

Monday, February 22, 2010

Page 1 of 2  
REQUEST NUMBER: 10-1984

**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: 10-1984

Per Agreement Number: 126310011

Project Cost Code: MR3A05529E00

Please analyse the enclosed samples  
according to the schedule indicated:

SHIP DATE: 2/22/2010

TURNAROUND/REPORT DUE: 3/24/2010

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

RE15-10-8316

R

2/17/2010

1

RE15-10-8317

R

2/17/2010

1

RE15-10-8318

R

2/17/2010

1

RE15-10-8319

R

2/17/2010

1

RE15-10-8326

R

2/17/2010

EPA:906.0

1

RE15-10-8316

R

2/17/2010

1

RE15-10-8317

R

2/17/2010

1

RE15-10-8318

R

2/17/2010

1

RE15-10-8319

R

2/17/2010

Monday, February 22, 2010

REQUEST NUMBER: 10-1984

Page 2 of 2

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
EPA:906.0	HASL-300:AM-241	1	RE15-10-8326	R	2/17/2010	
		1	RE15-10-8316	R	2/17/2010	
		1	RE15-10-8317	R	2/17/2010	
		1	RE15-10-8318	R	2/17/2010	
		1	RE15-10-8319	R	2/17/2010	
HASL-300:ISOPU		1	RE15-10-8326	R	2/17/2010	
		1	RE15-10-8316	R	2/17/2010	
		1	RE15-10-8317	R	2/17/2010	
		1	RE15-10-8318	R	2/17/2010	
		1	RE15-10-8319	R	2/17/2010	
HASL-300:ISOU		1	RE15-10-8326	R	2/17/2010	
		1	RE15-10-8316	R	2/17/2010	
		1	RE15-10-8317	R	2/17/2010	
		1	RE15-10-8318	R	2/17/2010	
		1	RE15-10-8319	R	2/17/2010	
		1	RE15-10-8326	R	2/17/2010	

Final Page of REQUEST NUMBER 10-1984

Monday, February 22, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1984

**LOS ALAMOS**

REQUEST NUMBER: 10-1984

**NATIONAL LABORATORY**

ATTN: Valerie Davis

TURNAROUND/REPORT DUE: 3/24/2010

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
RE15-10-8317	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8317	1	POLY	H3	Ice	R
RE15-10-8319	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8319	1	POLY	H3	Ice	R
RE15-10-8316	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8316	1	POLY	H3	Ice	R
RE15-10-8326	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8326	1	POLY	H3	Ice	R
RE15-10-8318	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8318	1	POLY	H3	Ice	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:

Printed Name

Signature

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2506

EVENT NAME: 4th Qtr. FY09 - SWMU 15-009(b) - Threemile Canyon

SAMPLE ID: RE15-10-8316

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/17/2010		MEDIA:	QBT3		OK
TIME COLLECTED (HH:MM)		14:17		SUB-MEDIA:	TUFF 1		OK
PRS ID:	15-009(b)	OK		SAMPLE TECH CODE:	HA		CBS
LOCATION ID:	15-610837	OK		FIELD QC TYPE:	NA		OK
LOCATION TYPE:	GENERIC	OK		FIELD PREP:	NA		
TOP DEPTH:	0	47.5 ft		SAMPLE USAGE:	INV		
BOTTOM DEPTH:	0	50.0 ft		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:	-90°		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		8260B	125 ML SEPTUM AMBER GLASS	Ice		
1		AM241+GS+ISO PU+ISOU	1 LITER POLY	None		
1		H3	500 ML POLY	Ice		
1		METALS+U-GEL	125 ML POLY	Ice		
1		Perchlorate+CN+ N03+pH	500 ML POLY	Ice		
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None		

## SAMPLE DESC:

Light brownish gray, slightly indurated non welded, dy, devitrified ash flow tuff

SAMPLE COMMENTS: NA

LOCATION DESC: ~~below R-14 tank inlet~~ JR 2/15/10 96-5

## FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 10 dpm  
Beta/Gamma = 2010 dpm

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

COLLECTED BY (PRINT)

R. Saunders

REVIEWED BY (PRINT)

J. MARIN

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) JON MARIN	2/18/10	(Printed Name) J. MARIN	2/18/10
(Signature) Jon R. Marin	9:30	(Signature)	935
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2506

EVENT NAME: 4th Qtr. FY09 - SWMU 15-009(b) - Threemile Canyon

SAMPLE ID: RE15-10-8317

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/17/2010		MEDIA:	OBT3		OK
TIME COLLECTED (HH:MM)		14:35		SUB-MEDIA:	TUFF 1		OK
PRS ID:	15-009(b)	OK		SAMPLE TECH CODE:	HA		CBS
LOCATION ID:	15-610837	OK		FIELD QC TYPE:	NA		OK
LOCATION TYPE:	GENERIC	OK		FIELD PREP:	NA		
TOP DEPTH:	0	58.5 ft		SAMPLE USAGE:	INV		
BOTTOM DEPTH:	0	60.0 ft		SCREEN/PORT DESC:			NA
FIELD MATRIX:	R	OK		EXCAVATED: YES/NO/NA	NO		
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		
BOREHOLE: YES/NO/NA	YES			BOREHOLE DECLINATION:	-90°		
				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		8260B	125 ML SEPTUM AMBER GLASS	Ice		
1		AM241+GS+ISO PU+ISOU	1 LITER POLY	None		
1		H3	500 ML POLY	Ice		
1		METALS+U-GEL	125 ML POLY	Ice		
1		Perchlorate+CN+ N03+pH	500 ML POLY	Ice		
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None		

## SAMPLE DESC:

Light gray, non indurated, non welded, devitrified, dry, ash flow tuff

SAMPLE COMMENTS: NA

LOCATION DESC: 96-5

## FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 25 dpm  
Beta/Gamma = 2000 dpm

PID  $\frac{\text{Ambient Reading}}{2/17/10} = \text{ppm}$

COLLECTED BY (PRINT)

R. Saunders

REVIEWED BY (PRINT)

J. MARIN

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) JON MARIN	2/18/10	(Printed Name) J. MARIN	2/18/10
(Signature) Jon R. Marin	9:30	(Signature) J. Marin	935
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2506

EVENT NAME: 4th Qtr. FY09 - SWMU 15-009(b) - Threemile Canyon

SAMPLE ID: RE15-10-8318

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/17/2010		MEDIA:	OBT3		OK
TIME COLLECTED (HH:MM)		14:51		SUB-MEDIA:	TUFF 1		OK
PRS ID:	15-009(b)	OK		SAMPLE TECH CODE:	HA		CBS
LOCATION ID:	15-610837			FIELD QC TYPE:	NA		OK
LOCATION TYPE:	GENERIC			FIELD PREP:	NA		
TOP DEPTH:	0	68.5 ft		SAMPLE USAGE:	INV		
BOTTOM DEPTH:	0	70.0 ft		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:	-90°		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		8260B	125 ML SEPTUM AMBER GLASS	Ice		
1		AM241+GS+ISO PU+ISOU	1 LITER POLY	None		
1		H3	500 ML POLY	Ice		
1		METALS+U-GEL	125 ML POLY	Ice		
1		Perchlorate+CN+N03+pH	500 ML POLY	Ice		
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None		

SAMPLE DESC:

Light brownish gray non indurated, non welded, dehydrified, dry  
 2/18/10 ash flow tuff

SAMPLE COMMENTS:

NA

LOCATION DESC: 96-5

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha  $\leq$  20 dpm  
 Beta/Gamma  $\leq$  1912 dpm

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

COLLECTED BY (PRINT)

REVIEWED BY (PRINT) J. MARIN

RELINQUISHED BY

(Printed Name) JON MARIN  
 (Signature) Jon R. Marin

Date/Time

2/18/10

9:30

RECEIVED BY

(Printed Name) Jeyul  
 (Signature) Jeyul

Date/Time

2/18/10

9:35

RELINQUISHED BY

Date/Time

RECEIVED BY

Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2506

EVENT NAME: 4th Qtr. FY09 - SWMU 15-009(b) - Threemile Canyon

SAMPLE ID: RE15-10-8319

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/17/2010		MEDIA:	QBT3		OK
TIME COLLECTED (HH:MM)		15:08		SUB-MEDIA:	TUFF 1		OK
PRS ID:	15-009(b)	OK		SAMPLE TECH CODE:	HA		CBS
LOCATION ID:	15-610837			FIELD QC TYPE:	NA		OK
LOCATION TYPE:	GENERIC			FIELD PREP:	NA		
TOP DEPTH:	0	78.5 ft		SAMPLE USAGE:	INV		
BOTTOM DEPTH:	0	80.0 ft		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:	-900		BOREHOLE DIRECTION:

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	Normal	8082+8270+NME D-EXP	500 ML AMBER GLASS	Ice	Y	
1		8260B	125 ML SEPTUM AMBER GLASS	Ice		
1		AM241+GS+ISO PU+ISOU	1 LITER POLY	None		
1		H3	500 ML POLY	Ice		
1		METALS+U-GEL	125 ML POLY	Ice		
1		Perchlorate+CN+N03+pH	500 ML POLY	Ice		
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None		

SAMPLE DESC:

Light brownish gray, nonindurated, nonwelded, devitrified, dry ash flow tuff.

SAMPLE COMMENTS:

NA

LOCATION DESC:

96-5

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 36 dpm  
Beta/Gamma = 1983 dpm

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

COLLECTED BY (PRINT)

R. Saunders

REVIEWED BY (PRINT)

J. MARY

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) JON MARY	2/18/10	(Printed Name) J. Mary	2/18/10
(Signature) Jon R. Mary	9:30	(Signature)	9:35
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2506

EVENT NAME: 4th Qtr. FY09 - SWMU 15-009(b) - Threemile Canyon

SAMPLE ID: RE15-10-8326

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/17/2010		MEDIA:	OBT3		OK
TIME COLLECTED (HH:MM)		14:17		SUB-MEDIA:	TUFF 1		OK
PRS ID:	15-009(b)	OK		SAMPLE TECH CODE:	HA		CBS
LOCATION ID:	UNK	15-610837		FIELD QC TYPE:	FD		OK
LOCATION TYPE:	GENERIC	OK		FIELD PREP:	NA		
TOP DEPTH:	0	47.5 ft		SAMPLE USAGE:	QC		
BOTTOM DEPTH:	0	50.0 ft		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	YES			BOREHOLE DECLINATION:	-90°		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		8260B	125 ML SEPTUM AMBER GLASS	Ice		
1		AM241+GS+ISO PU+ISOU	1 LITER POLY	None		
1		H3	500 ML POLY	Ice		
1		METALS+U-GEL	125 ML POLY	Ice		
1		Perchlorate+CN+N03+pH	500 ML POLY	Ice		
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None		

SAMPLE DESC: QC Sample of RE15-10-8316

Light brownish gray, slightly indurated, non welded, devitrified, dry ash flow tuff

SAMPLE COMMENTS: NA

LOCATION DESC: 96-5

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 10 dpm  
Beta/Gamma = 2010 dpmPID  $\frac{\text{Ambient Reading}}{\text{Reading}} = \text{ppm}$ 

COLLECTED BY (PRINT)

REVIEWED BY (PRINT)

R. Saunders

JON MARIN

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) JON MARIN	2/18/10	(Printed Name) [Signature]	2/18/10
(Signature) Jon R. Marin	2:30	(Signature)	8:25
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time



## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2506

EVENT NAME: 4th Qtr. FY09 - SWMU 15-009(b) - Threemile Canyon

SAMPLE ID: RE15-10-8330

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED(MM/DD/YYYY):		02/17/2010	MEDIA:	NA	OK
TIME COLLECTED (HH:MM)		15:25	SUB-MEDIA:	OTHER	
PRS ID: 15-009(b)		OK	SAMPLE TECH CODE:	DC	
LOCATION ID: UNK		15-610837	FIELD QC TYPE:	FR	
LOCATION TYPE: GENERIC		OK	FIELD PREP:	UF	
TOP DEPTH: 0		0	SAMPLE USAGE:	QC	
BOTTOM DEPTH: 0		0	SCREEN/PORT DESC:		NA
FIELD MATRIX: W		OK	EXCAVATED: YES/NO/NA		
COMPOSITE TYPE: NA			COMPOSITE TIME INTERVAL: NA		
			WATER FLOWING: YES/NO/NA		
BOREHOLE: YES/NO/NA			BOREHOLE DECLINATION: -90°		
			BOREHOLE DIRECTION: NA		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	Normal	METALS+U-GEL	1 LITER POLY	Nitric Acid	Y	
1		NO3NO2	250 ML POLY	Sulfuric Acid (Hydrogen Sulfate)	N	
1	Normal	SW-846:6850	250 ML POLY	Ice	Y	
1	Normal	TCN	500 ML POLY	Sodium Hydroxide	Y	

