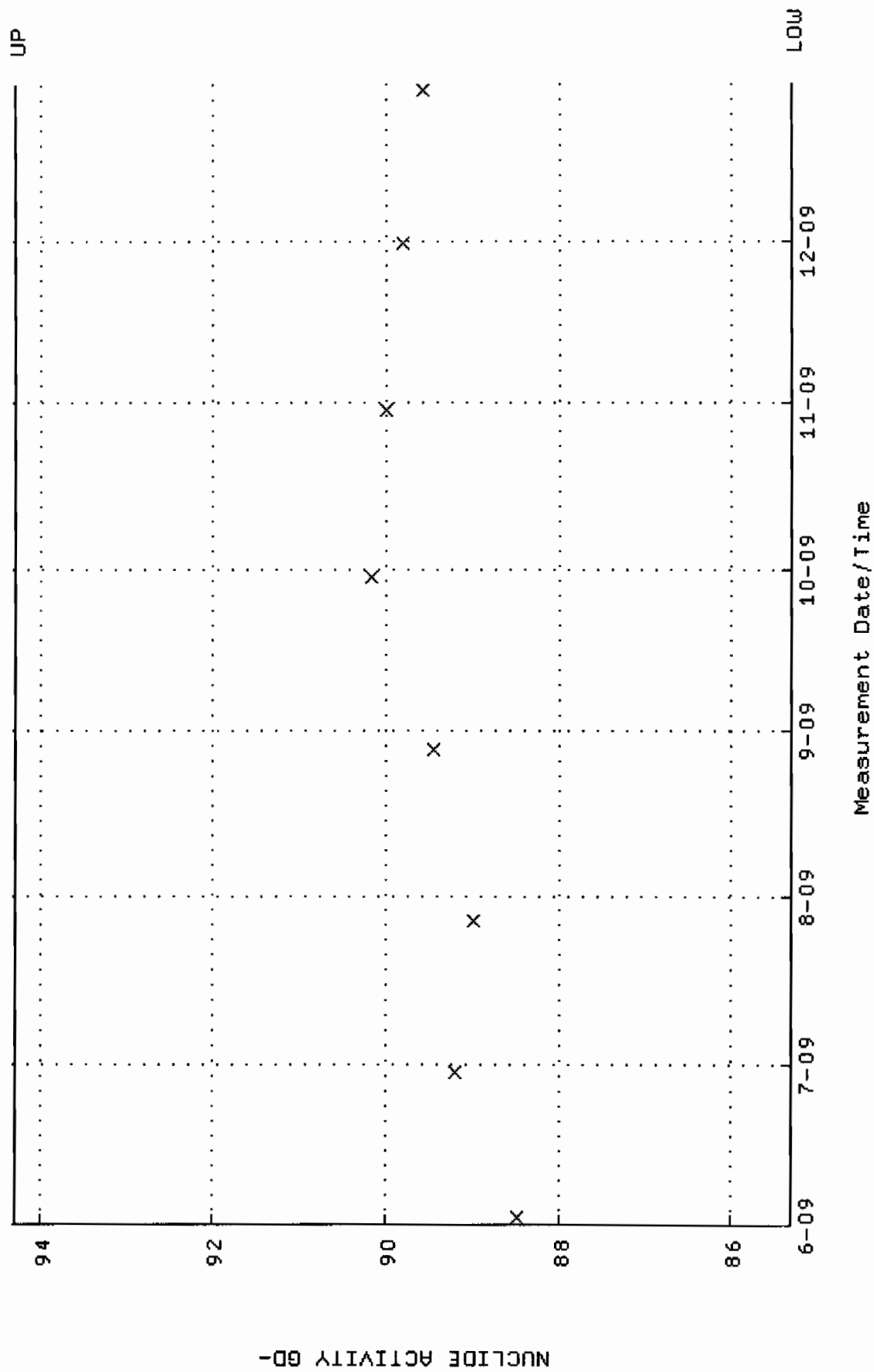


QA filename : DKA100:[ENV\_ALPHA.QA.W]W224.QAF;1  
Parameter Name : AVRGEFF (Average Efficiency)  
Start/End Dates : 2-JUN-2009 11:18:26 through 29-DEC-2009 12:00:00  
Lower/Upper Lmts: 0.368812 through 0.388812

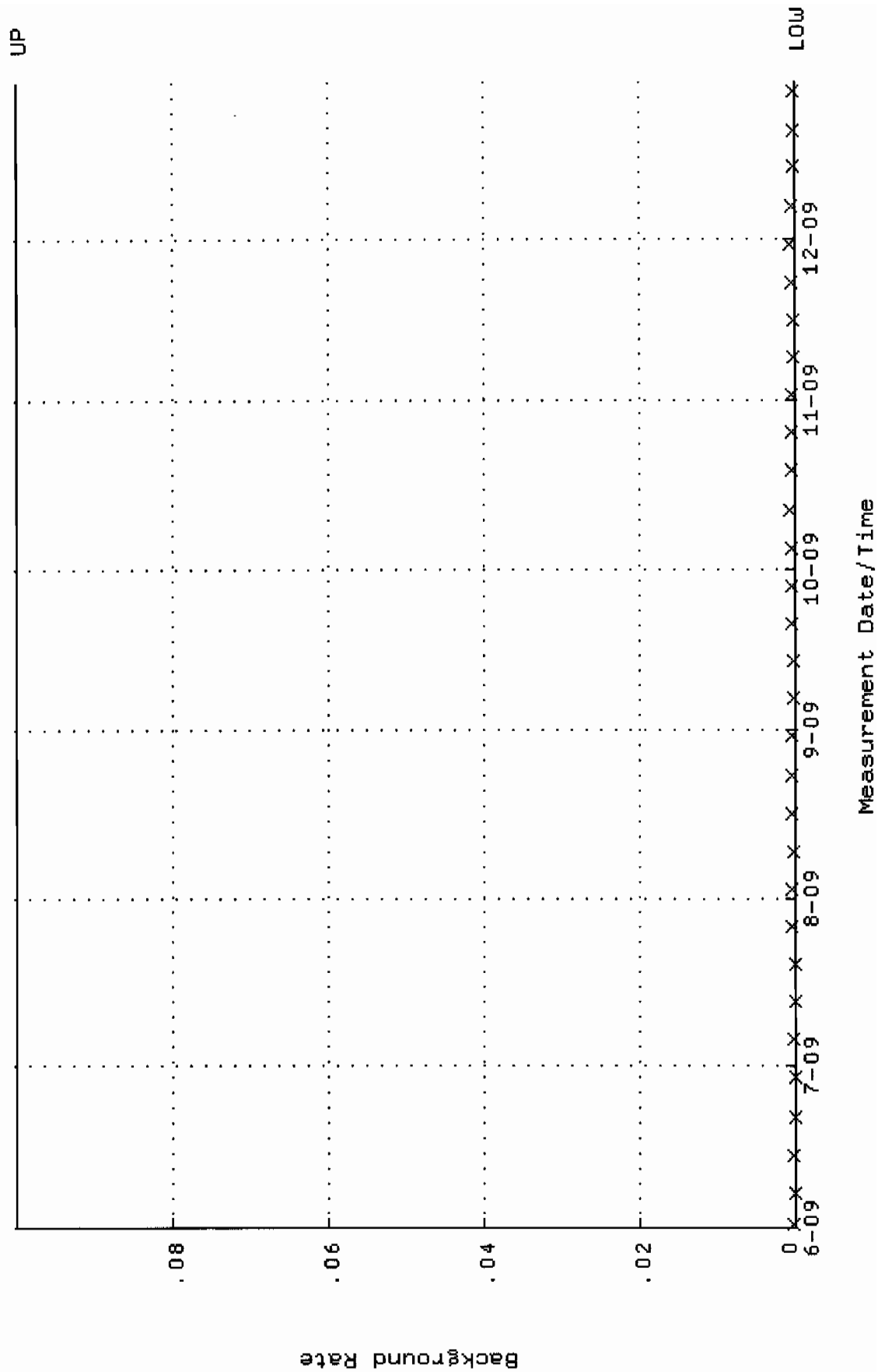




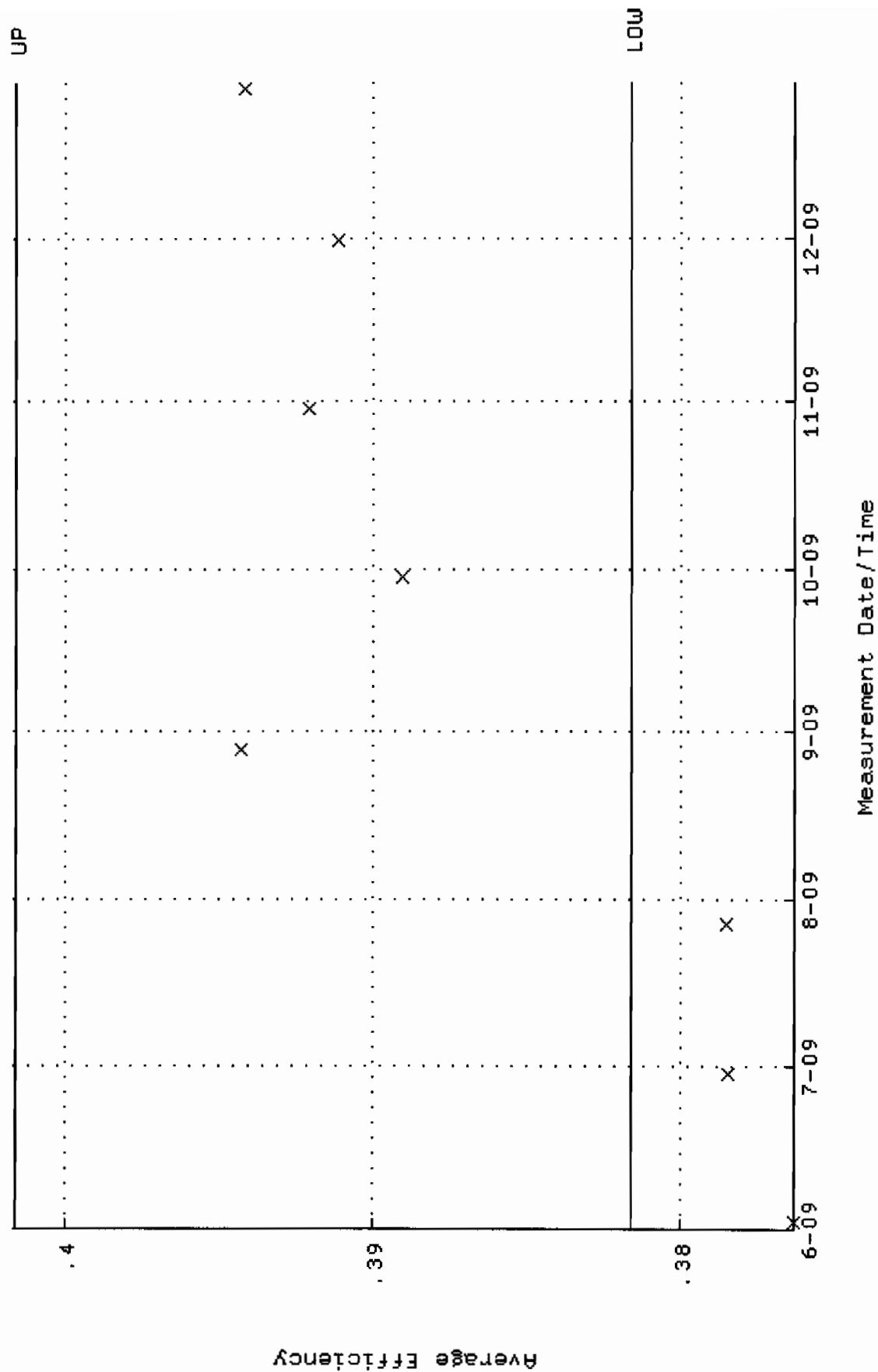
QA filename : DKA100:[ENV\_ALPHA.QA.W]W224.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:18:26 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 85.3066 through 94.2862



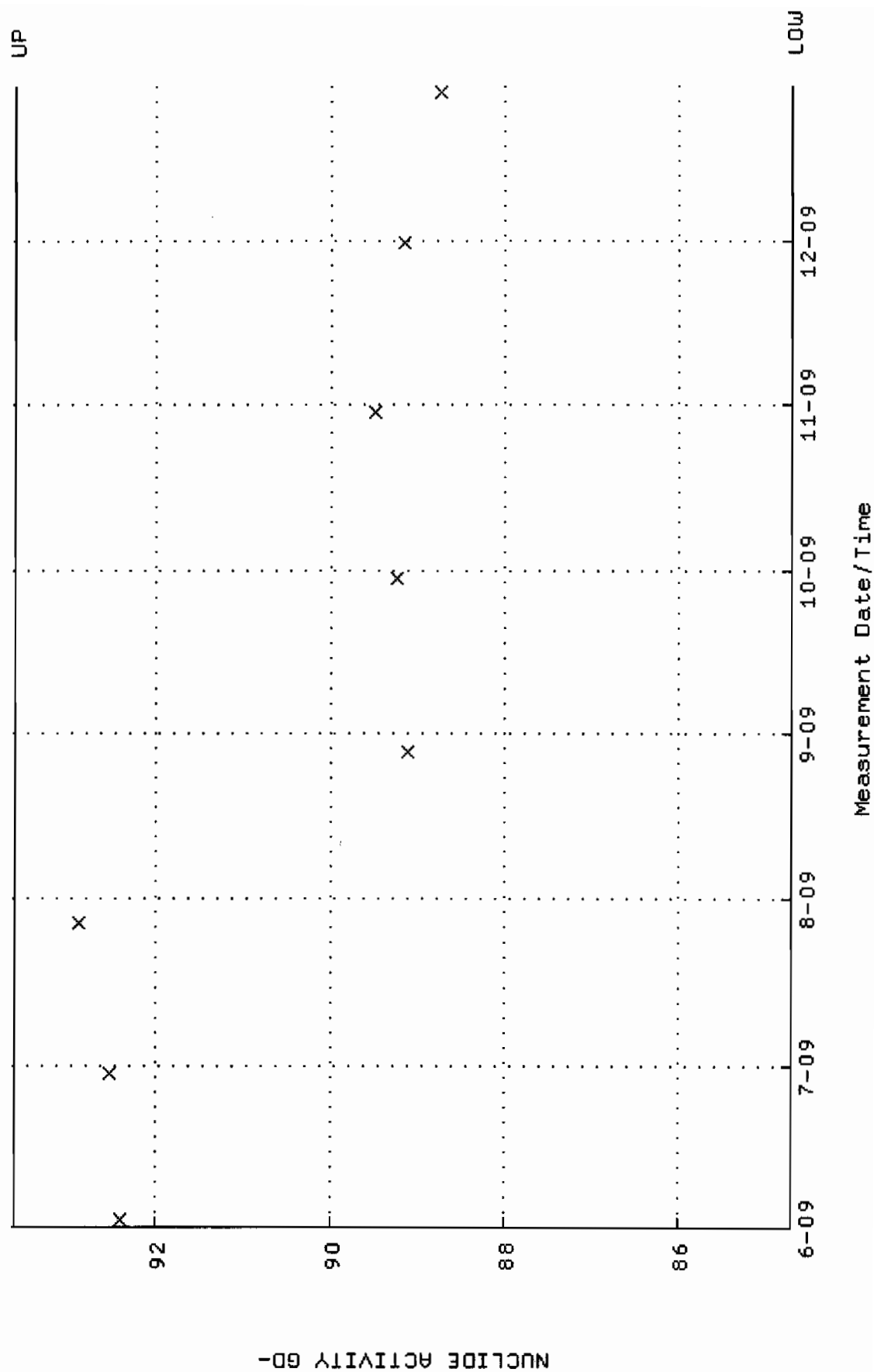
QA filename : DKA100:[ENV\_ALPHA.QA.B]B224.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:44:39 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



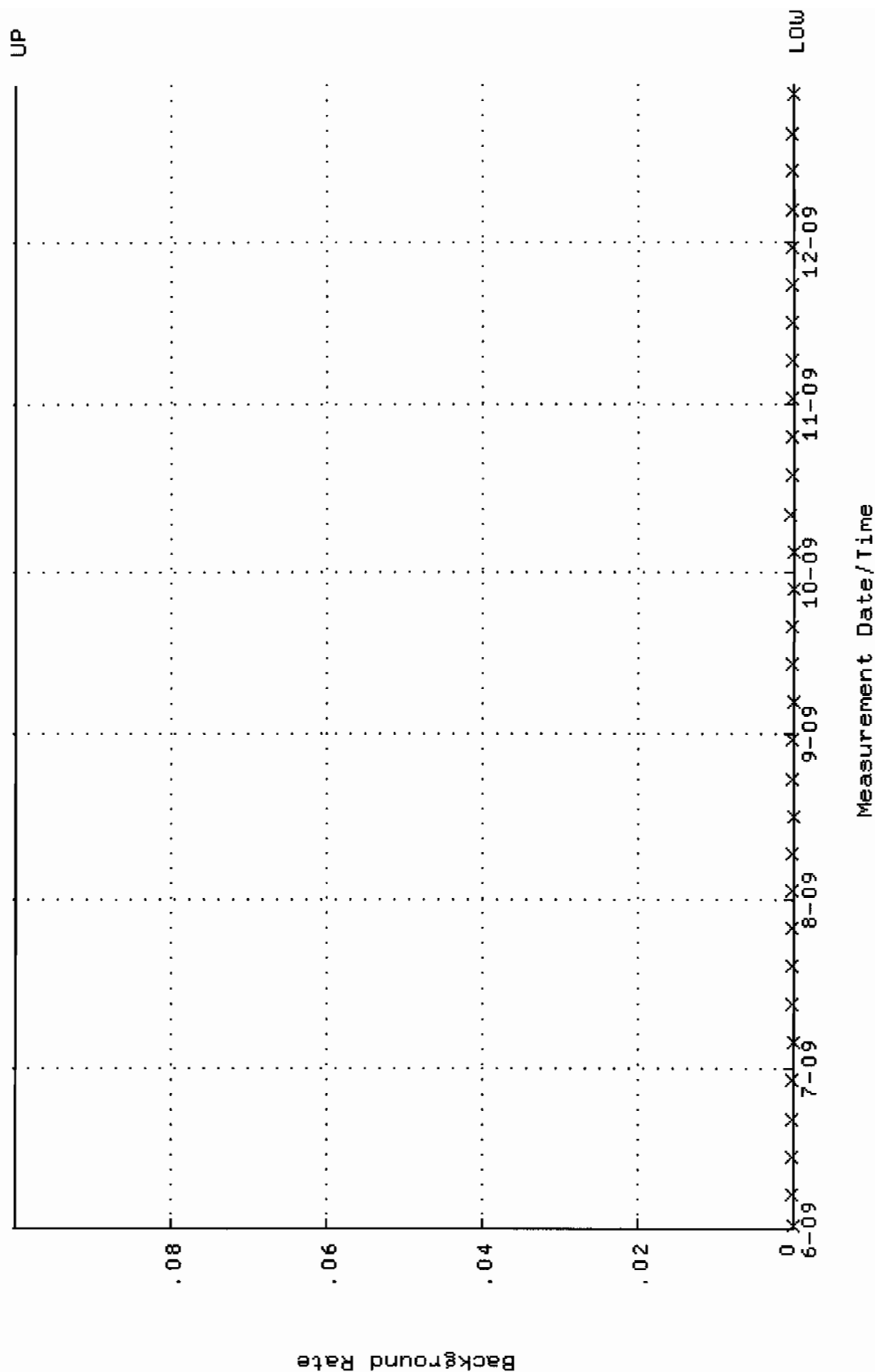
QA filename : DKA100:[ENV\_ALPHA.QA.W]W225.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUN-2009 11:18:31 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.381631 through 0.401631



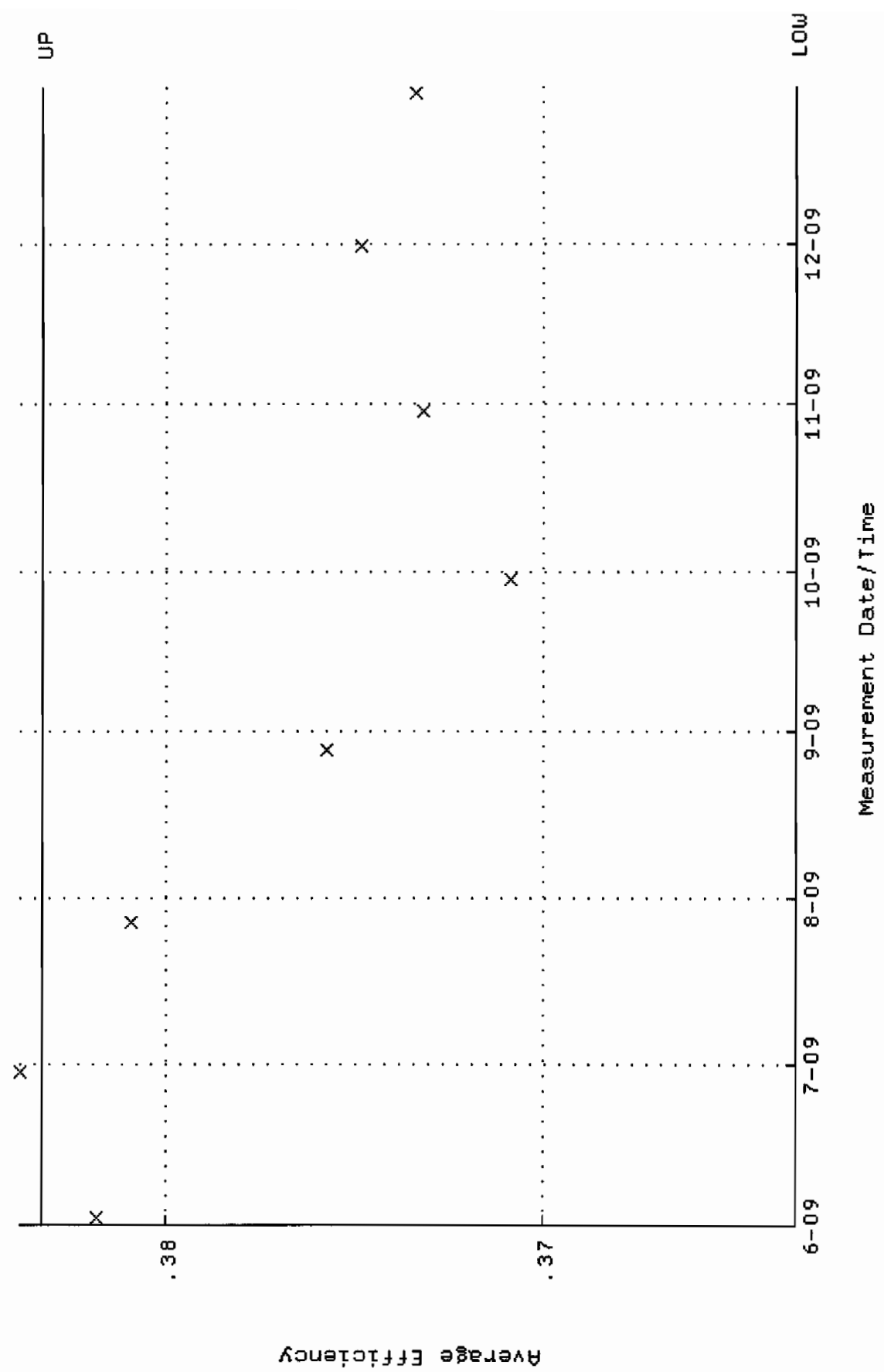
QA filename : DKA100:[ENV\_ALPHA.QA.W]W225.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:18:31 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 84.7082 through 93.6248



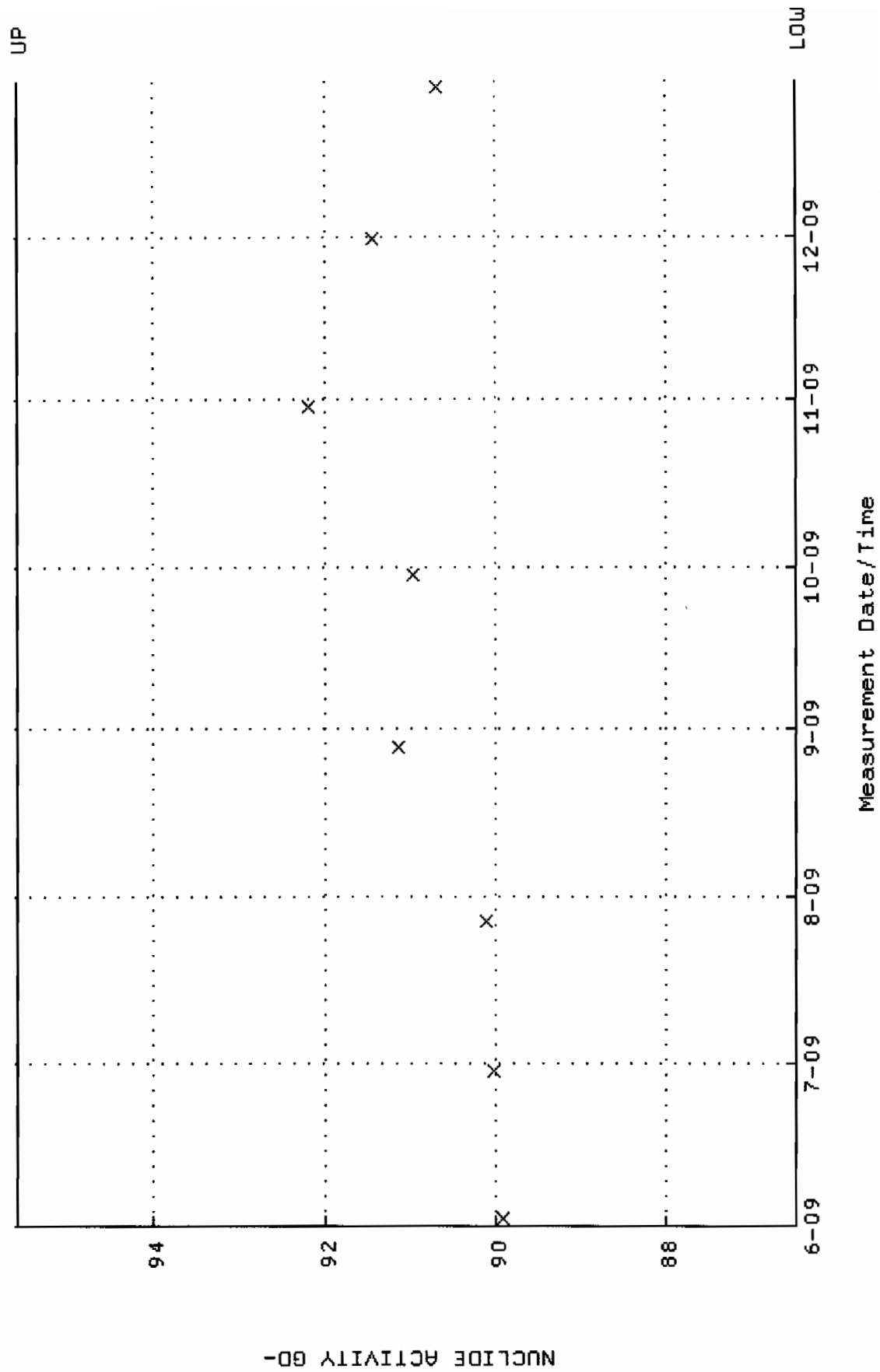
QA filename : DKA100:[ENV\_ALPHA.QA.B]B225.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:44:43 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



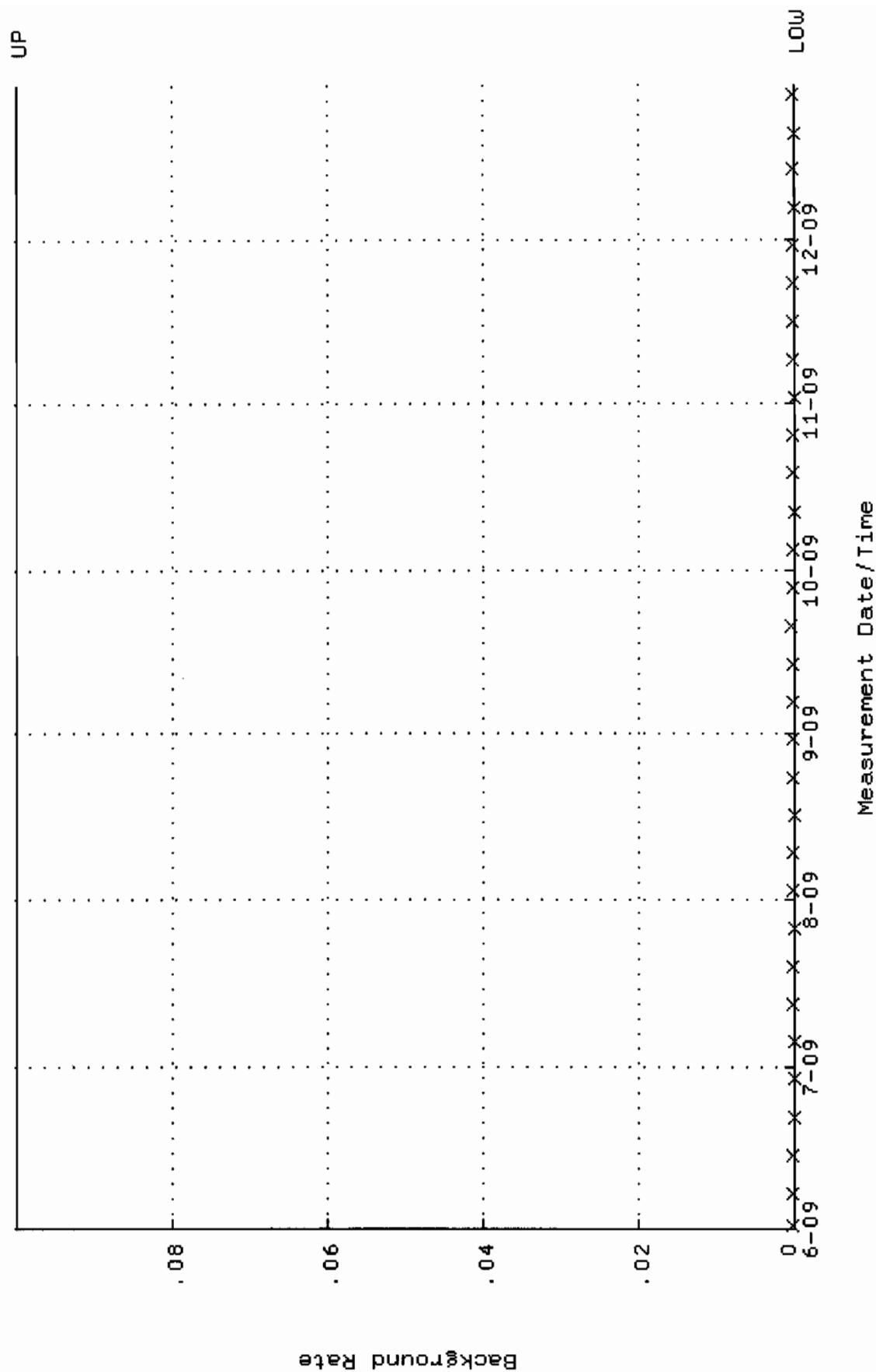
QA filename : DKA100:[ENV\_ALPHA.QA.W]W226.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUN-2009 11:18:36 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.363285 through 0.383285



QA filename : DKA100:[ENV\_ALPHA.QA.W]W226.QAF;1  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:18:36 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 86.4888 through 95.5928

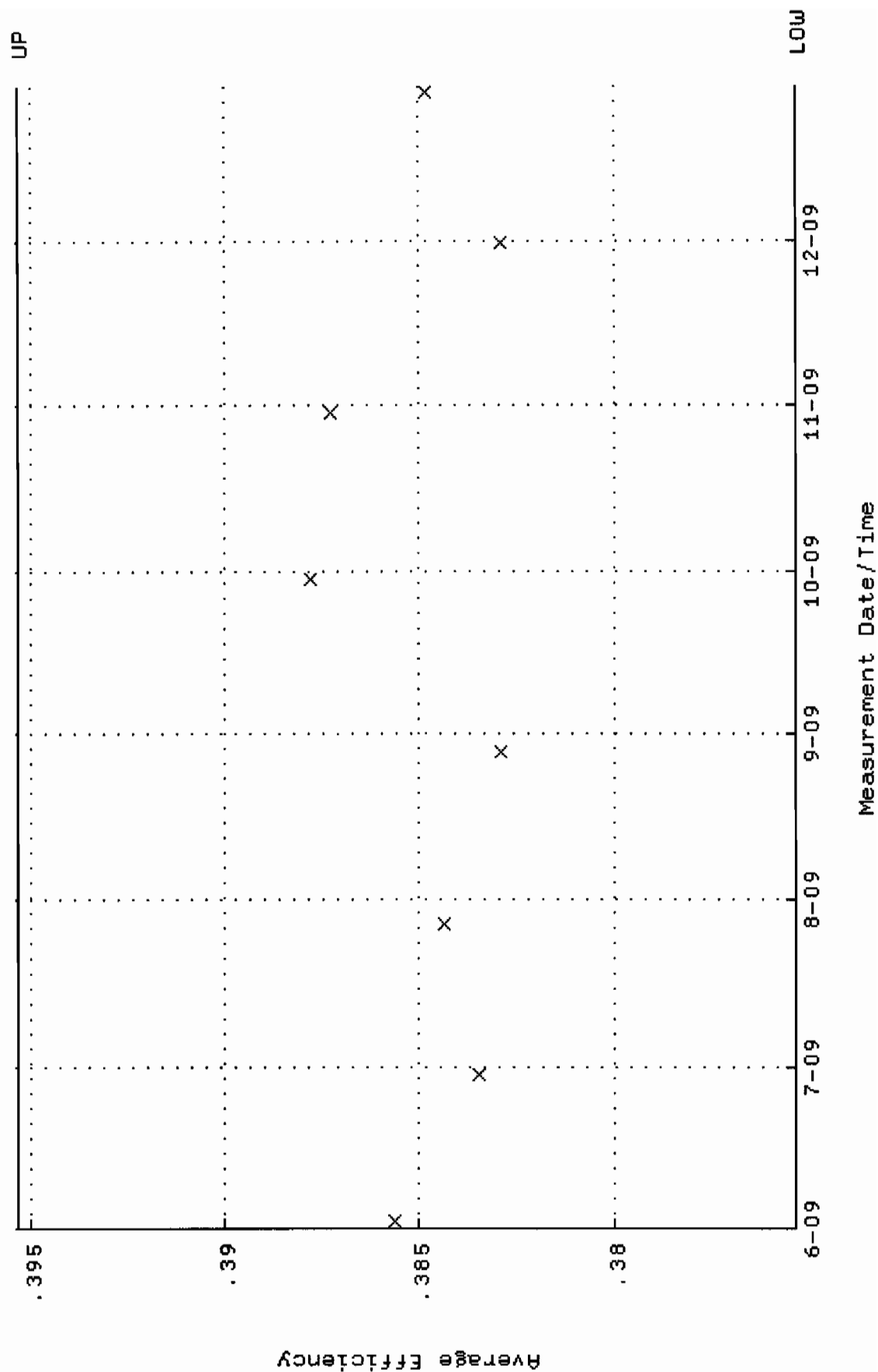


QA filename : DKA100:[ENV\_ALPHA.QA.B]B226.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:44:47 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000

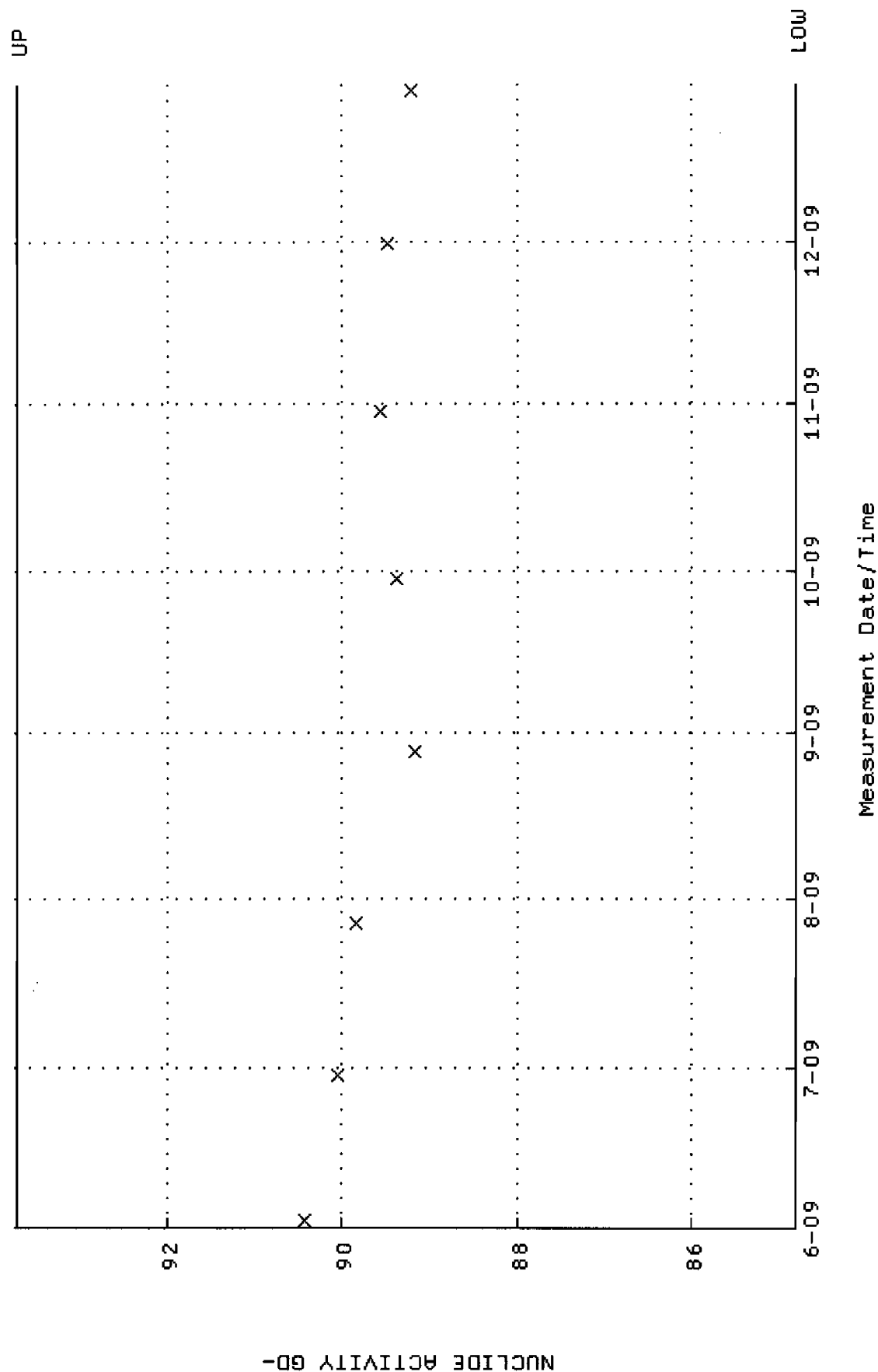




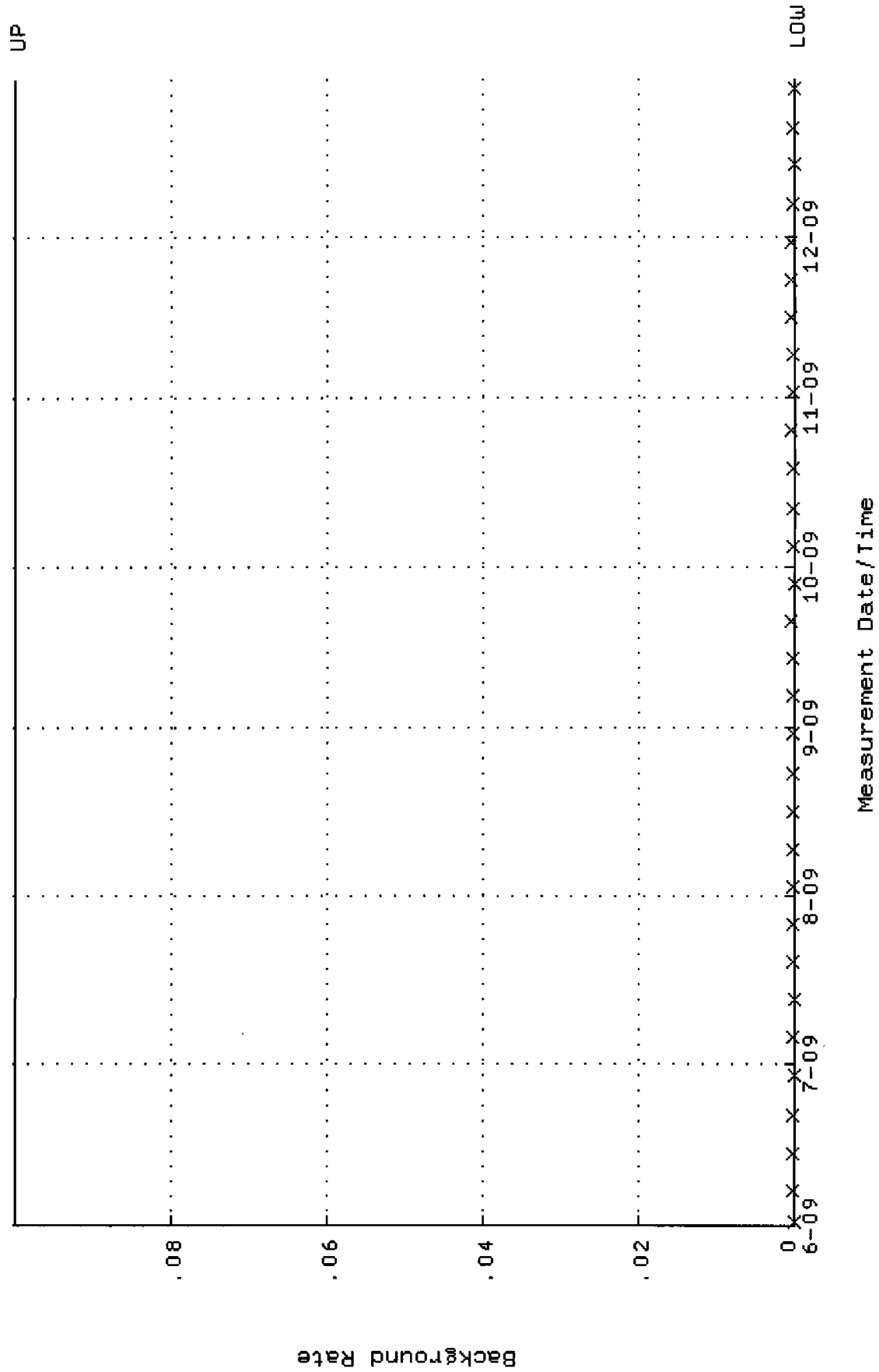
QA filename : DKA100:[ENV-ALPHA.QA.W]W227.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUN-2009 11:18:41 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.375328 through 0.395328



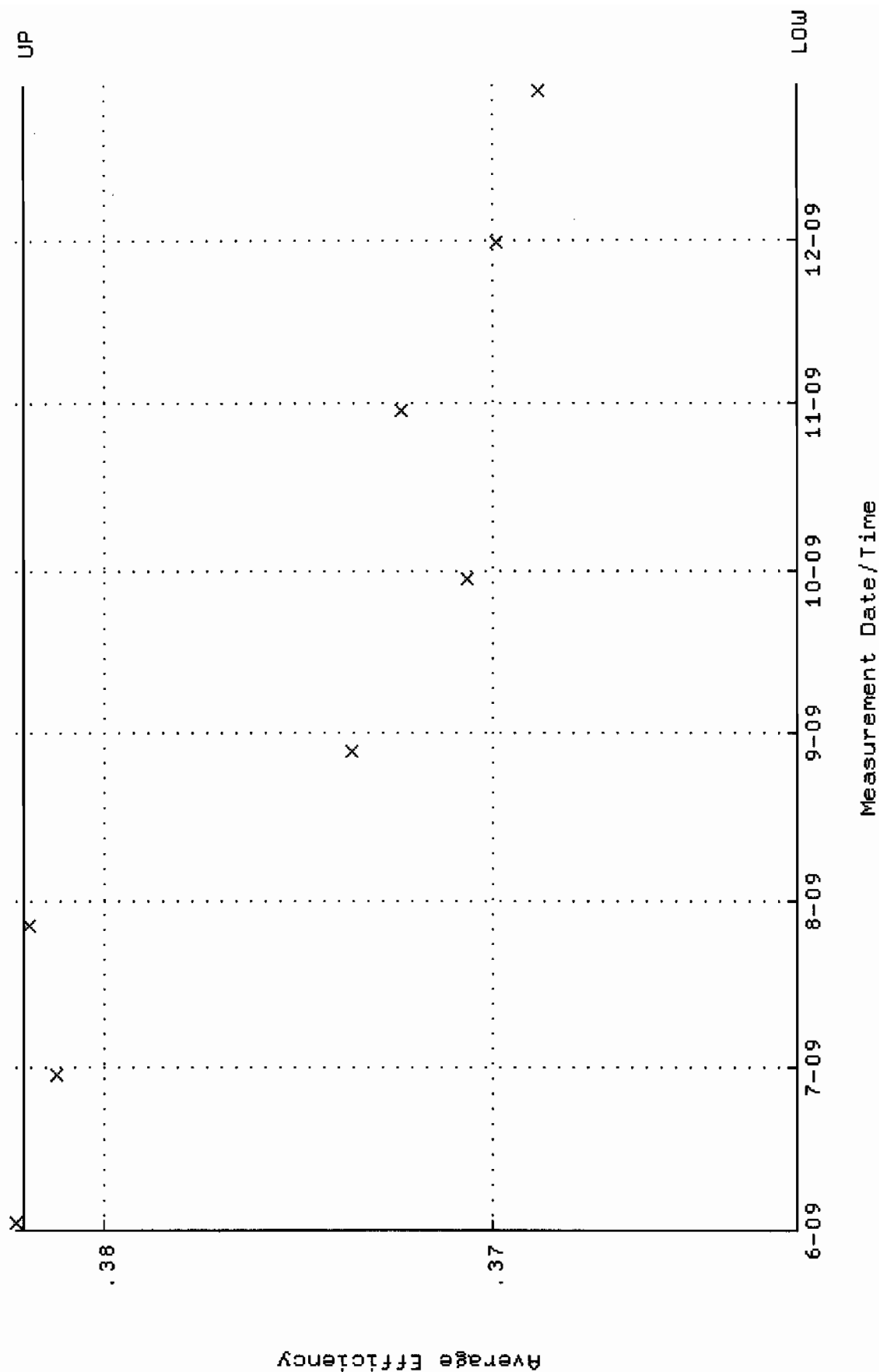
QA filename : DKA100:[ENV\_ALPHA.QA.W]W227.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:18:41 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 84.8011 through 93.7275



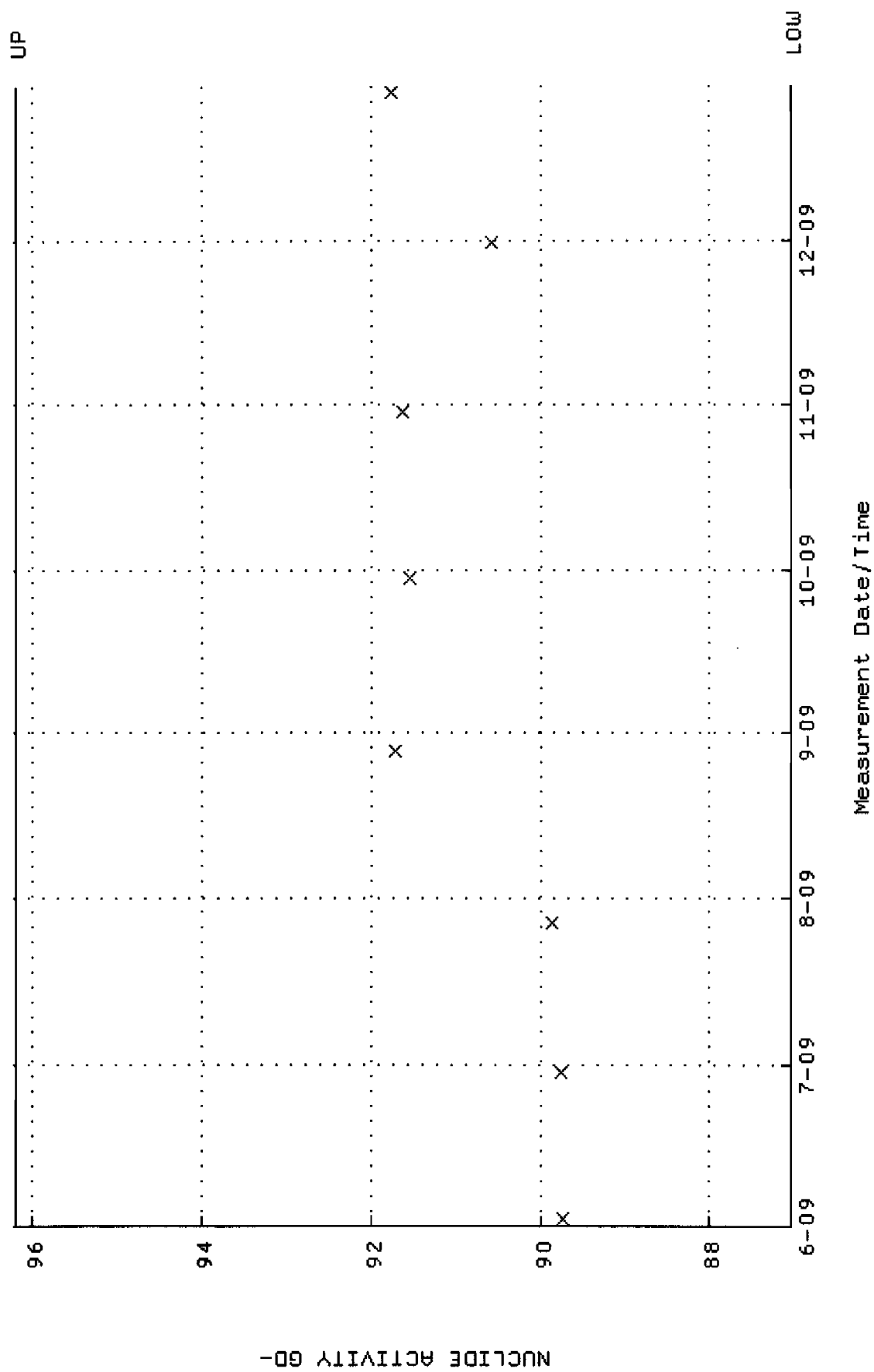
QA filename : DKA100:[ENV\_ALPHA.QA.B]B227.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:44:52 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