SAMPLE DESC: QC Sample of RE15-10-8319

SAMPLE COMMENTS: NA

LOCATION DESC: 96-5

FIELD SCREENING/MEASUREMENT RESULTS: NA

COLLECTED BY (PRINT)

R. Saunders

REVIEWED BY (PRINT)

J. MARIN

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) JON MARIN	2/18/10	(Printed Name)	2/18/10
(Signature) Jon R. Marin	9:30	(Signature)	9:30
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name)		(Printed Name)	
(Signature)		(Signature)	

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2506

EVENT NAME: 4th Qtr. FY09 - SWMU 15-009(b) - Threemile Canyon

SAMPLE ID: RE15-10-8335

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/17/2010	MEDIA:	NA		OK	
TIME COLLECTED (HH:MM)		12:30	SUB-MEDIA:	OTHER			
PRS ID:	15-009(b)	OK	SAMPLE TECH CODE:	DC			
LOCATION ID:	UNK	15-610837	FIELD QC TYPE:	FTB			
LOCATION TYPE:	GENERIC	OK	FIELD PREP:	NA			
TOP DEPTH:	0	0	SAMPLE USAGE:	QC			
BOTTOM DEPTH:	0	0	SCREEN/PORT DESC:				
FIELD MATRIX:	S	OK	EXCAVATED: YES/NO/NA				
COMPOSITE TYPE:	NA		COMPOSITE TIME INTERVAL:	NA			
BOREHOLE:	YES/NO/NA		BOREHOLE DECLINATION:	-90°		BOREHOLE DIRECTION:	NA

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1 <sup>2</sup>	Normal	8260B Trip Blank	40 ML SEPTUM AMBER GLASS	Ice	Y	

SAMPLE DESC: QC Sample of RE15-10-8316

SAMPLE COMMENTS: NA

LOCATION DESC: 96-5

FIELD SCREENING/MEASUREMENT RESULTS: NA

COLLECTED BY (PRINT)

REVIEWED BY (PRINT) J. MARIN

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) JON MARIN	2/18/10	(Printed Name)	2/18/10
(Signature) Jon R. Marin	9:30	(Signature)	435
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name)		(Printed Name)	
(Signature)		(Signature)	



2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4377 FAX (225) 381-2996

1 of 1

ARS Sample Delivery Group: ARS1-10-00300

Analysis Description: Gross Alpha/Beta In (Soil, Sludge, Waste, Sediment [SO])

Analysis Test Method: GPC-A-003

Request or PO Number: N/A

Date Received: 2/19/2010

Report Date: 02/19/10 18:26

1 of 1


ARS Sample ID	Client Sample ID	Isotope	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery	Sample Matrix	Collection Date
ARS1-10-00300-001	RE15-10-8316	GROSS ALPHA	12.624	6.050	14.476	4.464	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00300-002	RE15-10-8316	GROSS BETA	39.246	6.541	8.157	3.539		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00300-002	RE15-10-8317	GROSS ALPHA	19.261	7.686	16.572	5.314		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00300-002	RE15-10-8317	GROSS BETA	39.859	6.798	9.279	4.081		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00300-003	RE15-10-8318	GROSS ALPHA	9.637	5.628	15.661	5.050	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00300-003	RE15-10-8318	GROSS BETA	35.290	6.053	7.870	3.391		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00300-004	RE15-10-8319	GROSS ALPHA	9.938	5.709	15.732	5.045	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00300-004	RE15-10-8319	GROSS BETA	41.845	6.850	8.084	3.491		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00300-005	RE15-10-8326	GROSS ALPHA	2.866	4.141	15.430	5.028	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00300-005	RE15-10-8326	GROSS BETA	41.148	6.649	7.536	3.237		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00300-006	RE15-10-8387	GROSS ALPHA	8.149	5.279	15.319	4.839	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00300-006	RE15-10-8387	GROSS BETA	36.744	6.233	8.022	3.465		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00300-007	RE15-10-8386	GROSS ALPHA	4.752	4.702	16.405	5.435	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00300-007	RE15-10-8386	GROSS BETA	28.418	5.208	7.815	3.373		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00300-008	WST15-10-1162	GROSS ALPHA	3.243	3.902	14.353	4.616	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00300-008	WST15-10-1162	GROSS BETA	30.291	5.410	7.745	3.338		pCi/g	2/19/2010	CR	N/A	SO	
NOTES:													

Project Manager Review

Warning: 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.

LEIAP Certificate # 01949

NEIAP Certificate # E87558

DATA VALIDATION COVER SHEET	
5119-1	Records Use only
Data Validation Cover Sheet	
	

**Section I.**

REQUEST NUMBER: 10-1984 VALIDATION DATE: 04/02/10 LAB CODE: GEL

CONTRACT LABORATORY NAME: GEL Laboratories LLC

VALIDATOR: David Schwent 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 PESTICIDES/POLYCHLORINA TED BIPHENYLS
<input type="checkbox"/> GENERAL CHEMISTRY	<input checked="" type="checkbox"/> RADIOCHEMISTRY	<input type="checkbox"/> LCMSMS HIGH EXPLOSIVES	

☐ 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):


1. All reported sample results that were rejected by the laboratory due to interference or low abundance were qualified R,R5a. In the QC samples, several results were also rejected by the laboratory. No sample data were qualified as a result.
2. It should be noted that no MS analysis was performed for the tritium analysis. However, an LCS analysis was performed and was within acceptance limits. No sample data were qualified as a result.
3. It should be noted that the matrix QC analyses for the gamma spec and tritium analyses in this RN were performed on LANL samples from other RNs. No sample data were qualified as a result.

**Reviewed By:** Charissa Lewis **Level:** I **Date:** 4/6/10


DATA VALIDATION COVER SHEET	
5119-1	Records Use only
Data Validation Cover Sheet	
VALIDATOR'S SIGNATURE: <u>David Schwartz</u>	DATE: <u>04/02/10</u>
Form 5119-1, Revision 0.0	LOS ALAMOS Environmental Restoration Project

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

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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" 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	
<b>5119-2</b>  <b>Rad Analytical Data Validation Checklist</b>	Records Use only  

Yes No N/A				Assign Qualifier Listed Below If Criterion = Yes	
(Check One)				Non-detected Analyte	Detected Analyte
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	12. The tracer is < 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 type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>	19. Associated duplicate sample has DER or RER > the analytical laboratory's acceptance limits.	R, R10	J, J10
<input checked="" type="checkbox"/>	<input 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		
5119-2	Records Use only	
Rad Analytical Data Validation Checklist		

Yes No N/A				Assign Qualifier Listed Below If Criterion = Yes	
(Check One)				Non-detected Analyte	Detected 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input 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 NQ, NQ



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## 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: March 19, 2010

Client Sample ID: RE15-10-8317  
Sample ID: 247797001  
Matrix: R  
Collect Date: 17-FEB-10  
Receive Date: 23-FEB-10  
Collector: Client  
Moisture: 6.34%

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	-0.000211	0.021	+/-0.00315	0.050	pCi/g		AYB1	03/16/10	0738	961200	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.000845	0.0282	+/-0.00256	0.050	pCi/g		AYB1	03/18/10	2059	961201	2
Plutonium-239/240	U	0.00302	0.0238	+/-0.00336	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		0.862	0.130	+/-0.0897	0.100	pCi/g		AYB1	03/17/10	1834	961204	4
Uranium-235/236	U	0.0455	0.0793	+/-0.0164	0.100	pCi/g						
Uranium-238		0.769	0.0913	+/-0.0827	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.0597	0.130	+/-0.0415	0.200	pCi/g		MXR1	03/05/10	1027	957136	5
Bismuth-211	UI	4.86	R,R5a	0.402	+/-0.356	pCi/g						
Bismuth-214		1.67		0.152	+/-0.124	0.200	pCi/g					
Cadmium-109	UI	5.49	R,R5a	1.16	+/-0.540	pCi/g						
Cerium-139	U	0.0387	0.0637	+/-0.0185	0.050	pCi/g						
Cesium-134	U	0.0542	0.111	+/-0.0358	0.100	pCi/g						
Cesium-137	U	0.044	0.0812	+/-0.0233	0.100	pCi/g						
Cobalt-60	U	0.0159	0.0909	+/-0.0273	0.100	pCi/g						
Europium-152	U	-0.0932	0.191	+/-0.0728	0.200	pCi/g						
Lanthanum-140	U	-0.112	0.152	+/-0.0543		pCi/g						
Lead-212		2.25	0.113	+/-0.139	0.100	pCi/g						
Lead-214		1.76	0.146	+/-0.138	0.100	pCi/g						
Mercury-203	U	0.0273	0.0831	+/-0.0237	0.100	pCi/g						
Potassium-40		36.1	0.691	+/-1.54	1.00	pCi/g						
Radium-223	U	0.878	1.33	+/-0.425		pCi/g						
Radium-224	UI	6.48	R,R5a	1.21	+/-0.758	pCi/g						
Radium-226		1.67	0.152	+/-0.124		pCi/g						
Radium-228		2.15	0.273	+/-0.219	0.500	pCi/g						
Ruthenium-106	U	0.265	0.676	+/-0.197	0.800	pCi/g						
Sodium-22	U	0.0461	0.104	+/-0.0299	0.080	pCi/g						
Strontium-85	U	0.0648	0.0861	+/-0.0274		pCi/g						

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Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 19, 2010

Client Sample ID: RE15-10-8317  
Sample ID: 247797001

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		0.705	0.0752	+/-0.0611	0.080	pCi/g						
Thorium-227	U	0.00319	0.507	+/-0.147		pCi/g						
Thorium-231	U	0.878	1.33	+/-0.425		pCi/g						
Thorium-234		1.96	1.26	+/-0.594	2.00	pCi/g						
Tin-113	U	0.00948	0.0969	+/-0.0285	0.100	pCi/g						
Uranium-235	U	0.294	0.434	+/-0.128	0.500	pCi/g						
Yttrium-88	U	0.0177	0.080	+/-0.023	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		3890	102	+/-288	250	pCi/L		KXK2	03/11/10	0345	961540	6

### 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
6	GL-RAD-A-002

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Americium-243 Tracer	AM241 "Dry Weight Corrected"	84.7	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	81.2	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	57.8	(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

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Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 19, 2010

Client Sample ID: RE15-10-8319  
Sample ID: 247797002  
Matrix: R  
Collect Date: 17-FEB-10  
Receive Date: 23-FEB-10  
Collector: Client  
Moisture: 3.28%

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	0.00125	0.0225	+/-0.00154	0.050	pCi/g		AYB1	03/17/10	0728	961200	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.020	0.0304	+/-0.0105	0.050	pCi/g		AYB1	03/17/10	0850	961201	2
Plutonium-239/240	U	7.75E-05	0.0258	+/-0.00295	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		0.815	0.0775	+/-0.0744	0.100	pCi/g		AYB1	03/17/10	1834	961204	3
Uranium-235/236		0.051	0.0473	+/-0.016	0.100	pCi/g						
Uranium-238		0.899	0.0545	+/-0.0805	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	-0.0265	0.191	+/-0.0605	0.200	pCi/g		MXR1	03/05/10	1028	957136	4
Bismuth-211	UI	4.71	R,R5a	0.363	+/-0.341	pCi/g						
Bismuth-214		1.56		0.115	+/-0.118	0.200	pCi/g					
Cadmium-109	UI	2.72	R,R5a	1.23	+/-0.547	pCi/g						
Cerium-139	U	0.00688		0.0535	+/-0.0159	0.050	pCi/g					
Cesium-134	UI	0.119	R,R5a	0.0938	+/-0.0424	0.100	pCi/g					
Cesium-137	U	-0.00198		0.0637	+/-0.0188	0.100	pCi/g					
Cobalt-60	U	-0.0107		0.0586	+/-0.0183	0.100	pCi/g					
Europium-152	U	0.0268		0.169	+/-0.0508	0.200	pCi/g					
Lanthanum-140	U	0.108		0.166	+/-0.0474	pCi/g						
Lead-212		2.21		0.097	+/-0.122	0.100	pCi/g					
Lead-214		1.71		0.132	+/-0.132	0.100	pCi/g					
Mercury-203	UI	0.070	R,R5a	0.0661	+/-0.0275	0.100	pCi/g					
Potassium-40		37.0		0.542	+/-1.85	1.00	pCi/g					
Radium-223	U	0.393		1.14	+/-0.324	pCi/g						
Radium-224	UI	5.79	R,R5a	1.04	+/-0.655	pCi/g						
Radium-226		1.56		0.115	+/-0.118	pCi/g						
Radium-228		2.34		0.234	+/-0.206	0.500	pCi/g					
Ruthenium-106	U	-0.194		0.487	+/-0.150	0.800	pCi/g					
Sodium-22	U	0.0144		0.0781	+/-0.0228	0.080	pCi/g					
Strontium-85	UI	0.0857	R,R5a	0.0737	+/-0.0214	pCi/g						
Thallium-208		0.698		0.0567	+/-0.0552	0.080	pCi/g					

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Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 19, 2010

Client Sample ID:  
Sample ID:

RE15-10-8319  
247797002

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time Batch	Mtd.
<b>Rad Gamma Spec Analysis</b>											
GAMMA SPEC "Dry Weight Corrected"											
Thorium-227	U	-0.244	0.444	+/-0.134		pCi/g					
Thorium-231	U	0.393	1.14	+/-0.324		pCi/g					
Thorium-234	U	1.39	1.72	+/-0.735	2.00	pCi/g					
Tin-113	U	-0.0584	0.0681	+/-0.0223	0.100	pCi/g					
Uranium-235	U	0.106	0.347	+/-0.102	0.500	pCi/g					
Yttrium-88	U	-0.0131	0.0469	+/-0.0157	0.100	pCi/g					
<b>Rad Liquid Scintillation Analysis</b>											
H3 "As Received"											
Tritium		916	203	+/-107	250	pCi/L		KXK2	03/11/10	0548 961540	5

### 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
5	GL-RAD-A-002

Surrogate/Tracer recovery	Test	Recovery %	Acceptable Limits
Americium-243 Tracer	AM241 "Dry Weight Corrected"	91.2	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	87.5	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	92.9	(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

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## Certificate of Analysis

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Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 19, 2010

Client Sample ID: RE15-10-8316  
Sample ID: 247797003  
Matrix: R  
Collect Date: 17-FEB-10  
Receive Date: 23-FEB-10  
Collector: Client  
Moisture: 4.02%

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	-0.00608	0.0217	+/-0.00259	0.050	pCi/g		AYB1	03/16/10	0738	961200	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.020	0.0323	+/-0.0112	0.050	pCi/g		AYB1	03/17/10	0850	961201	2
Plutonium-239/240	U	0.0194	0.0274	+/-0.00751	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		0.948	0.0929	+/-0.0883	0.100	pCi/g		AYB1	03/17/10	1834	961204	3
Uranium-235/236	U	0.0448	0.0568	+/-0.0161	0.100	pCi/g						
Uranium-238		0.867	0.0653	+/-0.0819	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.00187	0.194	+/-0.0627	0.200	pCi/g		MXR1	03/05/10	1029	957136	4
Bismuth-211	UI	4.99	R,R5a	0.303	+/-0.409	pCi/g						
Bismuth-214		1.44		0.0963	+/-0.112	pCi/g						
Cadmium-109	UI	3.93	R,R5a	1.04	+/-0.517	pCi/g						
Cerium-139	U	-0.00706		0.046	+/-0.0135	pCi/g						
Cesium-134	UI	0.0982	R,R5a	0.0963	+/-0.0458	pCi/g						
Cesium-137	U	-0.0519		0.0527	+/-0.0184	pCi/g						
Cobalt-60	U	-0.00804		0.063	+/-0.0195	pCi/g						
Europium-152	U	0.107		0.162	+/-0.0519	pCi/g						
Lanthanum-140	U	-0.0693		0.133	+/-0.049	pCi/g						
Lead-212		2.11		0.0921	+/-0.159	pCi/g						
Lead-214		1.81		0.110	+/-0.157	pCi/g						
Mercury-203	U	-0.0283		0.0595	+/-0.019	pCi/g						
Potassium-40		40.9		0.539	+/-2.02	pCi/g						
Radium-223	U	-0.659		0.973	+/-0.368	pCi/g						
Radium-224	UI	4.38	R,R5a	0.988	+/-0.614	pCi/g						
Radium-226		1.44		0.0963	+/-0.112	pCi/g						
Radium-228		1.93		0.245	+/-0.197	pCi/g						
Ruthenium-106	U	0.121		0.556	+/-0.162	pCi/g						
Sodium-22	U	-0.0243		0.0706	+/-0.0229	pCi/g						
Strontium-85	UI	0.0744	R,R5a	0.0687	+/-0.0203	pCi/g						
Thallium-208		0.604		0.0576	+/-0.049	pCi/g						

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## 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: March 19, 2010

Client Sample ID:  
Sample ID:

RE15-10-8316  
247797003

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gamma Spec Analysis</b>												
GAMMA SPEC "Dry Weight Corrected"												
Thorium-227	U	-0.215	0.384	+/-0.122		pCi/g						
Thorium-231	U	-0.659	0.973	+/-0.368		pCi/g						
Thorium-234	U	1.45	1.68	+/-0.739	2.00	pCi/g						
Tin-113	U	0.0017	0.0697	+/-0.0201	0.100	pCi/g						
Uranium-235	U	0.101	0.326	+/-0.0929	0.500	pCi/g						
Yttrium-88	U	-0.00602	0.0475	+/-0.0151	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
H3 "As Received"												
Tritium		4550	114	+/-335	250	pCi/L		KXK2	03/11/10	0750	961540	5

### 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
5	GL-RAD-A-002

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Americium-243 Tracer	AM241 "Dry Weight Corrected"	85.9	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	89.0	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	86.3	(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

# GEL LABORATORIES LLC

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## 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: March 19, 2010

Client Sample ID: RE15-10-8326  
Sample ID: 247797004  
Matrix: R  
Collect Date: 17-FEB-10  
Receive Date: 23-FEB-10  
Collector: Client  
Moisture: 4.01%

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	0.000554	0.0222	+/-0.00256	0.050	pCi/g		AYB1	03/16/10	0738	961200	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.00397	0.0289	+/-0.00433	0.050	pCi/g		AYB1	03/18/10	2059	961201	2
Plutonium-239/240	U	0.000866	0.0245	+/-0.00262	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		0.824	0.136	+/-0.088	0.100	pCi/g		AYB1	03/17/10	1834	961204	4
Uranium-235/236	U	0.0655	0.0829	+/-0.0203	0.100	pCi/g						
Uranium-238		0.939	0.0954	+/-0.0974	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.0963	0.395	+/-0.108	0.200	pCi/g		MXR1	03/05/10	1029	957136	5
Bismuth-211	UI	4.61	R,R5a	+/-0.282		pCi/g						
Bismuth-214		1.32		+/-0.108	0.200	pCi/g						
Cadmium-109	UI	3.70	R,R5a	+/-0.495		pCi/g						
Cerium-139	U	0.0139		+/-0.0141	0.050	pCi/g						
Cesium-134	UI	0.102	R,R5a	+/-0.0533	0.100	pCi/g						
Cesium-137	U	-0.0406		+/-0.0189	0.100	pCi/g						
Cobalt-60	U	-0.000425		+/-0.0201	0.100	pCi/g						
Europium-152	U	0.0133		+/-0.050	0.200	pCi/g						
Lanthanum-140	U	-0.0203		+/-0.0491		pCi/g						
Lead-212		2.00		+/-0.101	0.100	pCi/g						
Lead-214		1.67		+/-0.112	0.100	pCi/g						
Mercury-203	U	-0.00226		+/-0.0193	0.100	pCi/g						
Potassium-40		39.1		+/-1.71	1.00	pCi/g						
Radium-223	U	0.084		+/-0.340		pCi/g						
Radium-224	UI	4.58	R,R5a	+/-0.702		pCi/g						
Radium-226		1.32		+/-0.108		pCi/g						
Radium-228		1.97		+/-0.202	0.500	pCi/g						
Ruthenium-106	U	-0.165		+/-0.158	0.800	pCi/g						
Sodium-22	U	-0.0248		+/-0.0228	0.080	pCi/g						
Strontium-85	UI	0.0757	R,R5a	+/-0.0217		pCi/g						
Thallium-208		0.547		+/-0.0489	0.080	pCi/g						

# GEL LABORATORIES LLC

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## 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: March 19, 2010

Client Sample ID: RE15-10-8326  
Sample ID: 247797004  
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	-0.0931	0.433	+/-0.125		pCi/g						
Thorium-231	U	0.084	1.05	+/-0.340		pCi/g						
Thorium-234	U	-0.189	3.17	+/-0.892	2.00	pCi/g						
Tin-113	U	0.0591	0.0767	+/-0.0208	0.100	pCi/g						
Uranium-235	U	0.161	0.356	+/-0.102	0.500	pCi/g						
Yttrium-88	U	0.017	0.0534	+/-0.0146	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		4370	204	+/-341	250	pCi/L		KXK2	03/11/10	0953	961540	6

### 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
6	GL-RAD-A-002

Surrogate/Tracer recovery	Test	Recovery %	Acceptable Limits
Americium-243 Tracer	AM241 "Dry Weight Corrected"	84.7	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	82.6	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	59.5	(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



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## Certificate of Analysis

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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: March 19, 2010

Client Sample ID: RE15-10-8318  
Sample ID: 247797005  
Matrix: R  
Collect Date: 17-FEB-10  
Receive Date: 23-FEB-10  
Collector: Client  
Moisture: 4.55%

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	-0.000327	0.022	+/-0.0015	0.050	pCi/g		AYB1	03/16/10	0739	961200	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.0136	0.0326	+/-0.0102	0.050	pCi/g		AYB1	03/17/10	0850	961201	2
Plutonium-239/240	U	0.0144	0.0276	+/-0.00657	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		0.822	0.116	+/-0.0861	0.100	pCi/g		AYB1	03/18/10	1145	961204	3
Uranium-235/236	U	0.0675	0.0718	+/-0.0201	0.100	pCi/g						
Uranium-238		0.809	0.0821	+/-0.0853	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	-0.162	0.346	+/-0.101	0.200	pCi/g		MXR1	03/05/10	1030	957136	4
Bismuth-211	UI	5.16	R,R5a	0.416	+/-0.369	pCi/g						
Bismuth-214		1.62		0.140	+/-0.131	pCi/g						
Cadmium-109	UI	3.49	R,R5a	1.55	+/-0.655	pCi/g						
Cerium-139	U	-0.00268	0.0602	+/-0.0183	0.050	pCi/g						
Cesium-134	U	0.113	0.118	+/-0.047	0.100	pCi/g						
Cesium-137	U	-0.024	0.0731	+/-0.0228	0.100	pCi/g						
Cobalt-60	U	-0.0184	0.0789	+/-0.0252	0.100	pCi/g						
Europium-152	U	0.0672	0.206	+/-0.0674	0.200	pCi/g						
Lanthanum-140	U	-0.0538	0.160	+/-0.0521		pCi/g						
Lead-212		2.23	0.108	+/-0.134	0.100	pCi/g						
Lead-214		1.87	0.142	+/-0.143	0.100	pCi/g						
Mercury-203	U	0.0251	0.0829	+/-0.0269	0.100	pCi/g						
Potassium-40		38.0	0.701	+/-2.10	1.00	pCi/g						
Radium-223	U	0.139	1.32	+/-0.440		pCi/g						
Radium-224	UI	5.25	R,R5a	1.15	+/-0.721	pCi/g						
Radium-226		1.62	0.140	+/-0.131		pCi/g						
Radium-228		2.32	0.268	+/-0.224	0.500	pCi/g						
Ruthenium-106	U	0.399	0.673	+/-0.186	0.800	pCi/g						
Sodium-22	U	0.00205	0.094	+/-0.0285	0.080	pCi/g						
Strontium-85	U	0.0705	0.0847	+/-0.0256		pCi/g						
Thallium-208		0.689	0.0675	+/-0.0575	0.080	pCi/g						

# GEL LABORATORIES LLC

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## 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: March 19, 2010

Client Sample ID: RE15-10-8318  
Sample ID: 247797005

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gamma Spec Analysis</b>												
GAMMA SPEC "Dry Weight Corrected"												
Thorium-227	U	-0.0917	0.538	+/-0.159		pCi/g						
Thorium-231	U	0.139	1.32	+/-0.440		pCi/g						
Thorium-234	U	1.70	3.09	+/-0.870	2.00	pCi/g						
Tin-113	U	-0.00957	0.0895	+/-0.0273	0.100	pCi/g						
Uranium-235	U	0.0786	0.398	+/-0.120	0.500	pCi/g						
Yttrium-88	U	0.016	0.067	+/-0.0188	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
H3 "As Received"												
Tritium		2240	121	+/-177	250	pCi/L		KXK2	03/11/10	1156	961540	5

### 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
5	GL-RAD-A-002

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Americium-243 Tracer	AM241 "Dry Weight Corrected"	84.8	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	83.6	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	92.3	(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

Monday, February 22, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1984

LOS ALAMOS

REQUEST NUMBER: 10-1984

NATIONAL LABORATORY

ATTN: Valerie Davis

TURNAROUND/REPORT DUE: 3/24/2010

General Engineering Laboratories, Inc.,  
Charleston, SC.