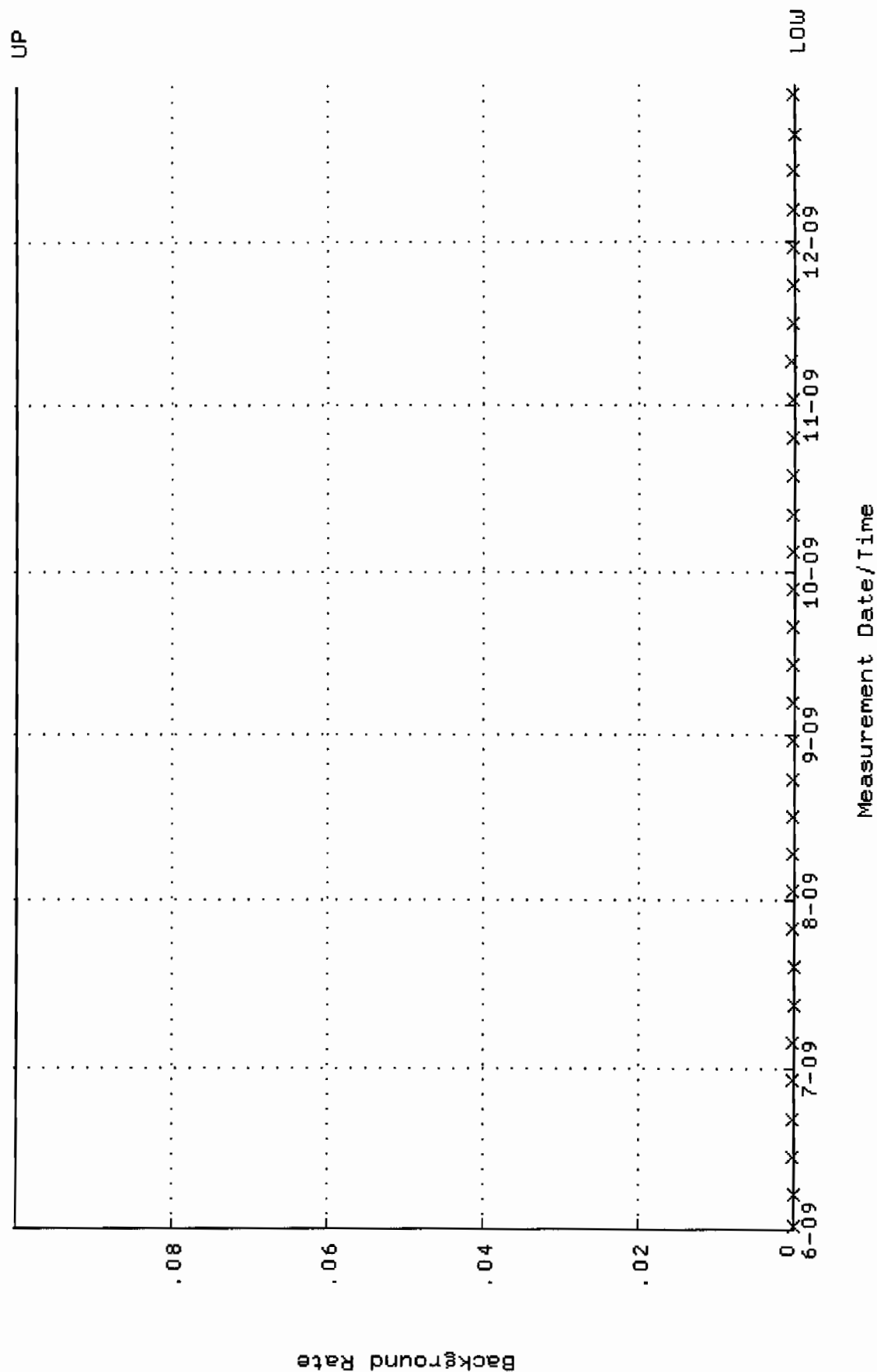
QA filename : DKA100:[ENV\_ALPHA.QA.W]W228.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUN-2009 11:18:47 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.362134 through 0.382134



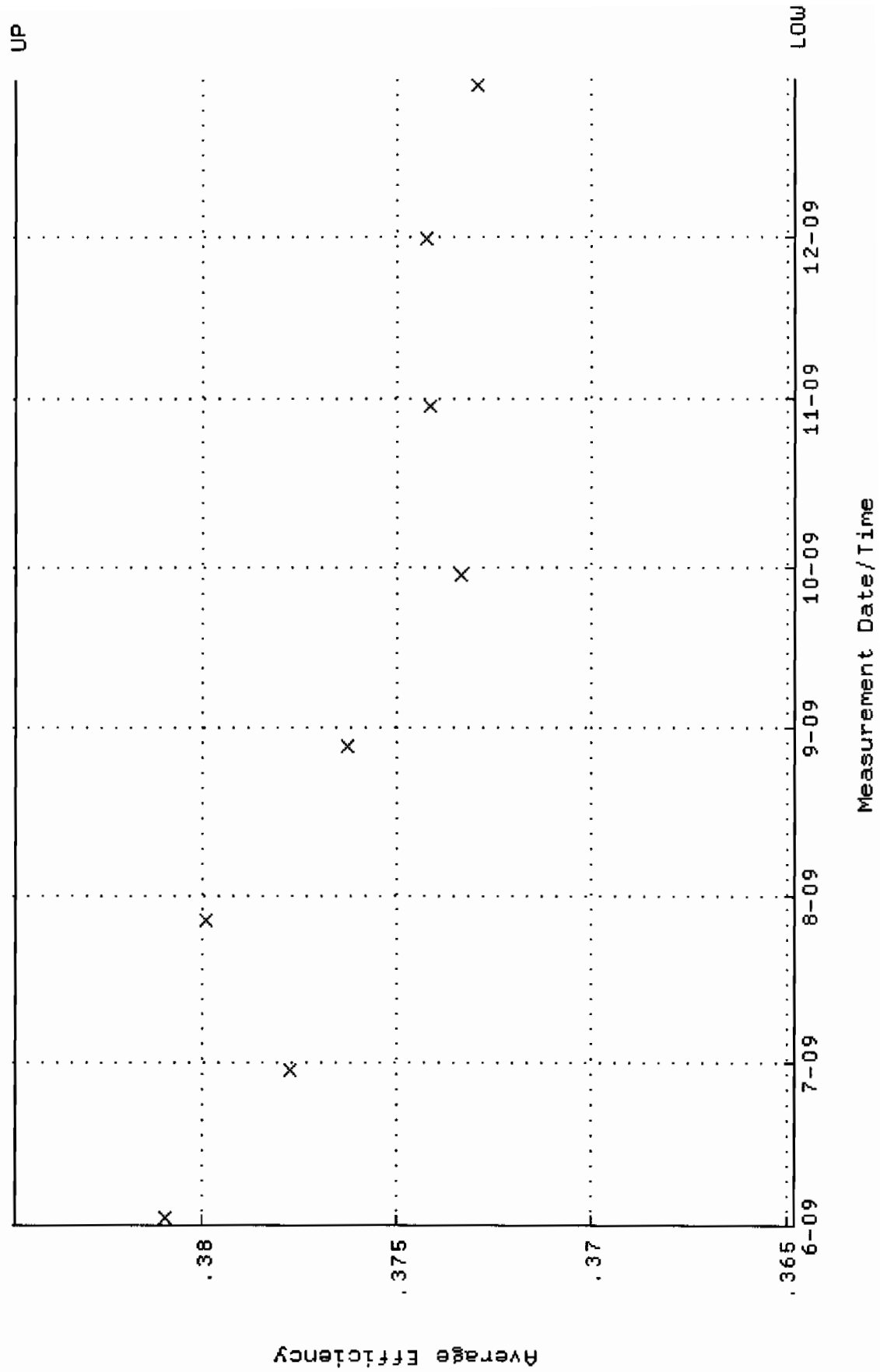
QA filename : DKA100:[ENV\_ALPHA.QA.U]W228.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:18:47 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 87.0370 through 96.1988



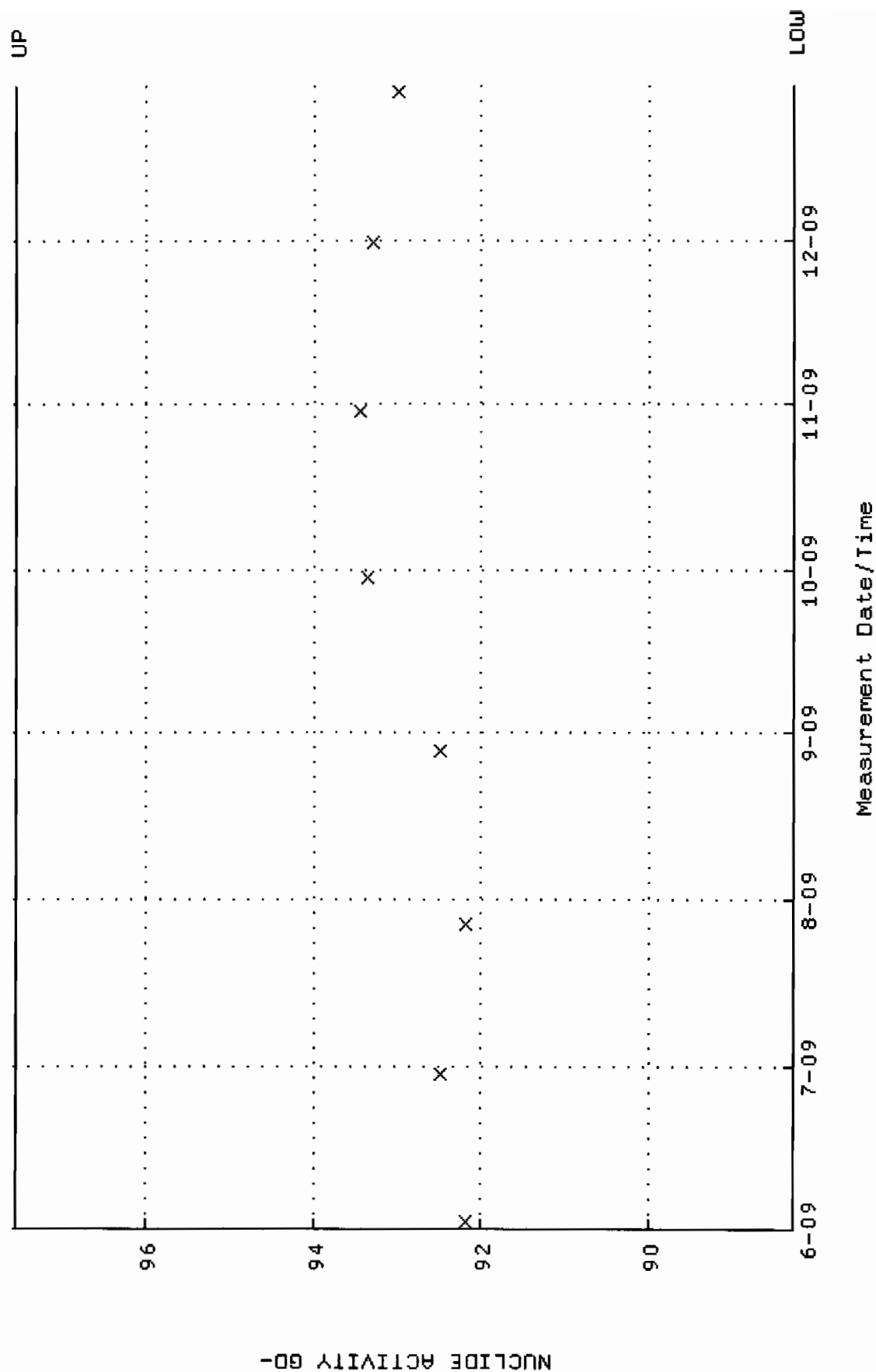
QA filename : DKA100:[ENV\_ALPHA.QA.B]B228.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:44:57 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



QA filename : DKA100:[ENV\_ALPHA.QA.W]w229.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUN-2009 11:18:53 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.364789 through 0.384789

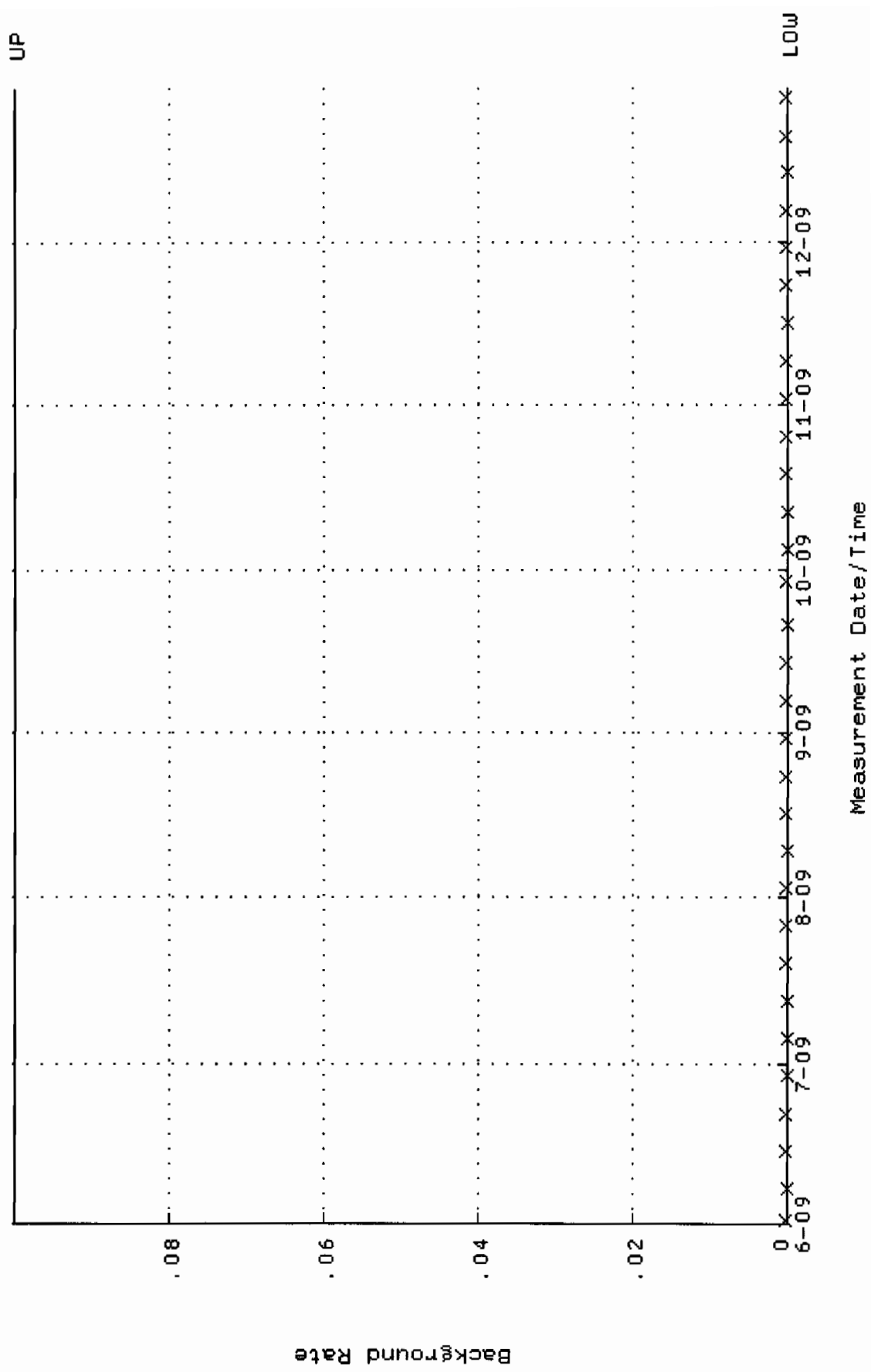


QA filename : DKA100:[ENV\_ALPHA.QA.W]w229.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:18:53 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 88.2691 through 97.5605

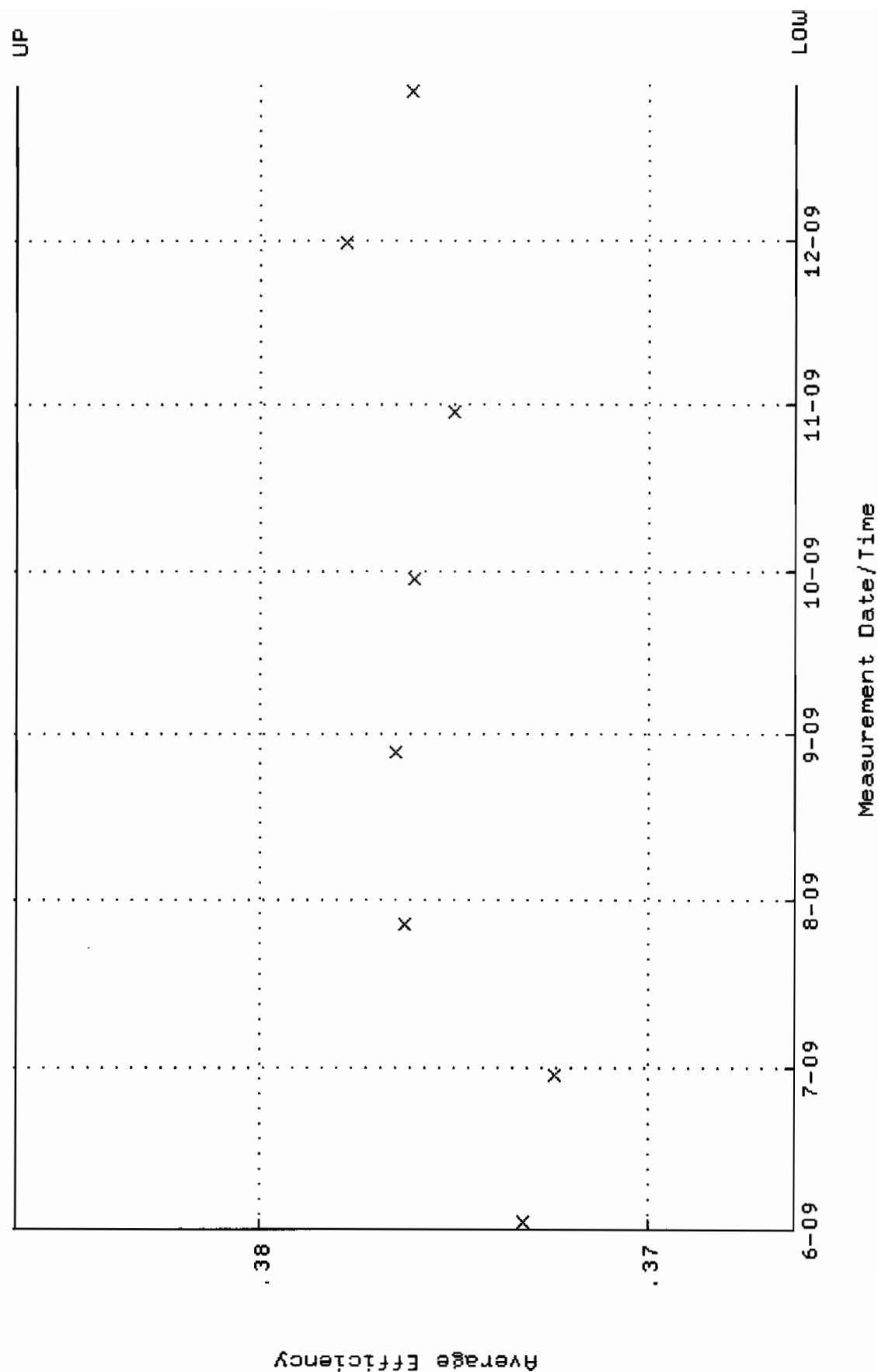




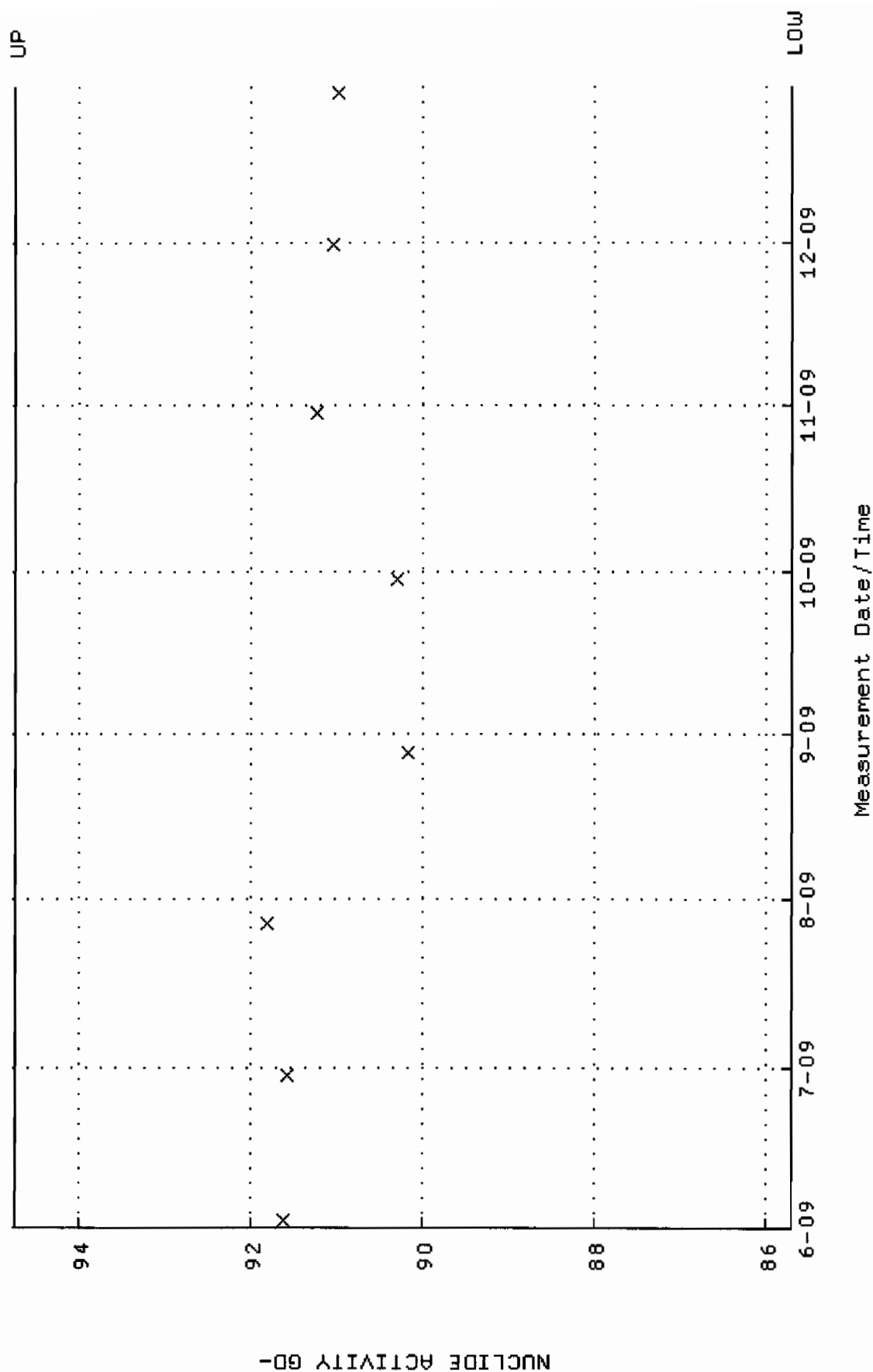
QA filename : DKA100:[ENV\_ALPHA.QA.B]B229.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:45:01 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



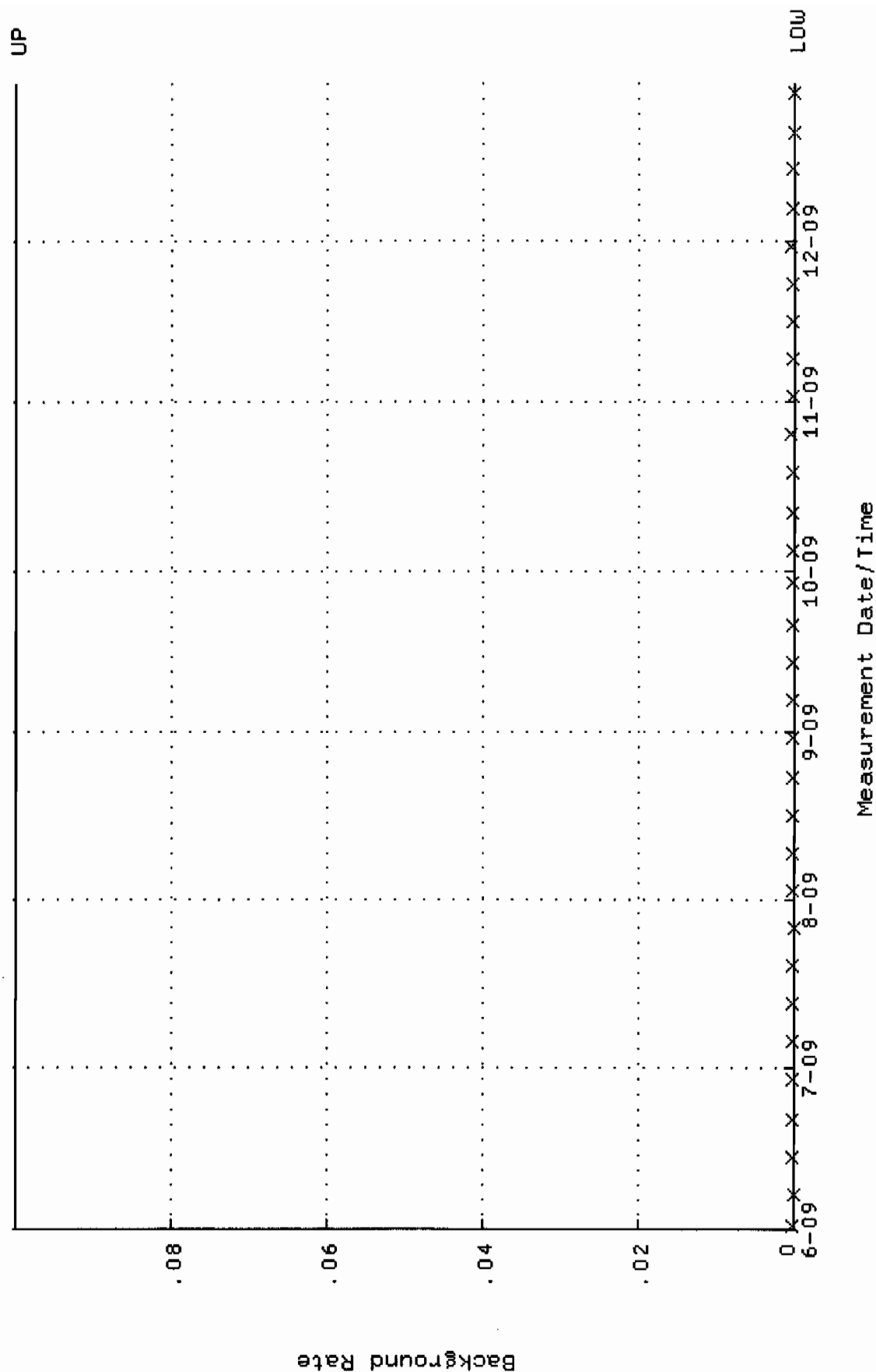
QA filename : DKA100:[ENV\_ALPHA.QA.W]W230.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUN-2009 11:18:58 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.366240 through 0.386240



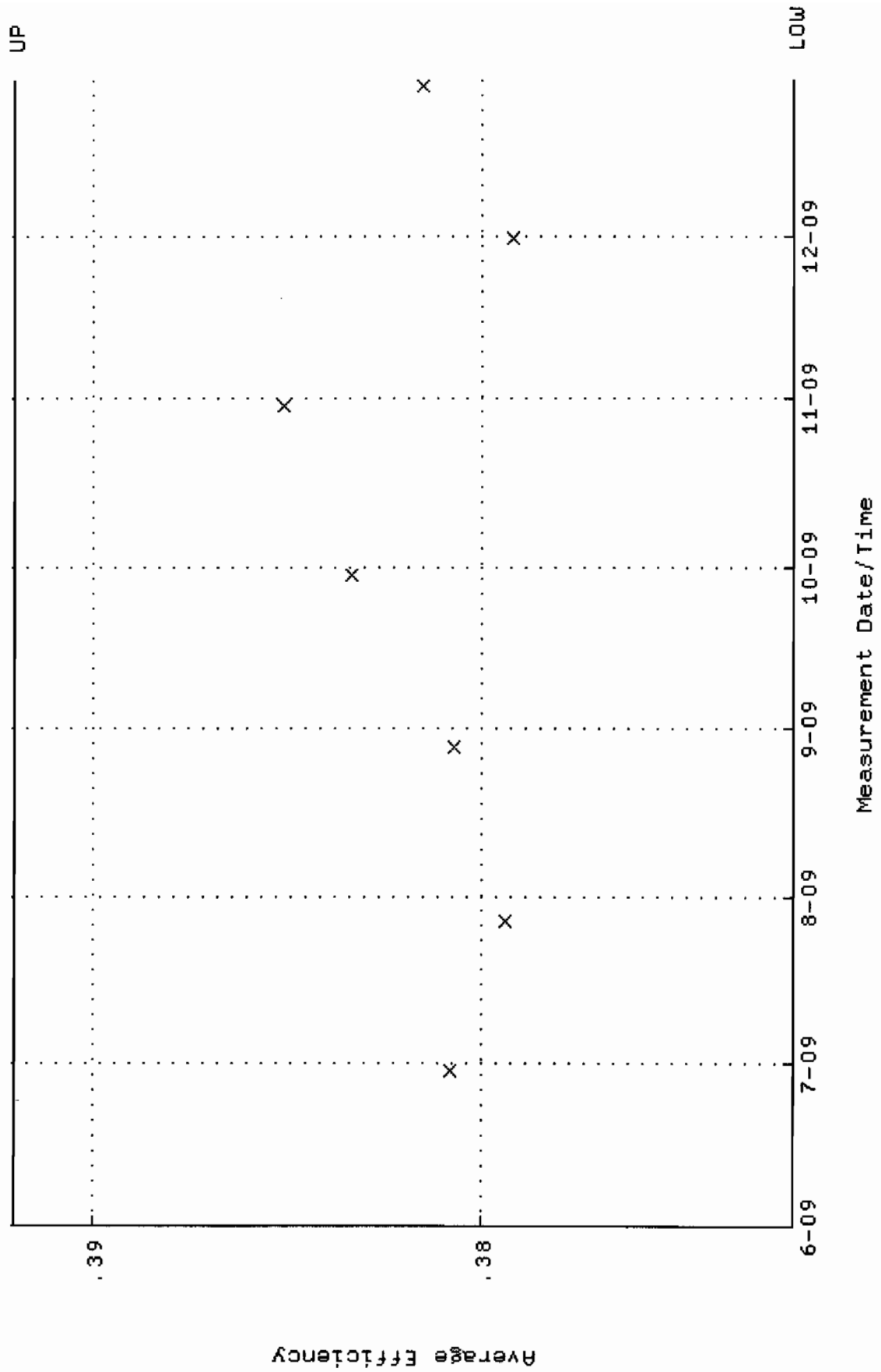
QA filename : DKA100:[ENV\_ALPHA.QA.W]W230.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:18:58 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 85.7127 through 94.7351



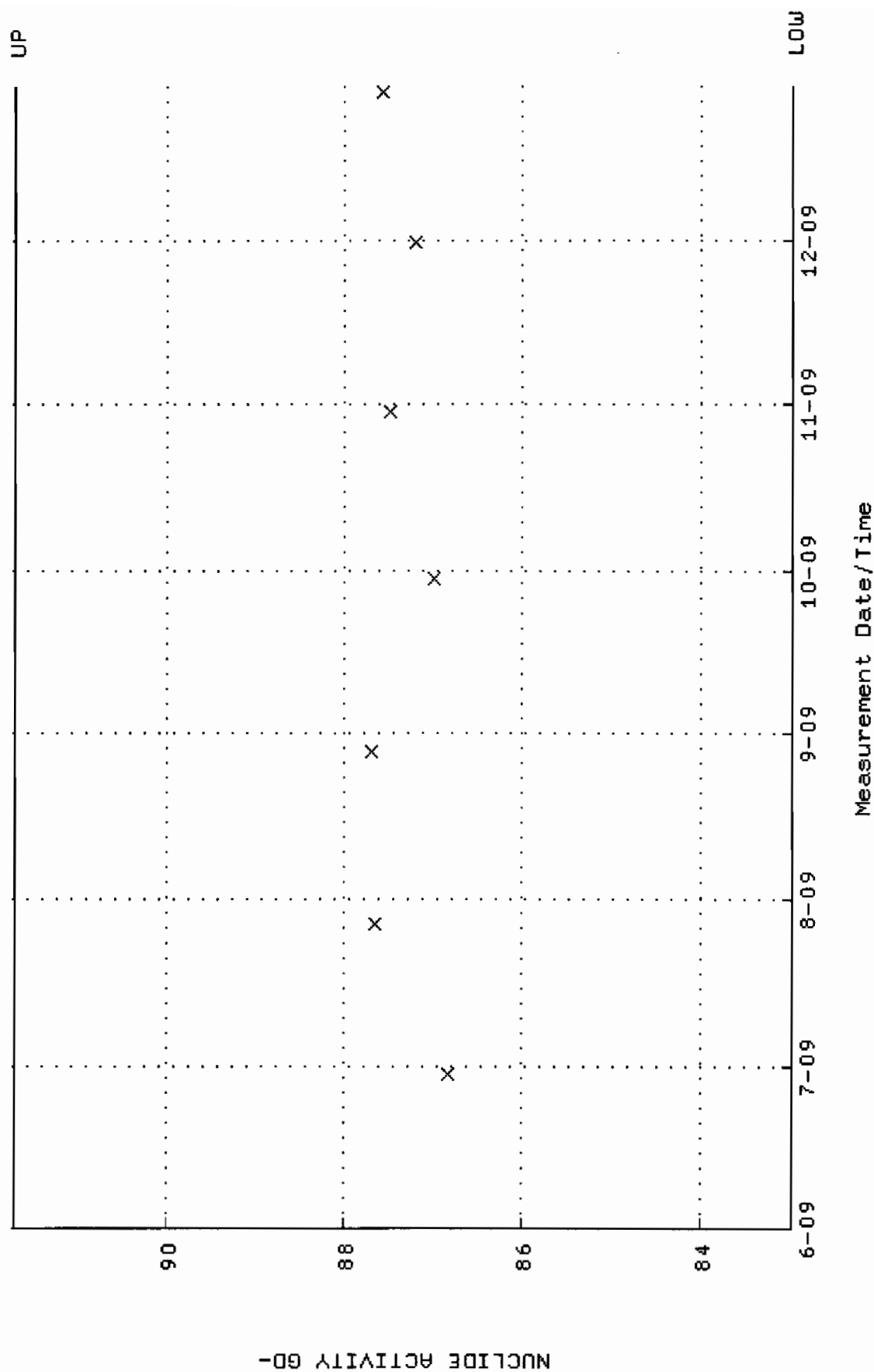
QA filename : DKA100:[ENV\_ALPHA.QA.B]B230.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:45:05 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



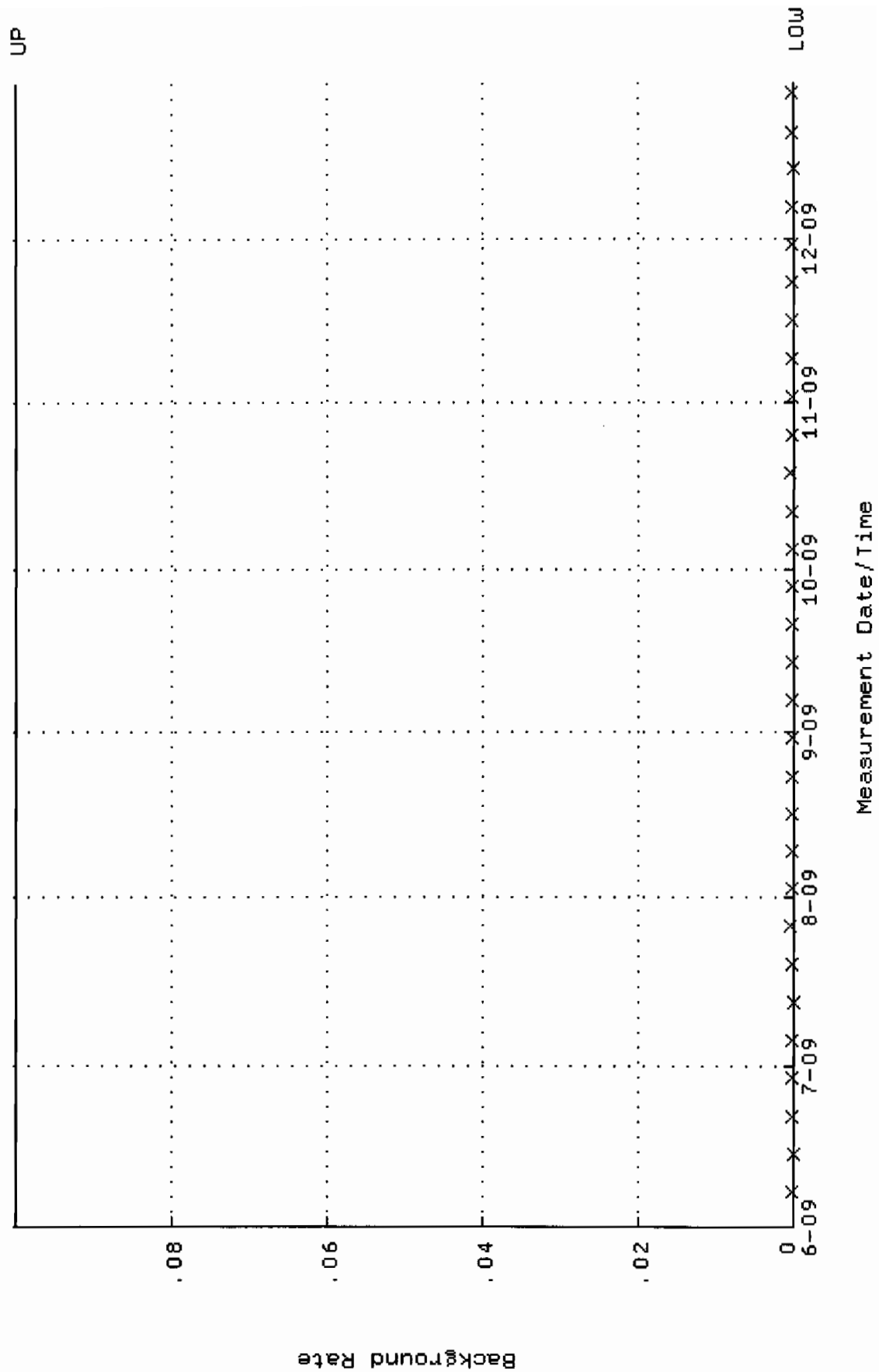
QA filename : DKA100:[ENV\_ALPHA.QA.W]W233.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 29-JUN-2009 11:08:39 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.372001 through 0.392001



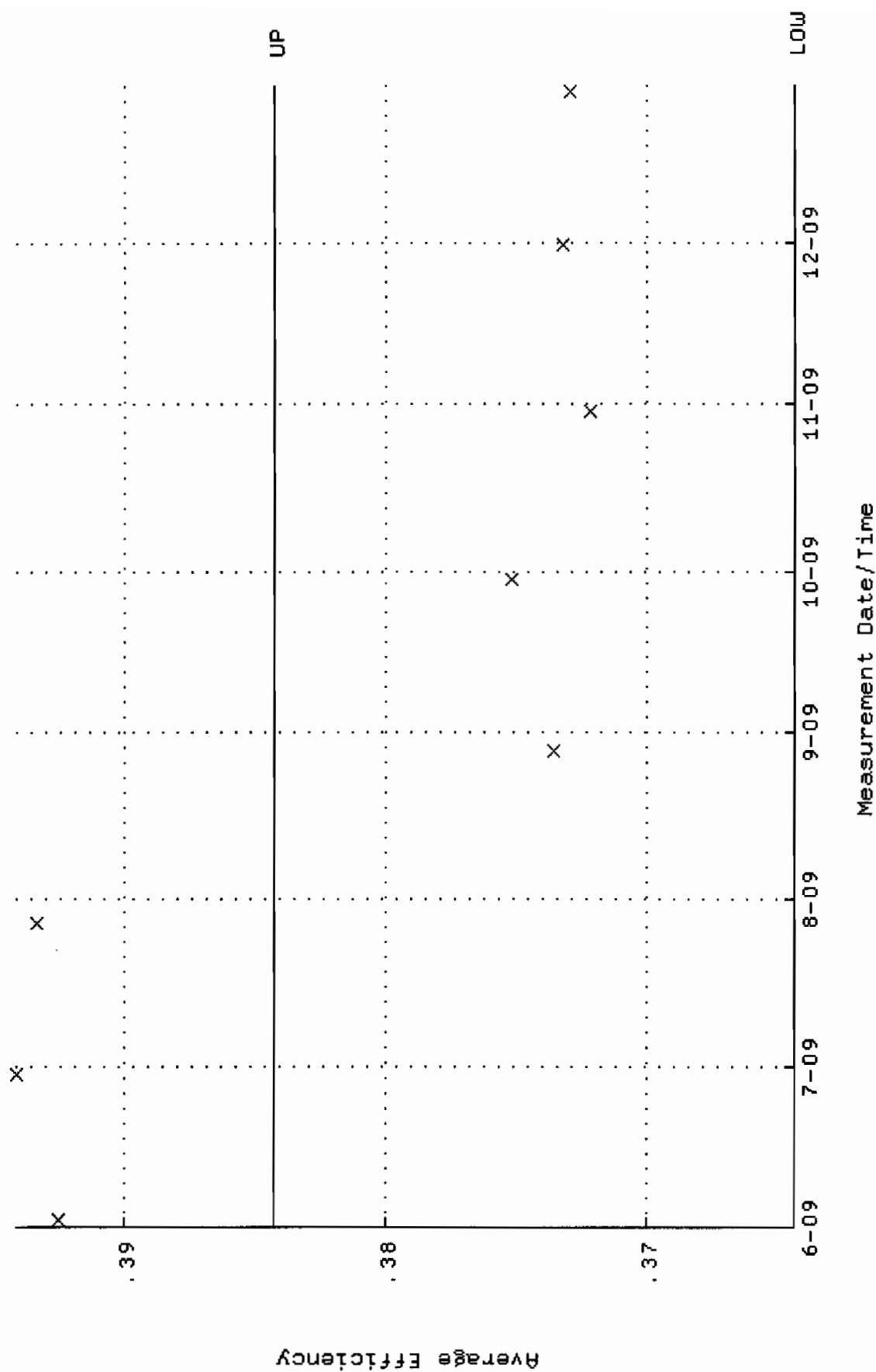
QA filename : DKA100:[ENV-ALPHA.QA.W]W233.QAF;1  
Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
Start/End Dates : 29-JUN-2009 11:08:39 through 29-DEC-2009 12:00:00  
Lower/Upper Lmts: 82.9652 through 91.6984



QA filename : DKA100:[ENV\_ALPHA.QA.B]B233.QAF;1  
Parameter Name : BACKRATE (Background Rate)  
Start/End Dates : 7-JUN-2009 17:16:56 through 29-DEC-2009 12:00:00  
Lower/Upper Lmts: 0.000000E+00 through 0.100000

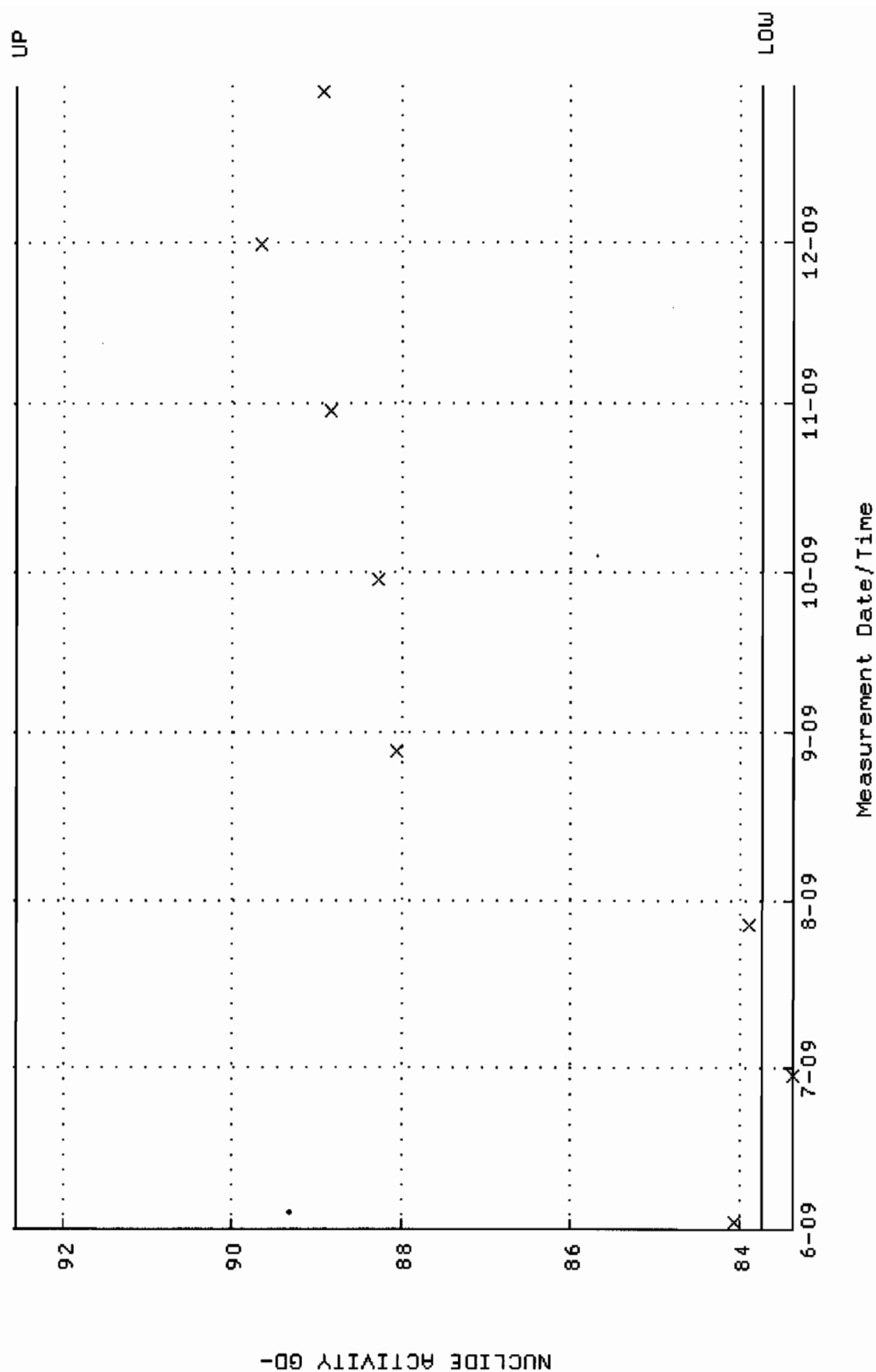


QA filename : DKA100:[ENV\_ALPHA.QA.W]W235.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUN-2009 11:19:23 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.364314 through 0.384314