TURNAROUND REQ'D: 30

2040 Savage Rd

Charleston, SC 29407

LAB REQUEST COMMENTS:

247797%

SAMPLE ID	CTNR	CTNR DESC	ORDER	PRESERV	MATRIX
RE15-10-8317	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8317	1	POLY	H3	Ice	R
RE15-10-8319	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8319	1	POLY	H3	Ice	R
RE15-10-8316	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8316	1	POLY	H3	Ice	R
RE15-10-8326	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8326	1	POLY	H3	Ice	R
RE15-10-8318	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8318	1	POLY	H3	Ice	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:

Printed Name

Signature

Monday, February 22, 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: 10-1984  
Per Agreement Number: 126310011  
Project Cost Code: MR3A05529E00

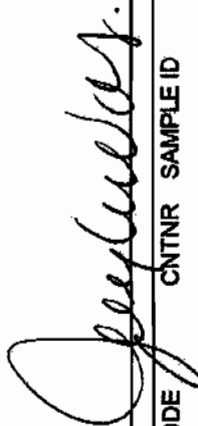
Please analyse the enclosed samples  
according to the schedule indicated:

SHIP DATE: 2/22/2010  
TURNAROUND/REPORT DUE: 3/24/2010  
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	RE15-10-8316	R	2/17/2010	
		1	RE15-10-8317	R	2/17/2010	
		1	RE15-10-8318	R	2/17/2010	
		1	RE15-10-8319	R	2/17/2010	
		1	RE15-10-8326	R	2/17/2010	
EPA-906.0		1	RE15-10-8316	R	2/17/2010	
		1	RE15-10-8317	R	2/17/2010	
		1	RE15-10-8318	R	2/17/2010	
		1	RE15-10-8319	R	2/17/2010	

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	EPA:906.0	1	RE15-10-8328	R	2/17/2010	
	HASL-300:AM-241	1	RE15-10-8316	R	2/17/2010	
		1	RE15-10-8317	R	2/17/2010	
		1	RE15-10-8318	R	2/17/2010	
		1	RE15-10-8319	R	2/17/2010	
		1	RE15-10-8326	R	2/17/2010	
	HASL-300:ISOPU	1	RE15-10-8316	R	2/17/2010	
		1	RE15-10-8317	R	2/17/2010	
		1	RE15-10-8318	R	2/17/2010	
		1	RE15-10-8319	R	2/17/2010	
		1	RE15-10-8328	R	2/17/2010	
	HASL-300:ISOU	1	RE15-10-8316	R	2/17/2010	
		1	RE15-10-8317	R	2/17/2010	
		1	RE15-10-8318	R	2/17/2010	
		1	RE15-10-8319	R	2/17/2010	
		1	RE15-10-8328	R	2/17/2010	

Final Page of REQUEST NUMBER 10-1984



March 01, 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: 247797  
SDG: 10-1984

Dear Ms. Valdez:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on February 23, 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: 10-1984  
Enclosures

**Los Alamos National Laboratory (72733-001-09)**  
**LANL ER Project**  
**Work Order #: 247797**  
**SDG: 10-1984**

## TABLE OF CONTENTS

Case Narrative.....	1
Chain of Custody and Supporting Documentation.....	4
Data Review Qualifier Flag Defintion Sheet.....	13
Radiological Analysis.....	15
Sample Data Summary.....	27
Quality Control Data.....	44
Raw Data.....	51
Background and Efficiency Data.....	403
Standards Data.....	493
Runlogs.....	524



# Case Narrative

**Case Narrative for  
Los Alamos National Laboratory (72733-001-09)  
LANL ER Project  
Workorder #: 247797  
SDG # : 10-1984**

**March 01, 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 February 23, 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 samples were delivered with proper chain of custody documentation and signatures. 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 7,11,12C temperatures. Shipping container temperature was within specification (0 - 6C).

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

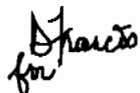
<u>Laboratory ID</u>	<u>Client ID</u>
247797001	RE15-10-8317
247797002	RE15-10-8319
247797003	RE15-10-8316
247797004	RE15-10-8326
247797005	RE15-10-8318

**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

Project Manager

**List of current GEL Certifications as of 01 March 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**

Monday, February 22, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1984

**LOS ALAMOS**

REQUEST NUMBER: 10-1984

**NATIONAL LABORATORY**

ATTN: Valerie Davis

TURNAROUND/REPORT DUE: 3/24/2010

General Engineering Laboratories, Inc.,  
Charleston, SC.

TURNAROUND REQ'D: 30

2040 Savage Rd

Charleston, SC 29407

LAB REQUEST COMMENTS:

247797%

SAMPLE ID	CTNR	CTNR DESC	ORDER	PRESERV	MATRIX
RE15-10-8317	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8317	1	POLY	H3	Ice	R
RE15-10-8319	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8319	1	POLY	H3	Ice	R
RE15-10-8316	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8316	1	POLY	H3	Ice	R
RE15-10-8326	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8326	1	POLY	H3	Ice	R
RE15-10-8318	1	POLY	AM241+GS+ISOPU+ISO U	None	R
RE15-10-8318	1	POLY	H3	Ice	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:

Printed Name

Signature

Monday, February 22, 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: 2/22/2010

TURNAROUND/REPORT DUE: 3/24/2010

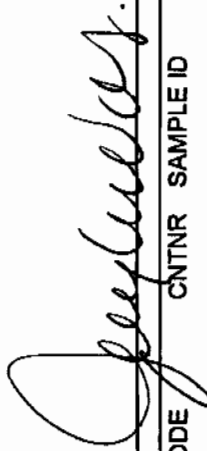
TURNAROUND REQ'D: 30 Days

RAD SCREENING: Yes, Below Background

LAB REQUEST COMMENTS:

LANL ER SMO CONTACT:

Signature:



Page 1 of 2

REQUEST NUMBER: 10-1984

These Samples are on:

LANL Request Number: 10-1984

Per Agreement Number: 126310011

Project Cost Code: MR3A05529E00

PRIORITY	METHOD CODE	CNTR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
EPA:901.1		1	RE15-10-8316	R	2/17/2010	
		1	RE15-10-8317	R	2/17/2010	
		1	RE15-10-8318	R	2/17/2010	
		1	RE15-10-8319	R	2/17/2010	
		1	RE15-10-8326	R	2/17/2010	
EPA:906.0		1	RE15-10-8316	R	2/17/2010	
		1	RE15-10-8317	R	2/17/2010	
		1	RE15-10-8318	R	2/17/2010	
		1	RE15-10-8319	R	2/17/2010	

Monday, February 22, 2010

REQUEST NUMBER: 10-1984

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	EPA-906.0	1	RE15-10-8326	R	2/17/2010	
	HASL-300:AM-241	1	RE15-10-8316	R	2/17/2010	
		1	RE15-10-8317	R	2/17/2010	
		1	RE15-10-8318	R	2/17/2010	
		1	RE15-10-8319	R	2/17/2010	
		1	RE15-10-8326	R	2/17/2010	
	HASL-300:ISOPU	1	RE15-10-8316	R	2/17/2010	
		1	RE15-10-8317	R	2/17/2010	
		1	RE15-10-8318	R	2/17/2010	
		1	RE15-10-8319	R	2/17/2010	
		1	RE15-10-8326	R	2/17/2010	
	HASL-300:ISOU	1	RE15-10-8316	R	2/17/2010	
		1	RE15-10-8317	R	2/17/2010	
		1	RE15-10-8318	R	2/17/2010	
		1	RE15-10-8319	R	2/17/2010	
		1	RE15-10-8326	R	2/17/2010	

Final Page of REQUEST NUMBER 10-1984



Laboratories LLC

## SAMPLE RECEIPT &amp; REVIEW FORM

Client: LANL			SDG/ARCOC/Work Order: 10-1984		
Received By: Patricia Dover-Dent			Date Received: February 23, 2009		
Suspected Hazard Information		Yes	No	*If Counts > x2 area background on samples not marked "radioactive", contact the Radiation Safety Group of further investigation.	
COC/Samples marked as radioactive?			X	Maximum Counts Observed*: 60 CPM	
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: seals broken   damaged container   leaking container   other (describe)
2 Samples requiring cold preservation within 0 ≤ 6 deg. C?	X			Preservation Method: ice bags   blue ice   dry ice   none   other (describe) 0,2-4   7,11,&12C
3 Chain of custody documents included with shipment?	X			
4 Sample containers intact and sealed?	X			Circle Applicable: seals broken   damaged container   leaking container   other (describe)
5 Samples requiring chemical preservation at proper pH?		X		Sample ID's, containers affected and observed pH: If Preservation 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: time written on containers, not on COC
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: FEDEX#S

7209 7850 1530 0C	7209 7850 1610 2C	7209 7850 1584 3C
7209 7850 1595 2C	7209 7850 1518 3C	7209 7850 1621 4C
7209 7850 1632 2C	7209 7850 1562 3C	7209 7850 1600 7C
7209 7850 1529 2C	7209 7850 1573 3C	7209 7850 1507 11C
	7209 7850 1492 12C	



ORIGIN ID: SAFA (505) 665-9968  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TA00 BLDG 1237 DPU 03  
LOS ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 22FEB10  
ACTWGT: 55.0 LB MAN  
CAD: 0014176/CAFE2450

BILL SENDER:

VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171  
REF: 6B010AMR1A015AGWYO

0°

JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TA00 BLDG 1237 DPU 03  
LOS ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 22FEB10  
ACTWGT: 51.0 LB MAN  
CAD: 0014176/CAFE2450

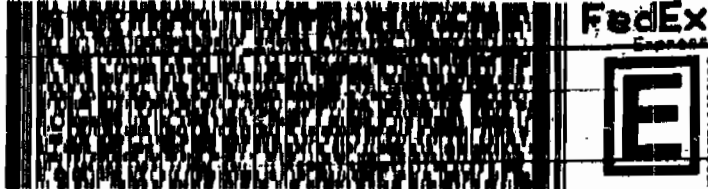
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TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171  
REF: 6B010AMR2A0515BYDO

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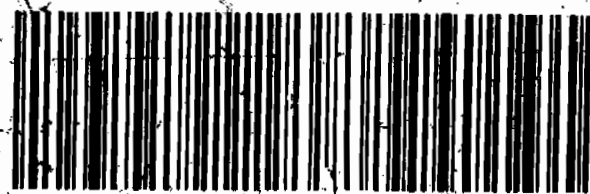
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SC-US  
CHS



ORIGIN ID: SAFA (505) 665-9968  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TA00 BLDG 1237 DPU 03  
LOS ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 22FEB10  
ACTWGT: 55.0 LB MAN  
CAD: 0014176/CAFE2450

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GENERAL ENGINEERING LAB  
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(843) 556-8171  
REF: 6B010AMR3A05529E00

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ORIGIN ID: SAFA (505) 665-9968  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TA00 BLDG 1237 DPU 03  
LOS ALAMOS, NM 87545  
UNITED STATES US