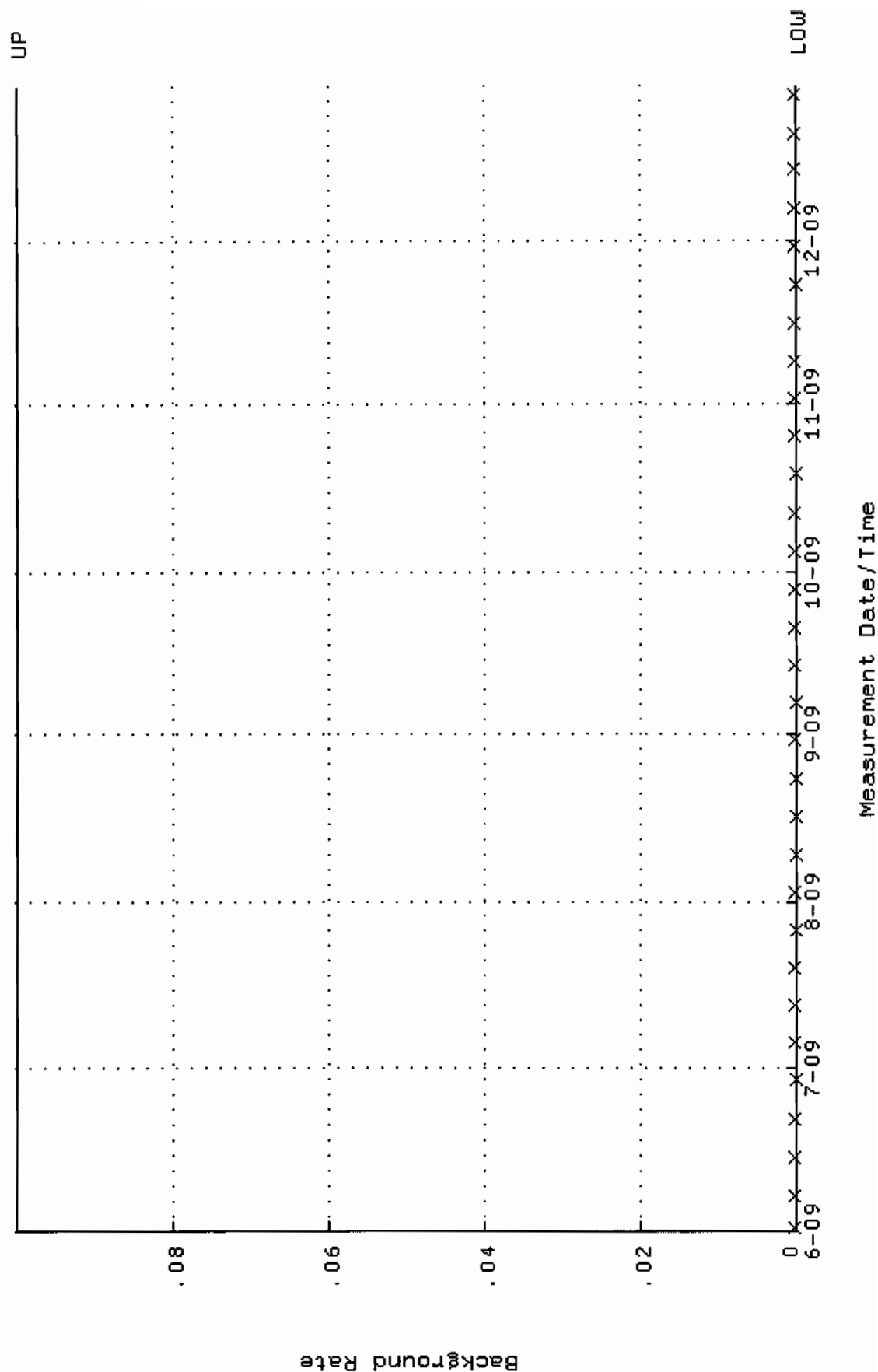




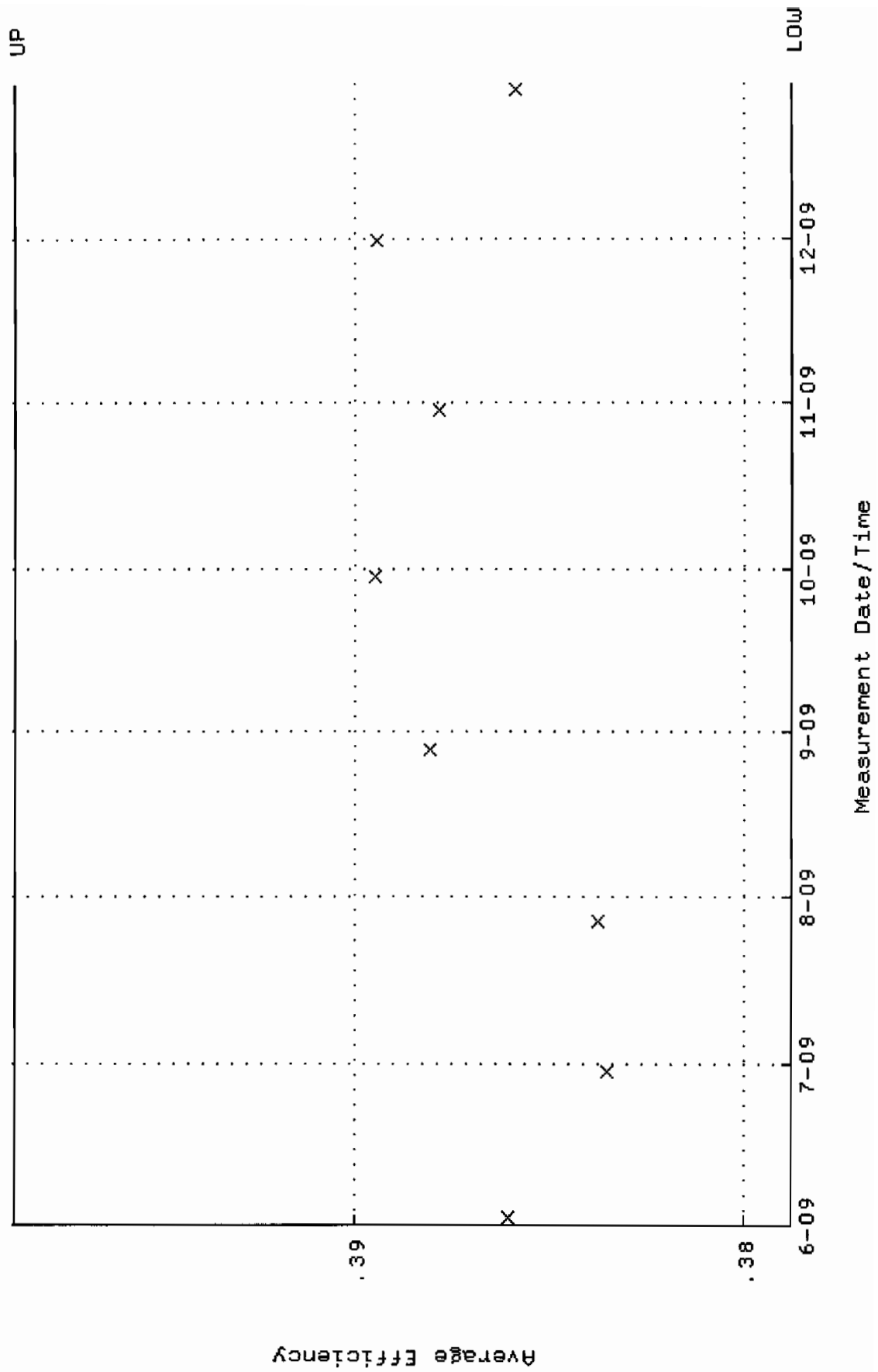
QA filename : DKA100:[ENV\_ALPHA.QA.W]W235.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:19:23 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 83.7416 through 92.5566



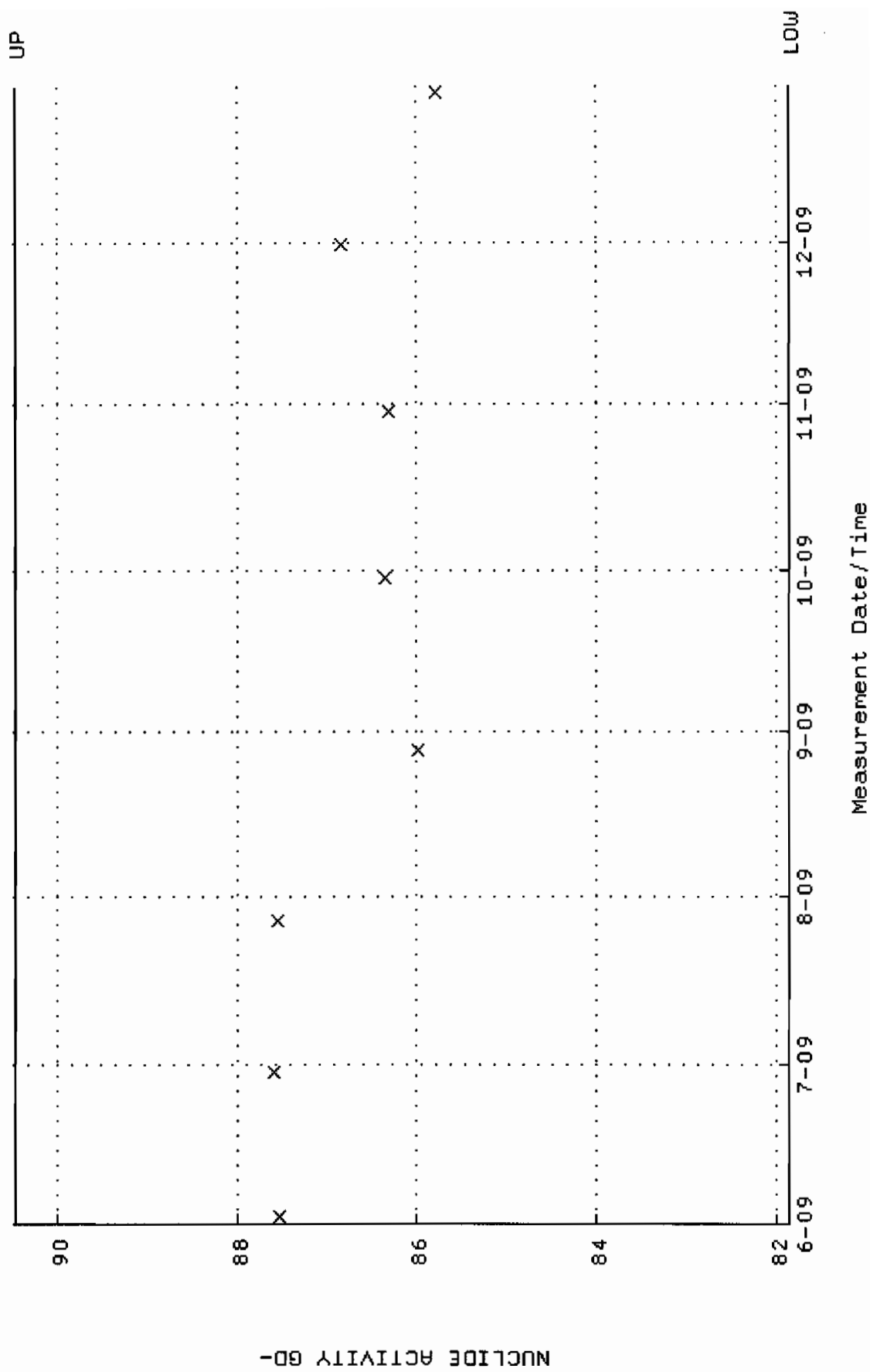
QA filename : DKA100:[ENV\_ALPHA.QA.B]B235.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:45:45 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



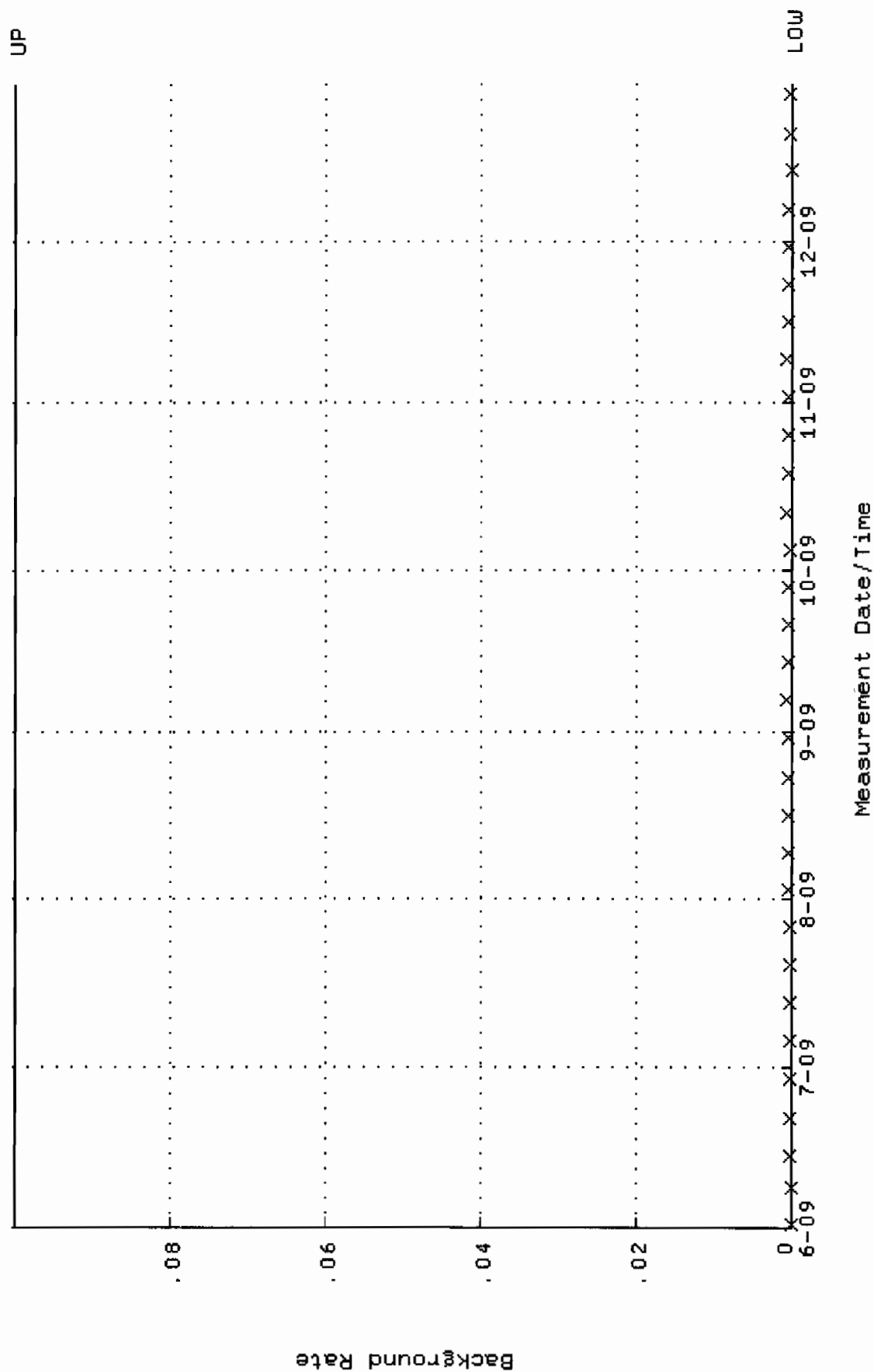
QA filename : DKA100:[ENV\_ALPHA.QA.W]W236.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUN-2009 11:19:29 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.378766 through 0.398766



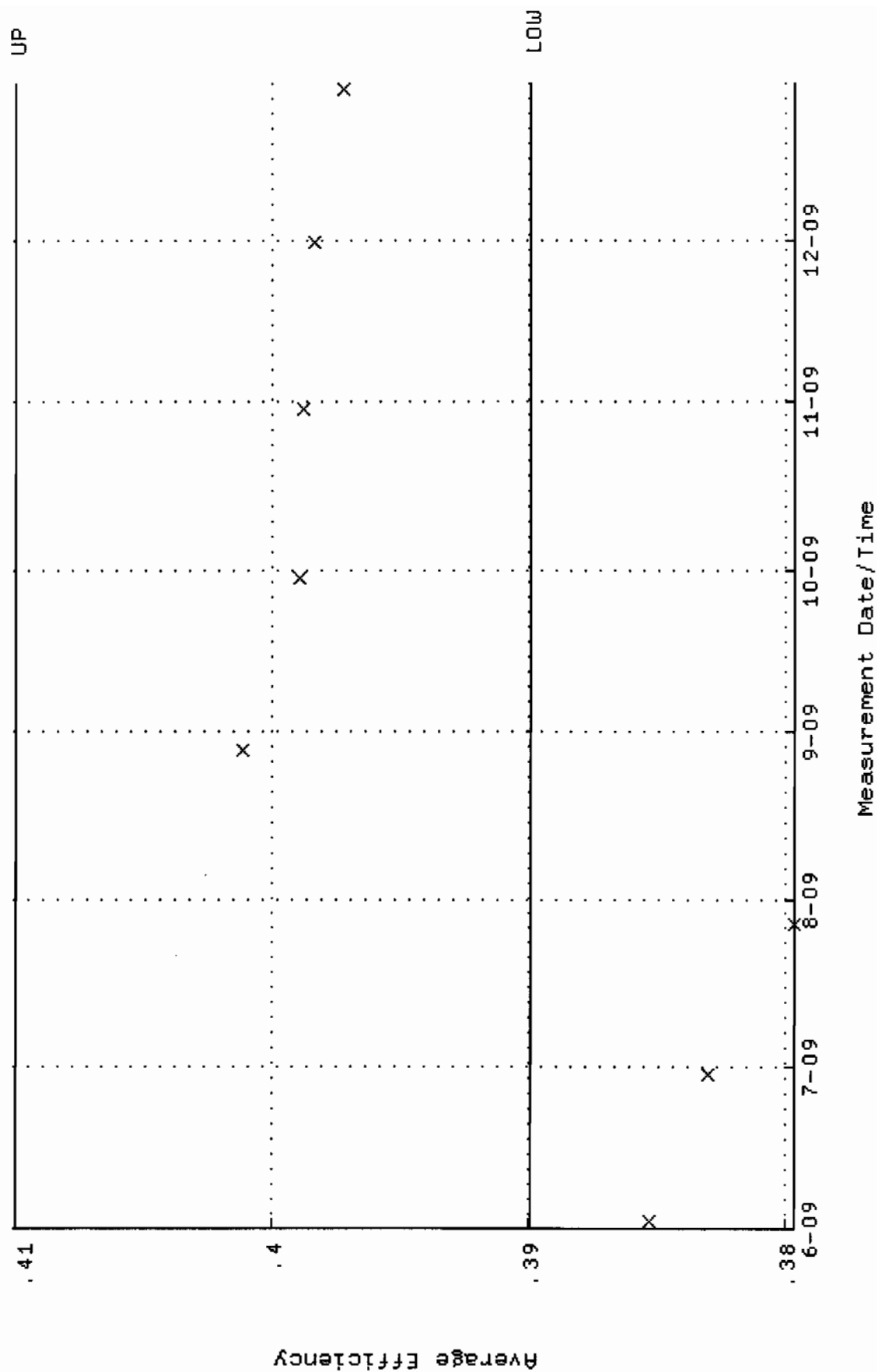
QA filename : DKA100:[ENV\_ALPHA.QA.W]W236.QAF;1  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:19:29 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 81.8490 through 90.4646



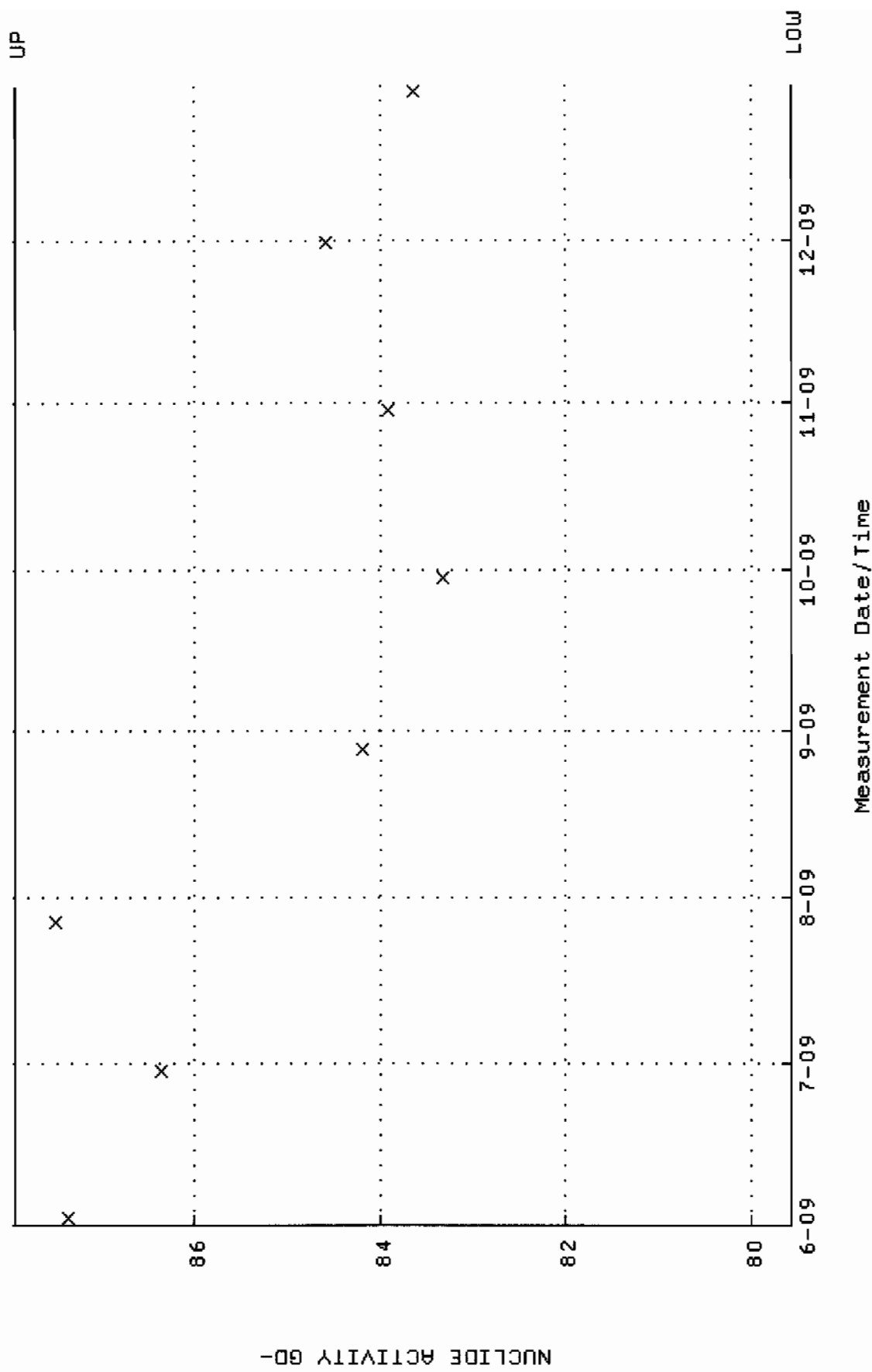
QA filename : DKA100:[ENV-ALPHA.QA.B]B236.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:45:52 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



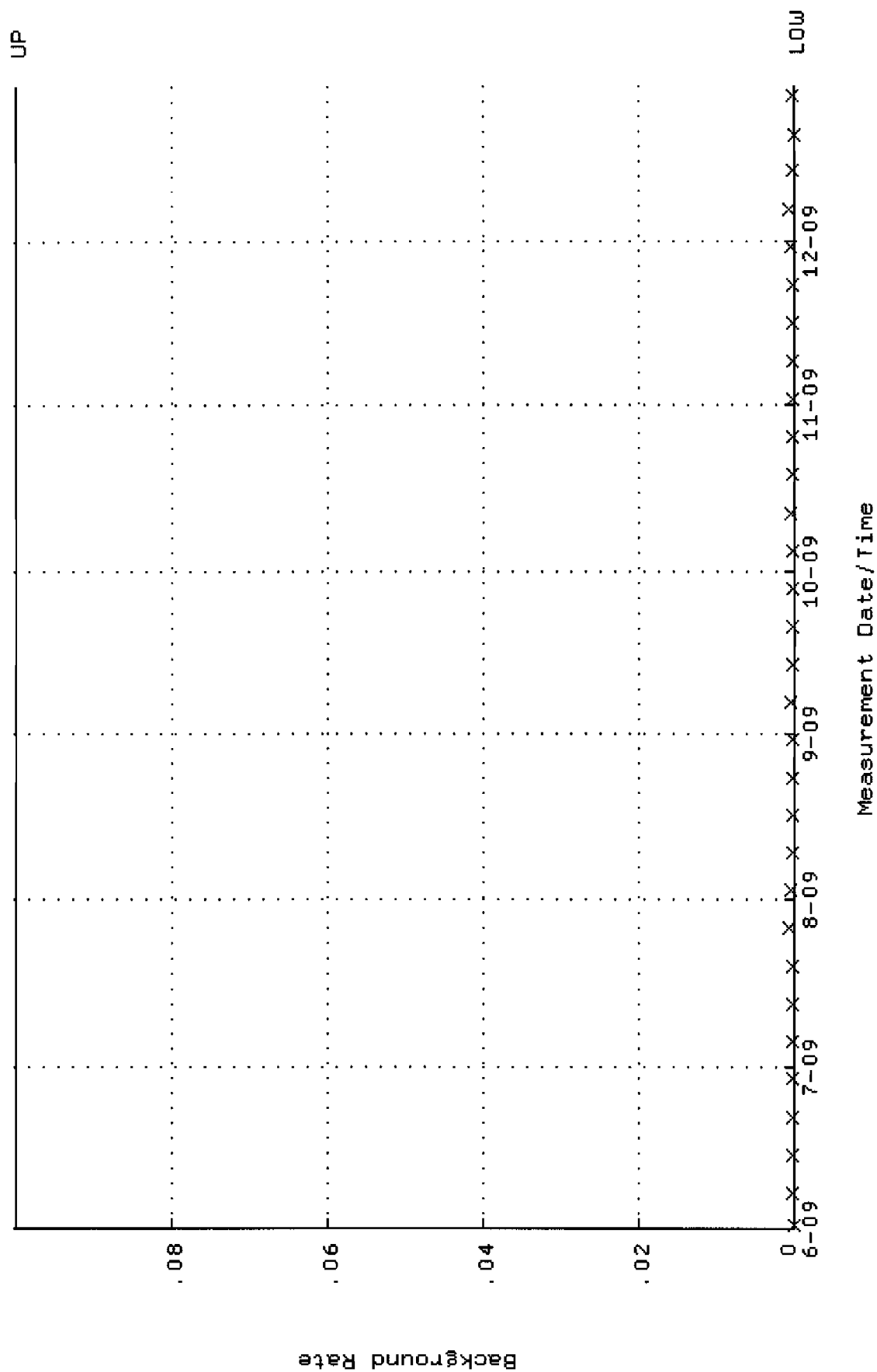
QA filename : DKA100:[ENV\_ALPHA.QA.W]W237.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUN-2009 11:19:34 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.390000 through 0.410000



QA filename : DKA100:[ENV\_ALPHA.QA.W]W237.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:19:34 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 79.5642 through 87.9394

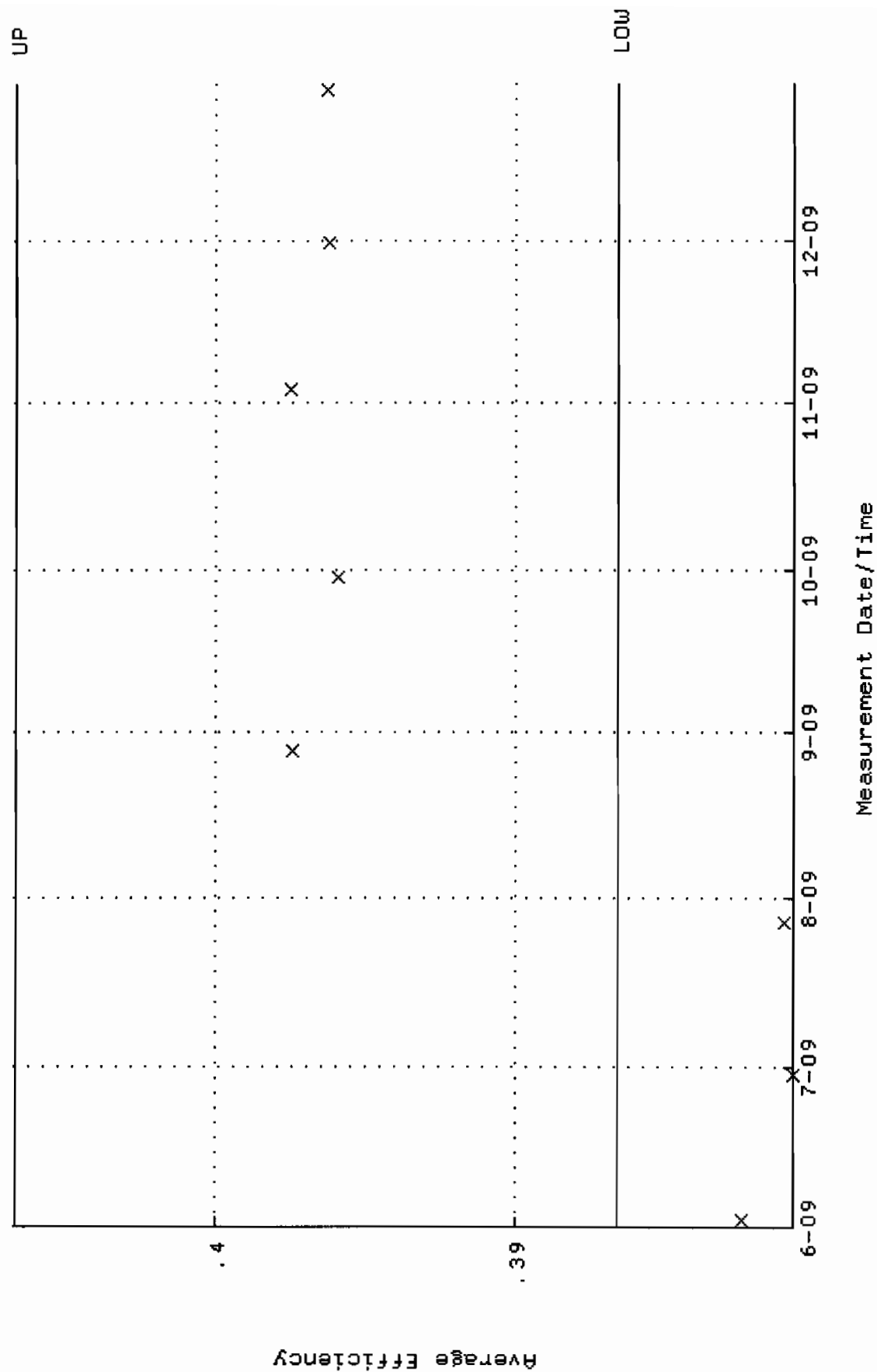


QA filename : DKA100:[ENV\_ALPHA.QA.B]B237.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:46:02 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000

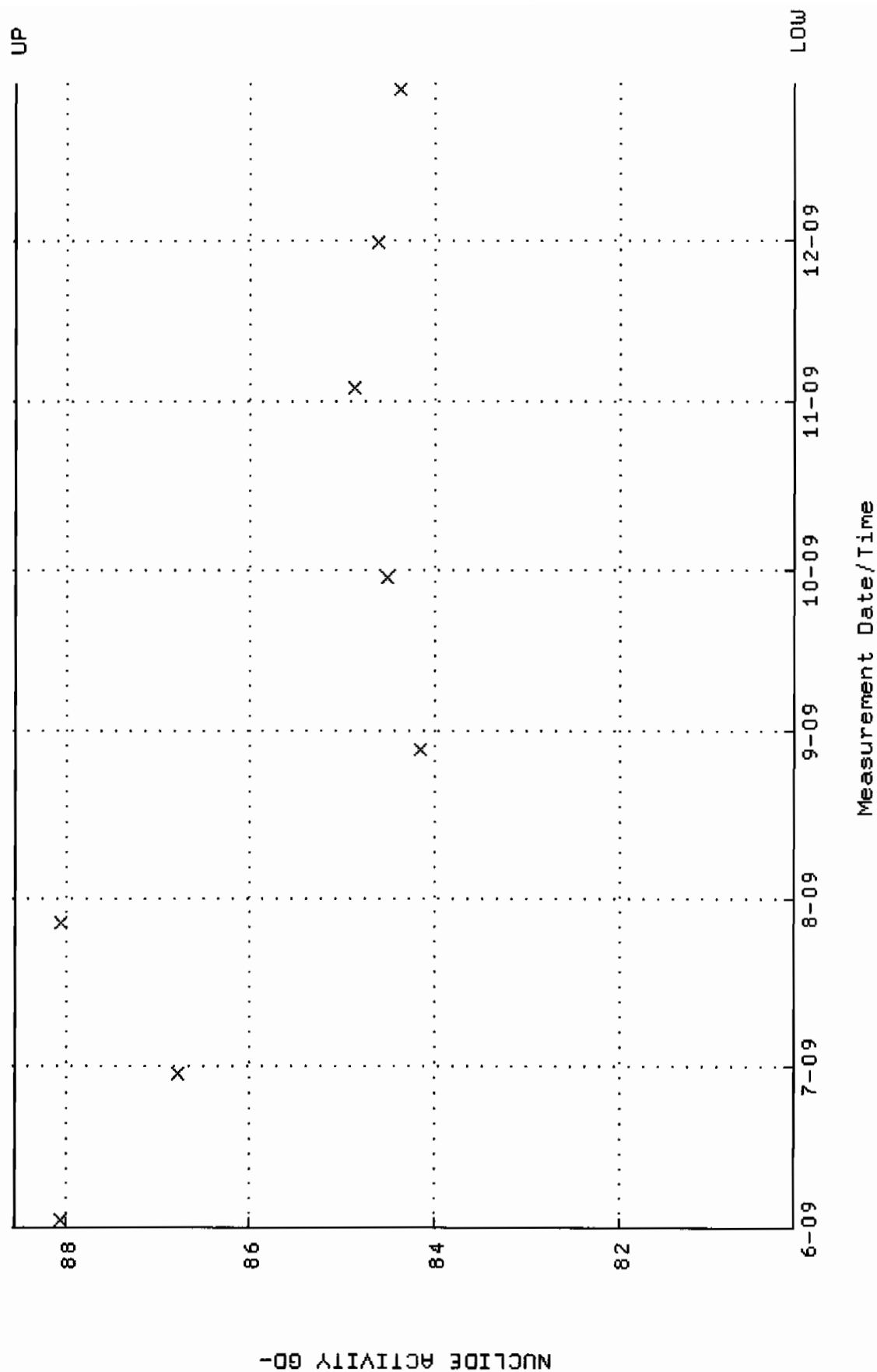




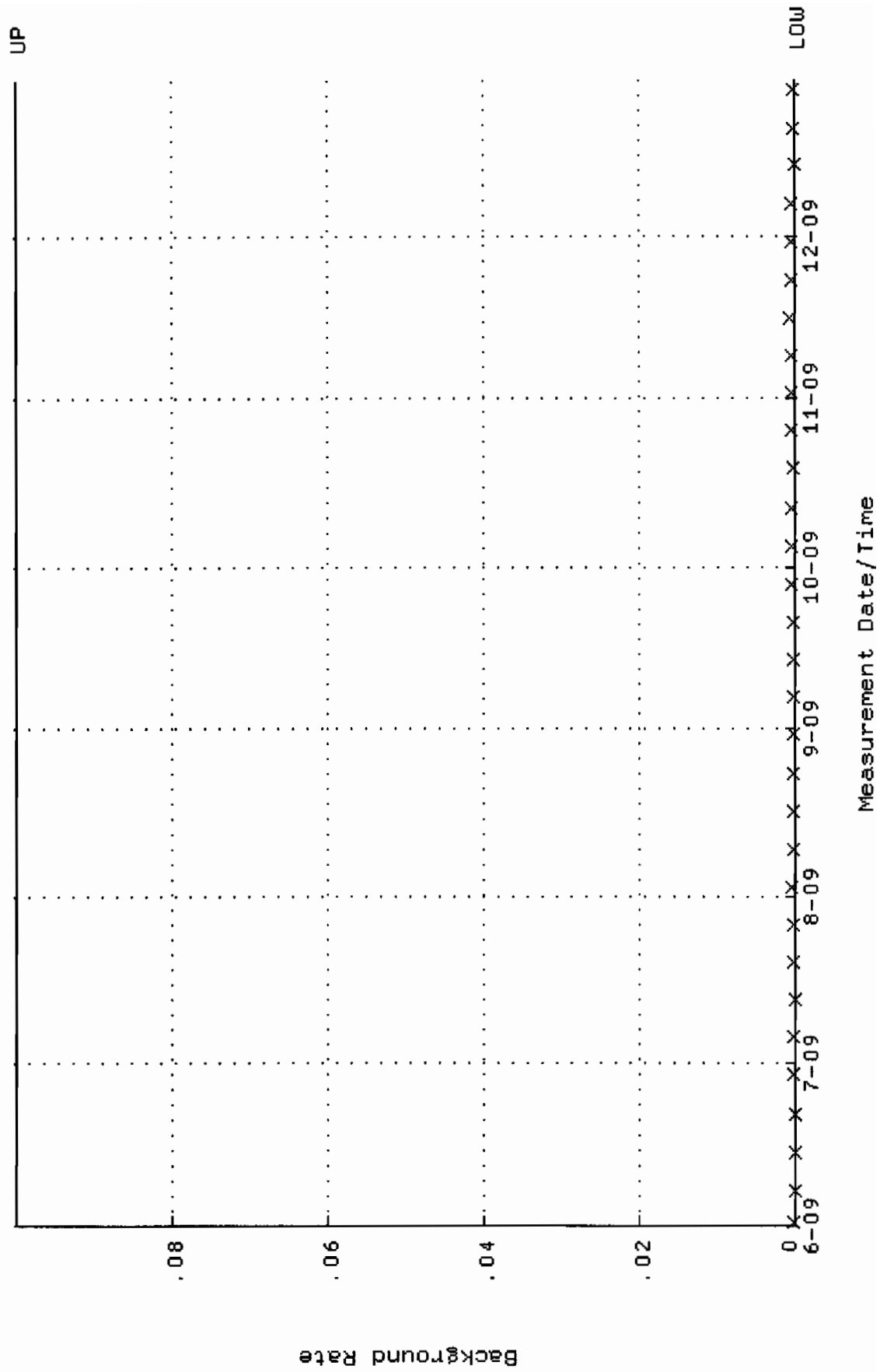
QA filename : DKA100:[ENV\_ALPHA.QA.W]W238.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUN-2009 11:19:38 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.386660 through 0.406660



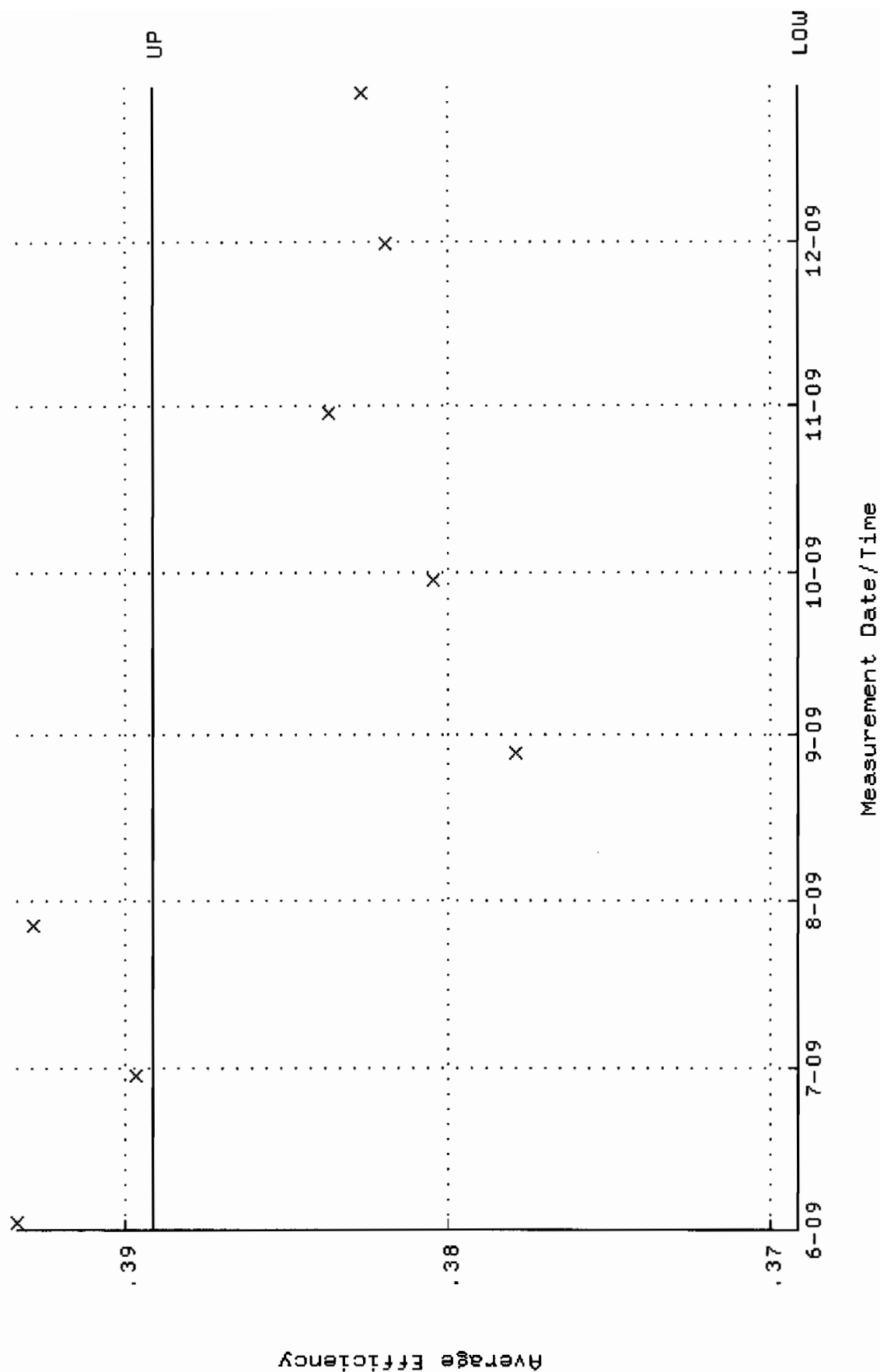
QA filename : DKA100:[ENV\_ALPHA.QA.W]W238.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:19:38 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 80.1146 through 88.5478



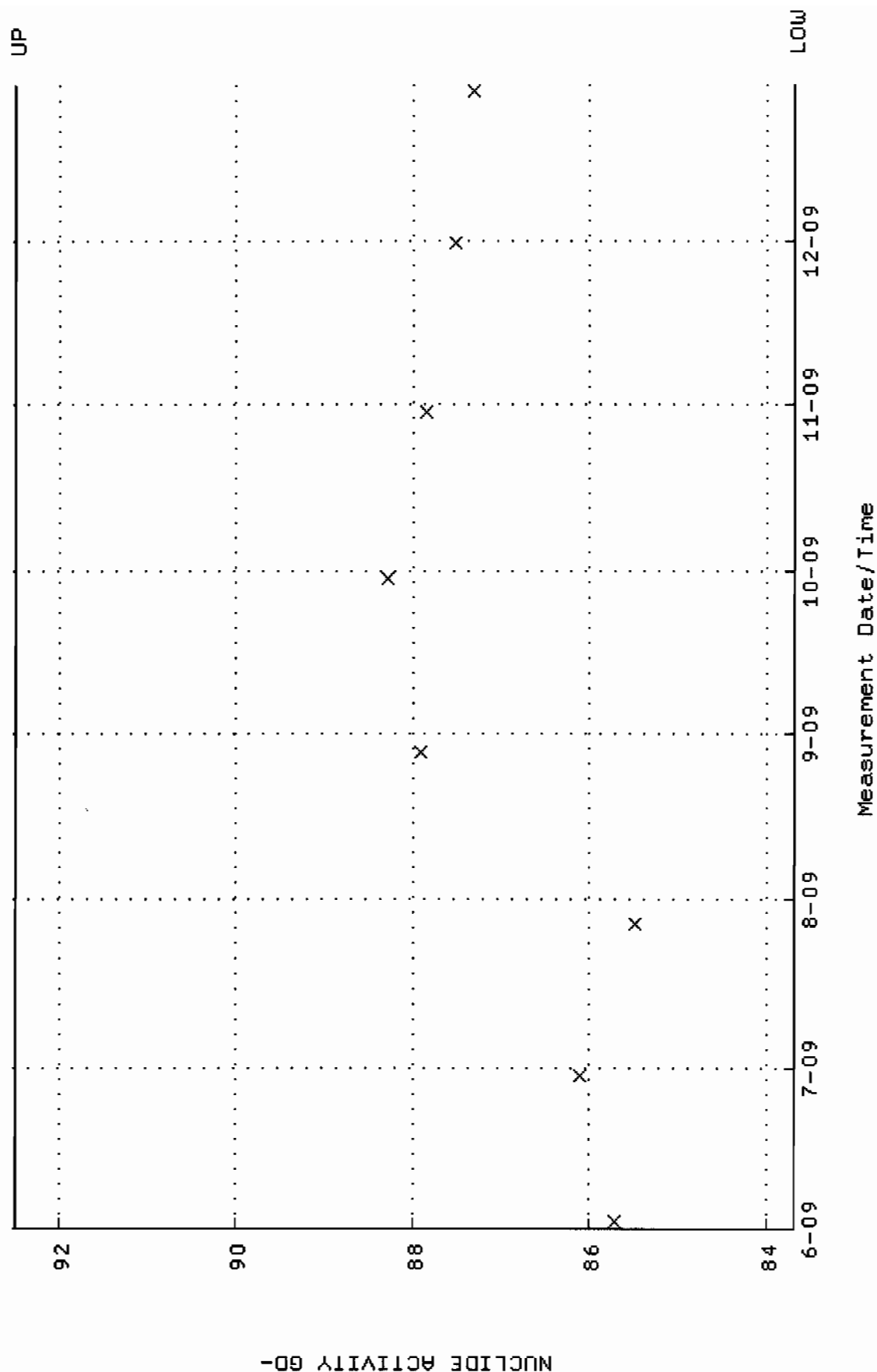
QA filename : DKA100:[ENV\_ALPHA.QA.B]B238.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:46:10 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



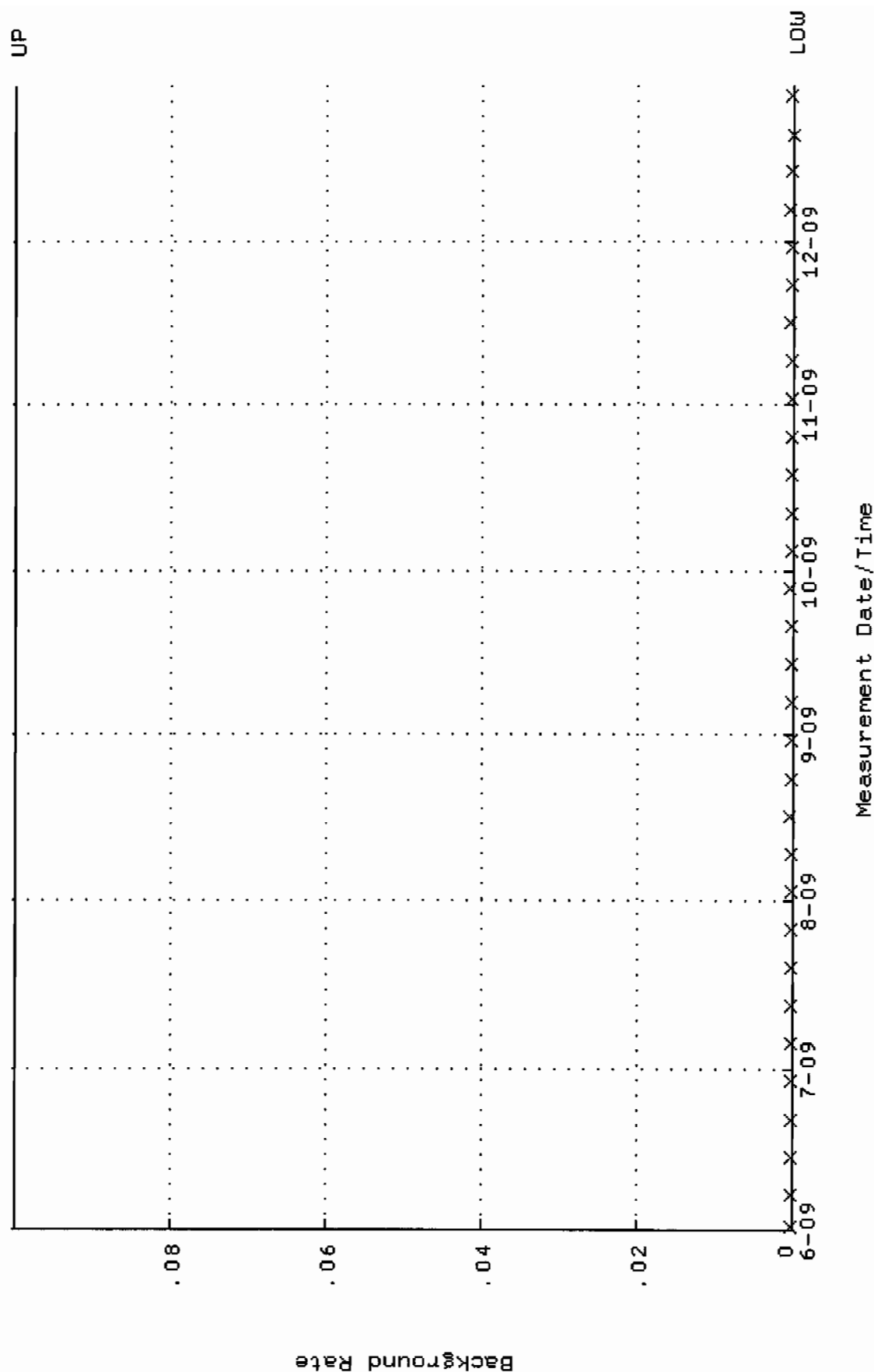
QA filename : DKA100:[ENV\_ALPHA.QA.W]W239.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUN-2009 11:19:43 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.369142 through 0.389142