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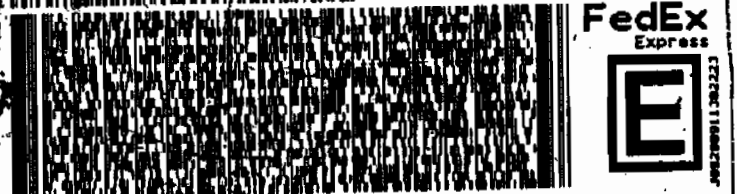
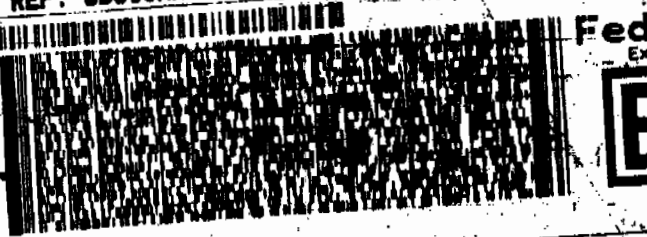
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GENERAL ENGINEERING LAB  
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IGIN ID: SAFA (506) 605-996  
JOYLENE VALDEZ  
16 ALAMOS NATL LAB  
90 BLDG 1237 DPU 03

16 ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 22FEB10  
ACTWGT: 52.0 LB MAN  
CNO: 0014176/CAFE2450

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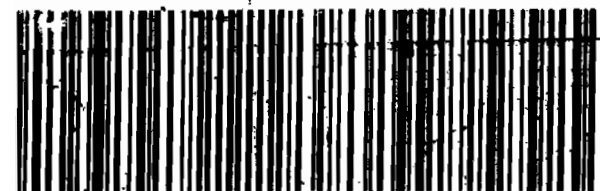
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JOYLENE VALDEZ  
16 ALAMOS NATL LAB  
90 BLDG 1237 DPU 03

16 ALAMOS, NM 87545  
UNITED STATES US

ACTWGT: 52.0 LB MAN  
CNO: 0014176/CAFE2450

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VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

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2 of 2  
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PRIORITY OVERNIGHT

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ORIGIN ID: SAFA (506) 665-9968  
JOYLENE VALDEZ  
16 ALAMOS NATL LAB  
90 BLDG 1237 DPU 03

16 ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 22FEB10  
ACTWGT: 52.0 LB MAN  
CNO: 0014176/CAFE2450

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GENERAL ENGINEERING LAB  
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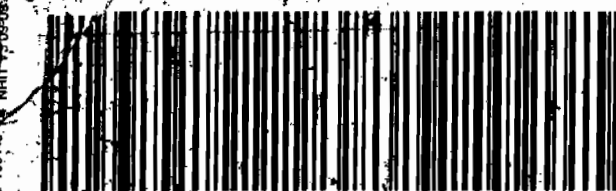
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JOYLENE VALDEZ  
16 ALAMOS NATL LAB  
90 BLDG 1237 DPU 03

16 ALAMOS, NM 87545  
UNITED STATES US

ACTWGT: 52.0 LB MAN  
CNO: 0014176/CAFE2450

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VALERIE DAVIS  
GENERAL ENGINEERING LAB  
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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: 22FEB10  
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TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
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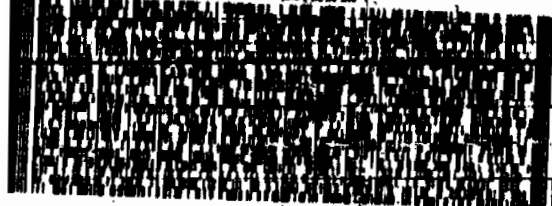
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(843) 556-8171

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ALAMOS NATL LAB  
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ALAMOS, NM 87545  
UNITED STATES US

CAD: 0014176/CAFE2450

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DATE TIME DESTINATION



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PRIORITY OVERNIGHT

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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: 22FEB10  
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CHARLESTON SC 29407

(843) 556-8171

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DATE TIME DESTINATION



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CHS

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JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TAGO BLDG 1237 DPU 03

LOS ALAMOS, NM 87545  
UNITED STATES US

ACTWGT: 66.0 LB MAN  
CAD: 0014176/CAFE2450

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TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171

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DATE TIME DESTINATION



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PRIORITY OVERNIGHT

29407  
SC-US  
CHS

XX CHSA



ORIGIN ID: SAFA (606) 665-9968  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TA00 BLDG 1237 DPU 03

SHIP DATE: 22FEB10  
ACTWGT: 56.0 LB MAN  
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LOS ALAMOS, NM 87545  
UNITED STATES US

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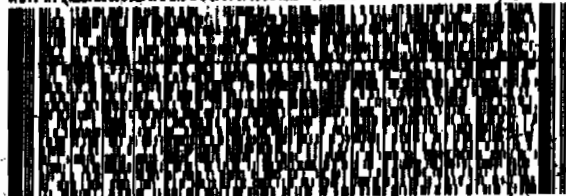
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**GENERAL ENGINEERING LAB**  
**2040 SAVAGE RD**

**CHARLESTON SC 29407**

(643) 896-8171

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NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES



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Express



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2 of 2

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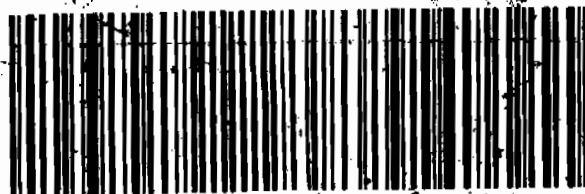
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**29407**

SC-US

**CHS**



Part # 156148-c34 INRT V3 09-09

# **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
- B    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 10-1984**

**Method/Analysis Information**

**Product:** AM241  
**Analytical Method:** DOE EML HASL-300, Am-05-RC Modified  
**Prep Method:** Dry Soil Prep  
**Analytical Batch Number:** 961200  
**Prep Batch Number:** 957087

<b>Sample ID</b>	<b>Client ID</b>
247797001	RE15-10-8317
247797002	RE15-10-8319
247797003	RE15-10-8316
247797004	RE15-10-8326
247797005	RE15-10-8318
1202061744	Method Blank (MB)
1202061745	247797001(RE15-10-8317) Sample Duplicate (DUP)
1202061746	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 solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

**Sample Geometry**



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

**Quality Control (QC) Information:**

**Blank Information**

Aliquot for sample 1202061744 (MB) was changed to 1.0 per client request.

**Designated QC**

The following sample was used for QC: 247797001 (RE15-10-8317). The QC was from LANL work order 247797.

**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 247797002 (RE15-10-8319) was recounted due to a negative result greater than three times the error. Second count being reported.

**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:	961201
Prep Batch Number:	957087

<b>Sample ID</b>	<b>Client ID</b>
247797001	RE15-10-8317
247797002	RE15-10-8319
247797003	RE15-10-8316
247797004	RE15-10-8326
247797005	RE15-10-8318
1202061750	Method Blank (MB)
1202061751	247797001(RE15-10-8317) Sample Duplicate (DUP)
1202061752	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 solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

##### **Sample Geometry**

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

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

##### **Blank Information**

Aliquot for sample 1202061750 (MB) was changed to 1.0 per client request.

##### **Designated QC**

The following sample was used for QC: 247797001 (RE15-10-8317). The QC was from LANL work order 247797.

**QC Information**

All of the QC samples met the required acceptance limits.

**CSU**

The Pu-238 blank result 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**

Samples 247797001 (RE15-10-8317) and 247797004 (RE15-10-8326) were given additional clean-up steps and recounted in order to remove suspected interferences.

**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 Pu-238 blank result is greater than the decision level but less than the MDC.

**Qualifier information**

Manual qualifiers were not required.

**Method/Analysis Information**

<b>Product:</b>	ISOU
Analytical Method:	DOE EML HASL-300, U-02-RC Modified
Prep Method:	Dry Soil Prep
Analytical Batch Number:	961204
Prep Batch Number:	957087

<b>Sample ID</b>	<b>Client ID</b>
247797001	RE15-10-8317
247797002	RE15-10-8319
247797003	RE15-10-8316
247797004	RE15-10-8326
247797005	RE15-10-8318
1202061756	Method Blank (MB)
1202061757	247797001(RE15-10-8317) Sample Duplicate (DUP)
1202061758	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 solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

##### **Sample Geometry**

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

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

##### **Blank Information**

Aliquot for sample 1202061756 (MB) was changed to 1.0 per client request.

##### **Designated QC**

The following sample was used for QC: 247797001 (RE15-10-8317). The QC was from LANL work order 247797.

##### **QC Information**

All of the QC samples met the required acceptance limits.

##### **CSU**

The U-233/234 blank result 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**

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.

**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>GAMMA SPEC</b>
Analytical Method:	DOE HASL 300, 4.5.2.3/Ga-01-R
Prep Method:	Dry Soil Prep
Analytical Batch Number:	957136
Prep Batch Number:	957087

<b>Sample ID</b>	<b>Client ID</b>
247797001	RE15-10-8317
247797002	RE15-10-8319
247797003	RE15-10-8316
247797004	RE15-10-8326
247797005	RE15-10-8318
1202052272	Method Blank (MB)
1202052273	247809001(RE46-10-13335) Sample Duplicate (DUP)
1202052274	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# 19.

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

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

**Standards Information**

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

**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: 247809001 (RE46-10-13335). The QC was from LANL work order 247809.

**QC Information**

All of the QC samples met the required acceptance limits.

**CSU**

The blank 1202052272 (MB) result is greater than 1.65 times the CSU but less than the MDC for Am-241, Cs-134, and Y-88.

**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 result is less than the decision level.

## **Qualifier information**

Qualifier	Reason	Analyte	Sample	Client Sample
UI	Data rejected due to interference.	Bismuth-211	247797001	RE15-10-8317
			247797002	RE15-10-8319
			247797003	RE15-10-8316
			247797004	RE15-10-8326
			247797005	RE15-10-8318
		Cadmium-109	1202052273	RE46-10-13335(247809001DUP)
			247797001	RE15-10-8317
			247797002	RE15-10-8319
			247797003	RE15-10-8316
			247797004	RE15-10-8326
		Mercury-203	247797005	RE15-10-8318
			1202052273	RE46-10-13335(247809001DUP)
			247797002	RE15-10-8319
		Radium-224	247797001	RE15-10-8317
			247797002	RE15-10-8319
			247797003	RE15-10-8316
			247797004	RE15-10-8326
			247797005	RE15-10-8318
		Cesium-134	1202052273	RE46-10-13335(247809001DUP)
			247797002	RE15-10-8319
			247797003	RE15-10-8316
			247797004	RE15-10-8326
			247797005	RE15-10-8318
		Cesium-134	1202052273	RE46-10-13335(247809001DUP)
			247797002	RE15-10-8319
			247797003	RE15-10-8316
			247797004	RE15-10-8326
			247797005	RE15-10-8318

	1202052273	RE46-10-13335(247809001DUP)
Strontium-85	247797002	RE15-10-8319
	247797003	RE15-10-8316
	247797004	RE15-10-8326
	1202052273	RE46-10-13335(247809001DUP)

### **Method/Analysis Information**

**Product:** H3

**Analytical Method:** GL-RAD-A-002

**Analytical Batch Number:** 961540

<b>Sample ID</b>	<b>Client ID</b>
247797001	RE15-10-8317
247797002	RE15-10-8319
247797003	RE15-10-8316
247797004	RE15-10-8326
247797005	RE15-10-8318
1202062409	Method Blank (MB)
1202062410	247920002(WSTPU-10-13410) Sample Duplicate (DUP)
1202062411	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" 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-002 REV# 18.

### **Calibration Information:**

#### **Calibration Information**

All initial and continuing calibration requirements have been met. The initial Calibration was performed in August 2009.

#### **Standards Information**

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.



**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: 247920002 (WSTPU-10-13410). The QC was from LANL work order 247920.

**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**

None of the samples in this sample set required prep 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 result is less than the decision level.

**Qualifier information**

Manual qualifiers were not required.