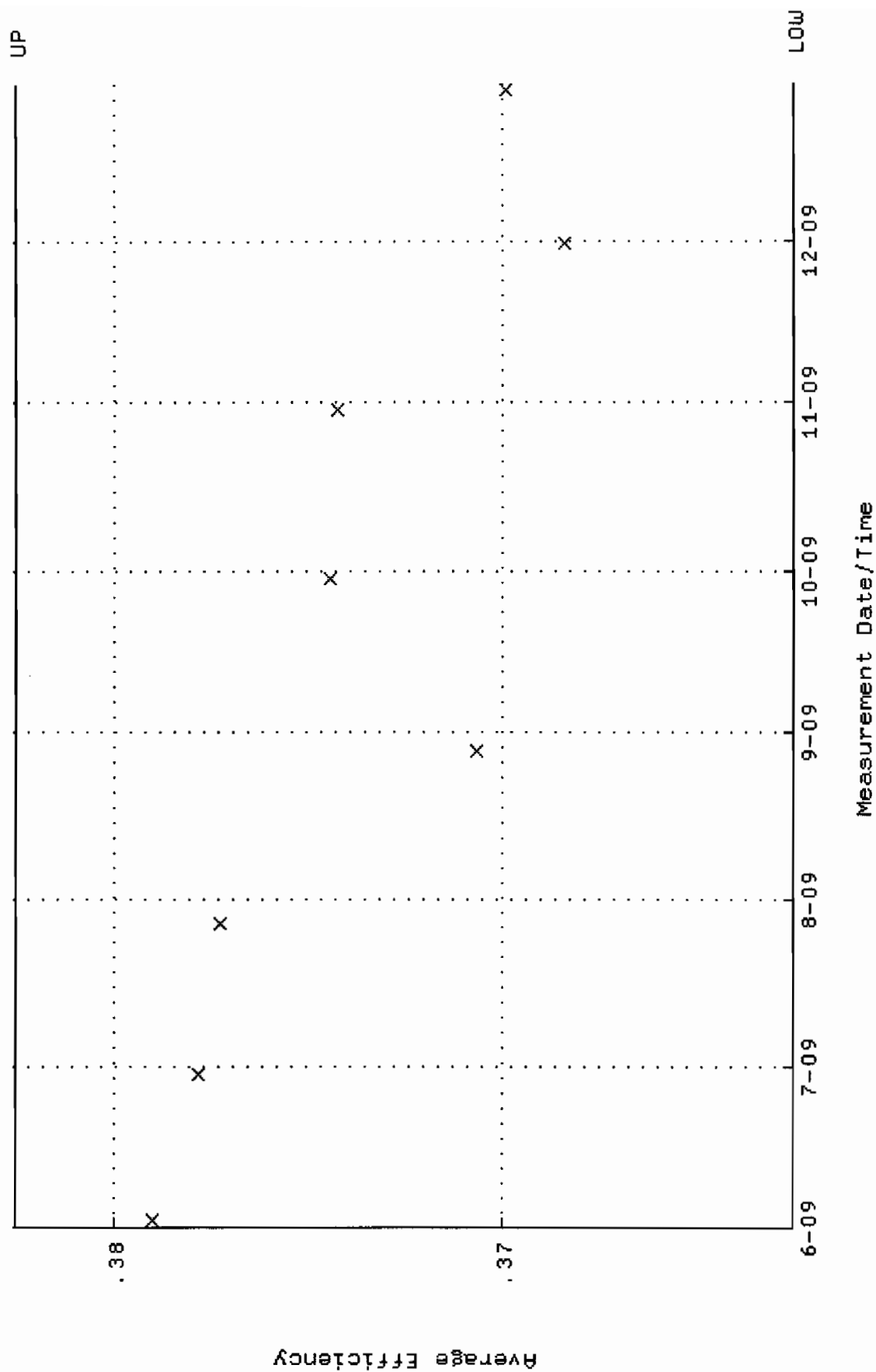
QA filename : DKA100:[ENV-ALPHA.QA.W]W239.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:19:43 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 83.6848 through 92.4938



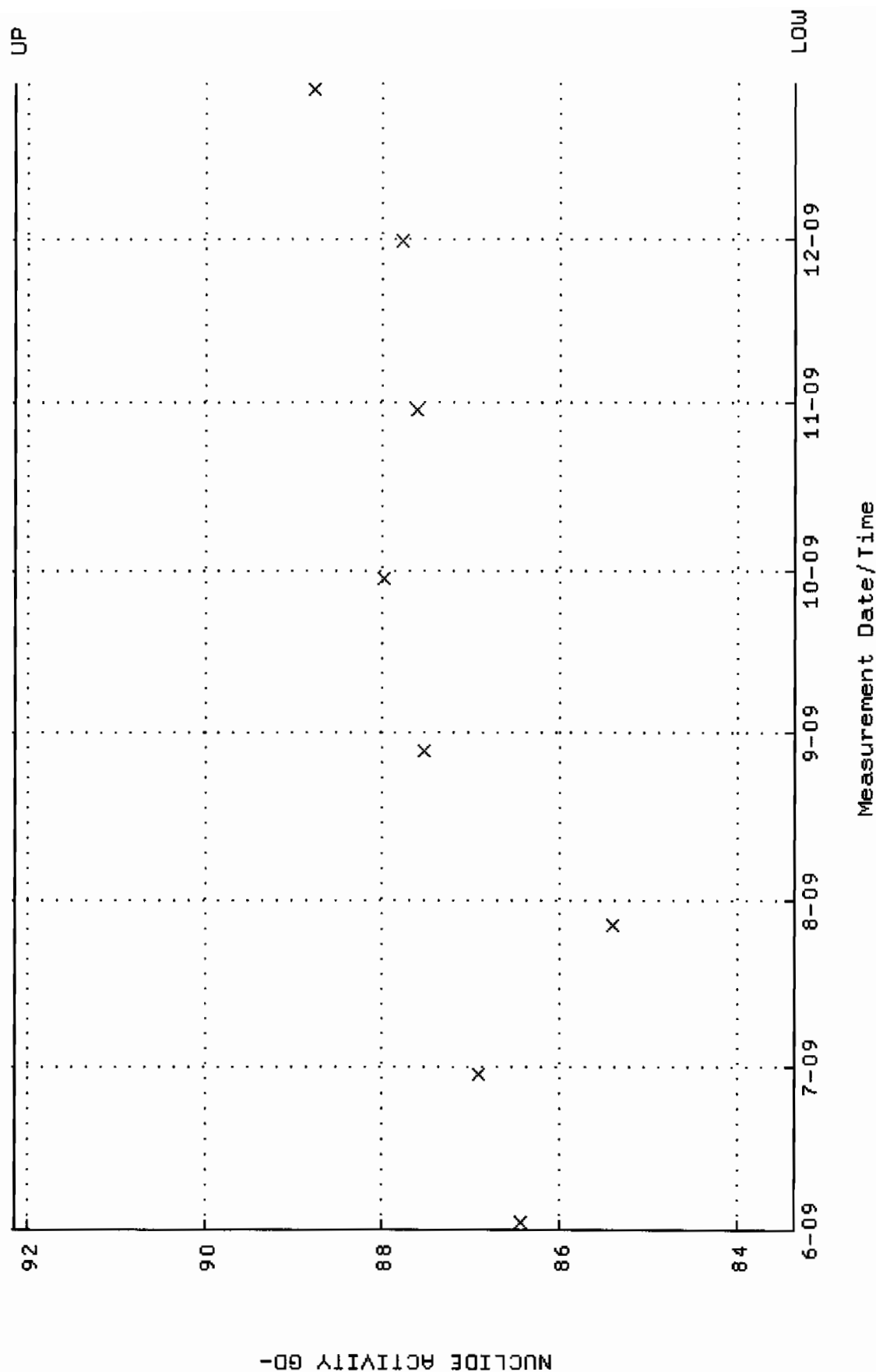
QA filename : DKA100:[ENV-ALPHA.QA.B]B239.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:46:15 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



QA filename : DKA100:[ENV\_ALPHA.QA.W]W240.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUN-2009 11:19:47 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.362523 through 0.382523

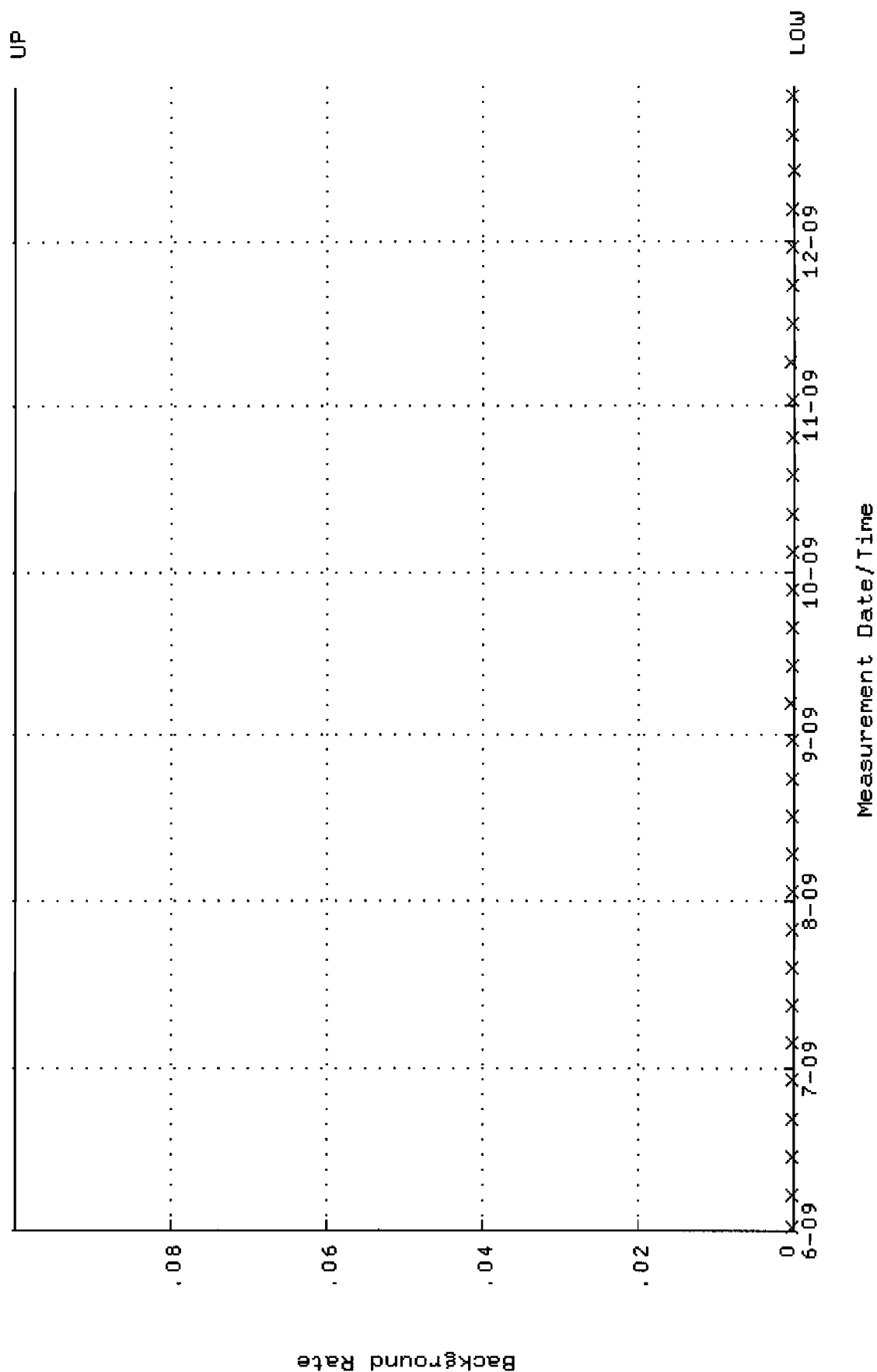


QA filename : DKA100:[ENV\_ALPHA.QA.W]W240.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:19:47 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 83.3638 through 92.1390

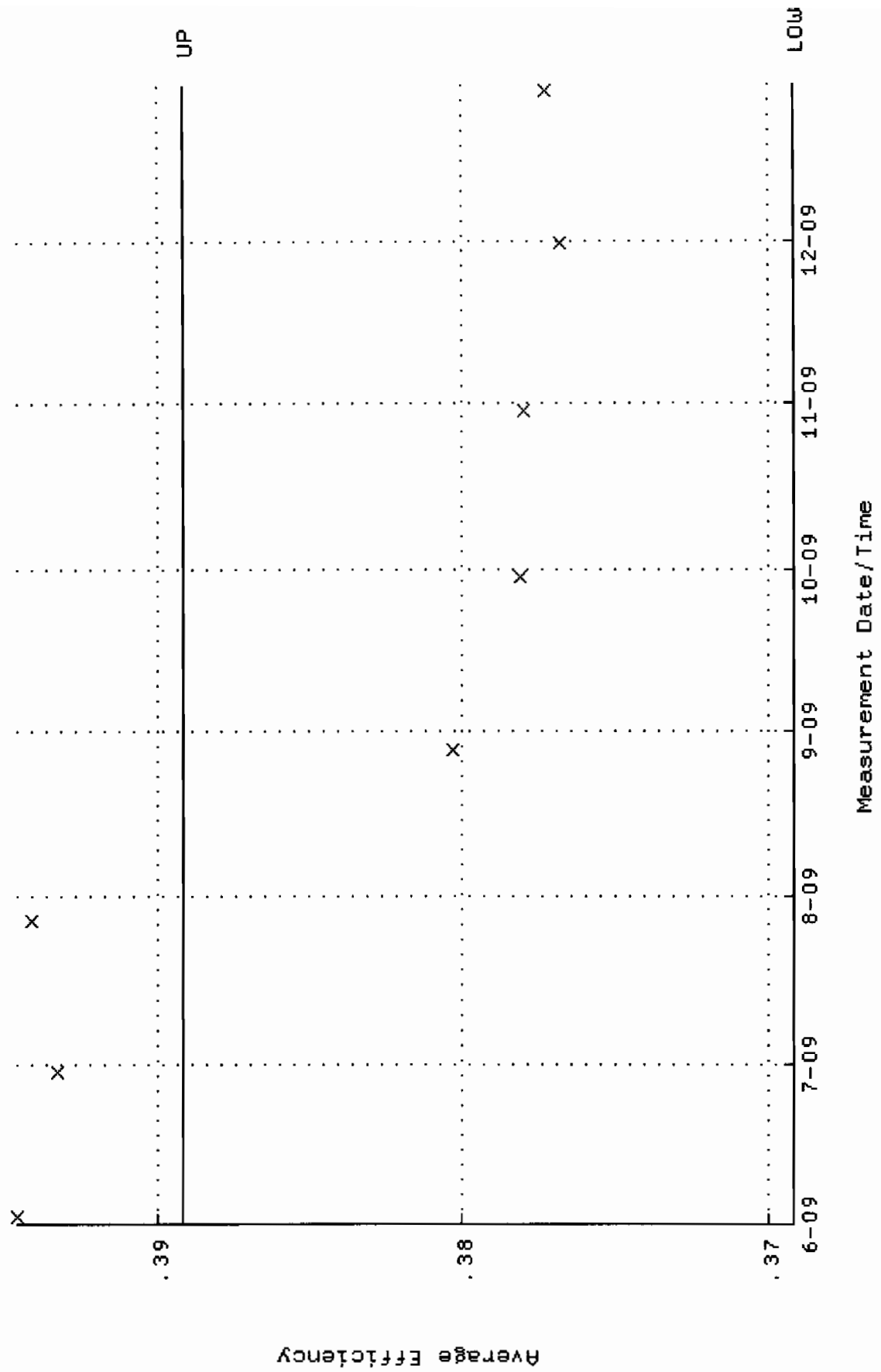




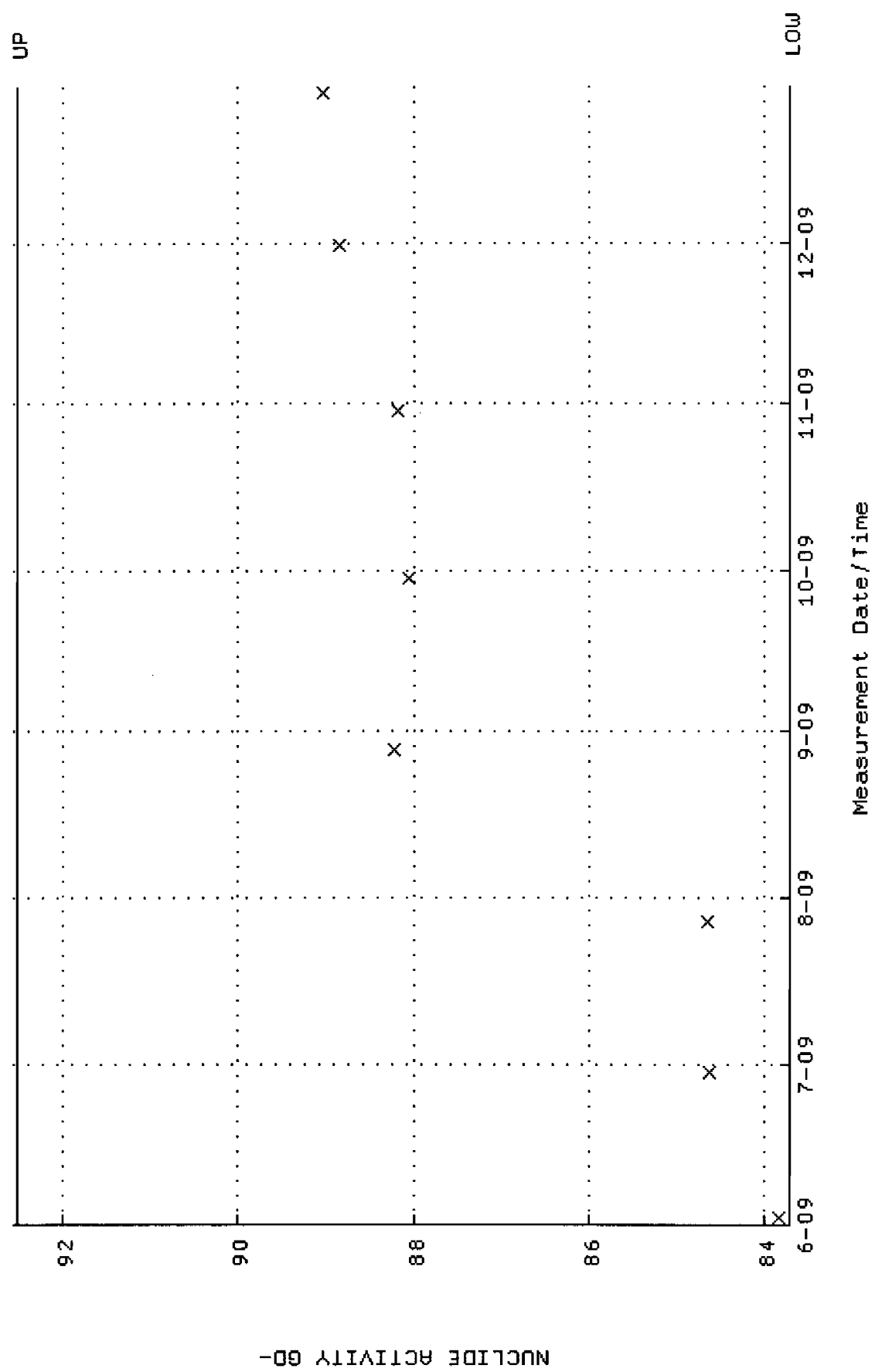
QA filename : DKA100:[ENV\_ALPHA.QA.B]B240.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:46:21 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



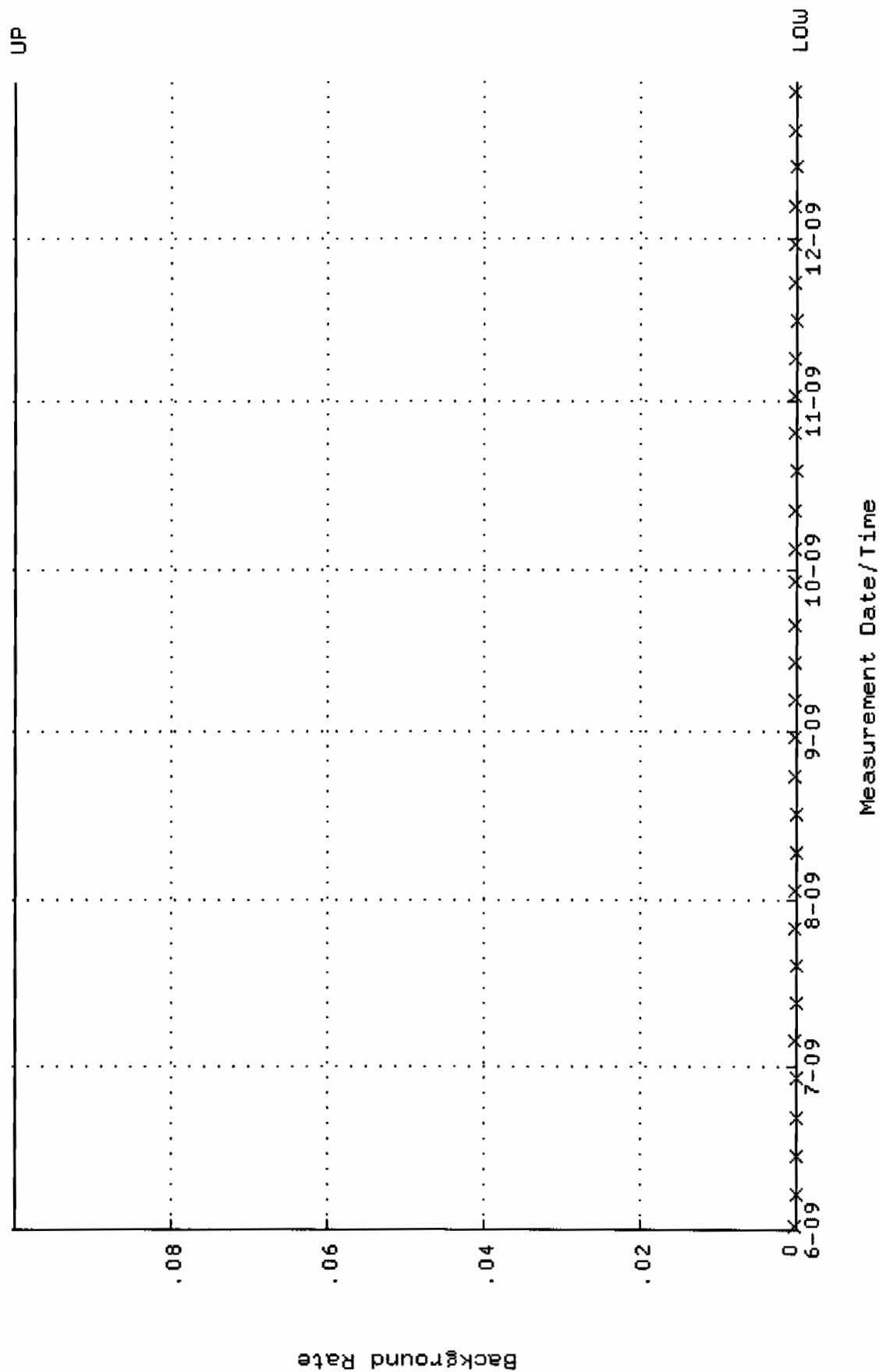
QA filename : DKA100:[ENV\_ALPHA.QA.W]W241.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUN-2009 11:19:52 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.369174 through 0.389174



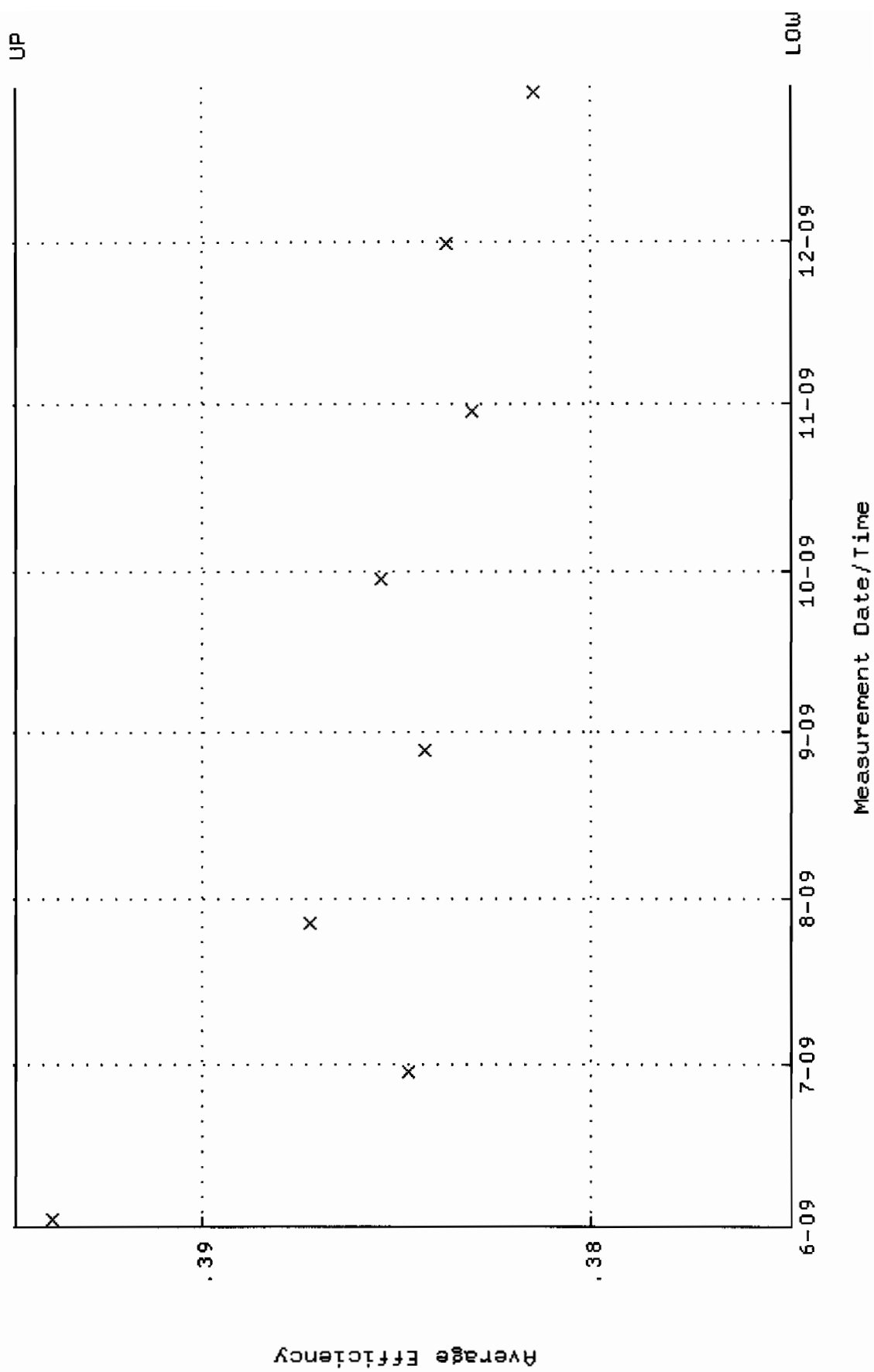
QA filename : DKA100:[ENV\_ALPHA.QA.W]W241.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:19:52 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 83.7197 through 92.5323



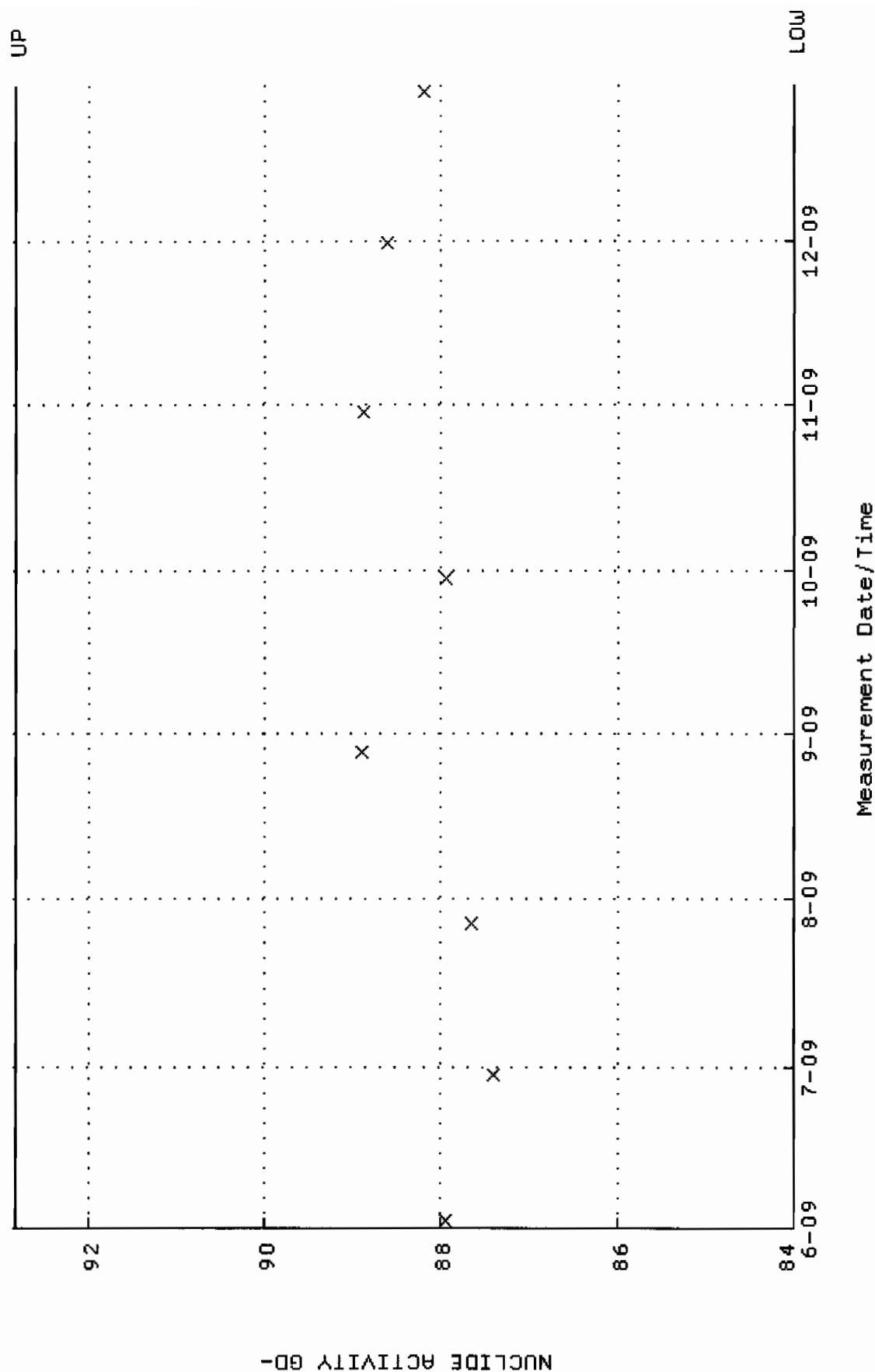
QA filename : DKA100:[ENV\_ALPHA.QA.B]B241.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:46:27 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



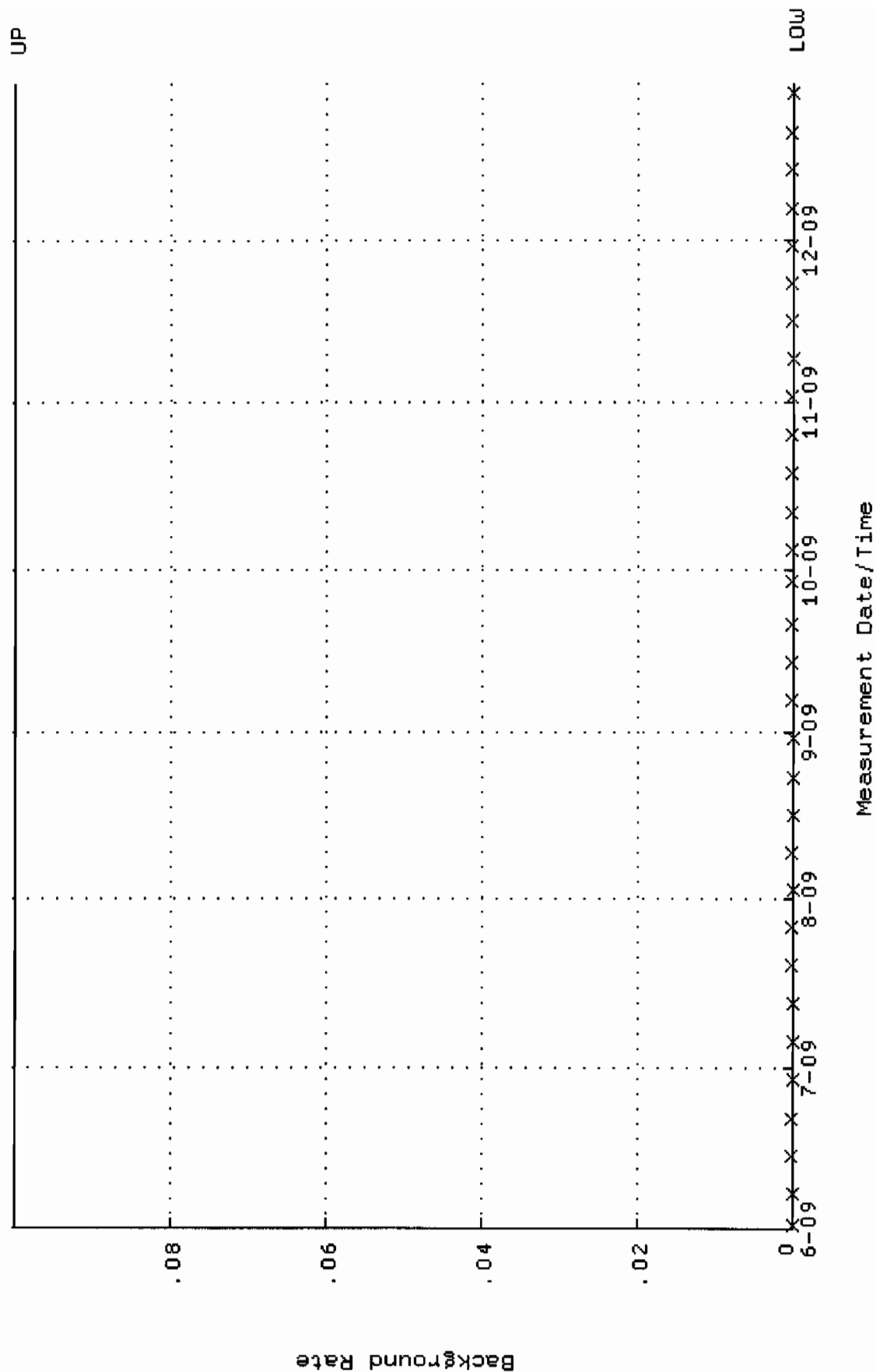
QA filename : DKA100:[ENV\_ALPHA.QA.W]W242.QAF;1  
Parameter Name : AVRGEFF (Average Efficiency)  
Start/End Dates : 2-JUN-2009 11:19:56 through 29-DEC-2009 12:00:00  
Lower/Upper Lmts: 0.374815 through 0.394815



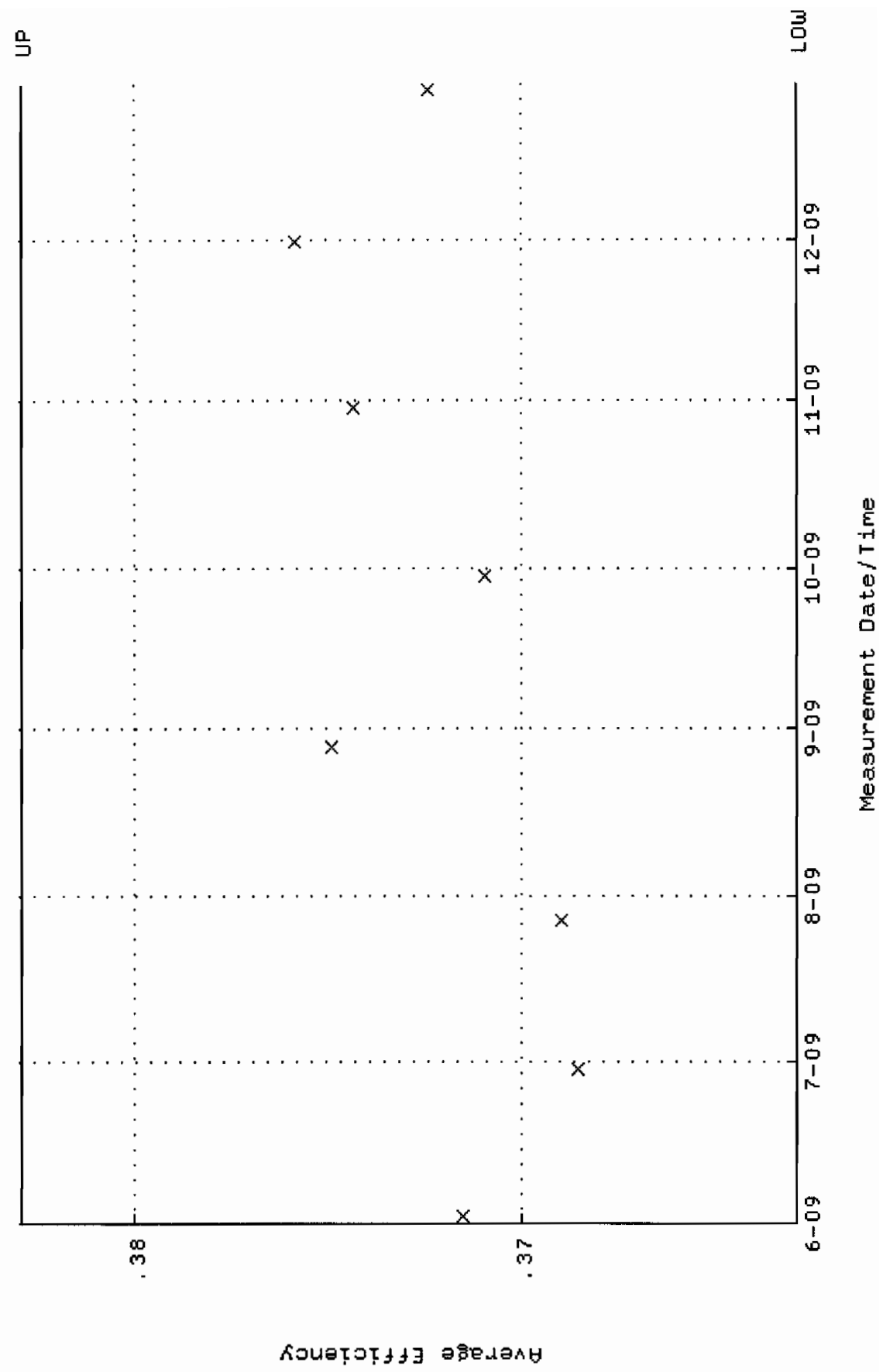
QA filename : DKA100:[ENV\_ALPHA.QA.W]W242.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:19:56 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 83.9949 through 92.8365



QA filename : DKA100:[ENV\_ALPHA.QA.B]B242.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:46:32 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000

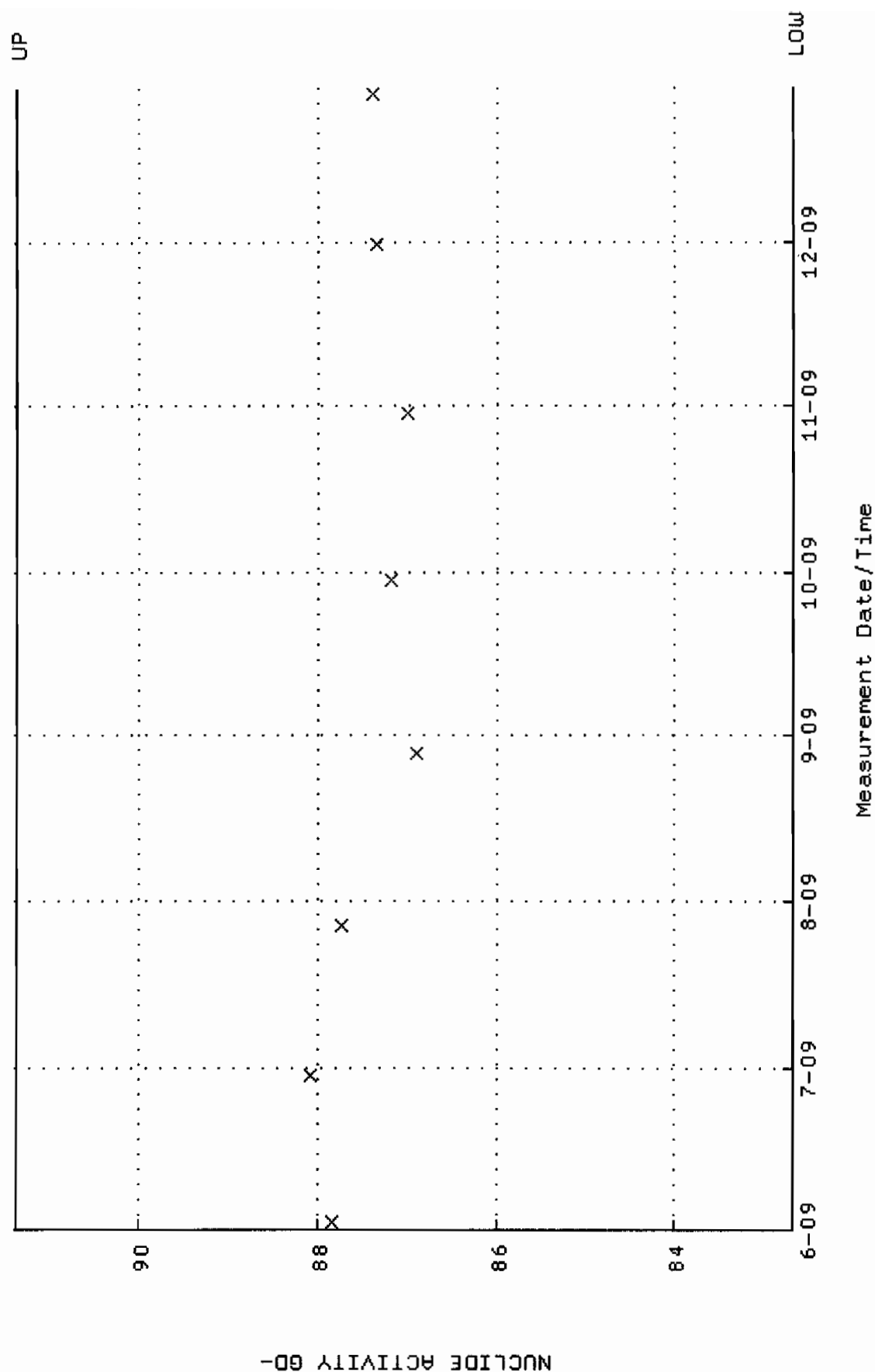


QA filename : DKA100:[ENV\_ALPHA.QA.W]W243.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUN-2009 11:20:01 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.362914 through 0.382914

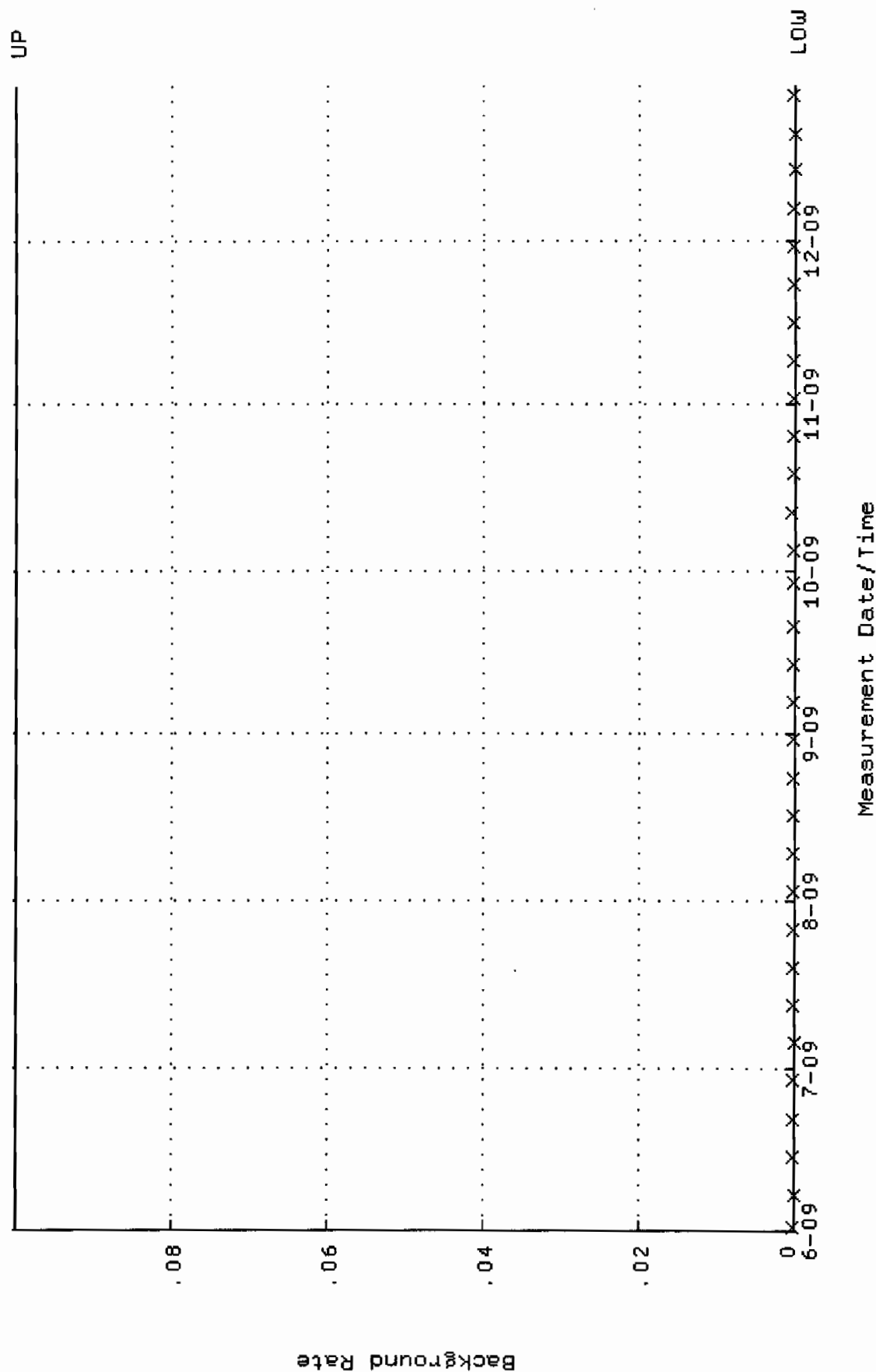




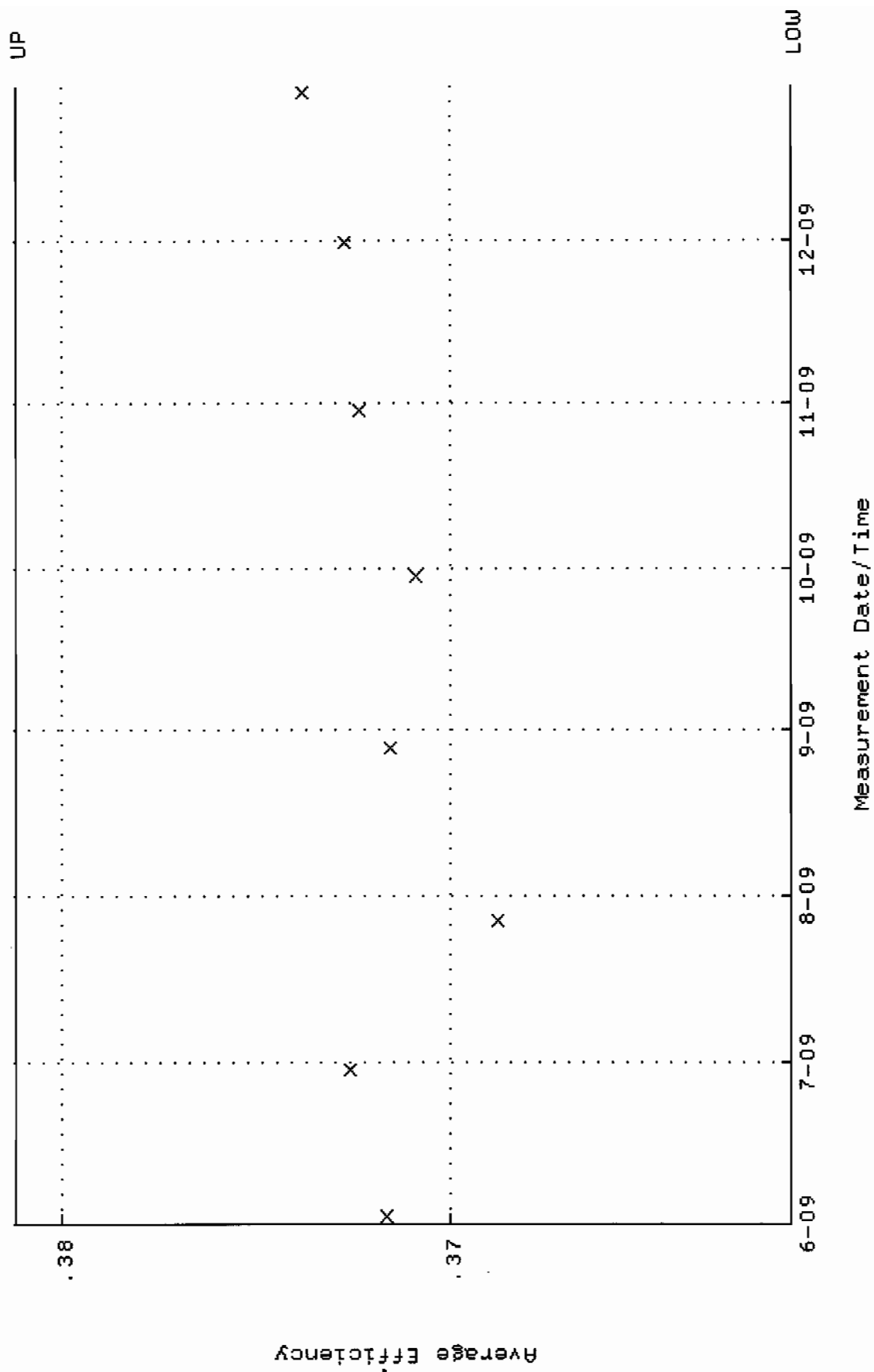
QA filename : DKA100:[ENV-ALPHA.QA.W]W243.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:20:01 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 82.6788 through 91.3818