**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:** Theresa J. Austin 3/19/2010

# 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: 10-1984 GEL Work Order: 247797

**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



# GEL LABORATORIES LLC

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## 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: March 19, 2010

Client Sample ID: RE15-10-8317  
Sample ID: 247797001  
Matrix: R  
Collect Date: 17-FEB-10  
Receive Date: 23-FEB-10  
Collector: Client  
Moisture: 6.34%

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	-0.000211	0.021	+/-0.00315	0.050	pCi/g		AYB1	03/16/10	0738	961200	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.000845	0.0282	+/-0.00256	0.050	pCi/g		AYB1	03/18/10	2059	961201	2
Plutonium-239/240	U	0.00302	0.0238	+/-0.00336	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		0.862	0.130	+/-0.0897	0.100	pCi/g		AYB1	03/17/10	1834	961204	4
Uranium-235/236	U	0.0455	0.0793	+/-0.0164	0.100	pCi/g						
Uranium-238		0.769	0.0913	+/-0.0827	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.0597	0.130	+/-0.0415	0.200	pCi/g		MXR1	03/05/10	1027	957136	5
Bismuth-211	UI	4.86	0.402	+/-0.356		pCi/g						
Bismuth-214		1.67	0.152	+/-0.124	0.200	pCi/g						
Cadmium-109	UI	5.49	1.16	+/-0.540		pCi/g						
Cerium-139	U	0.0387	0.0637	+/-0.0185	0.050	pCi/g						
Cesium-134	U	0.0542	0.111	+/-0.0358	0.100	pCi/g						
Cesium-137	U	0.044	0.0812	+/-0.0233	0.100	pCi/g						
Cobalt-60	U	0.0159	0.0909	+/-0.0273	0.100	pCi/g						
Europium-152	U	-0.0932	0.191	+/-0.0728	0.200	pCi/g						
Lanthanum-140	U	-0.112	0.152	+/-0.0543		pCi/g						
Lead-212		2.25	0.113	+/-0.139	0.100	pCi/g						
Lead-214		1.76	0.146	+/-0.138	0.100	pCi/g						
Mercury-203	U	0.0273	0.0831	+/-0.0237	0.100	pCi/g						
Potassium-40		36.1	0.691	+/-1.54	1.00	pCi/g						
Radium-223	U	0.878	1.33	+/-0.425		pCi/g						
Radium-224	UI	6.48	1.21	+/-0.758		pCi/g						
Radium-226		1.67	0.152	+/-0.124		pCi/g						
Radium-228		2.15	0.273	+/-0.219	0.500	pCi/g						
Ruthenium-106	U	0.265	0.676	+/-0.197	0.800	pCi/g						
Sodium-22	U	0.0461	0.104	+/-0.0299	0.080	pCi/g						
Strontium-85	U	0.0648	0.0861	+/-0.0274		pCi/g						

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## Certificate of Analysis

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TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 19, 2010

Client Sample ID:  
Sample ID:

RE15-10-8317  
247797001

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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### Rad Gamma Spec Analysis

*GAMMA SPEC "Dry Weight Corrected"*

Thallium-208		0.705	0.0752	+/-0.0611	0.080	pCi/g						
Thorium-227	U	0.00319	0.507	+/-0.147		pCi/g						
Thorium-231	U	0.878	1.33	+/-0.425		pCi/g						
Thorium-234		1.96	1.26	+/-0.594	2.00	pCi/g						
Tin-113	U	0.00948	0.0969	+/-0.0285	0.100	pCi/g						
Uranium-235	U	0.294	0.434	+/-0.128	0.500	pCi/g						
Yttrium-88	U	0.0177	0.080	+/-0.023	0.100	pCi/g						

### Rad Liquid Scintillation Analysis

*H3 "As Received"*

Tritium		3890	102	+/-288	250	pCi/L		KXK2	03/11/10	0345	961540	6
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### 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
6	GL-RAD-A-002

Surrogate/Tracer recovery	Test	Recovery %	Acceptable Limits
Americium-243 Tracer	AM241 "Dry Weight Corrected"	84.7	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	81.2	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	57.8	(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

## GEL LABORATORIES LLC

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### 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: March 19, 2010

Client Sample ID: RE15-10-8317  
Sample ID: 247797001

Project: LANL01004  
Client ID: LANL010

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

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## 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: March 19, 2010

Client Sample ID: RE15-10-8319  
Sample ID: 247797002  
Matrix: R  
Collect Date: 17-FEB-10  
Receive Date: 23-FEB-10  
Collector: Client  
Moisture: 3.28%

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	0.00125	0.0225	+/-0.00154	0.050	pCi/g		AYB1	03/17/10	0728	961200	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.020	0.0304	+/-0.0105	0.050	pCi/g		AYB1	03/17/10	0850	961201	2
Plutonium-239/240	U	7.75E-05	0.0258	+/-0.00295	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		0.815	0.0775	+/-0.0744	0.100	pCi/g		AYB1	03/17/10	1834	961204	3
Uranium-235/236		0.051	0.0473	+/-0.016	0.100	pCi/g						
Uranium-238		0.899	0.0545	+/-0.0805	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	-0.0265	0.191	+/-0.0605	0.200	pCi/g		MXR1	03/05/10	1028	957136	4
Bismuth-211	UI	4.71	0.363	+/-0.341		pCi/g						
Bismuth-214		1.56	0.115	+/-0.118	0.200	pCi/g						
Cadmium-109	UI	2.72	1.23	+/-0.547		pCi/g						
Cerium-139	U	0.00688	0.0535	+/-0.0159	0.050	pCi/g						
Cesium-134	UI	0.119	0.0938	+/-0.0424	0.100	pCi/g						
Cesium-137	U	-0.00198	0.0637	+/-0.0188	0.100	pCi/g						
Cobalt-60	U	-0.0107	0.0586	+/-0.0183	0.100	pCi/g						
Europium-152	U	0.0268	0.169	+/-0.0508	0.200	pCi/g						
Lanthanum-140	U	0.108	0.166	+/-0.0474		pCi/g						
Lead-212		2.21	0.097	+/-0.122	0.100	pCi/g						
Lead-214		1.71	0.132	+/-0.132	0.100	pCi/g						
Mercury-203	UI	0.070	0.0661	+/-0.0275	0.100	pCi/g						
Potassium-40		37.0	0.542	+/-1.85	1.00	pCi/g						
Radium-223	U	0.393	1.14	+/-0.324		pCi/g						
Radium-224	UI	5.79	1.04	+/-0.655		pCi/g						
Radium-226		1.56	0.115	+/-0.118		pCi/g						
Radium-228		2.34	0.234	+/-0.206	0.500	pCi/g						
Ruthenium-106	U	-0.194	0.487	+/-0.150	0.800	pCi/g						
Sodium-22	U	0.0144	0.0781	+/-0.0228	0.080	pCi/g						
Strontium-85	UI	0.0857	0.0737	+/-0.0214		pCi/g						
Thallium-208		0.698	0.0567	+/-0.0552	0.080	pCi/g						



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## 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: March 19, 2010

Client Sample ID:  
Sample ID:

RE15-10-8319  
247797002

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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### Rad Gamma Spec Analysis

*GAMMA SPEC "Dry Weight Corrected"*

Thorium-227	U	-0.244	0.444	+/-0.134		pCi/g						
Thorium-231	U	0.393	1.14	+/-0.324		pCi/g						
Thorium-234	U	1.39	1.72	+/-0.735	2.00	pCi/g						
Tin-113	U	-0.0584	0.0681	+/-0.0223	0.100	pCi/g						
Uranium-235	U	0.106	0.347	+/-0.102	0.500	pCi/g						
Yttrium-88	U	-0.0131	0.0469	+/-0.0157	0.100	pCi/g						

### Rad Liquid Scintillation Analysis

*H3 "As Received"*

Tritium		916	203	+/-107	250	pCi/L		KXK2	03/11/10	0548	961540	5
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### 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
5	GL-RAD-A-002

Surrogate/Tracer recovery	Test	Recovery %	Acceptable Limits
Americium-243 Tracer	AM241 "Dry Weight Corrected"	91.2	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	87.5	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	92.9	(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

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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: March 19, 2010

Client Sample ID: RE15-10-8319  
Sample ID: 247797002

Project: LANL01004  
Client ID: LANL010

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

UJ 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.

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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 19, 2010

Client Sample ID: RE15-10-8316  
Sample ID: 247797003  
Matrix: R  
Collect Date: 17-FEB-10  
Receive Date: 23-FEB-10  
Collector: Client  
Moisture: 4.02%

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	-0.00608	0.0217	+/-0.00259	0.050	pCi/g		AYB1	03/16/10	0738	961200	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.020	0.0323	+/-0.0112	0.050	pCi/g		AYB1	03/17/10	0850	961201	2
Plutonium-239/240	U	0.0194	0.0274	+/-0.00751	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		0.948	0.0929	+/-0.0883	0.100	pCi/g		AYB1	03/17/10	1834	961204	3
Uranium-235/236	U	0.0448	0.0568	+/-0.0161	0.100	pCi/g						
Uranium-238		0.867	0.0653	+/-0.0819	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.00187	0.194	+/-0.0627	0.200	pCi/g		MXR1	03/05/10	1029	957136	4
Bismuth-211	UI	4.99	0.303	+/-0.409		pCi/g						
Bismuth-214		1.44	0.0963	+/-0.112	0.200	pCi/g						
Cadmium-109	UI	3.93	1.04	+/-0.517		pCi/g						
Cerium-139	U	-0.00706	0.046	+/-0.0135	0.050	pCi/g						
Cesium-134	UI	0.0982	0.0963	+/-0.0458	0.100	pCi/g						
Cesium-137	U	-0.0519	0.0527	+/-0.0184	0.100	pCi/g						
Cobalt-60	U	-0.00804	0.063	+/-0.0195	0.100	pCi/g						
Europium-152	U	0.107	0.162	+/-0.0519	0.200	pCi/g						
Lanthanum-140	U	-0.0693	0.133	+/-0.049		pCi/g						
Lead-212		2.11	0.0921	+/-0.159	0.100	pCi/g						
Lead-214		1.81	0.110	+/-0.157	0.100	pCi/g						
Mercury-203	U	-0.0283	0.0595	+/-0.019	0.100	pCi/g						
Potassium-40		40.9	0.539	+/-2.02	1.00	pCi/g						
Radium-223	U	-0.659	0.973	+/-0.368		pCi/g						
Radium-224	UI	4.38	0.988	+/-0.614		pCi/g						
Radium-226		1.44	0.0963	+/-0.112		pCi/g						
Radium-228		1.93	0.245	+/-0.197	0.500	pCi/g						
Ruthenium-106	U	0.121	0.556	+/-0.162	0.800	pCi/g						
Sodium-22	U	-0.0243	0.0706	+/-0.0229	0.080	pCi/g						
Strontium-85	UI	0.0744	0.0687	+/-0.0203		pCi/g						
Thallium-208		0.604	0.0576	+/-0.049	0.080	pCi/g						

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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 19, 2010

Client Sample ID:  
Sample ID:

RE15-10-8316  
247797003

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	-0.215	0.384	+/-0.122		pCi/g						
Thorium-231	U	-0.659	0.973	+/-0.368		pCi/g						
Thorium-234	U	1.45	1.68	+/-0.739	2.00	pCi/g						
Tin-113	U	0.0017	0.0697	+/-0.0201	0.100	pCi/g						
Uranium-235	U	0.101	0.326	+/-0.0929	0.500	pCi/g						
Yttrium-88	U	-0.00602	0.0475	+/-0.0151	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		4550	114	+/-335	250	pCi/L		KXK2	03/11/10	0750	961540	5

### 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
5	GL-RAD-A-002

Surrogate/Tracer recovery	Test	Recovery %	Acceptable Limits
Americium-243 Tracer	AM241 "Dry Weight Corrected"	85.9	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	89.0	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	86.3	(50%-105%)

### Notes:

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

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- 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

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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 19, 2010

Client Sample ID: RE15-10-8316  
Sample ID: 247797003

Project: LANL01004  
Client ID: LANL010

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

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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 19, 2010

Client Sample ID: RE15-10-8326  
Sample ID: 247797004  
Matrix: R  
Collect Date: 17-FEB-10  
Receive Date: 23-FEB-10  
Collector: Client  
Moisture: 4.01%

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	0.000554	0.0222	+/-0.00256	0.050	pCi/g		AYB1	03/16/10	0738	961200	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.00397	0.0289	+/-0.00433	0.050	pCi/g		AYB1	03/18/10	2059	961201	2
Plutonium-239/240	U	0.000866	0.0245	+/-0.00262	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		0.824	0.136	+/-0.088	0.100	pCi/g		AYB1	03/17/10	1834	961204	4
Uranium-235/236	U	0.0655	0.0829	+/-0.0203	0.100	pCi/g						
Uranium-238		0.939	0.0954	+/-0.0974	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	0.0963	0.395	+/-0.108	0.200	pCi/g		MXR1	03/05/10	1029	957136	5
Bismuth-211	UI	4.61	0.310	+/-0.282		pCi/g						
Bismuth-214		1.32	0.113	+/-0.108	0.200	pCi/g						
Cadmium-109	UI	3.70	1.36	+/-0.495		pCi/g						
Cerium-139	U	0.0139	0.049	+/-0.0141	0.050	pCi/g						
Cesium-134	UI	0.102	0.0954	+/-0.0533	0.100	pCi/g						
Cesium-137	U	-0.0406	0.0607	+/-0.0189	0.100	pCi/g						
Cobalt-60	U	-0.000425	0.0674	+/-0.0201	0.100	pCi/g						
Europium-152	U	0.0133	0.161	+/-0.050	0.200	pCi/g						
Lanthanum-140	U	-0.0203	0.157	+/-0.0491		pCi/g						
Lead-212		2.00	0.0918	+/-0.101	0.100	pCi/g						
Lead-214		1.67	0.113	+/-0.112	0.100	pCi/g						
Mercury-203	U	-0.00226	0.0674	+/-0.0193	0.100	pCi/g						
Potassium-40		39.1	0.511	+/-1.71	1.00	pCi/g						
Radium-223	U	0.084	1.05	+/-0.340		pCi/g						
Radium-224	UI	4.58	0.984	+/-0.702		pCi/g						
Radium-226		1.32	0.113	+/-0.108		pCi/g						
Radium-228		1.97	0.226	+/-0.202	0.500	pCi/g						
Ruthenium-106	U	-0.165	0.491	+/-0.158	0.800	pCi/g						
Sodium-22	U	-0.0248	0.0729	+/-0.0228	0.080	pCi/g						
Strontium-85	UI	0.0757	0.0726	+/-0.0217		pCi/g						
Thallium-208		0.547	0.0574	+/-0.0489	0.080	pCi/g						

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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 19, 2010

Client Sample ID: RE15-10-8326  
Sample ID: 247797004  
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	-0.0931	0.433	+/-0.125		pCi/g						
Thorium-231	U	0.084	1.05	+/-0.340		pCi/g						
Thorium-234	U	-0.189	3.17	+/-0.892	2.00	pCi/g						
Tin-113	U	0.0591	0.0767	+/-0.0208	0.100	pCi/g						
Uranium-235	U	0.161	0.356	+/-0.102	0.500	pCi/g						
Yttrium-88	U	0.017	0.0534	+/-0.0146	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		4370	204	+/-341	250	pCi/L		KXK2	03/11/10	0953	961540	6

### 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
6	GL-RAD-A-002

Surrogate/Tracer recovery	Test	Recovery %	Acceptable Limits
Americium-243 Tracer	AM241 "Dry Weight Corrected"	84.7	(50%-105%)
Plutonium-236 Tracer	ISOPU "Dry Weight Corrected"	82.6	(50%-105%)
Uranium-232 Tracer	ISOU "Dry Weight Corrected"	59.5	(50%-105%)

### Notes:

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

The Qualifiers in this report are defined as follows :

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- > 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

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Project: LANL ER Project

Report Date: March 19, 2010

Client Sample ID: RE15-10-8326  
Sample ID: 247797004

Project: LANL01004  
Client ID: LANL010

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

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  
UJ 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.



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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 19, 2010

Client Sample ID: RE15-10-8318  
Sample ID: 247797005  
Matrix: R  
Collect Date: 17-FEB-10  
Receive Date: 23-FEB-10  
Collector: Client  
Moisture: 4.55%

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	-0.000327	0.022	+/-0.0015	0.050	pCi/g		AYB1	03/16/10	0739	961200	1
<i>ISOPU "Dry Weight Corrected"</i>												
Plutonium-238	U	0.0136	0.0326	+/-0.0102	0.050	pCi/g		AYB1	03/17/10	0850	961201	2
Plutonium-239/240	U	0.0144	0.0276	+/-0.00657	0.050	pCi/g						
<i>ISOU "Dry Weight Corrected"</i>												
Uranium-233/234		0.822	0.116	+/-0.0861	0.100	pCi/g		AYB1	03/18/10	1145	961204	3
Uranium-235/236	U	0.0675	0.0718	+/-0.0201	0.100	pCi/g						
Uranium-238		0.809	0.0821	+/-0.0853	0.100	pCi/g						
<b>Rad Gamma Spec Analysis</b>												
<i>GAMMA SPEC "Dry Weight Corrected"</i>												
Americium-241	U	-0.162	0.346	+/-0.101	0.200	pCi/g		MXR1	03/05/10	1030	957136	4
Bismuth-211	UI	5.16	0.416	+/-0.369		pCi/g						
Bismuth-214		1.62	0.140	+/-0.131	0.200	pCi/g						
Cadmium-109	UI	3.49	1.55	+/-0.655		pCi/g						
Cerium-139	U	-0.00268	0.0602	+/-0.0183	0.050	pCi/g						
Cesium-134	U	0.113	0.118	+/-0.047	0.100	pCi/g						
Cesium-137	U	-0.024	0.0731	+/-0.0228	0.100	pCi/g						
Cobalt-60	U	-0.0184	0.0789	+/-0.0252	0.100	pCi/g						
Europium-152	U	0.0672	0.206	+/-0.0674	0.200	pCi/g						
Lanthanum-140	U	-0.0538	0.160	+/-0.0521		pCi/g						
Lead-212		2.23	0.108	+/-0.134	0.100	pCi/g						
Lead-214		1.87	0.142	+/-0.143	0.100	pCi/g						
Mercury-203	U	0.0251	0.0829	+/-0.0269	0.100	pCi/g						
Potassium-40		38.0	0.701	+/-2.10	1.00	pCi/g						
Radium-223	U	0.139	1.32	+/-0.440		pCi/g						
Radium-224	UI	5.25	1.15	+/-0.721		pCi/g						
Radium-226		1.62	0.140	+/-0.131		pCi/g						
Radium-228		2.32	0.268	+/-0.224	0.500	pCi/g						
Ruthenium-106	U	0.399	0.673	+/-0.186	0.800	pCi/g						
Sodium-22	U	0.00205	0.094	+/-0.0285	0.080	pCi/g						
Strontium-85	U	0.0705	0.0847	+/-0.0256		pCi/g						
Thallium-208		0.689	0.0675	+/-0.0575	0.080	pCi/g						

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Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 19, 2010

Client Sample ID: RE15-10-8318  
Sample ID: 247797005

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	-0.0917	0.538	+/-0.159		pCi/g						
Thorium-231	U	0.139	1.32	+/-0.440		pCi/g						
Thorium-234	U	1.70	3.09	+/-0.870	2.00	pCi/g						
Tin-113	U	-0.00957	0.0895	+/-0.0273	0.100	pCi/g						
Uranium-235	U	0.0786	0.398	+/-0.120	0.500	pCi/g						
Yttrium-88	U	0.016	0.067	+/-0.0188	0.100	pCi/g						
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		2240	121	+/-177	250	pCi/L		KXK2	03/11/10	1156	961540	5

### 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
5	GL-RAD-A-002

Surrogate/Tracer	recovery	Test	Recovery %	Acceptable Limits
Americium-243 Tracer		AM241 "Dry Weight Corrected"	84.8	(50%-105%)
Plutonium-236 Tracer		ISOPU "Dry Weight Corrected"	83.6	(50%-105%)
Uranium-232 Tracer		ISOU "Dry Weight Corrected"	92.3	(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

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### 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: March 19, 2010

Client Sample ID: RE15-10-8318  
Sample ID: 247797005

Project: LANL01004  
Client ID: LANL010

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

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  
UJ 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

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## QC Summary

Report Date: March 19, 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:** 247797

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	961200										
QC1202061745	247797001	DUP									
Americium-241			U	-0.000211	U	0.00567			(0-1)	AYB1	03/16/1007:39
			TPU:	+/-0.00315		+/-0.00326					
			Yield:	84.7		87.4					
QC1202061746	LCS										
Americium-241		33.2				32.4		97.9	(75%-125%)		03/16/1007:38
			TPU:			+/-2.34					
			Yield:			101					
QC1202061744	MB										
Americium-241				U	-0.0133	pCi/g					03/16/1007:39
			TPU:			+/-0.0048					
			Yield:			77.7					
Batch	961201										
QC1202061751	247797001	DUP									
Plutonium-238			U	0.000845	U	0.00458			(0-1)	AYB1	03/17/1007:28
			TPU:	+/-0.00256		+/-0.00982					
			Yield:	81.2		77.4					
Plutonium-239/240			U	0.00302	U	0.00178			(0-1)		
			TPU:	+/-0.00336		+/-0.00793					
			Yield:	81.2		77.4					
QC1202061752	LCS					6.23			(75%-125%)		
Plutonium-238			TPU:			+/-0.574					
			Yield:			90.4					
Plutonium-239/240		41.8				43.0		103	(75%-125%)		
			TPU:			+/-3.09					
			Yield:			90.4					
QC1202061750	MB										
Plutonium-238				U	0.0265	pCi/g					
			TPU:			+/-0.00881					
			Yield:			92.7					
Plutonium-239/240				U	0.00419	pCi/g					
			TPU:			+/-0.00561					
			Yield:			92.7					
Batch	961204										
QC1202061757	247797001	DUP									
Uranium-233/234				0.862		0.869	pCi/g	0.0215	(0-1)	AYB1	03/17/1013:28
			TPU:	+/-0.0897		+/-0.0915					
			Yield:	57.8		73.3					
Uranium-235/236			U	0.0455	U	0.0789	pCi/g	0.427	(0-1)		
			TPU:	+/-0.0164		+/-0.0226					
			Yield:	57.8		73.3					
Uranium-238				0.769		0.829	pCi/g	0.177	(0-1)		
			TPU:	+/-0.0827		+/-0.0878					

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## QC Summary

Workorder: 247797

Page 2 of 6

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	961204										
		Yield:	57.8	73.3							
QC1202061758	LCS										
Uranium-233/234				6.03	pCi/g					03/17/1013:28	
		TPU:		+/-0.564							
		Yield:		93.5							
Uranium-235/236				0.302	pCi/g						
		TPU:		+/-0.0839							
		Yield:		93.5							
Uranium-238	5.75			5.86	pCi/g		102	(75%-125%)			
		TPU:		+/-0.551							
		Yield:		93.5							
QC1202061756	MB										
Uranium-233/234			U	0.00877	pCi/g					03/17/1013:28	
		TPU:		+/-0.00476							
		Yield:		95.5							
Uranium-235/236			U	0.00446	pCi/g						
		TPU:		+/-0.00317							
		Yield:		95.5							
Uranium-238			U	0.00	pCi/g						
		TPU:		+/-0.00361							
		Yield:		95.5							
Rad Gamma Spec											
Batch	957136										
QC1202052273	247809001	DUP									
Americium-241		U	-0.0807	U	0.0349	pCi/g	0.228	(0-1)	MXR1	03/05/1013:05	
		TPU:	+/-0.156		+/-0.098						
Bismuth-211		UI	3.89	UI	4.37	pCi/g	0.356	(0-1)			
		TPU:	+/-0.332		+/-0.348						
Bismuth-214			1.18		1.31	pCi/g	0.279	(0-1)			
		TPU:	+/-0.113		+/-0.114						
Cadmium-109		UI	2.81	UI	2.54	pCi/g	0.120	(0-1)			
		TPU:	+/-0.650		+/-0.474						
Cerium-139		U	0.00264	U	-0.00471	pCi/g	0.104	(0-1)			
		TPU:	+/-0.0191		+/-0.0162						
Cesium-134		U	0.0955	UI	0.149	pCi/g	0.400	(0-1)			
		TPU:	+/-0.0302		+/-0.036						
Cesium-137			0.131		0.125	pCi/g	0.0462	(0-1)			
		TPU:	+/-0.0344		+/-0.0283						
Cobalt-60		U	0.00483	U	-0.014	pCi/g	0.203	(0-1)			
		TPU:	+/-0.0231		+/-0.0233						
Europium-152		U	0.00217	U	-0.0271	pCi/g	0.114	(0-1)			
		TPU:	+/-0.0734		+/-0.0549						
Lanthanum-140		U	0.0062	U	-0.0765	pCi/g	0.468	(0-1)			
		TPU:	+/-0.045		+/-0.0434						
Lead-212			1.90		1.96	pCi/g	0.117	(0-1)			
		TPU:	+/-0.134		+/-0.139						
Lead-214			1.41		1.59	pCi/g	0.336	(0-1)			
		TPU:	+/-0.127		+/-0.134						
Mercury-203		U	0.0663	U	0.00818	pCi/g	0.565	(0-1)			
		TPU:	+/-0.0283		+/-0.0232						