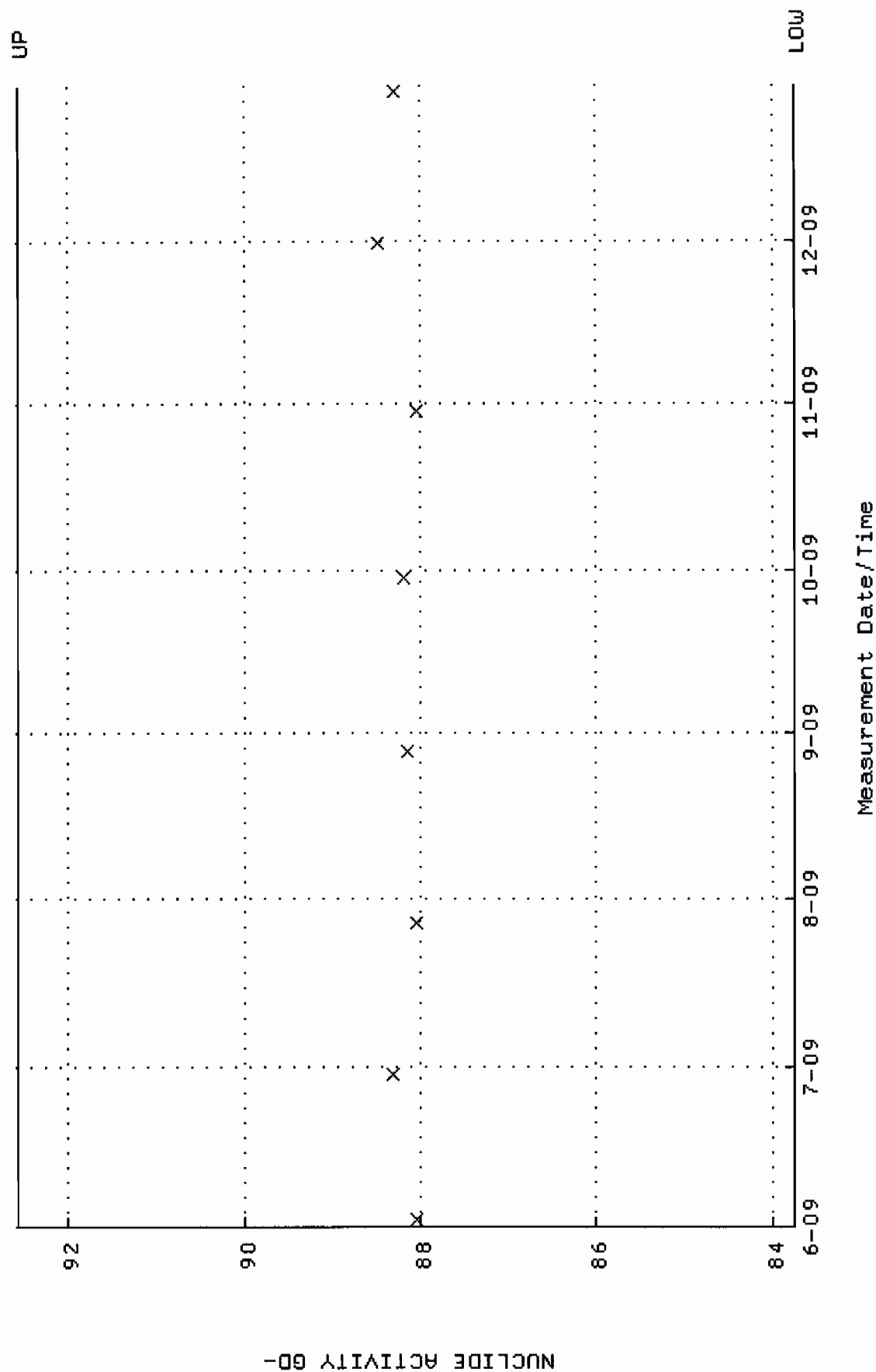
QA filename : DKA100:[ENV\_ALPHA.QA.B]B243.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:46:38 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



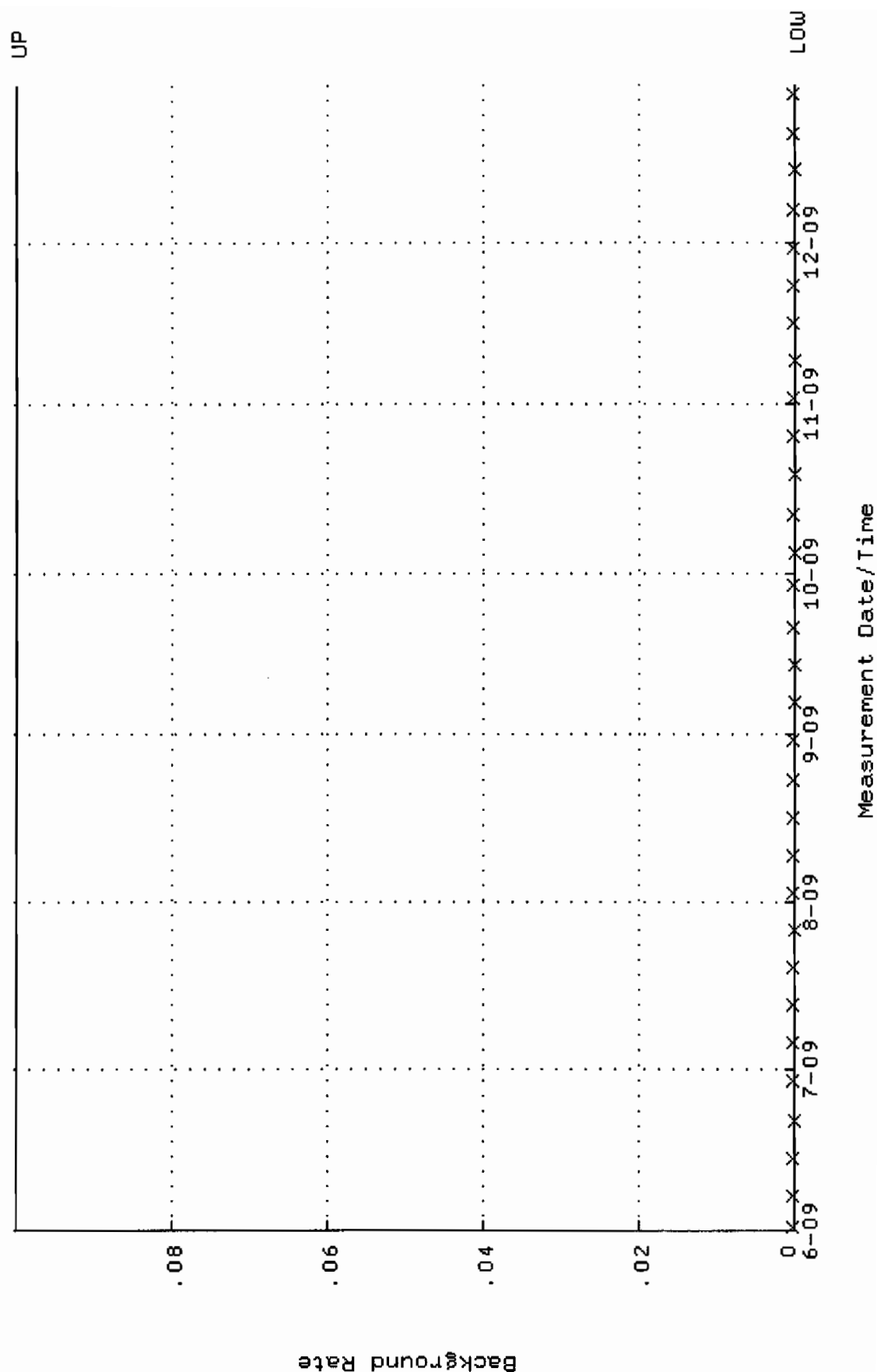
QA filename : DKA100:[ENV\_ALPHA.QA.W]W244.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUN-2009 11:20:06 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.361192 through 0.381192



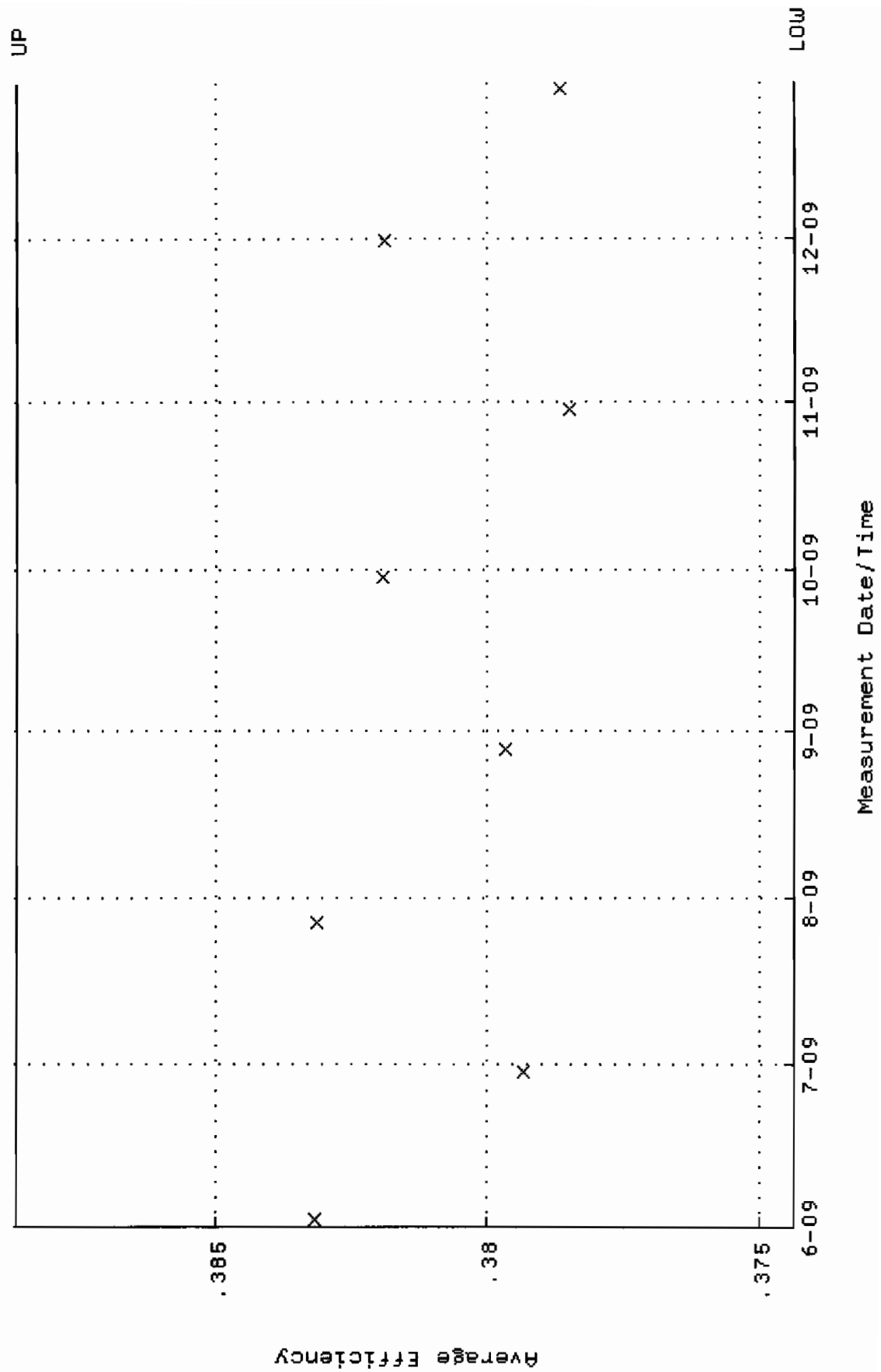
QA filename : DKA100:[ENV\_ALPHA.QA.W]W244.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:20:06 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 83.7473 through 92.5629



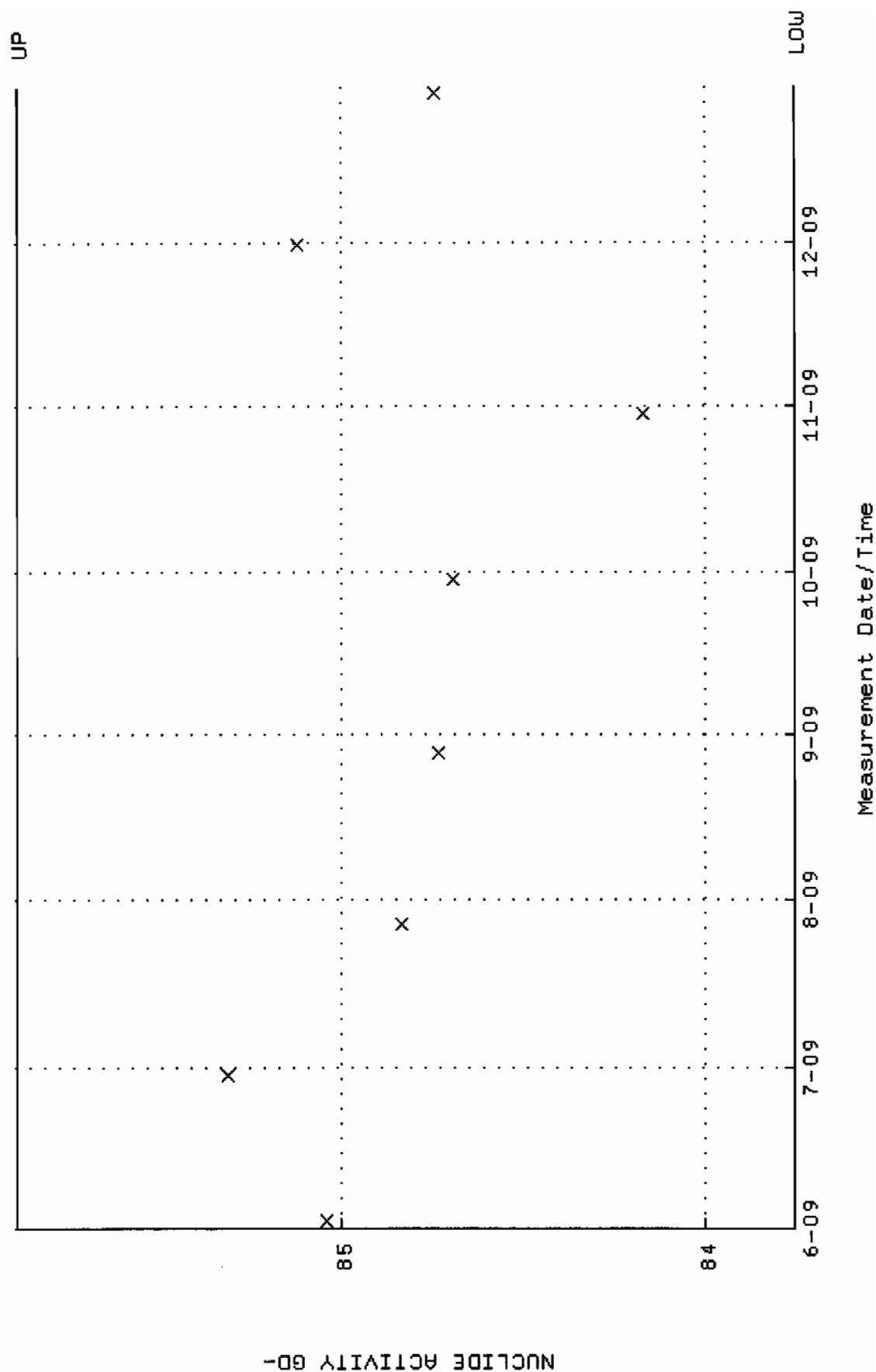
QA filename : DKA100:[ENV\_ALPHA.QA.B]B244.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:46:44 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



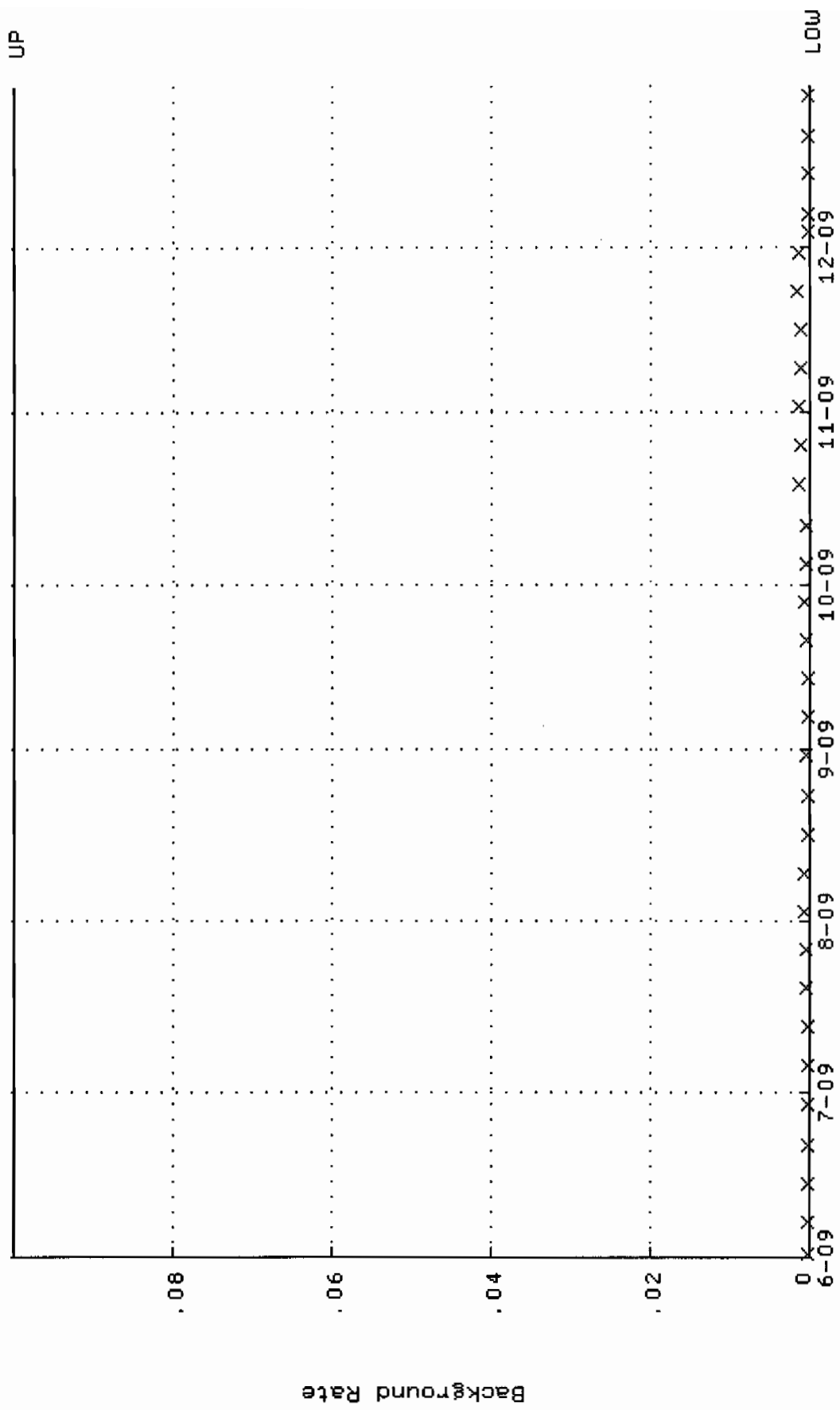
QA filename : DKA100:[ENV\_ALPHA.QA.W]W256.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 2-JUN-2009 11:21:01 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.374371 through 0.388647



QA filename : DKA100:[ENV-ALPHA.QA.W]W256.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 2-JUN-2009 11:21:01 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 83.7553 through 85.8901



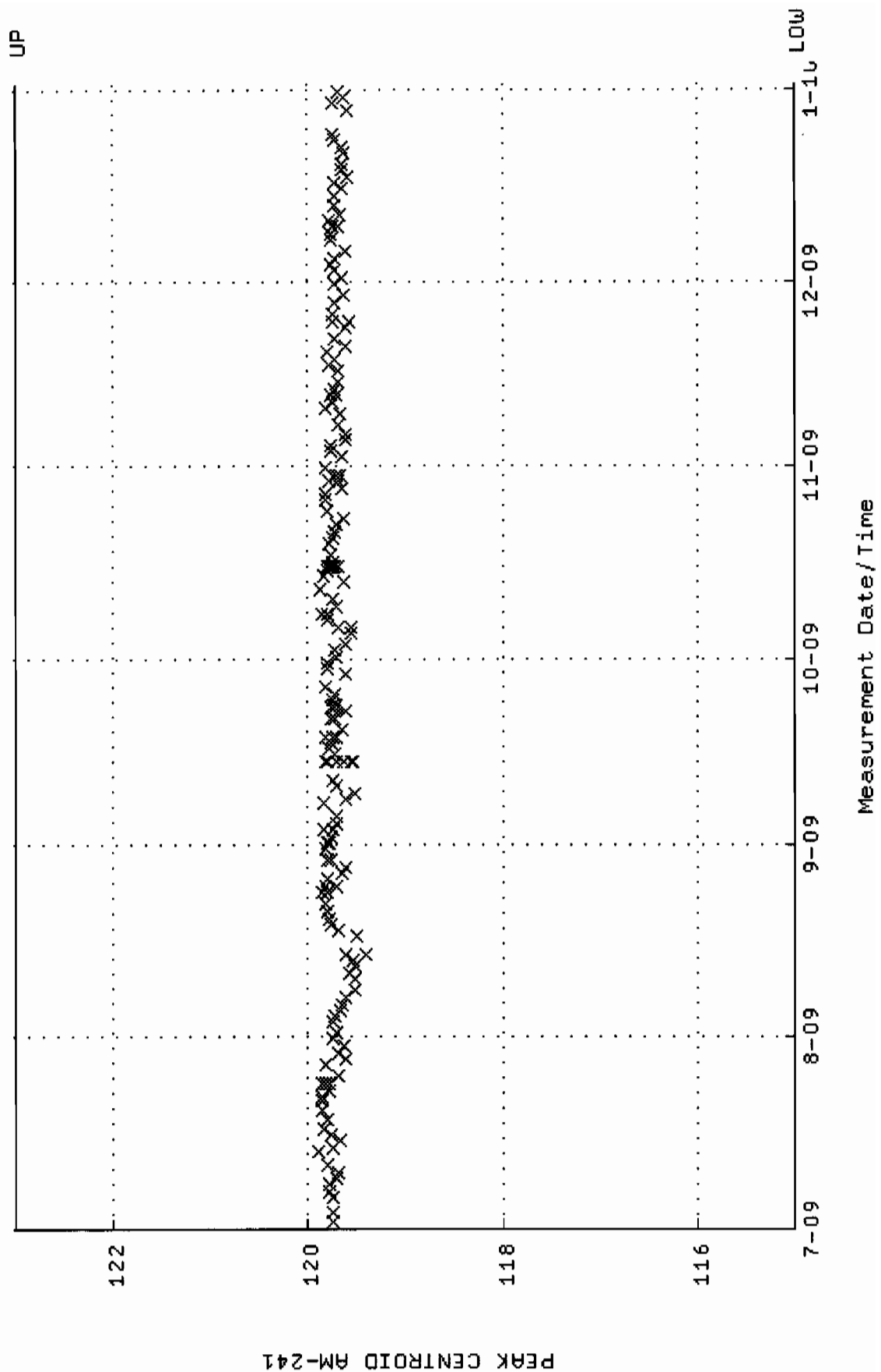
QA filename : DKA100:[ENV\_ALPHA.QA.B]B256.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 1-JUN-2009 17:47:52 through 29-DEC-2009 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



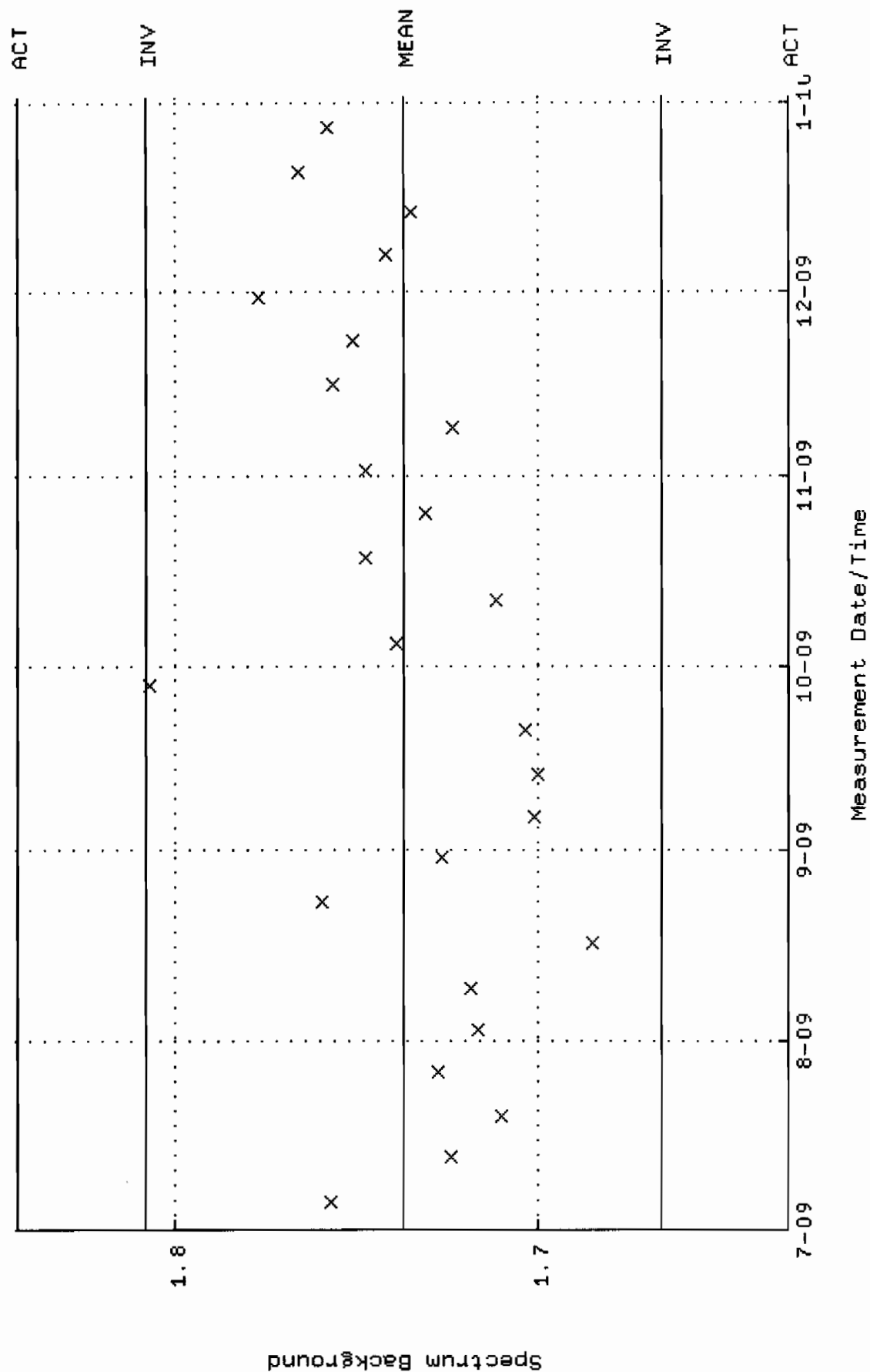
Measurement Date/Time



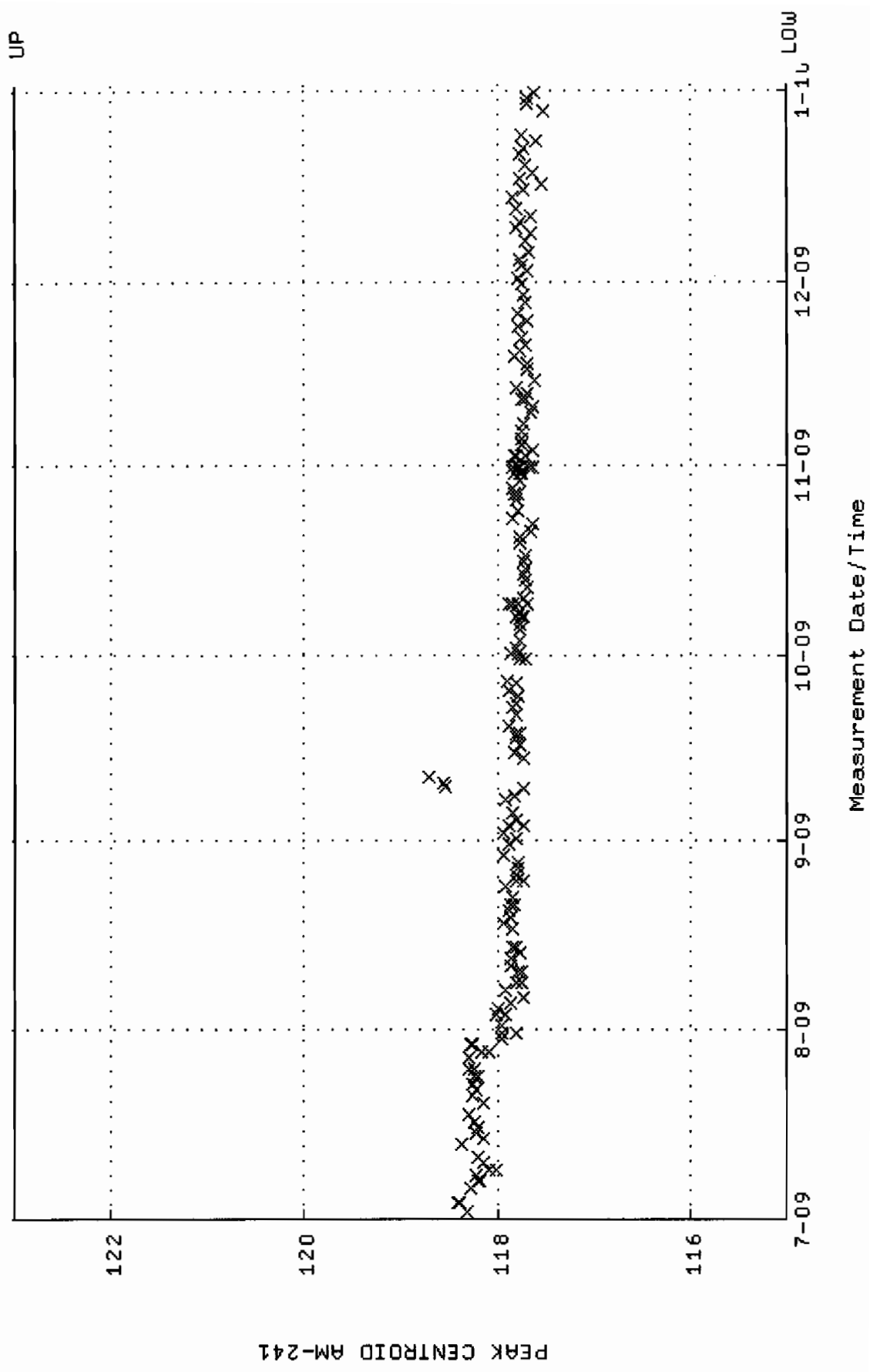
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC-GAM01\_500MLMB.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 2-JUL-2009 04:58:53 through 1-JAN-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



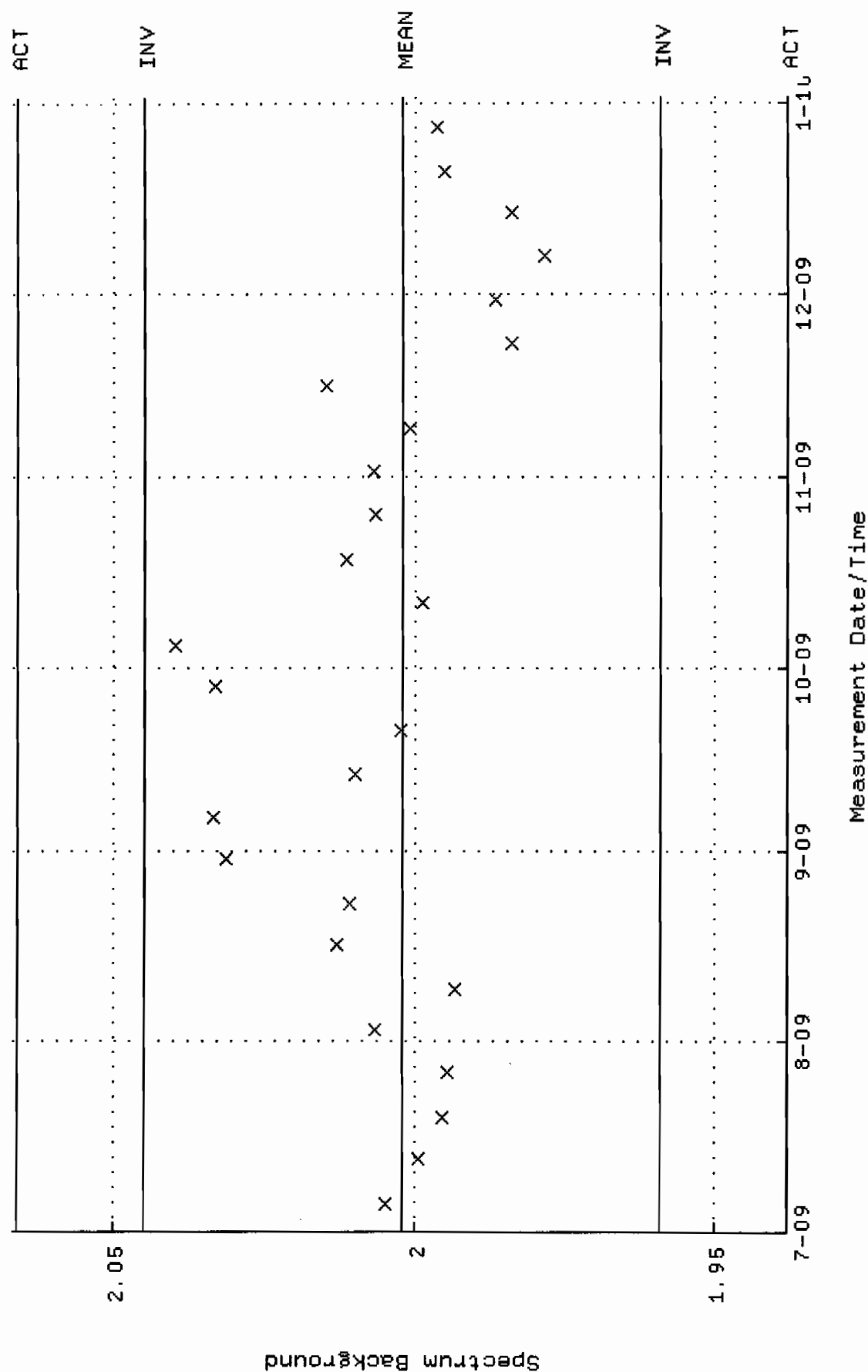
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC-GAM01.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 5-JUL-2009 13:49:24 through 1-JAN-2010 12:00:00  
 Mean +- Std Dev : 1.73723 +- 3.552524E-02 (2.04 %)



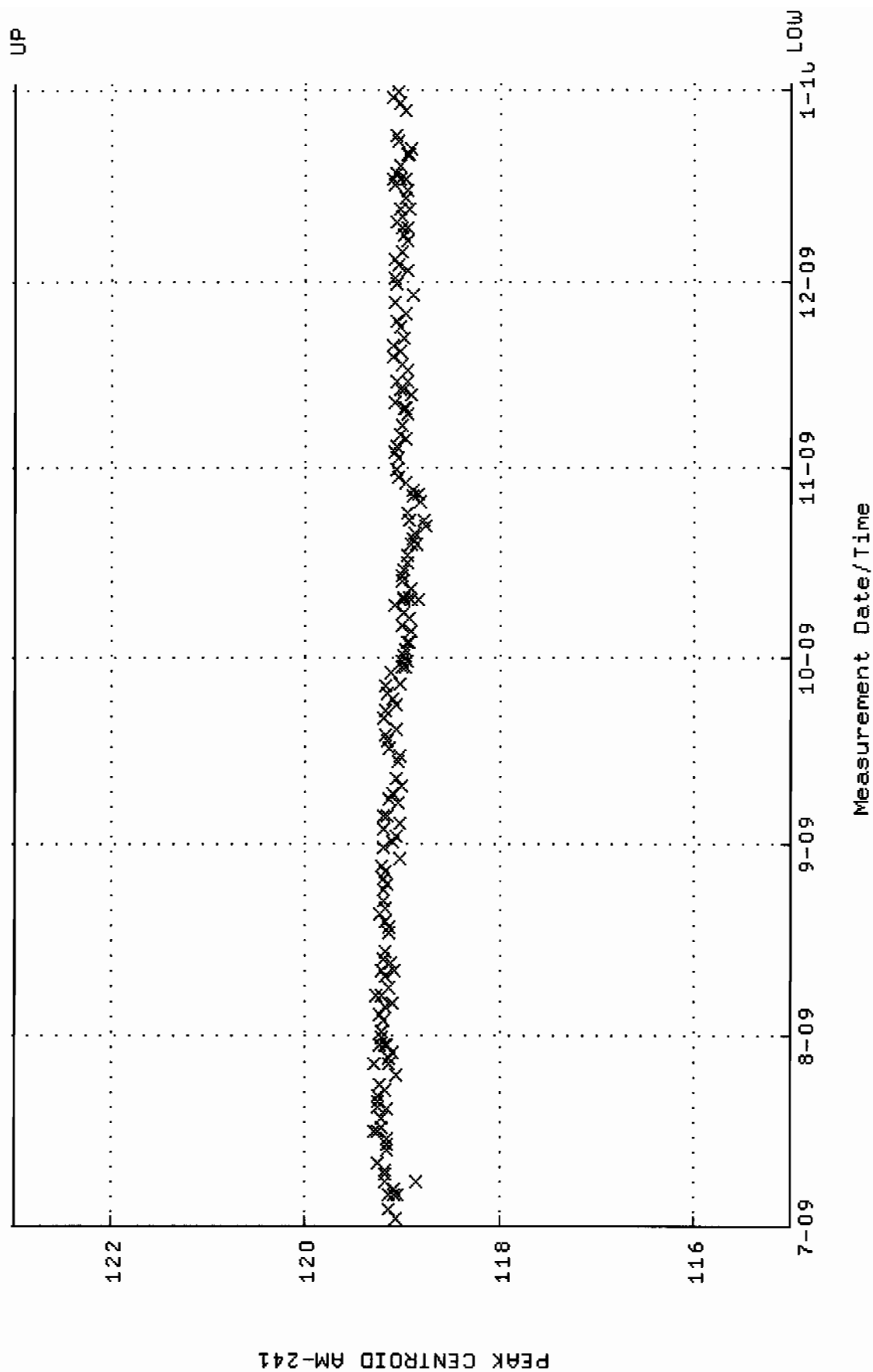
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM02\_CAN.QAF;1  
Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
Start/End Dates : 2-JUL-2009 04:58:43 through 1-JAN-2010 12:00:00  
Lower/Upper Lmts: 115.000 through 123.000



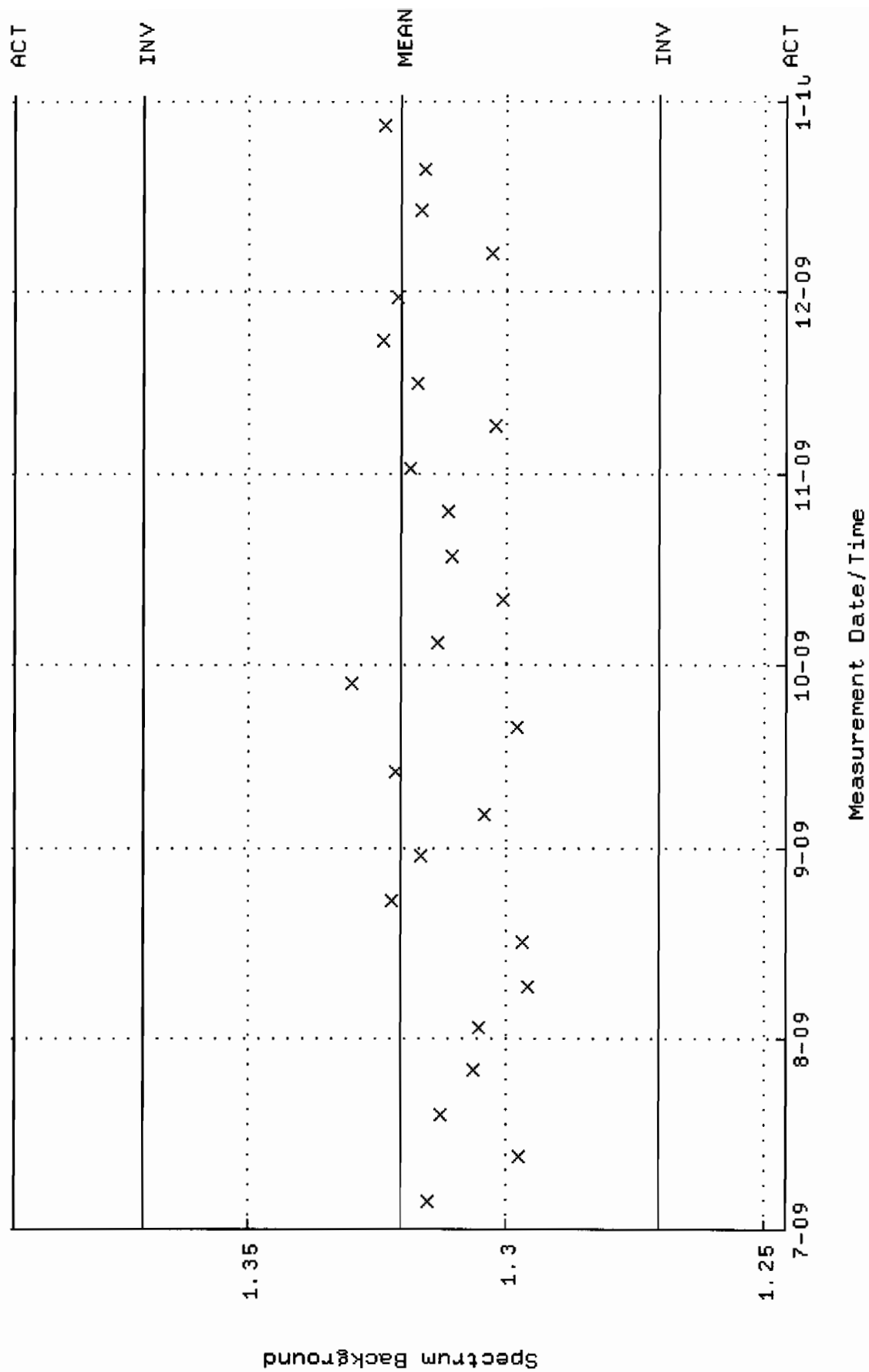
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC-GAM02.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 5-JUL-2009 13:49:39 through 1-JAN-2010 12:00:00  
 Mean +- Std Dev : 2.00226 +- 2.139827E-02 (1.07 %)



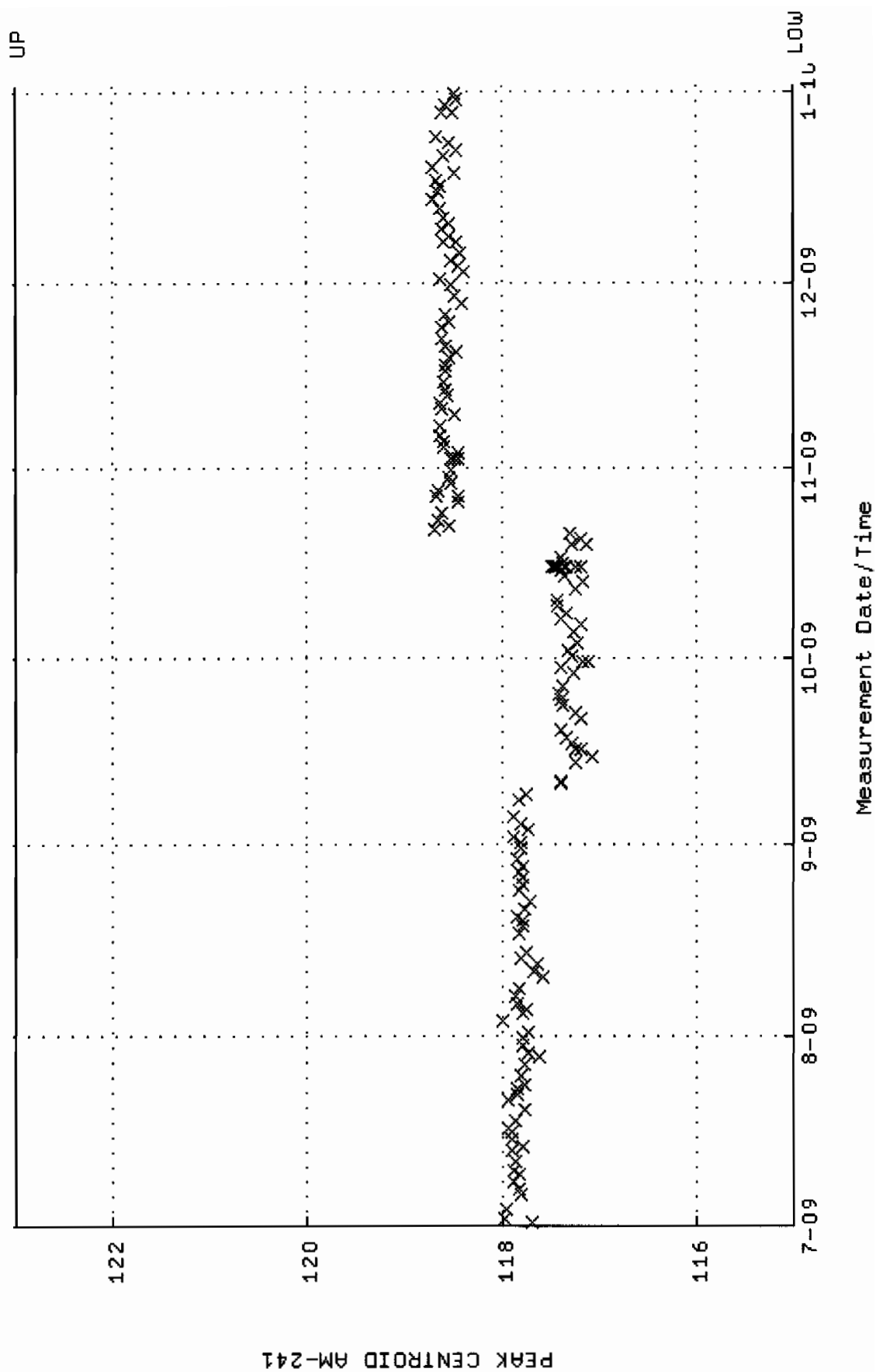
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC-GAM04-CAN.QAF;1  
Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
Start/End Dates : 2-JUL-2009 04:59:00 through 1-JAN-2010 12:00:00  
Lower/Upper Lmts: 115.000 through 123.000



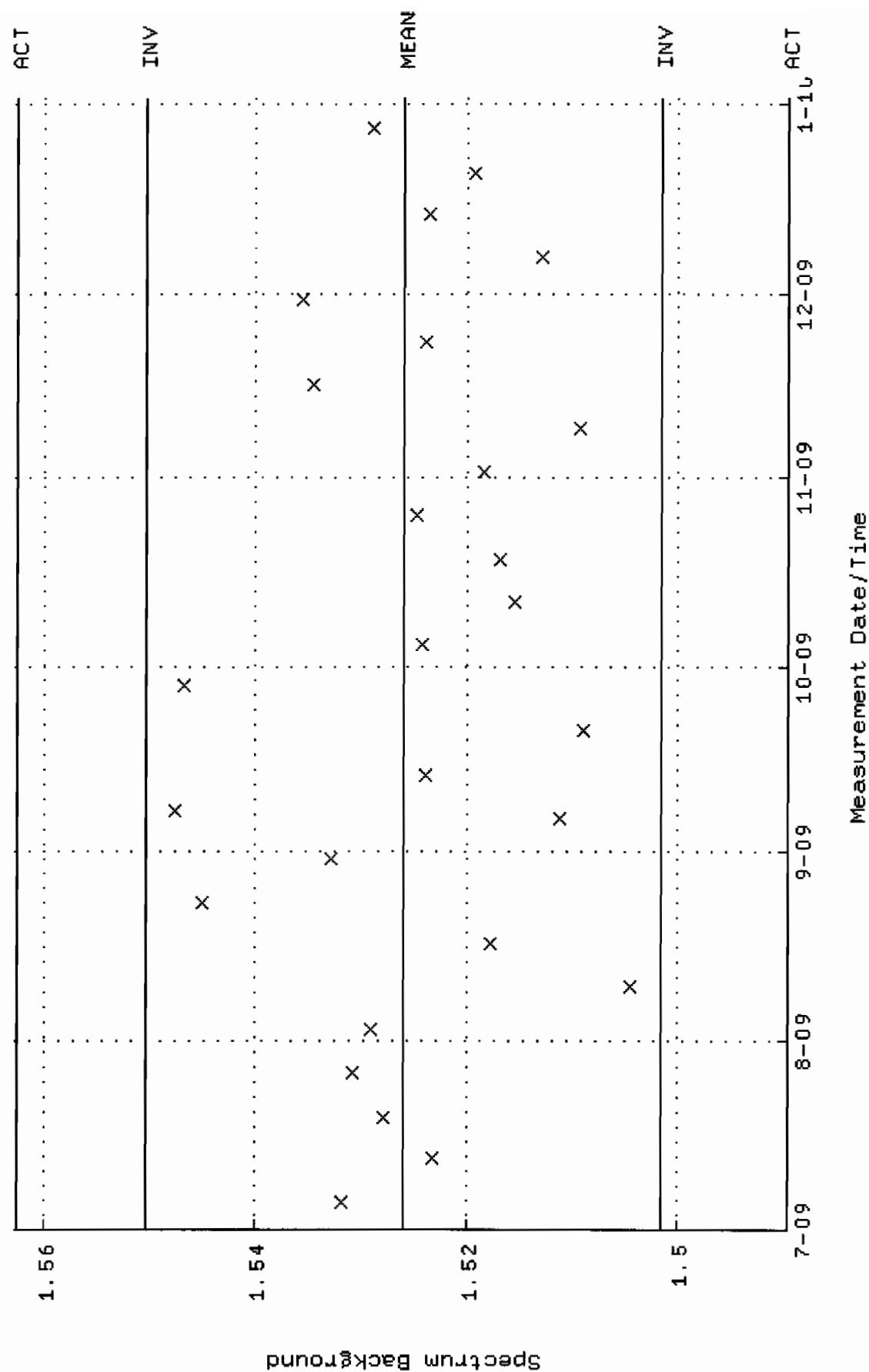
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM04.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 5-JUL-2009 13:49:51 through 1-JAN-2010 12:00:00  
 Mean +- Std Dev : 1.32050 +- 2.495234E-02 (1.89 %)



QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM06\_500MLMB.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 1-JUL-2009 14:30:59 through 1-JAN-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000

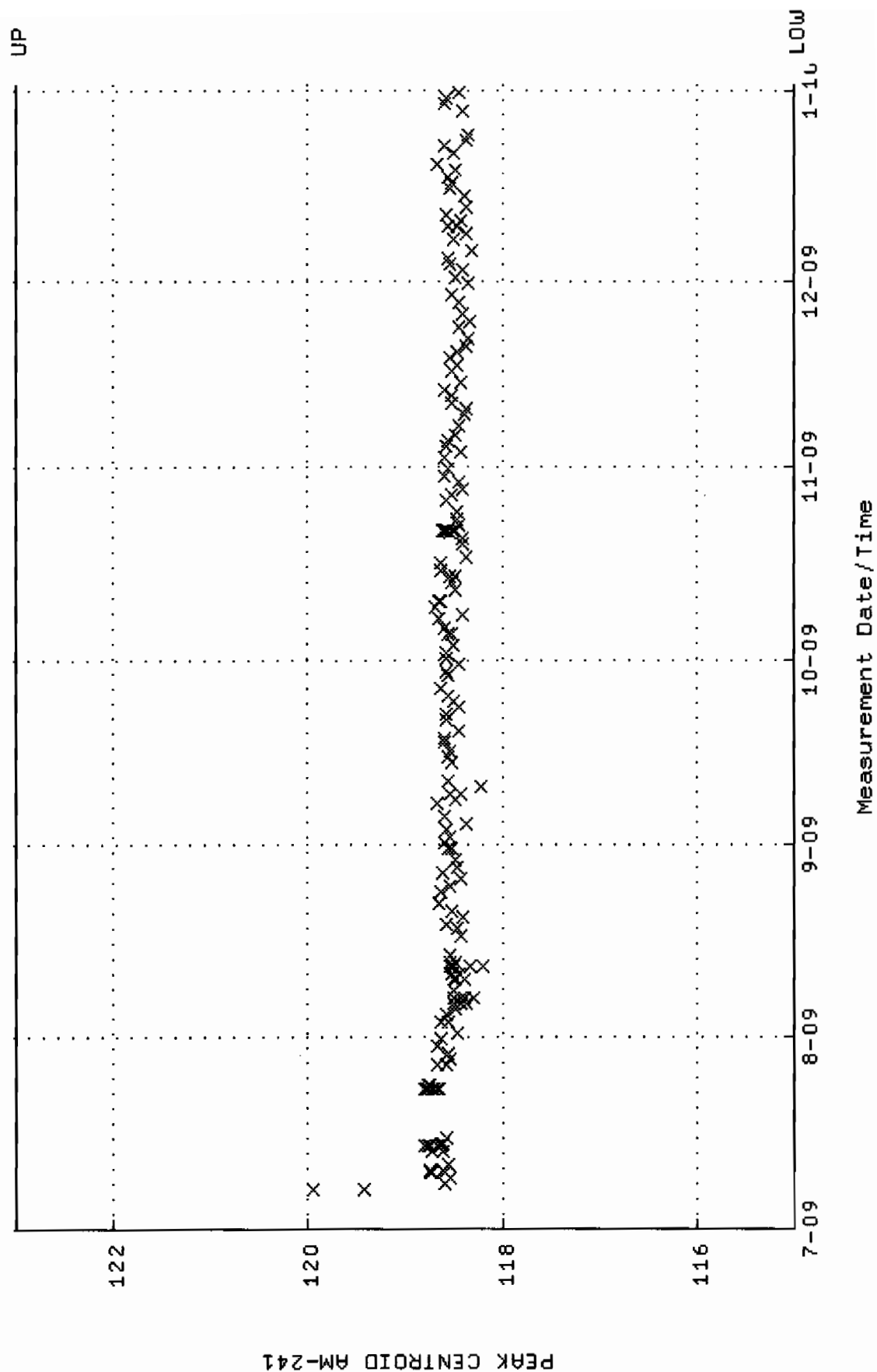


QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM06.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 5-JUL-2009 13:50:15 through 1-JAN-2010 12:00:00  
 Mean +- Std Dev : 1.52603 +- 1.215987E-02 (0.80 %)

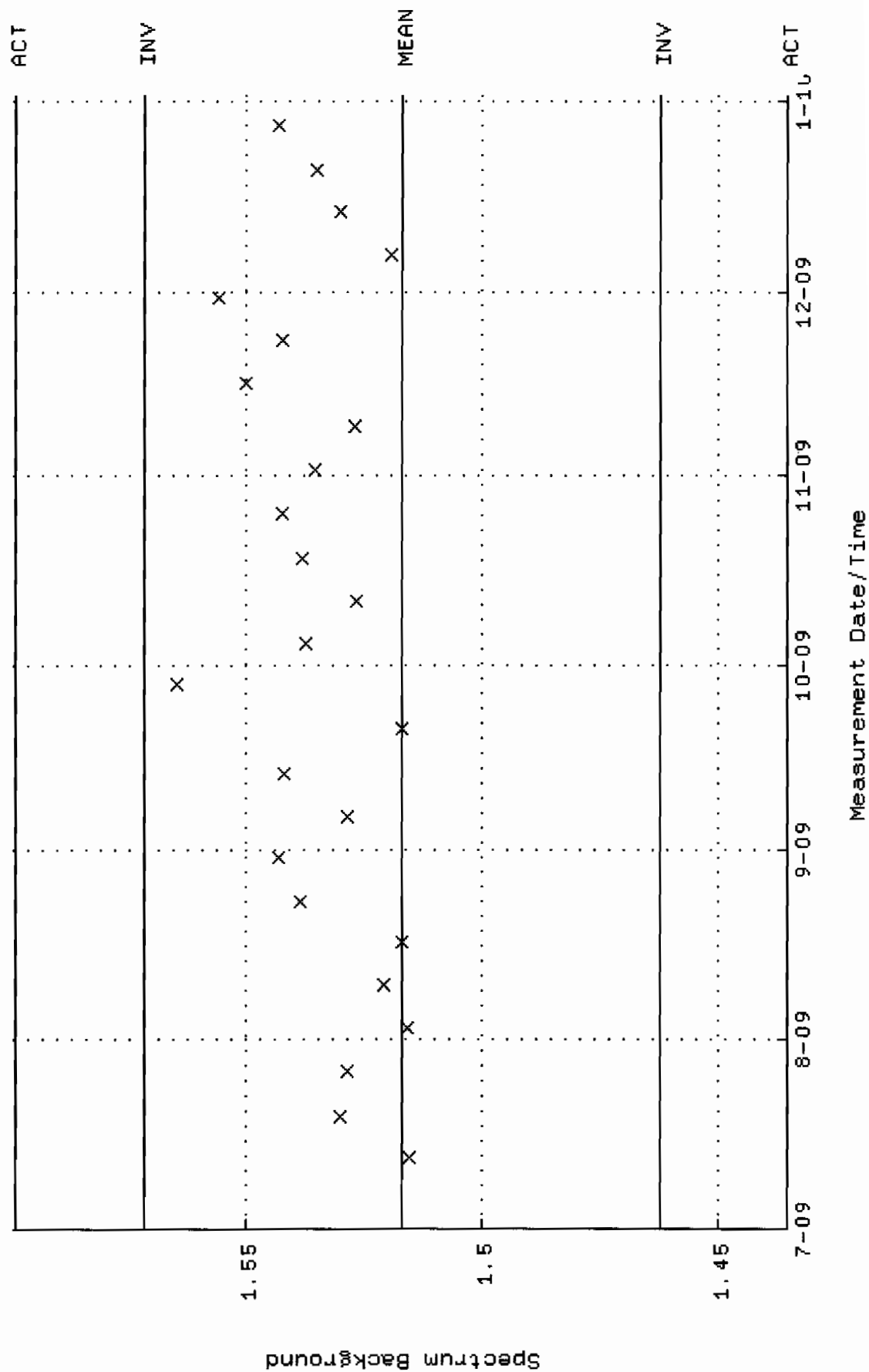




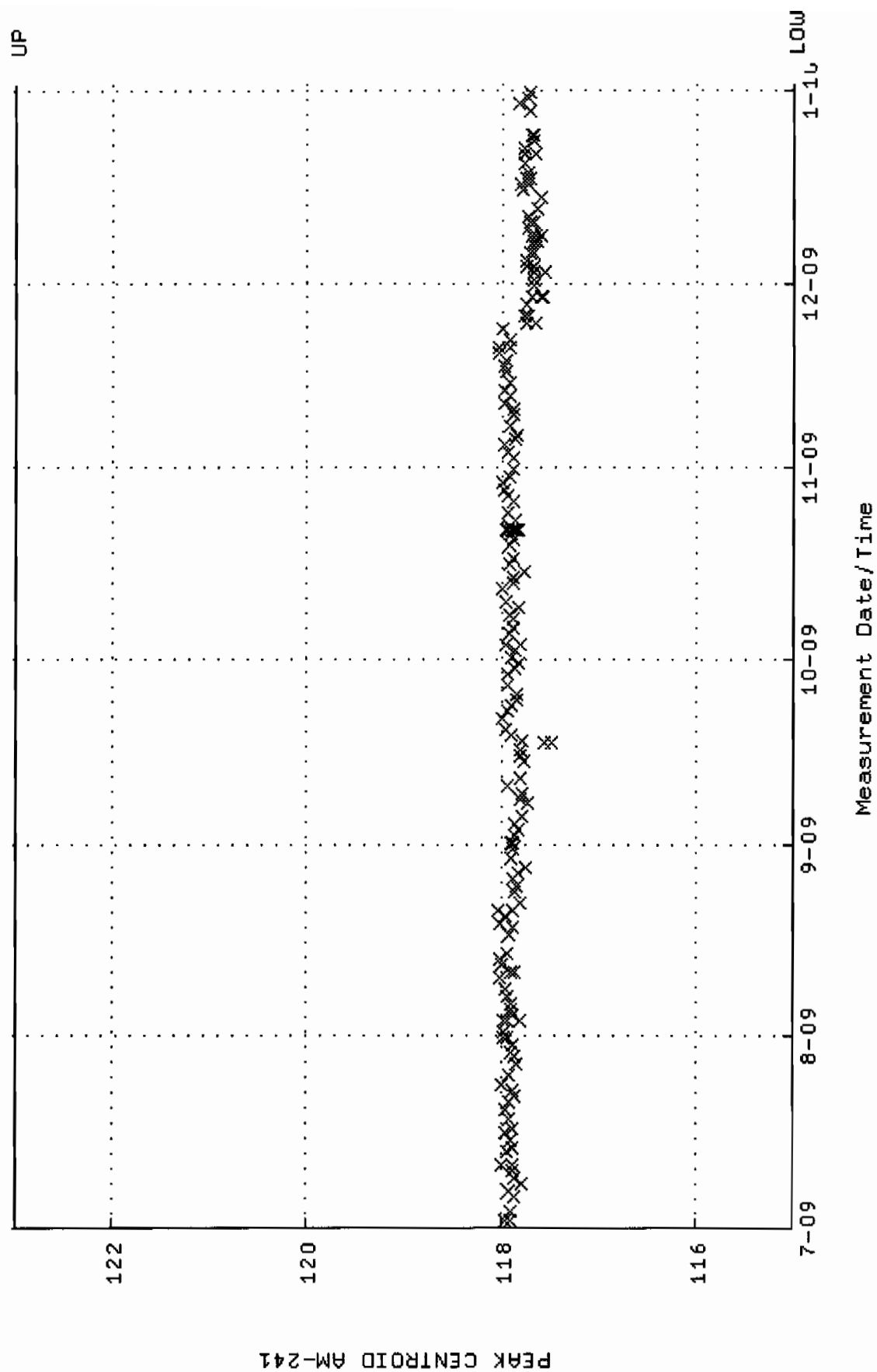
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM07\_JAR.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 7-JUL-2009 09:02:00 through 1-JAN-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



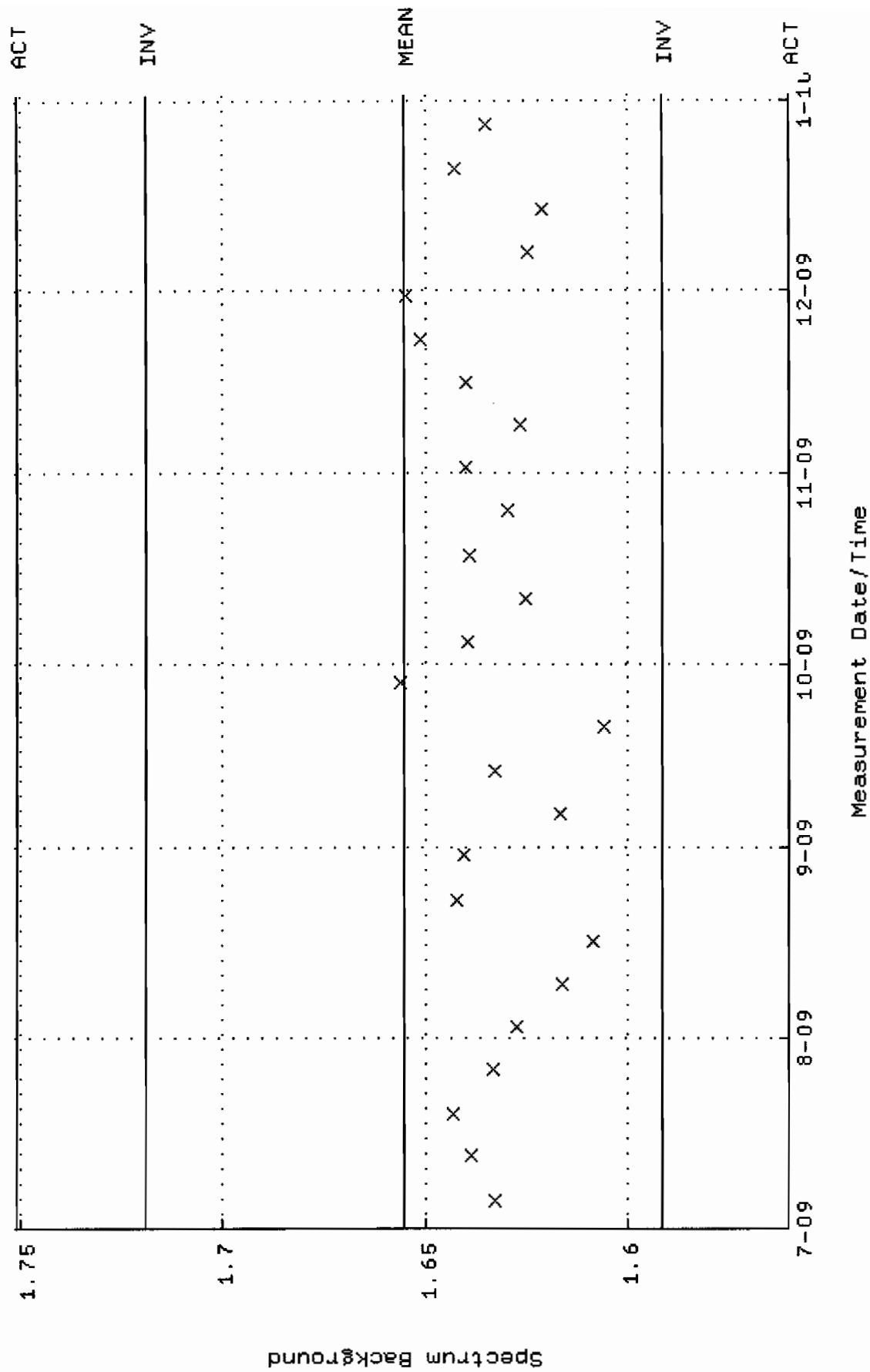
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM07.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 12-JUL-2009 17:17:31 through 1-JAN-2010 12:00:00  
 Mean +- Std Dev : 1.51715 +- 2.726376E-02 (1.80 %)



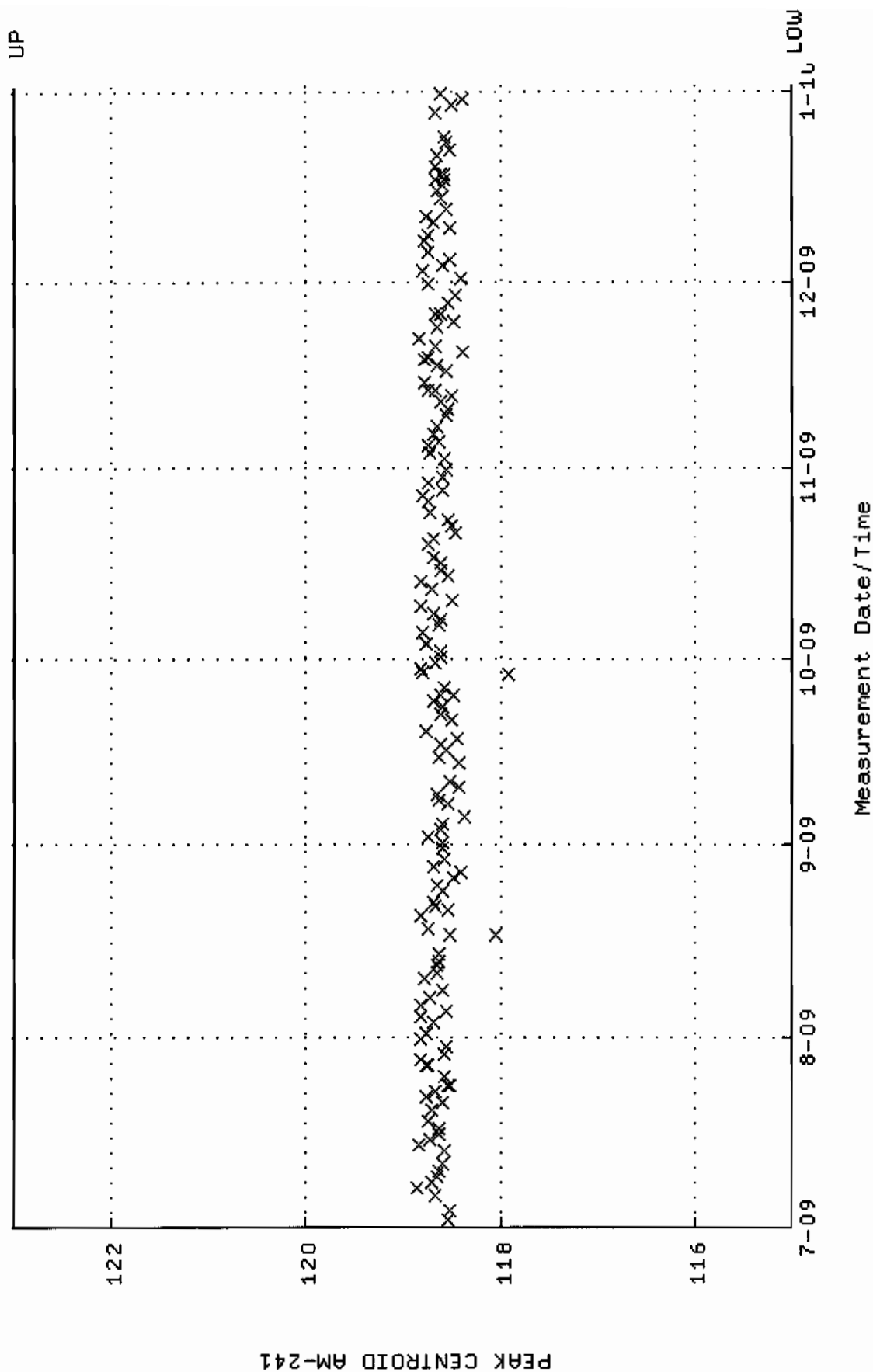
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC-GAM11-JAR.QAF;1  
 Parameter Name : PSCENTRO-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 2-JUL-2009 05:29:04 through 1-JAN-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



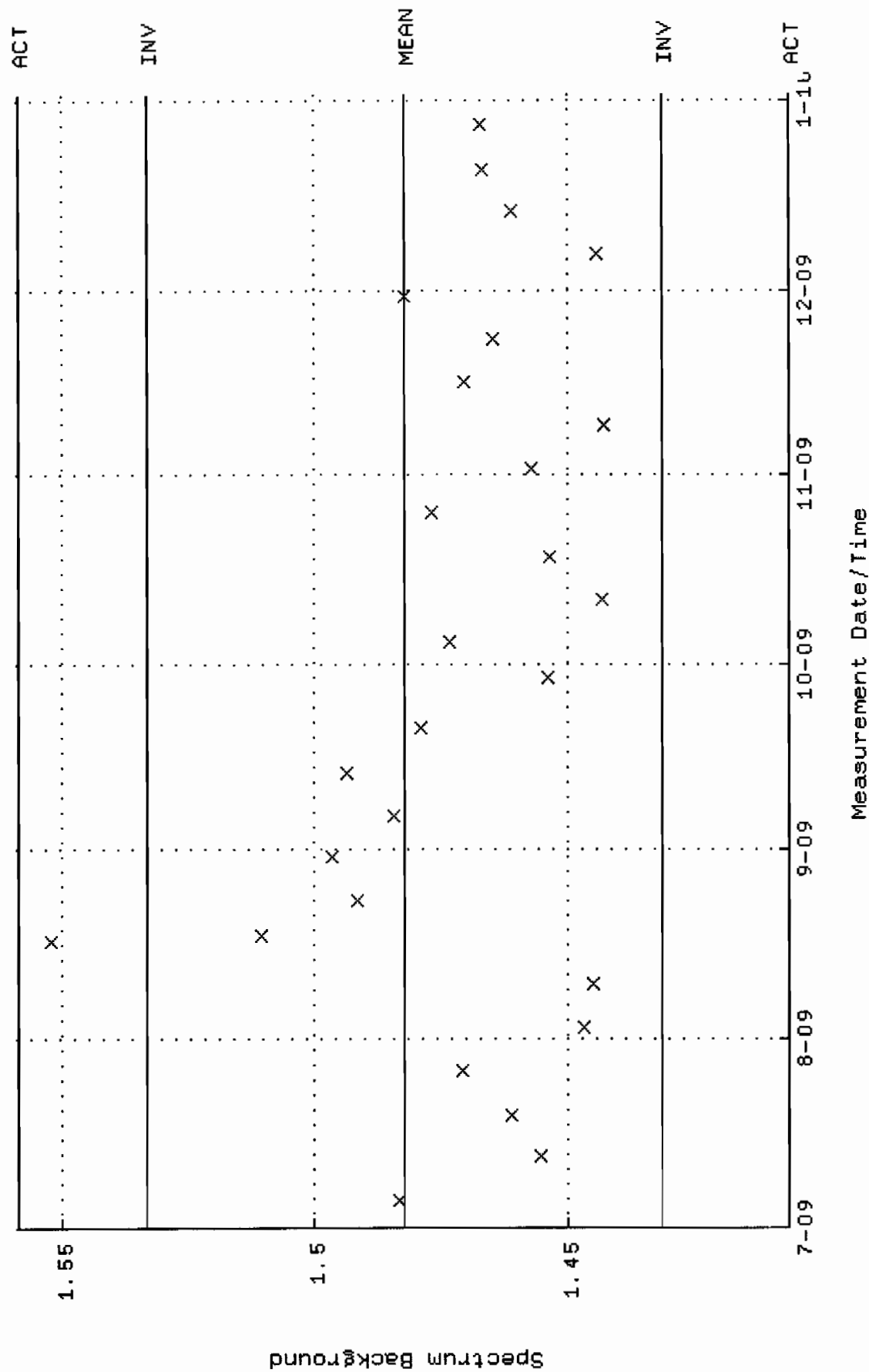
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM11.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 5-JUL-2009 13:51:39 through 1-JAN-2010 12:00:00  
 Mean +- Std Dev : 1.65552 +- 3.175806E-02 (1.92 %)



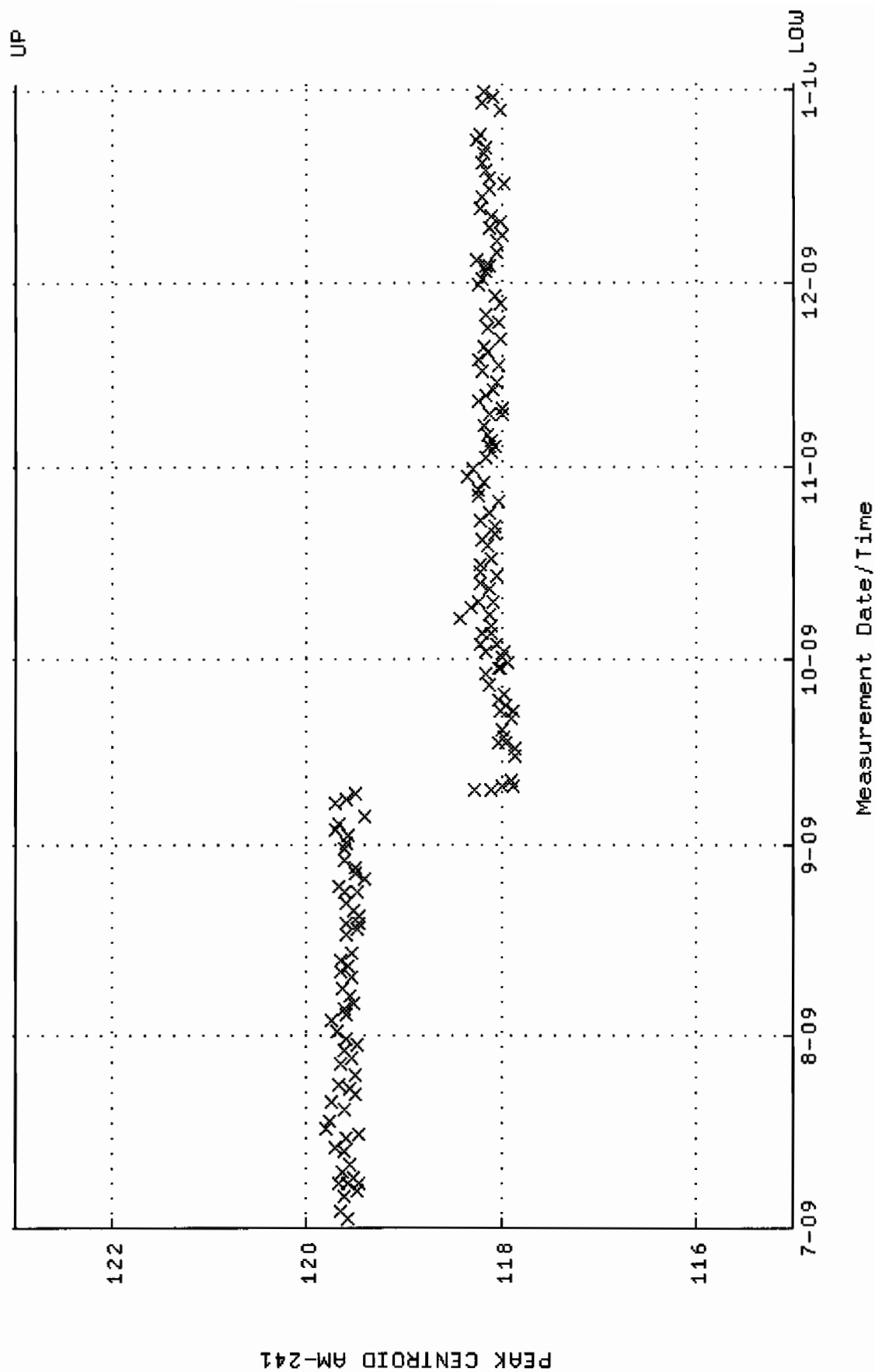
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM14\_2LMB.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 2-JUL-2009 04:59:23 through 1-JAN-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



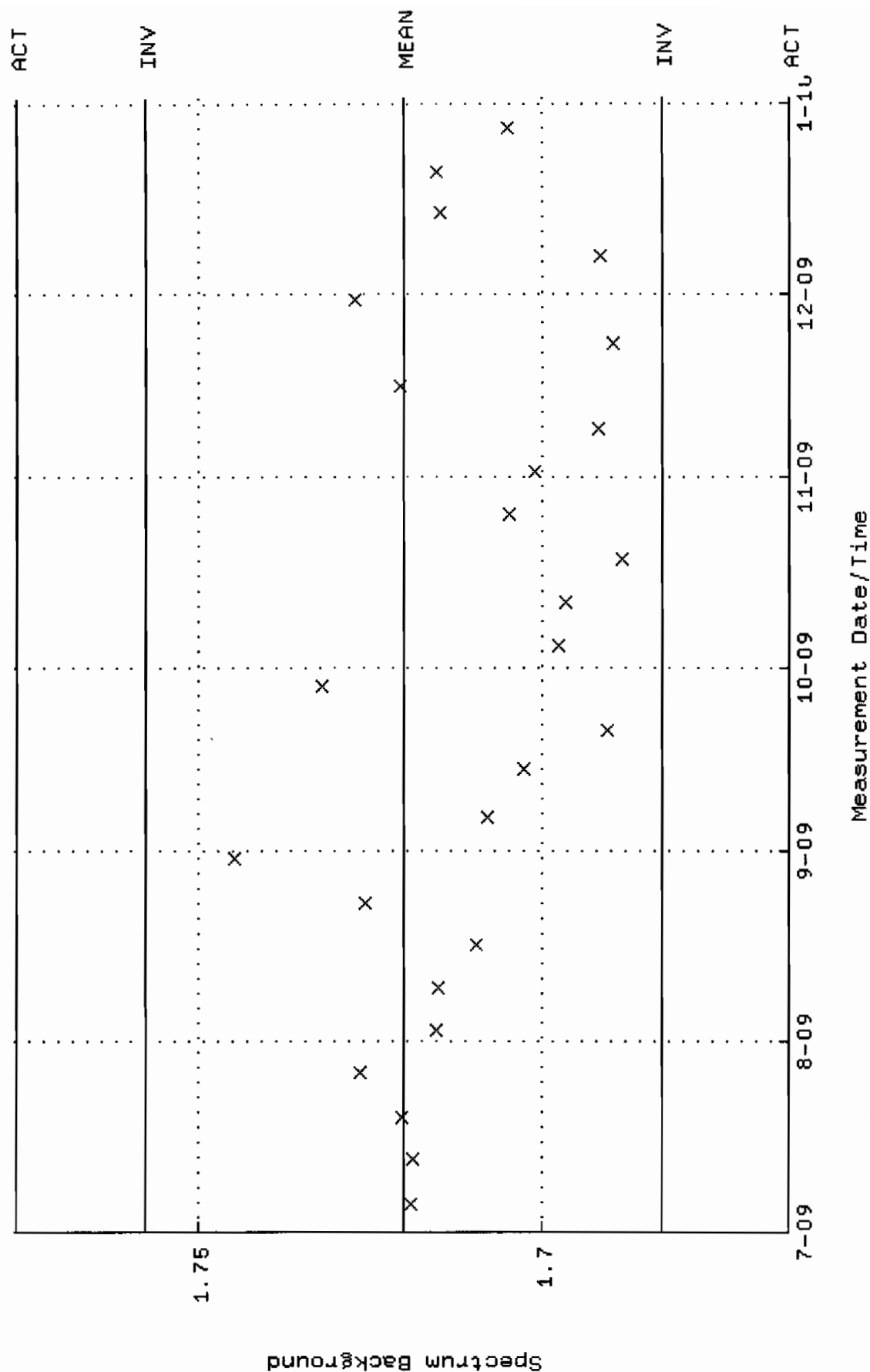
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM14.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 5-JUL-2009 13:52:31 through 1-JAN-2010 12:00:00  
 Mean +- Std Dev : 1.48240 +- 2.535500E-02 (1.71 %)



QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC-GAM15-CAN.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 2-JUL-2009 10:47:40 through 1-JAN-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000

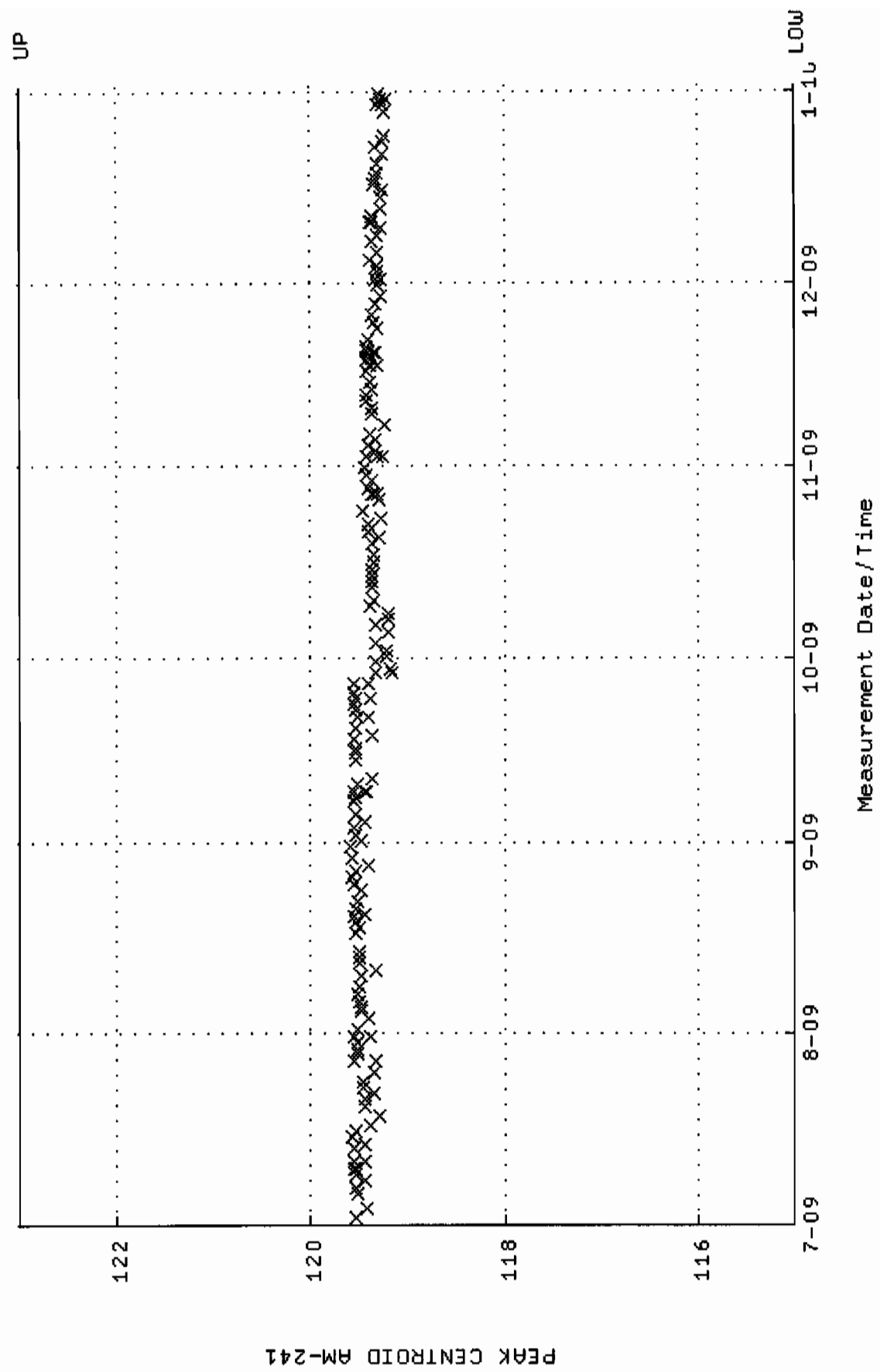


QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC-GAM15.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 5-JUL-2009 13:52:45 through 1-JAN-2010 12:00:00  
 Mean +- Std Dev : 1.72024 +- 1.875820E-02 (1.09 %)

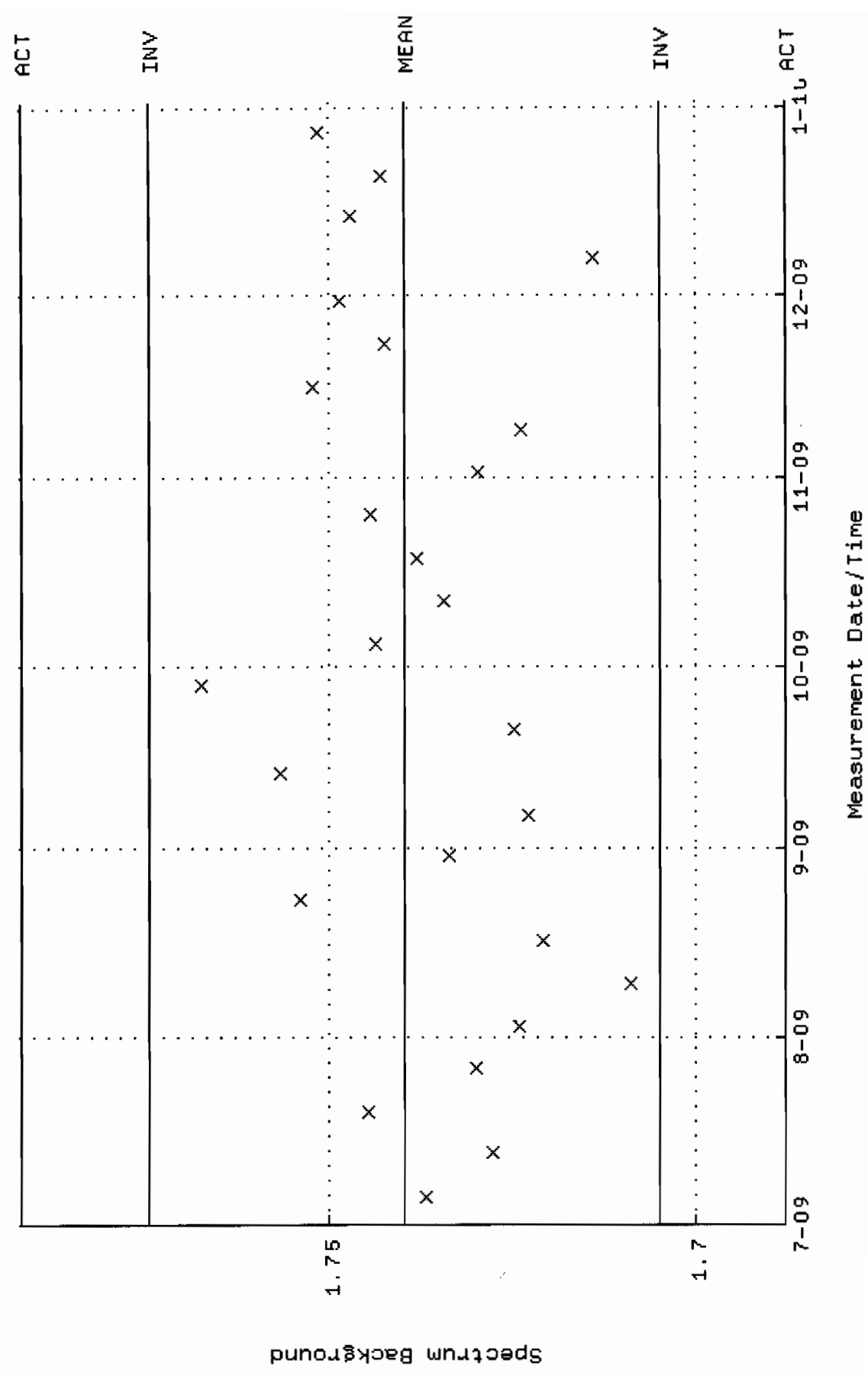




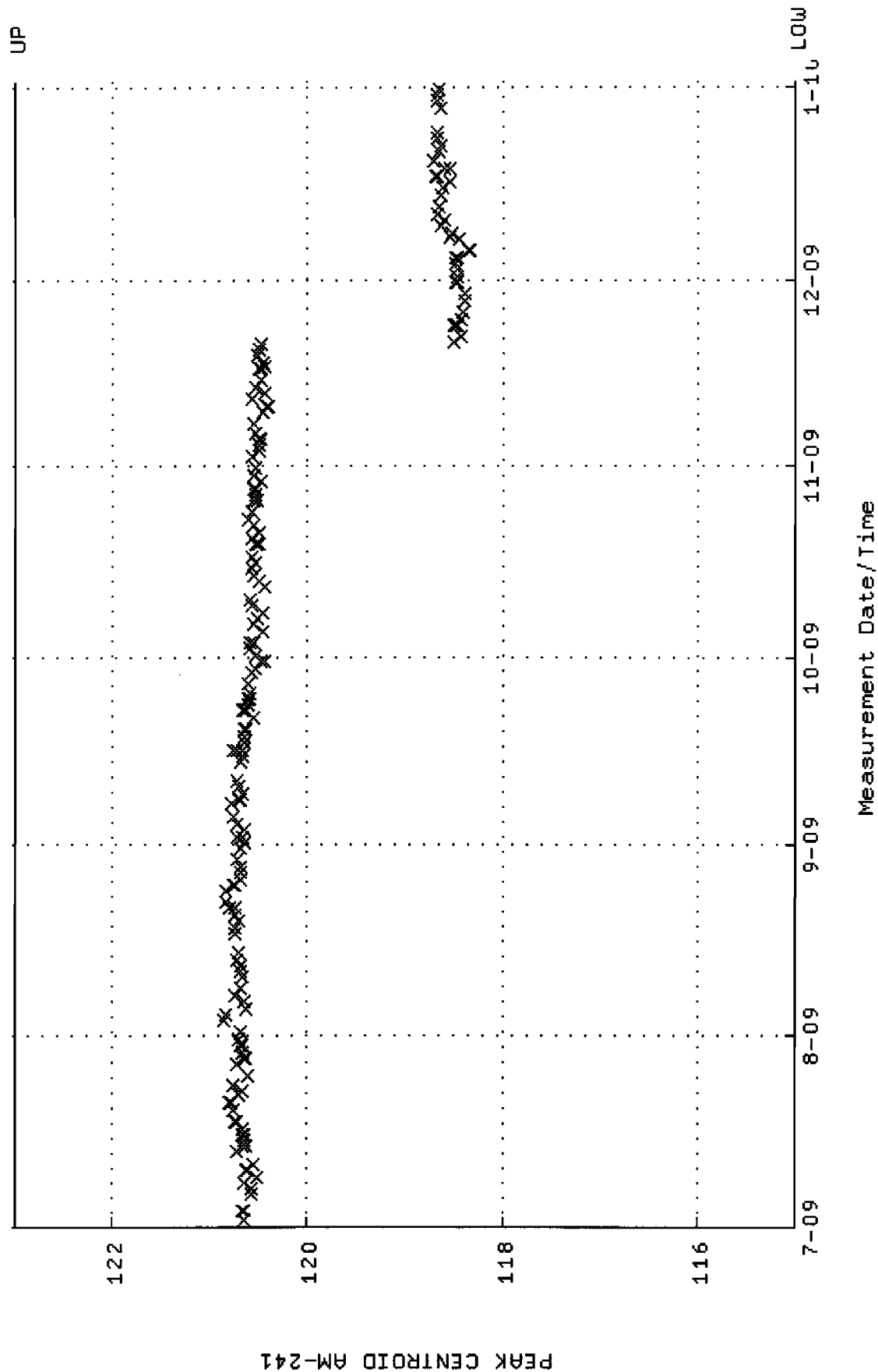
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC-GAM16-CAN.QAF;1  
Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
Start/End Dates : 2-JUL-2009 05:29:19 through 1-JAN-2010 12:00:00  
Lower/Upper Lmts: 115.000 through 123.000



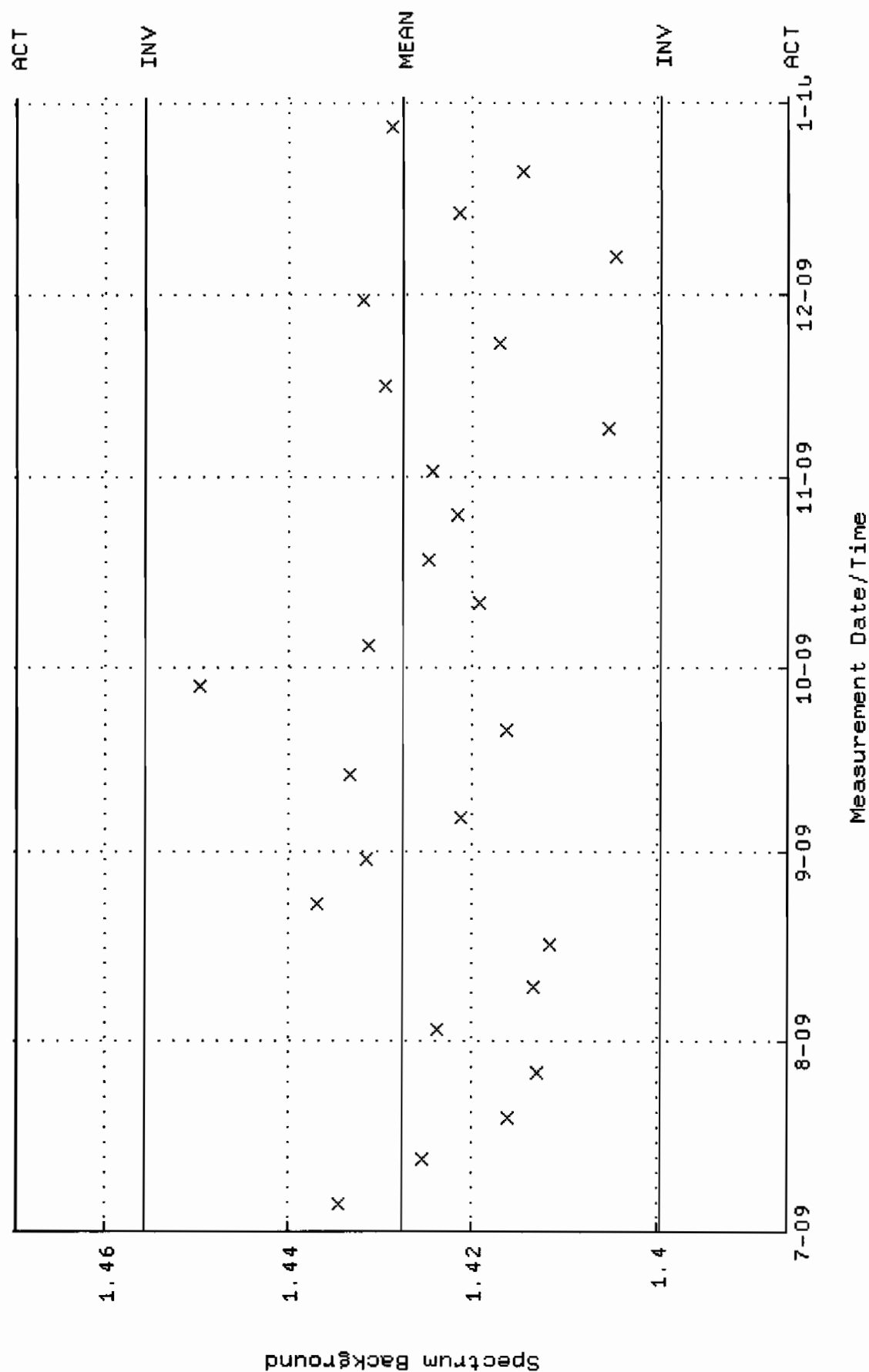
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC-GAM16.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 5-JUL-2009 13:52:58 through 1-JAN-2010 12:00:00  
 Mean +- Std Dev : 1.73980 +- 1.729897E-02 (0.99 %)



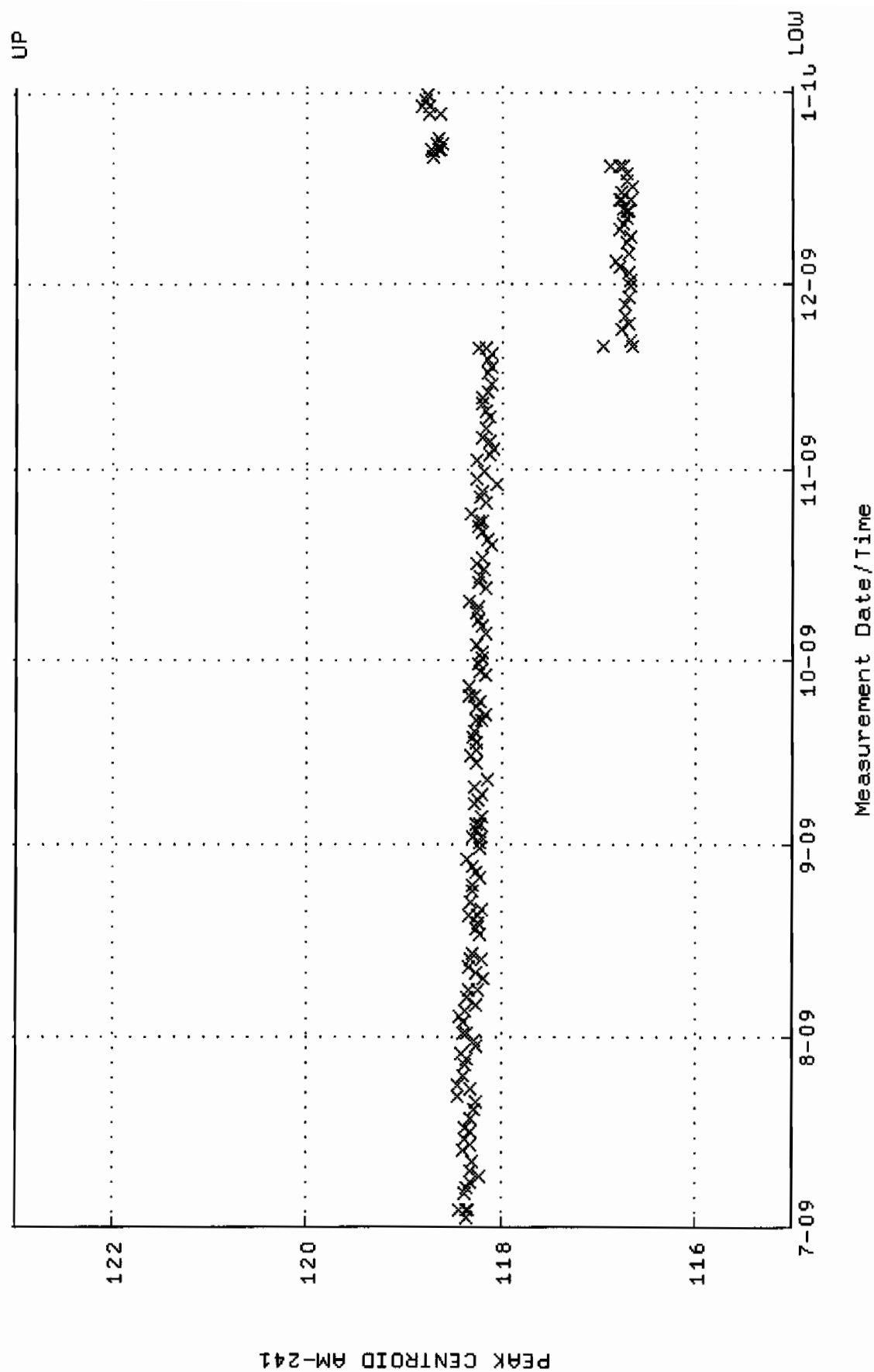
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM17\_CAN.QAF;1  
 Parameter Name : PSCENTRO-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 2-JUL-2009 05:29:26 through 1-JAN-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



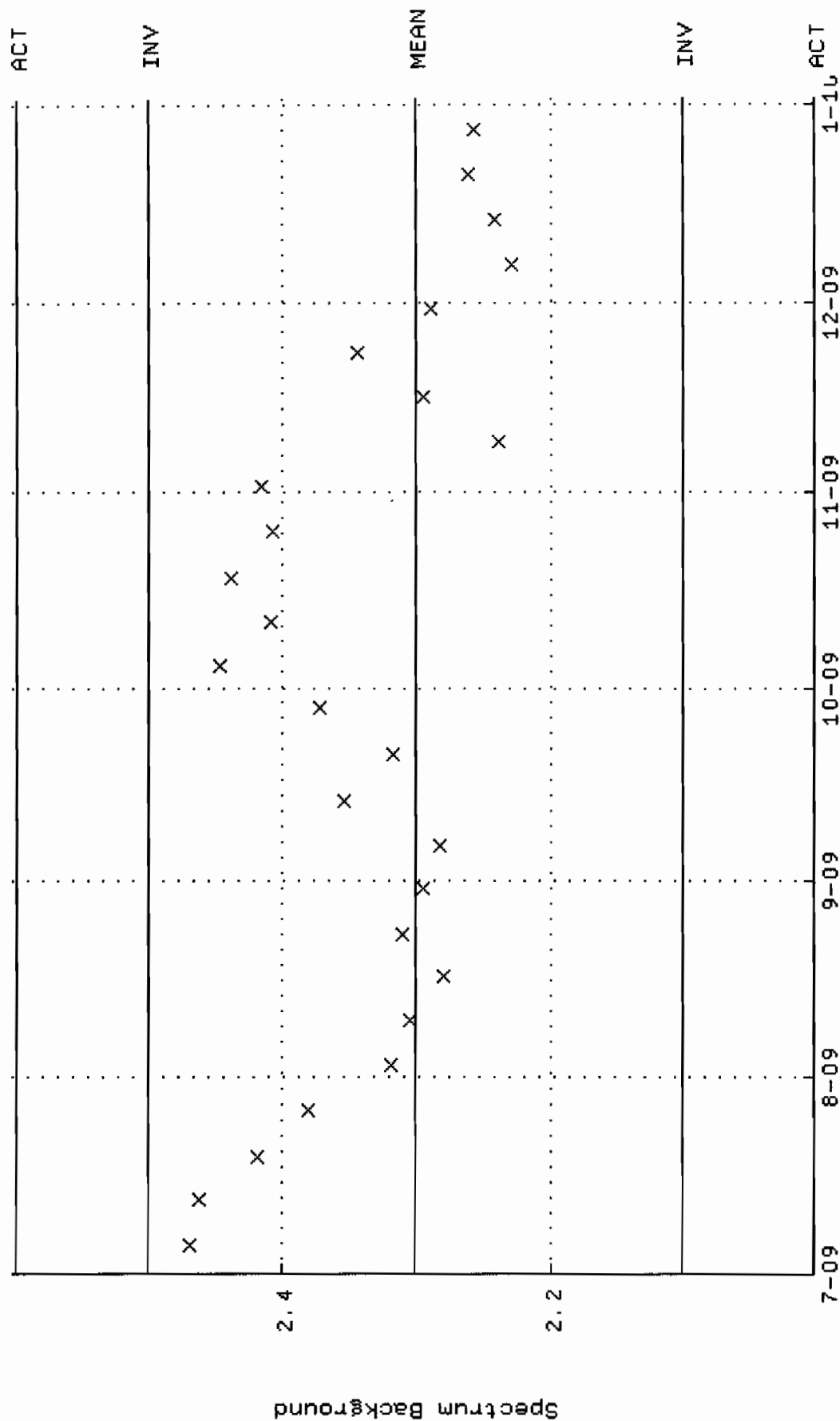
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC-GAM17.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 5-JUL-2009 13:53:11 through 1-JAN-2010 12:00:00  
 Mean +- Std Dev : 1.42766 +- 1.396974E-02 (0.98 %)



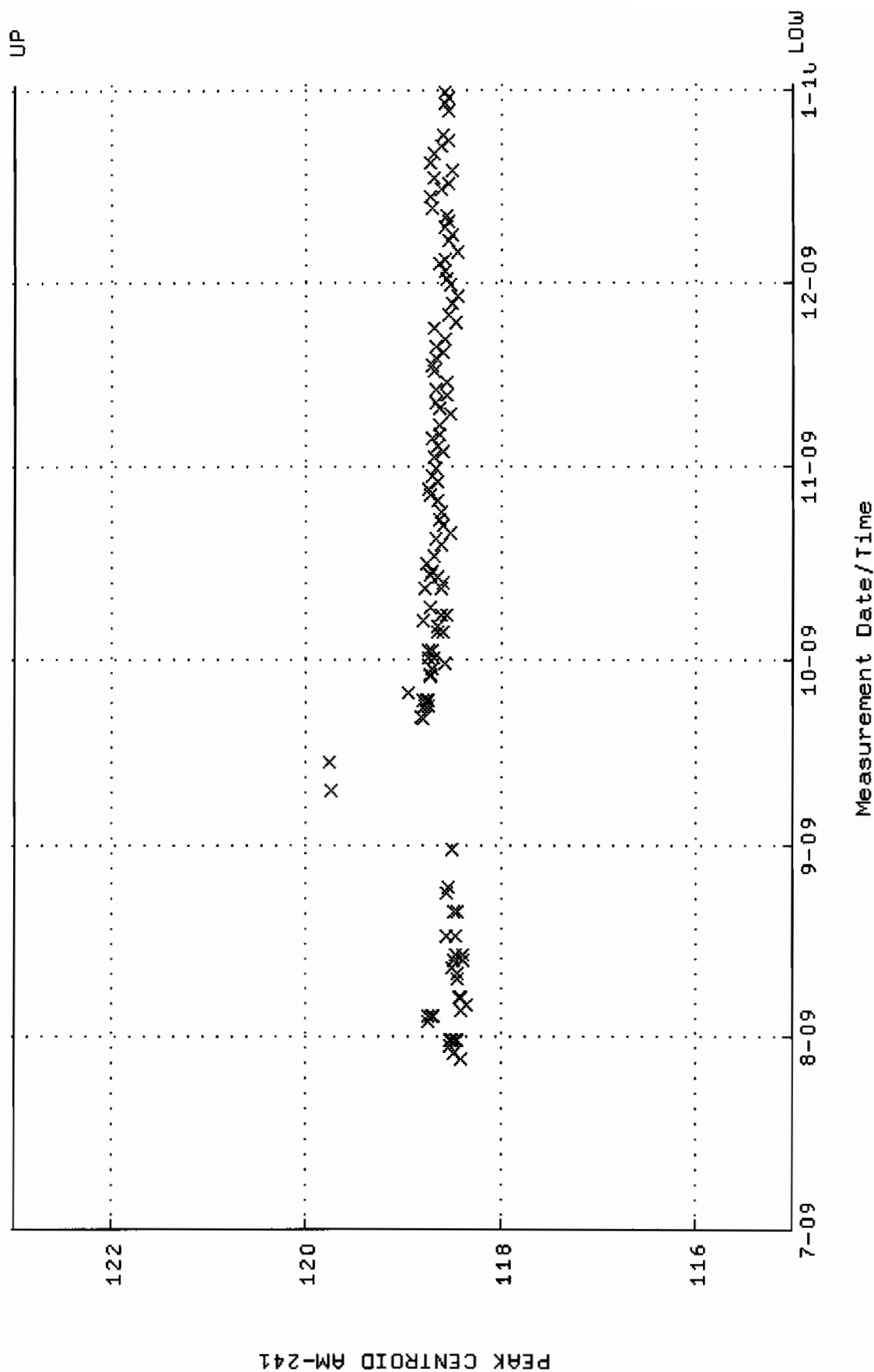
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM18\_CAN.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 2-JUL-2009 11:04:02 through 1-JAN-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



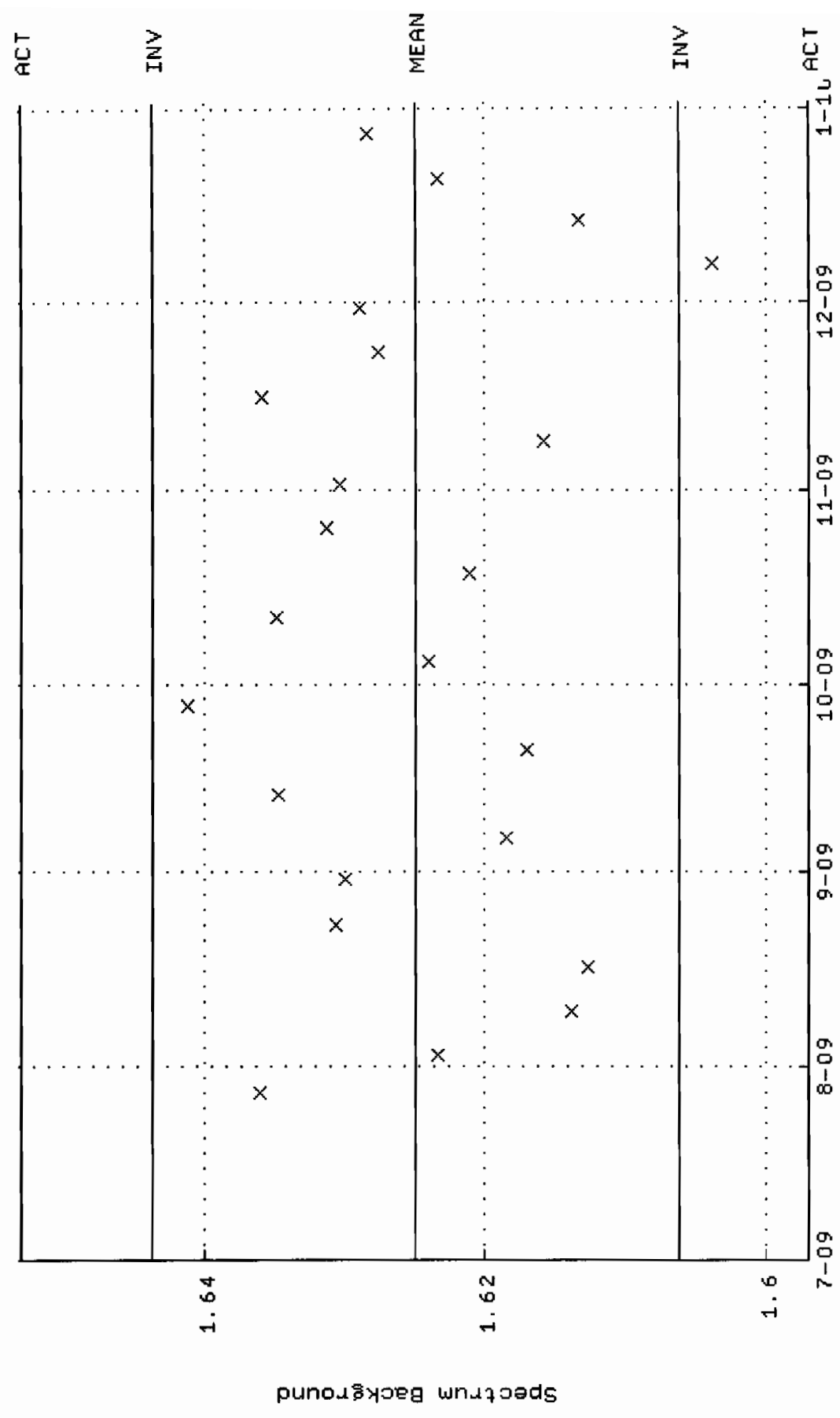
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM18.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 5-JUL-2009 13:53:23 through 1-JAN-2010 12:00:00  
 Mean +- Std Dev : 2.30164 +- 9.930626E-02 (4.31 %)



QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM25\_2LMB.QAF;1  
 Parameter Name : PSCENTRD-59 (PEAK CENTROID AM-241)  
 Start/End Dates : 28-JUL-2009 10:32:53 through 1-JAN-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM25.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 27-JUL-2009 17:25:45 through 1-JAN-2010 12:00:00  
 Mean +- Std Dev : 1.62502 +- 9.370414E-03 (0.58 %)





# STANDARDS DATA

1032

## CERTIFICATE OF CALIBRATION

### Standard Radionuclide Source

74047-278

5 mL Liquid in Flame Sealed Vial

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solution sources. The Am-241 was calibrated by 4 pi alpha liquid scintillation counting. All other radionuclides were calibrated using a germanium gamma spectrometer system. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Analytistics maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Rev. 1, February, 1979.

Calibration date: October 1, 2006 12:00 EST

| ISOTOPE | GAMMA-RAY<br>ENERGY | HALF-LIFE |   | GAMMA-RAYS<br>PER SECOND | TOTAL<br>UNCERTAINTY<br>% |
|---------|---------------------|-----------|---|--------------------------|---------------------------|
| Am-241  | 59.5                | 432       | y | 3339                     | 3.0                       |
| Cd-109  | 88                  | 462.6     | d | 4815                     | 3.3                       |
| Co-57   | 122                 | 271.79    | d | 2409                     | 3.0                       |
| Ce-139  | 166                 | 137.6     | d | 3408                     | 2.8                       |
| Hg-203  | 279                 | 46.61     | d | 7522                     | 2.7                       |
| Sn-113  | 392                 | 115.1     | d | 4728                     | 2.6                       |
| Cs-137  | 662                 | 30.07     | y | 2973                     | 3.0                       |
| Y-88    | 898                 | 106.6     | d | 11600                    | 2.6                       |
| Co-60   | 1173                | 5.2714    | y | 5780                     | 2.7                       |
| Co-60   | 1332                | 5.2714    | y | 5783                     | 2.6                       |
| Y-88    | 1836                | 106.6     | d | 12260                    | 2.6                       |

5.31725 grams 4M HCl solution.

P O NUMBER 2734RD, Item 1

SOURCE PREPARED BY:

M. Dimitrova  
M. Dimitrova, Radiochemist

Q A APPROVED:

W.M. [Signature] 11-28-06

This standard will expire one year after the calibration date.

rec'd 11/30/06  
RC-S-045-073-0

1380 Seaboard Industrial Blvd.  
 Atlanta, Georgia 30318

Tel 404-352-8677

Fax 404-352-2837

www.analytiscinc.com

## ANALYSIS OF UNCERTAINTY FOR MIXED GAMMA STANDARDS BATCH 127

### CALIBRATION DATE: October 1, 2006 12:00 EST

| Isotope | Energy (keV) | Calibration Method <sup>1</sup> | Statistics <sup>2</sup> | Calibration <sup>2</sup> | Peak Fitting <sup>2</sup> | Geometry <sup>2</sup> | Impurities <sup>2</sup> | Weighing | Combined Standard Uncertainty | Relative Expanded Uncertainty (k=2) |
|---------|--------------|---------------------------------|-------------------------|--------------------------|---------------------------|-----------------------|-------------------------|----------|-------------------------------|-------------------------------------|
| Cd-109  | 88           | HPGe                            | 0.16                    | 1.1                      | 0.88                      | 0.8                   | 0                       | 0.2      | 1.64                          | 3.3                                 |
| Co-57   | 122          | HPGe                            | 0.23                    | 1.1                      | 0.71                      | 0.7                   | 0                       | 0.2      | 1.52                          | 3.0                                 |
| Ce-139  | 166          | HPGe                            | 0.17                    | 1.0                      | 0.58                      | 0.7                   | 0                       | 0.2      | 1.38                          | 2.8                                 |
| Hg-203  | 279          | HPGe                            | 0.11                    | 1.1                      | 0.34                      | 0.7                   | 0                       | 0.2      | 1.37                          | 2.7                                 |
| Sn-113  | 392          | HPGe                            | 0.21                    | 1.0                      | 0.35                      | 0.7                   | 0                       | 0.2      | 1.30                          | 2.6                                 |
| Cs-137  | 662          | HPGe                            | 0.36                    | 1.1                      | 0.60                      | 0.7                   | 0                       | 0.2      | 1.49                          | 3.0                                 |
| Y-88    | 898          | HPGe                            | 0.19                    | 1.0                      | 0.33                      | 0.7                   | 0                       | 0.2      | 1.29                          | 2.6                                 |
| Co-60   | 1173         | HPGe                            | 0.31                    | .97                      | 0.45                      | 0.7                   | 0                       | 0.2      | 1.33                          | 2.7                                 |
| Co-60   | 1332         | HPGe                            | 0.33                    | .93                      | 0.48                      | 0.7                   | 0                       | 0.2      | 1.32                          | 2.6                                 |
| Y-88    | 1836         | HPGe                            | 0.24                    | 1.0                      | 0.35                      | 0.7                   | 0                       | 0.2      | 1.31                          | 2.6                                 |

#### Optional Additional Isotopes

|        |      |       |      |     |   |     |      |     |      |     |
|--------|------|-------|------|-----|---|-----|------|-----|------|-----|
| Pb-210 | 46.5 | 4π LS | 0.33 | 1.1 | 0 | 0.9 | 0.30 | 0.2 | 1.50 | 3.0 |
| Am-241 | 59.5 | 4π LS | 0.33 | 1.1 | 0 | 0.9 | 0.30 | 0.2 | 1.50 | 3.0 |
| Sr-85  | 514  | IC    | 0.30 | 1.1 | 0 | 0.7 | 0.17 | 0.2 | 1.36 | 2.7 |
| Cs-134 | 605  | IC    | 0.30 | 1.0 | 0 | 0.8 | 0.17 | 0.2 | 1.34 | 2.7 |
| Cs-134 | 796  | IC    | 0.30 | 1.0 | 0 | 0.8 | 0.17 | 0.2 | 1.34 | 2.7 |
| Mn-54  | 835  | IC    | 0.30 | 1.0 | 0 | 0.8 | 0.17 | 0.2 | 1.34 | 2.7 |
| Zn-65  | 1116 | IC    | 0.30 | 1.0 | 0 | 0.8 | 0.17 | 0.2 | 1.34 | 2.7 |

#### Calibration Methods:

4π LS (4 pi Liquid Scintillation Counting)

HPGe (High Purity Germanium Gamma Ray Spectrometer)

IC (Gamma Ray Ionization Chamber)

<sup>2</sup>As Percent (%) from counting data

No interfering gamma emitting impurities were detected during calibration. Depending on the resolution and energy dispersion (keV/channel) of the measuring system, the following spectral conflicts may occur: (1) between the 88 keV gamma-ray and the X-rays emitted in the decay of Hg-203, (2) between the 1333 keV gamma-ray and the 1325 keV single escape peak from the 1836 keV gamma-ray.

# Standard Traceability Log Rad

| Source Material Info |              |
|----------------------|--------------|
| Parent Code:         | 1032         |
| Prepared By:         | Daniel Roy   |
| Carrier Conc:        | 4 M HCL      |
| Reference Date:      | 10/01/2006   |
| Ampoule Mass (g):    | 5.31725 g    |
| Uncertainty:         | +/- 2.81 %   |
| LogBook No:          | RC-S-045-073 |

| A Solution Material Info |             |
|--------------------------|-------------|
| Isotope:                 | Mixed Gamma |
| Prepared By:             | Daniel Roy  |
| Prep Date:               | 11/30/2006  |
| Verification Date:       | 12/02/2009  |
| Expiration Date:         | 12/02/2010  |
| Primary Code:            | 1032-A      |
| Dilution(mL):            | 100 mL      |
| Mass of Parent(g):       | 5.2579 g    |
| Density(g/mL):           | 1.0611      |
| Balance ID:              | 38080204    |

## Calculations Converting parent activity to dpm/mL/dpm/g

$(\text{Mass of parent(g)}) * (\text{Parm Activity (dpm)}) * (\text{conversion dpm to dpm}) / (\text{Ampoule Mass(g)} * (\text{Dilution Vol})) = \text{Parent Activity (dpm/mL)}$

$(\text{Mass of parent(g)}) * (\text{Parm Activity (dpm)}) * (\text{conversion dpm to dpm}) / \text{Density} / (\text{Ampoule Mass (g)} * (\text{Dilution Vol})) = \text{Parent Activity (dpm/g)}$

$(5.2579 \text{ g}) * (218817 \text{ dpm}) * (1 \text{ dpm/dpm}) / (5.31725 \text{ g} * 100 \text{ mL}) = 2163.7461 \text{ dpm/mL}$

$(5.2579 \text{ g}) * (218817 \text{ dpm}) * (1 \text{ dpm/dpm}) / (1.0611 \text{ g/mL}) / (5.31725 \text{ g} * 100 \text{ mL}) = 2039.2400 \text{ dpm/g}$

## Secondary Standards

| Prep Date | Preparer | Mass Primary | Dilution (mL) | Code | Conc dpm/mL | Verification Date | Expiration Date |
|-----------|----------|--------------|---------------|------|-------------|-------------------|-----------------|
|-----------|----------|--------------|---------------|------|-------------|-------------------|-----------------|

GEL Laboratories LLC  
Version 1.0 9/18/2000

# Verification for Mixed Gamma Standard 1032-A

M. Stamps  
12/2/2009

Am-241

| Isotope        | Result | pCi/L - Ver. IAR-1 |
|----------------|--------|--------------------|
| Mixed Gamma N1 | 2534   | pCi/L - Ver. IAR-3 |
| Mixed Gamma N2 | 2510   | pCi/L - Ver. IAR-5 |
| Mixed Gamma N3 | 2413   |                    |

Mean Value (Counting) = 2485.67  
Stdev = 64.065  
Rule 3 (Pass/Fail) 100.00 Pass

Certificate Value = 2485.68018  
Lower Limit = 2357.536524  
Upper Limit = 2613.796809  
Rule 1 (Pass/Fail) Pass  
Two sigma = 128.1301422  
10 % of Mean = 248.5666667  
Rule 2 (Pass/Fail) Pass

## Verification Rules

- Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
- Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
- Rule 3 = The determined mean value shall be within 5% of the certificate value.

M. Stamps  
12/2/09  
independent  
12/2/09

# Verification for Mixed Gamma Standard 1032-A

M. Stamps  
12/2/2009

| Cs-137         | Isotope | Result |                     |
|----------------|---------|--------|---------------------|
| Mixed Gamma N1 |         | 854.2  | pCi/L - Ver. Tab. 1 |
| Mixed Gamma N2 |         | 907.6  | pCi/L - Ver. Tab. 3 |
| Mixed Gamma N3 |         | 898.9  | pCi/L - Ver. Tab. 2 |

Mean Value (Counting) =  
Stdev =

886.90  
28.651

95.01

Rule 3 (Pass/Fail)

*12/2/09  
M. Stamps  
12/2/09*

Certificate Value =  
Lower Limit =  
Upper Limit =  
Rule 1 (Pass/Fail)  
Two sigma =  
10 % of Mean =  
Rule 2 (Pass/Fail)

933.44144  
829.597644  
944.202356  
Pass  
57.30235597  
88.69000000  
Pass

pCi/L  
pCi/L  
pCi/L

## Verification Rules

- Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
- Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
- Rule 3 = The determined mean value shall be within 5% of the certificate value.

# Verification for Mixed Gamma Standard 1032-A

M. Stamps  
12/2/2009

Co-60 (1332.5)

| Isotope        | Result | pCi/L - Ver-Tag-5 |
|----------------|--------|-------------------|
| Mixed Gamma N1 | 1572   | pCi/L - Ver-Tag-2 |
| Mixed Gamma N2 | 1495   | pCi/L - Ver-Tag-3 |
| Mixed Gamma N3 | 1501   |                   |

Mean Value (Counting) = 1522.67  
Stdev = 42.829  
98.50 Pass  
Rule 3 (Pass/Fail)

Certificate Value = 1545.8378  
Lower Limit = 1437.008431  
Upper Limit = 1608.324902  
Rule 1 (Pass/Fail) Pass  
Two sigma = 85.65823564  
10 % of Mean = 152.26686867  
Rule 2 (Pass/Fail) Pass

## Verification Rules

- Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
- Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
- Rule 3 = The determined mean value shall be within 5% of the certificate value.

*U.S. Stamp issued 12/2/09*

### 0244-A Characterization

| Sample #         | Uranium-233/234<br>Result (pCi/g) | Uranium-238<br>Result (pCi/g) | Thorium-230<br>Result (pCi/g) |
|------------------|-----------------------------------|-------------------------------|-------------------------------|
| 0244-A 1         | 6.59                              | 6.12                          | 25.3                          |
| 0244-A 2         | 6.36                              | 6.07                          | 28.5                          |
| 0244-A 3         | 5.78                              | 5.53                          | 26.5                          |
| 0244-A 4         | 6.48                              | 5.97                          | 25.5                          |
| 0244-A 5         | 5.65                              | 5.59                          | 26.2                          |
| 0244-A 6         | 6.96                              | 5.78                          | 27.0                          |
| 0244-A 7         | 5.95                              | 5.75                          | 24.2                          |
| 0244-A 8         | 5.29                              | 5.67                          | 27.2                          |
| 0244-A 9         | 5.51                              | 6.05                          | 24.3                          |
| 0244-A 10        | 6.37                              | 5.57                          | 25.6                          |
| 0244-A 11        | 6.50                              | 5.80                          | 25.8                          |
| 0244-A 12        | 6.13                              | 5.42                          | 22.4                          |
| 0244-A 13        | 5.49                              | 5.24                          | 24.7                          |
| 0244-A 14        | 6.19                              | 5.21                          | 26.9                          |
| 0244-A 15        | 6.50                              | 6.27                          | 27.6                          |
| 0244-A 16        | 6.50                              | 5.24                          | 24.9                          |
| 0244-A 17        | 6.25                              | 6.05                          | 24.7                          |
| 0244-A 18        | 6.14                              | 6.00                          | 25.4                          |
| 0244-A 19        | 6.19                              | 6.14                          | 26.4                          |
| 0244-A 20        | 5.67                              | 5.61                          | 23.2                          |
| Mean Value       | 6.13                              | 5.75                          | 25.62                         |
| 1 sigma          | 0.439                             | 0.325                         | 1.493                         |
| 2 sigma          | 0.878                             | 0.650                         | 2.986                         |
| 75% Limit        | 4.60                              | 4.31                          | 19.22                         |
| 125% Limit       | 7.66                              | 7.19                          | 32.03                         |
| Expected Result  | 6.2 +/- 4.0                       | 6.0 +/- 4.0                   | 24.5 +/- 0.6                  |
| Achieved Results | 6.13 +/- 0.439                    | 5.75 +/- 0.325                | 25.62 +/- 1.493               |

REFERENCE DATA 4/14/2000 *fit c held 12/1/04*

*angela d. johnson 12/3/04*



TRM

Invoice:

5 boxes of TRM-1  
 10 " " TRM-2 and 3  
 5 " each of TRM-1 through 6  
 7 " baghouse dirt

use 1/4 gm x 10 samples WITH together  
 for TRM-2

Table 7. Recommended Concentrations of Tailings Reference Materials (pCi/g)

|        | TRM-1    | TRM-2      | TRM-3      | TRM-4      |
|--------|----------|------------|------------|------------|
| U-238  | 99 ± 6   | 6.0 ± 4.0  | 19.6 ± 1.4 | 44.9 ± 1.6 |
| U-234  | 105 ± 6  | 6.2 ± 4.0  | 19.6 ± 1.9 | 44.6 ± 1.2 |
| Th-230 | 471 ± 11 | 24.5 ± 0.6 | 58.5 ± 2.1 | 44.0 ± 1.6 |
| Ra-226 | 489 ± 17 | 25.4 ± 0.9 | 60.3 ± 2.3 | 42.9 ± 1.2 |
| Pb-210 | 421 ± 12 | 22.1 ± 1.2 | 56.0 ± 2.1 | 38.9 ± 2.0 |

1

### 0244-B Characterization

| Sample #         | Plutonium-239<br>Result (pCi/g) | Plutonium-238<br>Result (pCi/g) | Americium-241<br>Result (pCi/g) |
|------------------|---------------------------------|---------------------------------|---------------------------------|
| 0244-B 1         | 39.9                            | 7.88                            | 38.4                            |
| 0244-B 2         | 44.1                            | 7.97                            | 40.6                            |
| 0244-B 3         | 45.8                            | 6.56                            | 31.8                            |
| 0244-B 4         | 43.6                            | 7.69                            | 31.5                            |
| 0244-B 5         | 43                              | 7.9                             | 40.2                            |
| 0244-B 6         | 43.5                            | 7.84                            | 29.4                            |
| 0244-B 7         | 41.3                            | 7.67                            | 36                              |
| 0244-B 8         | 44.3                            | 6.95                            | 33.2                            |
| 0244-B 9         | 42.7                            | 7.2                             | 29.2                            |
| 0244-B 10        | 44.9                            | 7.69                            | 30                              |
| 0244-B 11        | 41.4                            | 7.22                            | 30.2                            |
| 0244-B 12        | 41.3                            | 7.74                            | 36                              |
| 0244-B 13        | 39.2                            | 6.65                            | 33.8                            |
| 0244-B 14        | 39.6                            | 7.78                            | 31.1                            |
| 0244-B 15        | 45.3                            | 8.41                            | 37.3                            |
| 0244-B 16        | 38.1                            | 6.74                            | 33.6                            |
| 0244-B 17        | 48.5                            | 8.51                            | 30.5                            |
| 0244-B 18        | 36.5                            | 7.23                            | 38.6                            |
| 0244-B 19        | 35.3                            | 6.98                            | 30.9                            |
| 0244-B 20        | 37.4                            | 8.55                            | 31.3                            |
| Mean Value       | 41.79                           | 7.56                            | 33.68                           |
| 1 sigma          | 3.418                           | 0.596                           | 3.724                           |
| 2 sigma          | 6.835                           | 1.193                           | 7.448                           |
| 75% Limit        | 30.75                           | 6.02                            | 24.38                           |
| 125% Limit       | 51.25                           | 10.04                           | 40.63                           |
| Expected Result  | 41.0 +/- 3.0                    | 8.03 +/- 0.37                   | 32.5 +/- 1.1                    |
| Achieved Results | 41.79 +/- 3.418                 | 7.56 +/- .596                   | 33.68 +/- 3.724                 |

REFERENCE DATA 4/14/2000

Amanda L. Fehr 4/30/04  
lett & dated 5/1/04

## PREPARATION AND CHARACTERIZATION OF THE PERFORMANCE EVALUATION SOIL SAMPLE PEM-1

### INTRODUCTION

Rust Geotech (Rust) was contracted by Los Alamos National Laboratory (LANL) to prepare and characterize a soil performance evaluation sample designated PEM-1. This report describes sample preparation, homogeneity assessment, and determination of the concentrations of 28 elements and radioactive isotopes in the sample.

### SAMPLE PREPARATION

Rust received nine five-gallon buckets of soil from LANL. The soils were dried overnight in ovens at 103 °C. The large pieces of leaves and sticks were removed and the soils were ground with ceramic-plate grinders to a particle size that passed through a 325 mesh screen. The samples were blended at the proportions specified by LANL for 48 hours in a 3-cubic-foot cross-flow blender. The sample identifications and the amounts used are listed in Table 1.

Table 1. Sample Identifications and Amounts Used to Prepare PEM-1

| LANL Sample ID | Amount Used (kg) |
|----------------|------------------|
| AAA 1592       | 1.7              |
| AAA 2505-1     | 10.9             |
| AAA 2505-2     | 12.8             |
| AAA 2750-1     | 8.4              |
| AAA 2750-2     | 8.4              |
| AAA 3205       | 12.6             |
| AAA 8581       | 4.2              |
| AAB 3417       | 12.8             |
| AAB 3475       | 12.6             |

The blended sample was transferred to three five-gallon plastic containers. While the sample was being transferred, 10 samples were taken at pre-determined time intervals to be used for homogeneity assessment and sample characterization. These samples are believed to be representative of the bulk material.



# CERTIFICATE OF CALIBRATION

## ALPHA STANDARD SOLUTION

|              |                     |                          |                           |
|--------------|---------------------|--------------------------|---------------------------|
| Radionuclide | Am-243              | Customer:                | GENERAL ENGINEERING LABS  |
| Half Life:   | 7380 $\pm$ 40 years | P.O.No.:                 | 9290-RAD                  |
| Catalog No.: | 7243                | Reference Date:          | January 1 1994 12:00 PST. |
| Source No.:  | 445-96-2            | Contained Radioactivity: | (Am-243) 101.2 $\mu$ Ci   |
|              |                     | Contained Radioactivity: | (Am-243) 3750 kBq         |

### Description of Solution

|                      |  |
|----------------------|--|
| a. Mass of solution: | 5.3739 g (in a 5 ml Flame Sealed Ampoule)                |
| b. Chemical form:    | Am(NO <sub>3</sub> ) <sub>3</sub> in 2N HNO <sub>3</sub> |
| c. Carrier content:  | None added   |
| d. Density:          | 1.0651 g/ml @ 20°C.                                      |

### Radioimpurities

None detected

### Radioactive Daughters

Np-239 (beta active) in equilibrium

### Radionuclide Concentration

(Am-243) 18.84  $\mu$ Ci/g

### Method of Calibration

Weighed aliquots of the solution were assayed using gamma spectrometry for Np-239:

|                                   |               |                       |
|-----------------------------------|---------------|-----------------------|
| Energy peak(s) intergrated under: | 228, 278      | keV.                  |
| Branching ratio(s) used:          | 0.108, 0.1420 | gamma rays per decay. |

### Uncertainty of Measurement

|  |             |
|--|-------------|
| a. Systematic uncertainty in instrument calibration: | $\pm 3.0\%$ |
| b. Random uncertainty in assay:                      | $\pm 0.4\%$ |
| c. Random uncertainty in weighing(s):                | $\pm 0.0\%$ |
| d. Total uncertainty at the 99% confidence level:    | $\pm 3.0\%$ |

### NIST Traceability

This calibration is implicitly traceable to the National Institute of Standards and Technology.

### Leak Test(s)

See reverse side for Leak Test(s) applied to this source.

### Notes

1. Nuclear data were taken from "Table of Radioactive Isotopes", edited by Virginia S. Shirley, 1986.
2. IPL participates in an NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).



ISOTOPE PRODUCTS LABORATORIES  
1800 North Keystone Street  
Burbank, California 91504  
(818) 843 - 7000

*Anna H. Khan*  
QUALITY CONTROL

*Jan 3, 1994*  
Date Signed

THE LEAK TEST(S) INDICATED BY THE CHECKED BOX(ES) WAS(WERE) APPLIED TO  
DETERMINE THE INTEGRITY OF THE SOURCE DESCRIBED ON THE FRONT SIDE



1. STANDARD WIPE TEST

The source is wiped over its entire surface with a moistened filter paper disk. After drying, the disk is checked for activity using a windowless proportional counter or end-window G.M. tube. Activity levels exceeding 0.001  $\mu\text{Ci}$  beta-gamma or 0.0001  $\mu\text{Ci}$  alpha are cause for rejection of the source.



2. SOAK TEST

The source is immersed in distilled water and maintained at  $50 \pm 10^\circ \text{C}$  for a minimum of four hours. After removal of the source, the liquid is a) checked for activity using a liquid scintillation counter, or b) evaporated in a planchet and the residue is checked for activity using a windowless proportional counter or end-window G.M. tube. Activity levels exceeding 0.001  $\mu\text{Ci}$  beta-gamma or 0.0001  $\mu\text{Ci}$  alpha are cause for rejection of the source.



3. SOAK TEST -- BERYLLIUM WINDOW

The source is immersed in distilled water and maintained at  $50 \pm 10^\circ \text{C}$  for 20 minutes. The entire surface of the source is then wiped with a moistened cotton swab or filter paper disk. After drying, the swab or disk is checked for activity using a windowless proportional counter or end-window G.M. tube. Activity levels exceeding 0.001  $\mu\text{Ci}$  beta-gamma or 0.0001  $\mu\text{Ci}$  alpha are cause for rejection of the source.



4. GAS SOURCE TEST (Radioactive Gas)

The source is placed in a vacuum desiccator and maintained at a pressure of less than 1 mm Hg for not less than 12 hours. The activity is checked by introducing air into the desiccator and monitoring the air with an end-window G.M. tube. Activity levels exceeding 1000 cpm are cause for rejection of the source.



5. OTHER LEAK TEST

The ampoule is kept in an inverted position on a filter paper disk for a minimum of 16 hours. The filter paper disk is then checked for activity using a windowless proportional counter or end-window G.M. tube. Activity levels exceeding 0.001  $\mu\text{Ci}$  beta-gamma or 0.0001  $\mu\text{Ci}$  alpha are cause for rejection of the source.



6. LEAK TEST NOT APPLICABLE

The active area of this source is uncovered or is protected by a very thin coating. Although the deposit is adherent, it is not designed or certified to pass a standard leak test. The inactive portions of the source have been checked using the standard wipe test. Levels of removable activity did not exceed 0.001  $\mu\text{Ci}$  beta-gamma or 0.0001  $\mu\text{Ci}$  alpha at the time of shipment.



# Standard Traceability Log Rad

| Source Material Info |              |
|----------------------|--------------|
| Parent Code:         | 445-96-2     |
| Prepared By:         | Genie Bost   |
| Carrier Conc:        | 2M HNO3      |
| Reference Date:      | 01/01/1994   |
| Ampoule Mass (g):    | 5.3739 g     |
| Uncertainty:         | +/- 3 %      |
| LogBook No:          | RC S 005 032 |

| A Solution Material Info |                |
|--------------------------|----------------|
| Isotope:                 | Americium-243  |
| Prepared By:             | Angela Johnson |
| Prep Date:               | 01/05/1994     |
| Verification Date:       | 05/11/2009     |
| Expiration Date:         | 05/11/2010     |
| Primary Code:            | 445-96-2-A     |
| Dilution(mL):            | 100 mL         |
| Mass of Parent(g):       | 5.3419 g       |
| Density(g/mL):           | 1.0785         |
| Balance ID:              | 38080204       |

### Calculations Converting parent activity to dpm/mL|dpm/g

|   |
|---|
| $(\text{Mass of parent(g)}) * (\text{Parm Activity (uCi/g)}) * (\text{conversion dpm to uCi}) / (\text{Dilution Vol}) = \text{Parent Activity (dpm/mL)}$                        |
| $(\text{Mass of parent(g)}) * (\text{Parm Activity (uCi/g)}) * (\text{conversion dpm to uCi}) / \text{Density (g/mL)} / (\text{Dilution Vol}) = \text{Parent Activity (dpm/g)}$ |
| $(5.3419 \text{ g}) * (18.84 \text{ uCi/g}) * (2220000 \text{ dpm/uCi}) / (100 \text{ mL}) = 2234238.9912 \text{ dpm/mL}$   |
| $(5.3419 \text{ g}) * (18.84 \text{ uCi/g}) * (2220000 \text{ dpm/uCi}) / (1.0785 \text{ g/mL}) / (100 \text{ mL}) = 2071617.0528 \text{ dpm/g}$                                |



## Secondary Standards

| Prep Date  | Preparer       | Mass Primary | Dilution (mL) | Code        | Conc dpm/mL     | Verification Date | Expiration Date |
|------------|----------------|--------------|---------------|-------------|-----------------|-------------------|-----------------|
| 01/05/1994 | Genie Bost     | .0058        | 100           | 445-96-2-B  | 120.1 dpm/ml    | 01/05/1995        | 01/05/1996      |
| 09/10/2004 | Amanda Fehr    | .0325        | 1000          | 445-96-2-BB | 67.328 dpm/mL   | 09/10/2005        | 09/10/2006      |
| 01/05/1994 | Genie Bost     | .0025        | 100           | 445-96-2-C  | 51.77 dpm/ml    | 01/05/1995        | 01/05/1996      |
| 05/27/2005 | Brenda Burke   | .000246      | 100           | 445-96-2-CC | 5.10613 dpm/mL  | 05/31/2005        | 05/31/2006      |
| 03/25/1994 | Genie Bost     | .0064        | 100           | 445-96-2-D  | 132.53 dpm/ml   | 01/05/1995        | 01/05/1996      |
| 08/16/2005 | Brenda Burke   | .001224      | 500           | 445-96-2-DD | 5.07144 dpm/mL  | 08/18/2007        | 08/18/2008      |
| 08/04/1994 | Genie Bost     | .0094        | 100           | 445-96-2-E  | 194.65 dpm/ml   | 01/05/1995        | 01/05/1996      |
| 10/13/2005 | Brenda Burke   | .0017        | 500           | 445-96-2-EE | 7.0435 dpm/mL   | 11/15/2005        | 11/15/2006      |
| 08/04/1994 | Genie Bost     | .0046        | 100           | 445-96-2-F  | 95.25 dpm/ml    | 01/05/1995        | 01/05/1996      |
| 10/14/2005 | Mary Aders     | .0141        | 500           | 445-96-2-FF | 58.4196 dpm/mL  | 10/14/2005        | 10/14/2006      |
| 09/01/1994 | Genie Bost     | .0031        | 100           | 445-96-2-G  | 64.19 dpm/ml    | 01/05/1995        | 01/05/1996      |
| 05/10/2006 | Mary Aders     | 2.0753       | 1000          | 445-96-2-GG | 4299.227 dpm/mL | 09/30/2008        | 09/30/2009      |
| 10/17/1994 | Genie Bost     | .0969        | 100           | 445-96-2-H  | 2006.52 dpm/ml  | 01/05/1995        | 01/05/1996      |
| 06/07/2006 | Mary Aders     | .0365        | 1000          | 445-96-2-HH | 75.614 dpm/mL   | 06/19/2006        | 06/19/2007      |
| 02/06/1995 | Genie Bost     | .0043        | 100           | 445-96-2-I  | 89.04 dpm/ml    | 01/05/1995        | 01/05/1996      |
| 05/11/2006 | Brenda Burke   | .000009739   | 100           | 445-96-2-II | .201761 dpm/mL  | 07/26/2006        | 07/26/2007      |
| 07/20/1995 | Theresa Austin | .0041        | 100           | 445-96-2-J  | 84.9 dpm/ml     | 01/05/1995        | 01/05/1996      |
| 05/01/2007 | Daniel Roy     | .0352        | 1000          | 445-96-2-JJ | 72.9209 dpm/ml  | 04/30/2008        | 04/30/2009      |
| 08/10/1995 | Garret Ray     | .0952        | 100           | 445-96-2-K  | 1971.32 dpm/ml  | 01/05/1995        | 01/05/1996      |
| 06/12/2007 | Julie Strock   | .01038       | 250           | 445-96-2-KK | 22.1496 dpm/mL  | 05/28/2008        | 05/28/2009      |

|            |                 |           |      |                |                 |            |            |
|------------|-----------------|-----------|------|----------------|-----------------|------------|------------|
| 09/11/1995 | Theresa Austin  | 1.0525    | 100  | 445-96-2-L     | 21794.23 dpm/ml | 01/05/1995 | 01/05/1996 |
| 09/11/1995 | Theresa Austin  | .5107     | 100  | 445-96-2-L-1   | 111.3 dpm/ml    | 01/05/1995 | 01/05/1996 |
| 04/28/1998 | Richard Kinney  | .1264     | 100  | 445-96-2-M     | 2617.4 dpm/ml   | 04/28/1998 | 04/28/1999 |
| 11/01/2007 | Eric Williamson | .001274   | 500  | 445-96-2-MM    | 5.27945 dpm/mL  | 04/06/2008 | 04/06/2010 |
| 10/12/1998 | Gregory Smith   | .1348     | 100  | 445-96-2-N     | 2791.32 dpm/mL  | 01/05/1995 | 01/05/1996 |
| 01/25/1999 | Gregory Smith   | 1.9382    | 100  | 445-96-2-N-1   | 50.16 dpm/ml    | 01/05/1995 | 01/05/1996 |
| 04/19/2008 | Daniel Roy      | .0424     | 1000 | 445-96-2-NN    | 87.8366 dpm/ml  | 04/16/2009 | 04/16/2010 |
| 04/21/1999 | Greg Smith      | .1645     | 100  | 445-96-2-O     | 3406.32 dpm/mL  | 04/21/1999 | 04/21/2000 |
| 07/27/1999 | Gregory Smith   | 1.567     | 100  | 445-96-2-O-2   | 50.56 dpm/ml    | 05/13/1999 | 05/13/2000 |
| 10/12/1999 | Richard Kinney  | 1.5589    | 100  | 445-96-2-O-3   | 50.31 dpm/mL    | 05/13/1999 | 05/13/2000 |
| 04/21/1999 | Greg Smith      | 1.5309    | 100  | 445-96-2-O-1   | 49.4 dpm/mL     | 04/21/1999 | 04/21/2000 |
| 11/10/1999 | Joe Davis       | .1809     | 100  | 445-96-2-P     | 3745.92 dpm/mL  | 05/13/1999 | 05/13/2000 |
| 01/04/2008 | Julie Strock    | .00001005 | 100  | 445-96-2-PP    | .20819 dpm/mL   | 12/29/2008 | 12/29/2009 |
| 01/28/2000 | Angela Johnson  | .0354     | 1000 | 445-96-2-Q     | 73.3 dpm/mL     | 02/08/2001 | 02/08/2002 |
| 09/29/2008 | Julie Strock    | .0025219  | 250  | 445-96-2-QQ    | 20.8977 dpm/mL  | 09/30/2008 | 09/29/2009 |
| 04/18/2000 | Robert Timm     | .429      | 250  | 445-96-2-R     | 3553.34 dpm/mL  | 04/18/2000 | 04/18/2001 |
| 04/23/2009 | Tina Schoneman  | .001251   | 500  | 445-96-2-RR    | 4.8075 dpm/mL   | 04/23/2009 | 04/23/2010 |
| 04/13/2001 | Angela Johnson  | .1869     | 100  | 445-96-2-S     | 3870.16 dpm/mL  | 04/13/2001 | 04/13/2002 |
| 05/08/2009 | Mary Aders      | .0141     | 1000 | 445-96-2-SS    | 29.2098 dpm/ml  | 05/11/2009 | 05/11/2010 |
| 07/03/2001 | Lonnie Morris   | 2.0057    | 1000 | 445-96-2-T-103 | 4153.225 dpm/mL | 07/03/2002 | 07/03/2003 |
| 07/03/2001 | Lonnie Morris   | 2.0057    | 1000 | 445-96-2-T-203 | 4153.225 dpm/mL | 07/03/2002 | 07/03/2003 |

|            |                 |           |      |                |                  |            |            |
|------------|-----------------|-----------|------|----------------|------------------|------------|------------|
| 07/03/2001 | Lonnie Morris   | 2.0057    | 1000 | 445-96-2-T-303 | 4153.225 dpm/mL  | 07/03/2002 | 07/03/2003 |
| 06/03/2009 | Julie Strock    | .00000927 | 100  | 445-96-2-TT    | .1923 dpm/mL     | 06/05/2009 | 06/03/2010 |
| 08/23/2001 | Angela Johnson  | .0194     | 500  | 445-96-2-U-103 | 80.34 dpm/mL     | 08/23/2001 | 08/23/2002 |
| 08/23/2001 | Angela Johnson  | .0194     | 500  | 445-96-2-U-203 | 80.34 dpm/mL     | 08/23/2001 | 08/23/2002 |
| 08/23/2001 | Angela Johnson  | .0194     | 500  | 445-96-2-U-303 | 80.34 dpm/ml     | 08/23/2001 | 08/23/2002 |
| 06/02/2009 | Mary Aders      | 2.1177    | 1000 | 445-96-2-UU    | 4385.1449 dpm/ml | 06/04/2009 | 06/04/2010 |
| 08/27/2001 | Angela Johnson  | .0394     | 1000 | 445-96-2-V-103 | 81.586 dpm/mL    | 08/27/2002 | 08/27/2003 |
| 08/27/2001 | Angela Johnson  | .0394     | 1000 | 445-96-2-V-203 | 81.586 dpm/mL    | 08/27/2002 | 08/27/2003 |
| 08/27/2001 | Angela Johnson  | .0394     | 1000 | 445-96-2-V-303 | 81.586 dpm/mL    | 08/27/2002 | 08/27/2003 |
| 03/17/2003 | Angela Johnson  | 2.1108    | 1000 | 445-96-2-W     | 4370.857 dpm/mL  | 03/14/2006 | 03/14/2007 |
| 04/14/2003 | Lonnie Morris   | .0315     | 1000 | 445-96-2-X     | 65.2559 dpm/mL   | 04/14/2004 | 04/14/2005 |
| 05/03/2003 | Tim Chandler    | .0103     | 1000 | 445-96-2-Y     | 21.3376 dpm/mL   | 05/05/2003 | 05/05/2004 |
| 05/05/2003 | Eric Williamson | .011      | 1000 | 445-96-2-Z     | 22.7877 dpm/mL   | 04/03/2007 | 04/03/2008 |

GEL Laboratories LLC  
Version 1.0 9/18/2000

## Verification for Am-243 Standard 445-96-2-SS

|                         |                |                    |             |
|-------------------------|----------------|--------------------|-------------|
| M. Aders<br>5/15/2009   | Isotope        | Value              | Uncertainty |
|                         | 445-96-2-SS #1 | 1.360              | 0.1690      |
|                         | 445-96-2-SS #2 | 1.370              | 0.1690      |
|                         | 445-96-2-SS #3 | 1.290              | 0.1590      |
| Mean Value (Counting) = | 1.340          | 101.99             | Pass        |
| Stdev =                 | 0.043588969    | Rule 3 (Pass/Fail) |             |
| Target =                | 1.314          |                    |             |
| Lower Limit =           | 1.252822021    |                    |             |
| Upper Limit =           | 1.427177979    |                    |             |
| Rule 1 Pass/Fail        | Pass           |                    |             |
| Two sigma =             | 0.087177979    |                    |             |
| 10 % of Mean =          | 0.134          |                    |             |
| Rule 2 (Pass/Fail)      | Pass           |                    |             |

The analyst prepared three standard verification sources for standard 445-96-2-SS using 0.1 mL for each source. Each standard was combined with 0.1 mL of Cm-244 standard 0533-O and 50 micrograms of neodymium carrier in a disposable centrifuge tube. Each standard was diluted with 4 mL of 2 M HCl and 6 mL of DI Water. Two mL of 48% HF was added to precipitate Nd (and Americium) fluoride. After 30 minutes, each sample was filtered following routine procedures for alpha spectroscopy source preparation. Each source was counted using routine alpha spec procedures. DPM values for Am-243 were calculated by comparison to Am-241 certified values.

Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements

Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.

Rule 3 = The determined mean value shall be within 5% of the certificate value.

*M. Aders 5/15/09*  
*Rahab*  
*07509*



# National Institute of Standards & Technology Certificate

## Standard Reference Material 4334H Plutonium-242 Radioactivity Standard

This Standard Reference Material (SRM) consists of radioactive plutonium-242 nitrate and nitric acid dissolved in 5 mL of distilled water. The solution is contained in a flame-sealed NIST borosilicate-glass ampoule. The SRM is intended for the calibration of alpha-particle counting instruments and for the monitoring of radiochemical procedures.

**Radiological Hazard:** The SRM ampoule contains plutonium-242 with a total activity of approximately 150 Bq. Plutonium-242 decays by alpha-particle emission. None of the alpha particles escape from the SRM ampoule. During the decay process, X-rays and gamma rays with energies from 10 keV to 160 keV are also emitted. Most of these photons escape from the SRM ampoule but their intensities are so small that they do not represent a radiation hazard. Approximate unshielded dose rates at several distances (as of the reference time) are given in note [a]\*. The SRM should be used only by persons qualified to handle radioactive material.

**Chemical Hazard:** The SRM ampoule contains nitric acid ( $\text{HNO}_3$ ) with a concentration of 3 moles per liter of water. The solution is corrosive and represents a health hazard if it comes in contact with eyes or skin. If the ampoule is to be opened to transfer the solution, the recommended procedure is given on page 2. The ampoule should be opened only by persons qualified to handle both radioactive material and strong acid solution.

**Storage and Handling:** The SRM should be stored and used at a temperature between 5 °C and 65 °C. The solution in an unopened ampoule should remain stable and homogeneous until at least January 2015. The ampoule (or any subsequent container) should always be clearly marked as containing radioactive material. If the ampoule is transported it should be packed, marked, labeled, and shipped in accordance with the applicable national, international, and carrier regulations. The solution in the ampoule is a dangerous good (hazardous material) both because of the radioactivity and because of the strong acid.

**Preparation:** This Standard Reference Material was prepared in the Physics Laboratory, Ionizing Radiation Division, Radioactivity Group, M.P. Unterwieser, Acting Group Leader. The overall technical direction and physical measurements leading to certification were provided by L.L. Lucas of the Radioactivity Group. The support aspects involved in the preparation, certification, and issuance of this SRM were coordinated through the Standard Reference Materials Program.

RECEIVED  
2/2/05

Lisa R. Karam, Acting Chief  
Ionizing Radiation Division

Gaithersburg, Maryland 20899  
January 2005

Robert L. Watters, Jr., Chief  
Measurement Services Division

### **Recommended Procedure for Opening the SRM Ampoule**

- 1) If the SRM solution is to be diluted, it is recommended that the diluting solution have a composition comparable to that of the SRM solution.
- 2) Wear eye protection, gloves, and protective clothing and work over a tray with absorbent paper in it. Work in a fume hood. In addition to the radioactive material, the solution contains strong acid and is corrosive.
- 3) Shake the ampoule to wet all of the inside surface of the ampoule. Return the ampoule to the upright position.
- 4) Check that all of the liquid has drained out of the neck of the ampoule. If necessary, gently tap the neck to speed the process.
- 5) Holding the ampoule upright, score the narrowest part of the neck with a scribe or diamond pencil.
- 6) Lightly wet the scored line. This reduces the crack propagation velocity and makes for a cleaner break.
- 7) Hold the ampoule upright with a paper towel, a wiper, or a support jig. Position the scored line away from you. Using a paper towel or wiper to avoid contamination, snap off the top of the ampoule by pressing the narrowest part of the neck away from you while pulling the tip of the ampoule towards you.
- 8) Transfer the solution from the ampoule using a pycnometer or a pipet with dispenser handle. **NEVER PIPETTE BY MOUTH.**
- 9) Seal any unused SRM solution in a flame-sealed glass ampoule, if possible, to minimize the evaporation loss.

See also reference [4]\*.

# PROPERTIES OF SRM 4334H

## Certified values

|                                     |   |
|-------------------------------------|---|
| Radionuclide                        | Plutonium-242                                   |
| Reference time                      | 1200 EST, 07 June 1994 [b]*                     |
| Massic activity of the solution [c] | 26.31 Bq·g <sup>-1</sup>                        |
| Relative expanded uncertainty (k=2) | 0.72% [d] [e]                                   |
| Solution density                    | (1.105 ± 0.002) g·mL <sup>-1</sup> at 20 °C [f] |

## Uncertified values

|  |   |                                      |                                    |
|--|---|--------------------------------------|------------------------------------|
| Physical Properties:                           |   |                                      |                                    |
| Source description                             | Liquid in flame-sealed NIST borosilicate-glass ampoule  |                                      |                                    |
| Ampoule specifications                         | Body outside diameter   | (16.5 ± 0.5) mm                      |                                    |
|  | Wall thickness  | (0.60 ± 0.04) mm                     |                                    |
|  | Barium content  | Less than 2.5%                       |                                    |
|  | Lead-oxide content  | Less than 0.02%                      |                                    |
|  | Other heavy elements  | Trace quantities                     |                                    |
| Solution mass                                  | Approximately 5.5 g   |                                      |                                    |
| Chemical Properties:                           |   |                                      |                                    |
| Solution composition                           | Chemical Formula  | Concentration (mol·L <sup>-1</sup> ) | Mass Fraction (g·g <sup>-1</sup> ) |
|  | H <sub>2</sub> O  | 50                                   | 0.81                               |
|  | HNO <sub>3</sub>  | 3.2                                  | 0.19                               |
|  | <sup>242</sup> Pu <sup>+6</sup>   | 8 × 10 <sup>-7</sup>                 | 2 × 10 <sup>-7</sup>               |
| Radiological Properties:                       |   |                                      |                                    |
| Alpha-particle-emitting impurities             | None detected [g] [h]. See table on page 5.   |                                      |                                    |
| Beta-particle-emitting impurities              | Plutonium-241: (0.092 ± 0.018) Bq·g <sup>-1</sup> [f] [h]   |                                      |                                    |
| Photon-emitting impurities                     | None detected [i]   |                                      |                                    |
| Half lives used                                | Plutonium-242: (373 500 ± 1100) a [j] [5]<br>Plutonium-241: (14.35 ± 0.10) a [j] [5]<br>Americium-241: (432.2 ± 0.7) a [j] [5]  |                                      |                                    |
| Calibration method and measuring instrument(s) | Three 4π $\alpha$ liquid-scintillation counters, a calibrated germanium detector system, and a silicon surface-barrier detector |                                      |                                    |

**EVALUATION OF THE UNCERTAINTY OF THE MASSIC ACTIVITY [d] [e]\***

| Input Quantity $x_i$ ,<br>the source of uncertainty<br><br>(and individual<br>uncertainty components<br>where appropriate) | Method Used To Evaluate $u(x_i)$ ,<br>the standard uncertainty of $x_i$<br>(A) denotes evaluation by<br>statistical methods<br>(B) denotes evaluation by<br>other methods | Relative<br>Uncertainty<br>Of Input<br>Quantity,<br>$u(x_i)/x_i$ ,<br>(%) [k] | Relative<br>Sensitivity<br>Factor,<br>$ \partial y / \partial x_i  \cdot$<br>( $x_i/y$ )<br>[m] | Relative<br>Uncertainty<br>Of Output<br>Quantity,<br>$u_c(y)/y$ ,<br>(%) [n] |
|--|---|---|---|--|
| Massic alpha-particle<br>emission rate, corrected<br>for background and<br>decay   | Standard deviation of the mean<br>for 80 sets of $4\pi\alpha$ liquid-<br>scintillation measurements (A)   | 0.05  | 1.0   | 0.05   |
| Half life of Pu-242  | Standard uncertainty<br>of the half life (A)  | 0.32<br>[p]   | 0.00001<br>[q]  | 0.000003   |
| Decay-scheme data  | Standard uncertainty of the<br>probability of decay by alpha-<br>particle emission (A)  | 0.001   | 1.0   | 0.001  |
| Extrapolation of alpha-<br>particle-count-rate-<br>versus-energy to zero<br>energy   | Estimated (B)   | 0.25  | 1.0   | 0.25   |
| Gravimetric<br>measurements  | Estimated (B)   | 0.10  | 1.0   | 0.10   |
| Live time [r]  | Estimated (B)   | 0.10  | 1.0   | 0.10   |
| Alpha-particle detection<br>efficiency of scintillators  | Estimated (B)   | 0.15  | 1.0   | 0.15   |
| Alpha-particle-emitting<br>impurities  | Limit of detection (B) [s]  | 100.  | 0.001   | 0.10   |
| Photon-emitting<br>impurities  | Limit of detection (B) [s]  | 100.  | 0.001   | 0.10   |
| Relative Combined Standard Uncertainty of the Output Quantity, $u_c(y)/y$ , (%)  |   |   |   | 0.36   |
| Coverage Factor, $k$   |   |   |   | <u>x 2</u>   |
| Relative Expanded Uncertainty of the Output Quantity, $U/y$ , (%)  |   |   |   | 0.72   |



**RELATIVE ACTIVITIES OF RADIONUCLIDIC IMPURITIES AT THE REFERENCE TIME [b]**

| Radionuclide  | Half Life<br>(years) [j] [5] | Relative Activity As Determined By                      |   |
|---------------|------------------------------|---|---|
|               |                              | LLNL  | NIST  |
| Plutonium-242 | 373 500 ± 1100               | 1.000 000   | 1.000 000   |
| Plutonium-241 | 14.35 ± 0.10                 | - -   | 0.0035 ± 0.0004 [t]   |
| Plutonium-240 | 6 564 ± 11                   | <sup>239</sup> Pu + <sup>240</sup> Pu<br><0.000 001 [u] | <sup>239</sup> Pu + <sup>240</sup> Pu<br>0.000 020 ± 0.000 021<br>[v] |
| Plutonium-239 | 24 110 ± 30                  |   |   |
| Plutonium-238 | 87.7 ± 0.1                   | <sup>238</sup> Pu + <sup>241</sup> Am<br><0.000 016 [u] | 0.000 009 ± 0.000 016<br>[v]  |
| Americium-241 | 432.2 ± 0.7                  |   | 0.000 000 assumed [t]   |

**NOTES**

- [a] The Sievert is the SI unit for dose equivalent. See reference [1]. One  $\mu\text{Sv}$  is equal to 0.1 mrem.  
 Distance from Ampoule (cm):           1     30     100  
 Approximate Dose Rate ( $\mu\text{Sv/h}$ ):   <0.1     -     -
- [b] The plutonium-242 master solution was chemically purified at 1200 EST, 07 June 1994.
- [c] **Massic activity** is the preferred name for the quantity activity divided by the total mass of the sample. See reference [1].
- [d] The reported value,  $y$ , of massic activity (activity per unit mass) at the reference time was not measured directly but was derived from measurements and calculations of other quantities. This can be expressed as  $y = f(x_1, x_2, x_3, \dots, x_n)$ , where  $f$  is a mathematical function derived from the assumed model of the measurement process. The value,  $x_i$ , used for each input quantity  $i$  has a **standard uncertainty**,  $u(x_i)$ , that generates a corresponding uncertainty in  $y$ ,  $u_i(y) = |\partial y / \partial x_i| \cdot u(x_i)$ , called a **component of combined standard uncertainty** of  $y$ . The **combined standard uncertainty** of  $y$ ,  $u_c(y)$ , is the positive square root of the sum of the squares of the components of combined standard uncertainty. The combined standard uncertainty is multiplied by a **coverage factor** of  $k = 2$  to obtain  $U$ , the **expanded uncertainty** of  $y$ .

Since it can be assumed that the possible estimated values of the massic activity are approximately normally distributed with approximate standard deviation  $u_c(y)$ , the unknown value of the massic activity is believed to lie in the interval  $y \pm U$  with a level of confidence of approximately 95 percent.

For further information on the expression of uncertainties, see references [2] and [3].

- [e] The value of each component of combined standard uncertainty, and hence the value of the expanded uncertainty itself, is a best estimate based upon all available information, but is only approximately known. That is to say, the "uncertainty of the uncertainty" is large and not well known. This is true for uncertainties evaluated by statistical methods (e.g., the relative standard deviation of the standard deviation of the mean for the massic response is approximately 50%) and for uncertainties evaluated by other methods (which could easily be over estimated or under estimated by substantial amounts). The unknown value of the expanded uncertainty is believed to lie in the interval  $U/2$  to  $2U$  (i.e., within a factor of 2 of the estimated value).
- [f] The stated uncertainty is two times the standard uncertainty.
- [g] Estimated limits of detection for alpha-particle-emitting impurities, expressed as massic alpha-particle emission rates (numbers of alpha particles per second per gram), are:  
 $0.003 \text{ s}^{-1}\cdot\text{g}^{-1}$  for energies less than 3.1 MeV,  
 $0.03 \text{ s}^{-1}\cdot\text{g}^{-1}$  for energies between 3.1 and 4.4 MeV, and  
 $0.003 \text{ s}^{-1}\cdot\text{g}^{-1}$  for energies greater than 5.0 MeV.
- [h] The plutonium-242 master solution was chemically purified at 1200 EST, 07 June 1994. Americium-241, the daughter of plutonium-241, was removed but has been growing in since that time.
- [i] Estimated limits of detection for photon-emitting impurities, expressed as massic photon emission rates (numbers of photons per second per gram), are:  
 $5 \times 10^{-5} \text{ s}^{-1}\cdot\text{g}^{-1}$  for energies between 19 and 39 keV,  
 $7 \times 10^{-5} \text{ s}^{-1}\cdot\text{g}^{-1}$  for energies between 49 and 92 keV,  
 $2 \times 10^{-5} \text{ s}^{-1}\cdot\text{g}^{-1}$  for energies between 106 and 507 keV,  
 $1 \times 10^{-5} \text{ s}^{-1}\cdot\text{g}^{-1}$  for energies between 515 and 1456 keV, and  
 $5 \times 10^{-6} \text{ s}^{-1}\cdot\text{g}^{-1}$  for energies between 1465 and 2750 keV,  
provided that the photons are separated in energy by 4 keV or more from photons emitted in the decay of plutonium-242, plutonium-241, or americium-241.
- [j] The stated uncertainty is the standard uncertainty.
- [k] Relative standard uncertainty of the input quantity  $x_i$ .
- [m] The relative change in the output quantity  $y$  divided by the relative change in the input quantity  $x_i$ . If  $|\partial y / \partial x_i| \cdot (x_i / y) = 1.0$ , then a 1% change in  $x_i$  results in a 1% change in  $y$ . If  $|\partial y / \partial x_i| \cdot (x_i / y) = 0.05$ , then a 1% change in  $x_i$  results in a 0.05% change in  $y$ .
- [n] Relative component of combined standard uncertainty of output quantity  $y$ , rounded to two significant figures or less. The relative component of combined standard uncertainty of  $y$  is given by  $u_c(y)/y \equiv |\partial y / \partial x_i| \cdot u(x_i)/y = |\partial y / \partial x_i| \cdot (x_i / y) \cdot u(x_i)/x_i$ . The numerical values of  $u(x_i)/x_i$ ,  $|\partial y / \partial x_i| \cdot (x_i / y)$ , and  $u_c(y)/y$ , all dimensionless quantities, are listed in columns 3, 4, and 5, respectively. Thus, the value in column 5 is equal to the value in column 4 multiplied by the value in column 3. The input quantities are independent, or very nearly so. Hence the covariances are zero or negligible.

- [p] The relative standard uncertainty of  $\lambda \cdot t$  is determined by the relative standard uncertainty of  $\lambda$  (i.e., of the half life). The relative standard uncertainty of  $t$  is negligible.
- [q]  $|\partial y / \partial x_i| \cdot (x_i / y) = |\lambda \cdot t|$
- [r] The live time is determined by counting the pulses from a gated crystal-controlled oscillator.
- [s] The standard uncertainty for each undetected impurity that might reasonably be expected to be present is estimated to be equal to the estimated limit of detection for that impurity, i.e.  $u(x_i) / x_i = 100\%$ .  $|\partial y / \partial x_i| \cdot (x_i / y) = \{(\text{response per Bq of impurity}) / (\text{response per Bq of Pu-242})\} \cdot \{(\text{Bq of impurity}) / (\text{Bq of Pu-242})\}$ . Thus  $u_i(y) / y$  is the relative change in  $y$  if the impurity were present with a massic activity equal to the estimated limit of detection.
- [t] The stated uncertainty is the standard uncertainty. The plutonium-241 activity was calculated from a gamma-ray measurement of the americium-241 ingrowth as of 25 November 1998, assuming that americium-241 was completely removed at the time of chemical purification.
- [u] Using alpha-particle spectrometry, no alpha-particle emission was detected that could reliably be ascribed to these radionuclides. The value shown is an estimated upper limit based upon background and counting statistics. Measurements were made at the Lawrence Livermore National Laboratory (LLNL) in July of 1994.
- [v] Using alpha-particle spectrometry, no alpha-particle emission was detected that could reliably be ascribed to these radionuclides. The stated uncertainty is the standard uncertainty. Measurements were made at the National Institute of Standards and Technology (NIST) in June and July of 1999.

#### REFERENCES

- [1] International Organization for Standardization (ISO), *ISO Standards Handbook - Quantities and Units*, 1993. Available from Global Engineering Documents, 12 Inverness Way East, Englewood, CO 80112, U.S.A. Telephone 1-800-854-7179.
- [2] International Organization for Standardization (ISO), *Guide to the Expression of Uncertainty in Measurement*, 1993 (corrected and reprinted, 1995). Available from Global Engineering Documents, 12 Inverness Way East, Englewood, CO 80112, U.S.A. Telephone 1-800-854-7179.
- [3] B.N. Taylor and C.E. Kuyatt, *Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results*, NIST Technical Note 1297, 1994. Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20407, U.S.A.
- [4] National Council on Radiation Protection and Measurements Report No. 58, *A Handbook of Radioactivity Measurements Procedures*, Second Edition, 1985. Available from the National Council on Radiation Protection and Measurements, 7910 Woodmont Avenue, Bethesda, MD 20814 U.S.A.
- [5] Evaluated Nuclear Structure Data File (ENSDF), January 2005.

# Standard Traceability Log Rad

| Source Material Info |              | A Solution Material Info |                 |
|----------------------|--------------|--------------------------|-----------------|
| Parent Code:         | 1374         | Isotope:                 | Plutonium-242   |
| Prepared By:         | Mary Aders   | Prepared By:             | Ashley Drochter |
| Carrier Conc:        | 0.5M HNO3    | Prep Date:               | 12/02/2009      |
| Reference Date:      | 06/07/1994   | Verification Date:       | 12/08/2009      |
| Ampoule Mass (g):    | 5.5 g        | Expiration Date:         | 12/08/2010      |
| Uncertainty:         | +/- .72 %    | Primary Code:            | 1374-A          |
| LogBook No:          | RC-S-051-093 | Dilution(mL):            | 250 mL          |
|                      |              | Mass of Parent(g):       | 5.3616 g        |
|                      |              | Density(g/mL):           | 1.0136          |
|                      |              | Balance ID:              | 38080204        |

## Calculations Converting parent activity to dpm/mL|dpm/g

|   |
|---|
| $(\text{Mass of parent(g)}) * (\text{Parm Activity (Bq/g)}) * (\text{conversion dpm to Bq}) / (\text{Dilution Vol}) = \text{Parent Activity (dpm/mL)}$                        |
| $(\text{Mass of parent(g)}) * (\text{Parm Activity (Bq/g)}) * (\text{conversion dpm to Bq}) / \text{Density (g/mL)} / (\text{Dilution Vol}) = \text{Parent Activity (dpm/g)}$ |
| $(5.3616 \text{ g}) * (26.31 \text{ Bq/g}) * (60 \text{ dpm/Bq}) / (250 \text{ mL}) = 33.8553 \text{ dpm/mL}$   |
| $(5.3616 \text{ g}) * (26.31 \text{ Bq/g}) * (60 \text{ dpm/Bq}) / (1.0136 \text{ g/mL}) / (250 \text{ mL}) = 33.4010 \text{ dpm/g}$  |

## Secondary Standards

| Prep Date | Preparer | Mass Primary | Dilution (mL) | Code | Conc dpm/mL | Verification Date | Expiration Date |
|-----------|----------|--------------|---------------|------|-------------|-------------------|-----------------|
|-----------|----------|--------------|---------------|------|-------------|-------------------|-----------------|

GEL Laboratories LLC  
Version 1.0 9/18/2000

## Verification for Pu-242 Standard 1374-A

|                         |             |        |                    |
|-------------------------|-------------|--------|--------------------|
| A.Drochter<br>12/8/2009 | Isotope     | Value  | Uncertainty        |
|                         | 1374-A      | 1.610  | 0.2480             |
|                         | 1374-A      | 1.580  | 0.2510             |
|                         | 1374-A      | 1.530  | 0.2440             |
| Mean Value (Counting) = | 1.573       | 103.17 | Pass               |
| Stdev =                 | 0.040414519 |        | Rule 3 (Pass/Fail) |
| Target =                | 1.52        |        |                    |
| Lower Limit =           | 1.492504296 |        |                    |
| Upper Limit =           | 1.654162371 |        |                    |
| Rule 1 Pass/Fail        | Pass        |        |                    |
| Two sigma =             | 0.080829038 |        |                    |
| 10 % of Mean =          | 0.157333333 |        |                    |
| Rule 2 (Pass/Fail)      | Pass        |        |                    |

Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements

Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.

Rule 3 = The determined mean value shall be within 5% of the certificate value.

The analyst prepared three standard verification sources for standard 1374-A using 0.1 mL for each source. Each standard was combined with 0.1 mL of Pu239 standard 0338-BB and 50 micrograms of neodymium carrier in a disposable centrifuge tube containing 4 mL of 2 M HCl and 6 mL of DI water. Four drops of 25% Hydrazine dihydrochloride were added to each centrifuge tube and swirled. Two mL of 49% HF was added to precipitate neodymium (and plutonium) fluoride. After 30 minutes, each sample was filtered following routine procedures for alpha spectroscopy source preparation. Each source was counted using routine alpha spec procedures. DPM values for Pu-242 were calculated by comparison to Pu-239 certified values.

*Handwritten:* Jot call 12/11/09 12/9/09 JPM 12/9/09



Eckert & Ziegler

Analytics

1380 Seaboard Industrial Blvd.  
Atlanta, Georgia 30318  
Tel 404-352-8677  
Fax 404-352-2837  
www.analyticsinc.com

**CERTIFICATE OF CALIBRATION**  
Standard Radionuclide Source

78747-278

1283

U-232 5 mL Liquid in Flame Sealed Vial

Customer: GEL Laboratories, LLC  
P.O. No.: 7319 RD, Item 1

This standard radionuclide source was prepared gravimetrically from a calibrated master solution. The master solution was calibrated using a germanium gamma spectrometer system.

Radionuclide purity and calibration were checked using a germanium gamma spectrometer system. The nuclear decay rate and assay date for this source are given below.

ANALYTICS maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. Guide 4.18, Revision 1.

|   |                            |
|---|----------------------------|
| Isotope:                                | U-232                      |
| Activity (Bq):                          | 3.754 E3                   |
| Half-Life:                              | 68.9 years                 |
| Calibration Date:                       | December 9, 2008 12:00 EST |
| Relative Expanded<br>Uncertainty (k=2): | 5.0%                       |

**Comments:**

Impurities: U-233 <0.3%, Am-241 <0.15%  
5.20453 grams 1M HNO<sub>3</sub> solution.

Source Prepared By: W. Mao  
W. Mao, Radiochemist

QA Approved: D. M. Montgomery  
D. M. Montgomery, QA Manager

Date: 12-11-08

# Standard Traceability Log Rad

| Source Material Info |              |
|----------------------|--------------|
| Parent Code:         | 1283         |
| Prepared By:         | Daniel Roy   |
| Carrier Conc:        | 1M HNO3      |
| Reference Date:      | 12/09/2008   |
| Ampoule Mass (g):    | 5.20453 g    |
| Uncertainty:         | +/- 5 %      |
| LogBook No:          | RC-S-051-002 |

| A Solution Material Info |             |
|--------------------------|-------------|
| Isotope:                 | Uranium-232 |
| Prepared By:             | Daniel Roy  |
| Prep Date:               | 12/16/2008  |
| Verification Date:       | 12/30/2008  |
| Expiration Date:         | 12/30/2009  |
| Primary Code:            | 1283-A      |
| Dilution(mL):            | 100 mL      |
| Mass of Parent(g):       | 5.0245 g    |
| Density(g/mL):           | 1.0285      |
| Balance ID:              |             |

## Calculations Converting parent activity to dpm/mL/dpm/g

|  |
|--|
| $(\text{Mass of parent(g)}) * (\text{Parm Activity (Bq)}) * (\text{conversion dpm to Bq}) / (\text{Ampoule Mass(g)} * (\text{Dilution Vol})) = \text{Parent Activity (dpm/mL)}$                  |
| $(\text{Mass of parent(g)}) * (\text{Parm Activity (Bq)}) * (\text{conversion dpm to Bq}) / \text{Density} / (\text{Ampoule Mass (g)} * (\text{Dilution Vol})) = \text{Parent Activity (dpm/g)}$ |
| $(5.0245 \text{ g}) * (3754 \text{ Bq}) * (60 \text{ dpm/Bq}) / (5.20453 \text{ g} * 100 \text{ mL}) = 2174.4872 \text{ dpm/mL}$   |
| $(5.0245 \text{ g}) * (3754 \text{ Bq}) * (60 \text{ dpm/Bq}) / (1.0285 \text{ g/mL}) / (5.20453 \text{ g} * 100 \text{ mL}) = 2114.1700 \text{ dpm/g}$  |

## Secondary Standards

| Prep Date  | Preparer        | Mass Primary | Dilution (mL) | Code   | Conc dpm/mL    | Verification Date | Expiration Date |
|------------|-----------------|--------------|---------------|--------|----------------|-------------------|-----------------|
| 12/16/2008 | Daniel Roy      | 25.1813      | 1000          | 1283-B | 53.2375 dpm/ml | 12/16/2008        | 12/16/2009      |
| 12/30/2008 | Tina Schoneman  | 2.05         | 250           | 1283-C | 17.336 dpm/mL  | 12/30/2008        | 12/30/2009      |
| 12/30/2008 | Tina Schoneman  | .49          | 250           | 1283-D | 4.1438 dpm/mL  | 01/09/2009        | 01/09/2010      |
| 01/14/2009 | Mary Aders      | 25.0528      | 1000          | 1283-E | 52.9659 dpm/ml | 01/15/2009        | 01/15/2010      |
| 12/02/2009 | Julie Strock    | 2.076        | 250           | 1283-F | 17.5561 dpm/mL | 01/09/2009        | 12/30/2009      |
| 12/02/2009 | Julie Strock    | .517         | 250           | 1283-G | 4.3721 dpm/mL  | 01/09/2009        | 12/30/2009      |
| 12/09/2009 | Ashley Drochter | 21.56        | 1000          | 1283-H | 45.58 dpm/mL   | 12/09/2009        | 12/09/2010      |

## Verification for Uranium-232 Standard 1283-H

|                         |  |             |       |                    |       |
|-------------------------|--|-------------|-------|--------------------|-------|
| Analyst: A. Drochter    |  | Serial #    | Value | Uncertainty        |       |
| Date: 12/10/09          |  | 1283-H N1   | 2.020 | pCi/L              | 0.238 |
|                         |  | 1283-H N2   | 2.000 | pCi/L              | 0.234 |
|                         |  | 1283-H N3   | 2.060 | pCi/L              | 0.242 |
| Mean Value (Counting) = |  | 2.027       | pCi/L | 99.66904           | Pass  |
| Stdev =                 |  | 0.030550505 | pCi/L | Rule 3 (Pass/Fail) |       |
| Target =                |  | 2.033       | pCi/L |                    |       |
| Lower Limit =           |  | 1.965565857 | pCi/L |                    |       |
| Upper Limit =           |  | 2.087767676 | pCi/L |                    |       |
| Rule 1 Pass/Fail        |  | Pass        |       |                    |       |
| Two sigma =             |  | 0.061101009 |       |                    |       |
| 10 % of Mean =          |  | 0.202666667 |       |                    |       |
| Rule 2 (Pass/Fail)      |  | Pass        |       |                    |       |

Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements

Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.

Rule 3 = The determined mean value shall be within 10% of the certificate value.

The analyst prepared three standard verification sources for standard 1283-H using 0.1 mL for each source. Each standard was combined with 0.1 mL of U-238 standard 1163-G and was diluted to 10 mL with DI water. 50 micrograms of neodymium carrier and 1 ml of Titanium Chloride were added. The solution was allowed to sit for 30 seconds. One mL of 49% HF was then added to precipitate neodymium (and uranium) fluoride. After 30 minutes, each sample was filtered following routine procedures for alpha spectroscopy source preparation. Each source was counted using routine alpha spec procedures. DPM values for U-238 were calculated by comparison to U-232 certified values.

*A. Drochter*  
12/14/09



# RUNLOGS

## Instrument Run Log

**Instrument Type: GAMMA SPECTROMETER**

**Batch ID: 941639**

| Sample ID  | Sample Type | Analyst | Instrument | Run Date        | Status | Geometry | Calibration Date |
|------------|-------------|---------|------------|-----------------|--------|----------|------------------|
| 244630001  | SAMPLE      | MXR1    | GAM15      | 22-JAN-10 20:49 | DONE   | CAN      | 16-FEB-09 00:00  |
| 244630002  | SAMPLE      | MXR1    | GAM18      | 22-JAN-10 20:50 | DONE   | CAN      | 23-APR-09 00:00  |
| 244630003  | SAMPLE      | MXR1    | GAM04      | 23-JAN-10 11:45 | DONE   | CAN      | 05-MAY-09 00:00  |
| 244630004  | SAMPLE      | MXR1    | GAM06      | 23-JAN-10 11:46 | DONE   | CAN      | 04-FEB-09 00:00  |
| 244630005  | SAMPLE      | MXR1    | GAM07      | 23-JAN-10 11:46 | DONE   | CAN      | 20-JUL-09 00:00  |
| 244630006  | SAMPLE      | MXR1    | GAM11      | 23-JAN-10 11:47 | DONE   | CAN      | 18-NOV-09 00:00  |
| 244630007  | SAMPLE      | MXR1    | GAM15      | 23-JAN-10 11:47 | DONE   | CAN      | 16-FEB-09 00:00  |
| 244630008  | SAMPLE      | MXR1    | GAM16      | 23-JAN-10 11:47 | DONE   | CAN      | 16-NOV-09 00:00  |
| 244630009  | SAMPLE      | MXR1    | GAM17      | 23-JAN-10 11:48 | DONE   | CAN      | 06-JAN-10 00:00  |
| 244630010  | SAMPLE      | MXR1    | GAM25      | 23-JAN-10 11:48 | DONE   | CAN      | 07-OCT-09 00:00  |
| 244630011  | SAMPLE      | MXR1    | GAM18      | 23-JAN-10 11:49 | DONE   | CAN      | 23-APR-09 00:00  |
| 244630012  | SAMPLE      | MXR1    | GAM14      | 23-JAN-10 12:29 | DONE   | CAN      | 06-MAR-09 00:00  |
| 244630013  | SAMPLE      | MXR1    | GAM01      | 23-JAN-10 14:05 | DONE   | CAN      | 30-JAN-09 00:00  |
| 244630014  | SAMPLE      | MXR1    | GAM02      | 23-JAN-10 14:05 | DONE   | CAN      | 29-OCT-09 00:00  |
| 244630015  | SAMPLE      | MXR1    | GAM15      | 23-JAN-10 14:06 | DONE   | CAN      | 16-FEB-09 00:00  |
| 244630016  | SAMPLE      | MXR1    | GAM18      | 23-JAN-10 14:06 | DONE   | CAN      | 23-APR-09 00:00  |
| 1202015449 | MB          | MXR1    | GAM04      | 23-JAN-10 14:07 | DONE   | CAN      | 05-MAY-09 00:00  |
| 1202015450 | DUP         | MXR1    | GAM06      | 23-JAN-10 14:07 | DONE   | CAN      | 04-FEB-09 00:00  |
| 1202015451 | LCS         | MXR1    | GAM07      | 23-JAN-10 14:08 | DONE   | CAN      | 20-JUL-09 00:00  |

## Instrument Run Log

Instrument Type: ALPHA SPECTROMETER

Batch ID: 941748

| Sample ID  | Sample Type | Analyst | Instrument | Run Date        | Status | Geometry | Calibration Date |
|------------|-------------|---------|------------|-----------------|--------|----------|------------------|
| 1202015727 | MB          | MXA1    | 1025       | 22-JAN-10 12:03 | DONE   |          |                  |
| 1202015728 | DUP         | MXA1    | 1030       | 22-JAN-10 12:03 | DONE   |          |                  |
| 244630001  | SAMPLE      | MXA1    | 1215       | 22-JAN-10 12:03 | DONE   |          |                  |
| 244630002  | SAMPLE      | MXA1    | 1216       | 22-JAN-10 12:03 | DONE   |          |                  |
| 1202015729 | LCS         | MXA1    | 1031       | 22-JAN-10 12:03 | DONE   |          |                  |
| 244630003  | SAMPLE      | MXA1    | 1217       | 22-JAN-10 12:03 | DONE   |          |                  |
| 244630004  | SAMPLE      | MXA1    | 1218       | 22-JAN-10 12:03 | DONE   |          |                  |
| 244630005  | SAMPLE      | MXA1    | 1219       | 22-JAN-10 12:03 | DONE   |          |                  |
| 244630006  | SAMPLE      | MXA1    | 1220       | 22-JAN-10 12:03 | DONE   |          |                  |
| 244630007  | SAMPLE      | MXA1    | 1221       | 22-JAN-10 12:03 | DONE   |          |                  |
| 244630008  | SAMPLE      | MXA1    | 1222       | 22-JAN-10 12:03 | DONE   |          |                  |
| 244630009  | SAMPLE      | MXA1    | 1223       | 22-JAN-10 12:03 | DONE   |          |                  |
| 244630010  | SAMPLE      | MXA1    | 1224       | 22-JAN-10 12:03 | DUSE   |          |                  |
| 244630011  | SAMPLE      | MXA1    | 1225       | 22-JAN-10 12:03 | DONE   |          |                  |
| 244630012  | SAMPLE      | MXA1    | 1226       | 22-JAN-10 12:03 | DONE   |          |                  |
| 244630013  | SAMPLE      | MXA1    | 1227       | 22-JAN-10 12:03 | DONE   |          |                  |
| 244630014  | SAMPLE      | MXA1    | 1228       | 22-JAN-10 12:04 | DONE   |          |                  |
| 244630015  | SAMPLE      | MXA1    | 1229       | 22-JAN-10 12:04 | DONE   |          |                  |
| 244630016  | SAMPLE      | MXA1    | 1230       | 22-JAN-10 12:04 | DONE   |          |                  |
| 244630010  | SAMPLE      | MXA1    | 1256       | 25-JAN-10 17:15 | DONE   |          |                  |

## Instrument Run Log

Instrument Type: ALPHA SPECTROMETER

Batch ID: 941752

| Sample ID  | Sample Type | Analyst | Instrument | Run Date        | Status | Geometry | Calibration Date |
|------------|-------------|---------|------------|-----------------|--------|----------|------------------|
| 244630008  | SAMPLE      | MXA1    | 1233       | 20-JAN-10 16:36 | DONE   |          |                  |
| 244630009  | SAMPLE      | MXA1    | 1234       | 20-JAN-10 16:36 | DUSE   |          |                  |
| 244630010  | SAMPLE      | MXA1    | 1235       | 20-JAN-10 16:37 | DONE   |          |                  |
| 244630011  | SAMPLE      | MXA1    | 1236       | 20-JAN-10 16:37 | DONE   |          |                  |
| 244630012  | SAMPLE      | MXA1    | 1237       | 20-JAN-10 16:37 | DONE   |          |                  |
| 244630013  | SAMPLE      | MXA1    | 1238       | 20-JAN-10 16:37 | DONE   |          |                  |
| 244630014  | SAMPLE      | MXA1    | 1239       | 20-JAN-10 16:37 | DONE   |          |                  |
| 244630015  | SAMPLE      | MXA1    | 1240       | 20-JAN-10 16:37 | DONE   |          |                  |
| 244630016  | SAMPLE      | MXA1    | 1241       | 20-JAN-10 16:37 | DONE   |          |                  |
| 1202015738 | MB          | MXA1    | 1242       | 20-JAN-10 16:37 | DONE   |          |                  |
| 1202015739 | DUP         | MXA1    | 1243       | 20-JAN-10 16:37 | DONE   |          |                  |
| 1202015740 | LCS         | MXA1    | 1244       | 20-JAN-10 16:37 | DONE   |          |                  |
| 244630001  | SAMPLE      | MXA1    | 1106       | 20-JAN-10 16:41 | DONE   |          |                  |
| 244630002  | SAMPLE      | MXA1    | 1107       | 20-JAN-10 16:41 | DONE   |          |                  |
| 244630003  | SAMPLE      | MXA1    | 1108       | 20-JAN-10 16:41 | DONE   |          |                  |
| 244630004  | SAMPLE      | MXA1    | 1109       | 20-JAN-10 16:41 | DONE   |          |                  |
| 244630005  | SAMPLE      | MXA1    | 1110       | 20-JAN-10 16:41 | DONE   |          |                  |
| 244630006  | SAMPLE      | MXA1    | 1111       | 20-JAN-10 16:41 | DONE   |          |                  |
| 244630007  | SAMPLE      | MXA1    | 1112       | 20-JAN-10 16:41 | DONE   |          |                  |
| 244630009  | SAMPLE      | MXA1    | 1088       | 21-JAN-10 17:04 | DONE   |          |                  |

# Instrument Run Log

**Instrument Type: ALPHA SPECTROMETER**

**Batch ID:941758**

| Sample ID  | Sample Type | Analyst | Instrument | Run Date        | Status | Geometry | Calibration Date |
|------------|-------------|---------|------------|-----------------|--------|----------|------------------|
| 1202015747 | MB          | MXA1    | 1004       | 22-JAN-10 14:32 | DUSE   |          |                  |
| 244630013  | SAMPLE      | MXA1    | 1117       | 23-JAN-10 11:16 | DONE   |          |                  |
| 244630014  | SAMPLE      | MXA1    | 1118       | 23-JAN-10 11:16 | DONE   |          |                  |
| 244630015  | SAMPLE      | MXA1    | 1119       | 23-JAN-10 11:16 | DONE   |          |                  |
| 244630016  | SAMPLE      | MXA1    | 1120       | 23-JAN-10 11:16 | DONE   |          |                  |
| 1202015748 | DUP         | MXA1    | 1121       | 23-JAN-10 11:16 | DONE   |          |                  |
| 1202015749 | LCS         | MXA1    | 1122       | 23-JAN-10 11:16 | DONE   |          |                  |
| 244630001  | SAMPLE      | MXA1    | 1001       | 23-JAN-10 11:20 | DONE   |          |                  |
| 244630002  | SAMPLE      | MXA1    | 1002       | 23-JAN-10 11:20 | DONE   |          |                  |
| 244630003  | SAMPLE      | MXA1    | 1003       | 23-JAN-10 11:20 | DONE   |          |                  |
| 244630004  | SAMPLE      | MXA1    | 1004       | 23-JAN-10 11:20 | DONE   |          |                  |
| 244630005  | SAMPLE      | MXA1    | 1005       | 23-JAN-10 11:20 | DONE   |          |                  |
| 244630006  | SAMPLE      | MXA1    | 1006       | 23-JAN-10 11:20 | DONE   |          |                  |
| 244630007  | SAMPLE      | MXA1    | 1007       | 23-JAN-10 11:20 | DONE   |          |                  |
| 244630008  | SAMPLE      | MXA1    | 1008       | 23-JAN-10 11:20 | DONE   |          |                  |
| 244630009  | SAMPLE      | MXA1    | 1009       | 23-JAN-10 11:20 | DONE   |          |                  |
| 244630010  | SAMPLE      | MXA1    | 1010       | 23-JAN-10 11:20 | DONE   |          |                  |
| 244630011  | SAMPLE      | MXA1    | 1011       | 23-JAN-10 11:20 | DONE   |          |                  |
| 244630012  | SAMPLE      | MXA1    | 1012       | 23-JAN-10 11:20 | DONE   |          |                  |
| 1202015747 | MB          | MXA1    | 1150       | 26-JAN-10 20:27 | DONE   |          |                  |