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## QC Summary

Workorder: 247797

Page 3 of 6

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
<b>Rad Gamma Spec</b>											
Batch	957136										
Potassium-40		35.0		34.1	pCi/g	0.111		(0-1)			
	TPU:	+/-2.04		+/-1.93							
Radium-223	U	0.0554	U	-0.402	pCi/g	0.260		(0-1)			
	TPU:	+/-0.471		+/-0.408							
Radium-224	UI	5.10	UI	5.18	pCi/g	0.0268		(0-1)			
	TPU:	+/-0.808		+/-0.702							
Radium-226		1.18		1.31	pCi/g	0.279		(0-1)			
	TPU:	+/-0.113		+/-0.114							
Radium-228		2.01		2.09	pCi/g	0.100		(0-1)			
	TPU:	+/-0.199		+/-0.210							
Ruthenium-106	U	-0.0461	U	0.0329	pCi/g	0.111		(0-1)			
	TPU:	+/-0.188		+/-0.167							
Sodium-22	U	0.0103	U	-0.0124	pCi/g	0.213		(0-1)			
	TPU:	+/-0.028		+/-0.0254							
Strontium-85	UI	0.141	UI	0.0795	pCi/g	0.643		(0-1)			
	TPU:	+/-0.025		+/-0.0225							
Thallium-208		0.544		0.575	pCi/g	0.139		(0-1)			
	TPU:	+/-0.056		+/-0.0534							
Thorium-227	U	0.300	U	0.139	pCi/g	0.266		(0-1)			
	TPU:	+/-0.164		+/-0.138							
Thorium-231	U	0.0554	U	-0.402	pCi/g	0.260		(0-1)			
	TPU:	+/-0.471		+/-0.408							
Thorium-234	U	0.232		3.26	pCi/g	0.585		(0-1)			
	TPU:	+/-1.23		+/-1.36							
Tin-113	U	-0.00652	U	-0.0245	pCi/g	0.172		(0-1)			
	TPU:	+/-0.0267		+/-0.0255							
Uranium-235	U	0.197	U	0.116	pCi/g	0.163		(0-1)			
	TPU:	+/-0.136		+/-0.111							
Yttrium-88	U	-0.0195	U	0.00747	pCi/g	0.362		(0-1)			
	TPU:	+/-0.0187		+/-0.0186							
QC1202052274	LCS										
Americium-241	15.9			14.8	pCi/g		93.3	(75%-125%)		03/08/1009:46	
	TPU:			+/-0.762							
Bismuth-211				2.45	pCi/g						
	TPU:			+/-0.381							
Bismuth-214				0.768	pCi/g						
	TPU:			+/-0.144							
Cadmium-109				33.0	pCi/g						
	TPU:			+/-2.24							
Cerium-139			U	0.0168	pCi/g						
	TPU:			+/-0.0233							
Cesium-134			U	0.112	pCi/g						
	TPU:			+/-0.049							
Cesium-137	5.55			5.56	pCi/g		100	(75%-125%)			
	TPU:			+/-0.277							
Cobalt-60	6.36			6.66	pCi/g		105	(75%-125%)			
	TPU:			+/-0.359							
Europium-152			U	-0.0694	pCi/g						
	TPU:			+/-0.103							
Lanthanum-140			U	-0.103	pCi/g						
	TPU:			+/-0.0497							

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## QC Summary

Workorder: 247797

Page 4 of 6

Paramname	NOM	Sample Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
<b>Rad Gamma Spec</b>									
Batch	957136								
Lead-212			1.19	pCi/g					
	TPU:		+/-0.119						
Lead-214			0.887	pCi/g					
	TPU:		+/-0.141						
Mercury-203		U	0.025	pCi/g					
	TPU:		+/-0.0325						
Potassium-40		U	0.669	pCi/g					
	TPU:		+/-0.355						
Radium-223		U	-0.247	pCi/g					
	TPU:		+/-0.622						
Radium-224			2.82	pCi/g					
	TPU:		+/-0.680						
Radium-226			0.768	pCi/g					
	TPU:		+/-0.144						
Radium-228			0.824	pCi/g					
	TPU:		+/-0.225						
Ruthenium-106		U	-0.893	pCi/g					
	TPU:		+/-0.313						
Sodium-22		U	-0.0166	pCi/g					
	TPU:		+/-0.0315						
Strontium-85		U	-0.126	pCi/g					
	TPU:		+/-0.0426						
Thallium-208			0.478	pCi/g					
	TPU:		+/-0.0741						
Thorium-227		U	0.239	pCi/g					
	TPU:		+/-0.232						
Thorium-231		U	-0.247	pCi/g					
	TPU:		+/-0.622						
Thorium-234		U	0.392	pCi/g					
	TPU:		+/-1.30						
Tin-113		U	0.00831	pCi/g					
	TPU:		+/-0.0466						
Uranium-235		U	0.170	pCi/g					
	TPU:		+/-0.164						
Yttrium-88		U	-0.0339	pCi/g					
	TPU:		+/-0.0261						
QC1202052272 MB									
Americium-241		U	0.0922	pCi/g					03/05/1010:54
	TPU:		+/-0.049						
Bismuth-211		U	0.00244	pCi/g					
	TPU:		+/-0.0604						
Bismuth-214		U	-0.0209	pCi/g					
	TPU:		+/-0.0217						
Cadmium-109		U	0.0132	pCi/g					
	TPU:		+/-0.156						
Cerium-139		U	0.00141	pCi/g					
	TPU:		+/-0.00645						
Cesium-134		U	0.0188	pCi/g					
	TPU:		+/-0.00984						
Cesium-137		U	-0.00469	pCi/g					
	TPU:		+/-0.00929						



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## QC Summary

Workorder: 247797

Page 5 of 6

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
<b>Rad Gamma Spec</b>											
Batch	957136										
Cobalt-60			U	0.000795	pCi/g						
	TPU:			+/-0.0101							
Europium-152			U	-0.0328	pCi/g						
	TPU:			+/-0.0237							
Lanthanum-140			U	-0.0247	pCi/g						
	TPU:			+/-0.014							
Lead-212			U	0.0169	pCi/g						
	TPU:			+/-0.0155							
Lead-214			U	-0.0168	pCi/g						
	TPU:			+/-0.0214							
Mercury-203			U	0.0057	pCi/g						
	TPU:			+/-0.00835							
Potassium-40			U	-0.0373	pCi/g						
	TPU:			+/-0.129							
Radium-223			U	-0.107	pCi/g						
	TPU:			+/-0.143							
Radium-224			U	-0.105	pCi/g						
	TPU:			+/-0.145							
Radium-226			U	-0.0209	pCi/g						
	TPU:			+/-0.0217							
Radium-228			U	0.0381	pCi/g						
	TPU:			+/-0.0386							
Ruthenium-106			U	1.18E-05	pCi/g						
	TPU:			+/-0.0653							
Sodium-22			U	-0.00821	pCi/g						
	TPU:			+/-0.00989							
Strontium-85			U	-0.0284	pCi/g						
	TPU:			+/-0.0136							
Thallium-208			U	0.000722	pCi/g						
	TPU:			+/-0.0103							
Thorium-227			U	-0.0684	pCi/g						
	TPU:			+/-0.0616							
Thorium-231			U	-0.107	pCi/g						
	TPU:			+/-0.143							
Thorium-234			U	-0.933	pCi/g						
	TPU:			+/-0.433							
Tin-113			U	-0.0114	pCi/g						
	TPU:			+/-0.00983							
Uranium-235			U	-0.0601	pCi/g						
	TPU:			+/-0.0485							
Yttrium-88			U	0.0144	pCi/g						
	TPU:			+/-0.00644							
<b>Rad Liquid Scintillation</b>											
Batch	961540										
QC1202062410	247920002	DUP									
Tritium			109	108	pCi/L	0.00856		(0-1)	KXK2	03/12/1018:22	
			TPU:	+/-33.9							
QC1202062411	LCS										
Tritium		5540		5240	pCi/L		94.7	(80%-120%)		03/12/1020:24	
			TPU:	+/-479							

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## QC Summary

Workorder: 247797

Page 6 of 6

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
<b>Rad Liquid Scintillation</b>											
Batch	961540										
QC1202062409	MB										
Tritium			U	-7.93	pCi/L					03/12/10	16:18
	TPU:			+/-28.7							

### 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
- 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
- UJ 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# 961200

Product: Am

Date: 3/18/10

Critera:	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] 3/18/10

Secondary Review Performed By: [Signature] 3/19/10

LANL

3/9 - 3/19/10 Page 52 of 529



# Blank Correction Report

**Batch ID 961200**

GEL Sample ID	Client sample ID	Parameter	Aliquot	Result	TPU	MDA	Aliquot Corrected Blank Result	Units	Activity <5X Corrected Blank
1202061745	DUP	Americium-241	1.26 g	0.00567	0.00326	0.0208	-.01055556	pCi/g	NO
1202061746	LCS	Americium-241	0.106 g	32.4	2.34	0.218	-.12547170	pCi/g	NO
1202061744	MB	Americium-241	1.00 g	-0.0133	0.0048	0.0296	-.0133	pCi/g	NO
247549001	RE46-10-13324	Americium-241	1.26 g	-0.00181	0.00148	0.0217	-.01055556	pCi/g	NO
247549002	RE46-10-13323	Americium-241	1.25 g	0.00279	0.00208	0.0226	-.01064	pCi/g	NO
247549003	RE46-10-13361	Americium-241	1.26 g	0.00232	0.0018	0.0202	-.01055556	pCi/g	NO
247549004	RE46-10-13380	Americium-241	1.25 g	-0.00289	0.00184	0.0218	-.01064	pCi/g	NO
247551001	RE15-10-8349	Americium-241	1.26 g	-0.000275	0.00154	0.0225	-.01055556	pCi/g	NO
247551002	RE15-10-8348	Americium-241	1.26 g	0.00155	0.00266	0.0307	-.01055556	pCi/g	NO
247797001	RE15-10-8317	Americium-241	1.26 g	-0.000211	0.00315	0.021	-.01055556	pCi/g	NO
247797002	RE15-10-8319	Americium-241	1.26 g	0.00125	0.00154	0.0225	-.01055556	pCi/g	NO
247797003	RE15-10-8316	Americium-241	1.25 g	-0.00608	0.00259	0.0217	-.01064	pCi/g	NO
247797004	RE15-10-8326	Americium-241	1.26 g	0.000554	0.00256	0.0222	-.01055556	pCi/g	NO
247797005	RE15-10-8318	Americium-241	1.25 g	-0.000327	0.0015	0.022	-.01064	pCi/g	NO
248239001	RE11-10-1859	Americium-241	1.25 g	-0.00141	0.00183	0.0217	-.01064	pCi/g	NO
248239002	RE11-10-1860	Americium-241	1.26 g	-0.00182	0.00155	0.0227	-.01055556	pCi/g	NO
248239003	RE11-10-1872	Americium-241	1.26 g	0.000152	0.0019	0.0226	-.01055556	pCi/g	NO
248239004	RE11-10-1857	Americium-241	1.25 g	0.000959	0.00315	0.0221	-.01064	pCi/g	NO
248239005	RE11-10-1856	Americium-241	1.26 g	0.00308	0.00272	0.0219	-.01055556	pCi/g	NO
248239006	RE11-10-1858	Americium-241	1.26 g	-0.00245	0.00208	0.0213	-.01055556	pCi/g	NO
248239007	RE11-10-1871	Americium-241	1.26 g	0.0158	0.00493	0.0216	-.01055556	pCi/g	NO

# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

<p>BATCH NUMBER : 961200 SAMPLE ID : S0247797001_AM SAMPLE QTY : 1.256 G SAMPLE DATE : 17-FEB-2010 00:00:00 ANALYST : AYB1 % YIELD : 84.688</p>	<p>CHAMBER : 237 DETECTOR S/N : 79430 AVERAGE %EFFICIENCY : 41.0426 COUNT DATE : 16-MAR-2010 07:38:48 ELAPSED LIVE TIME(SEC) : 43200.00</p>	<p>LIB FILE : ENV_ALPHA_AM BKG FILE : B237.CNF:89 BKG DATE : 14-MAR-2010 BKG LIVE TIME(SEC) : 60000.00 EFF FILE : W237.CNF:30 CAL DATE : 28-FEB-2010</p>
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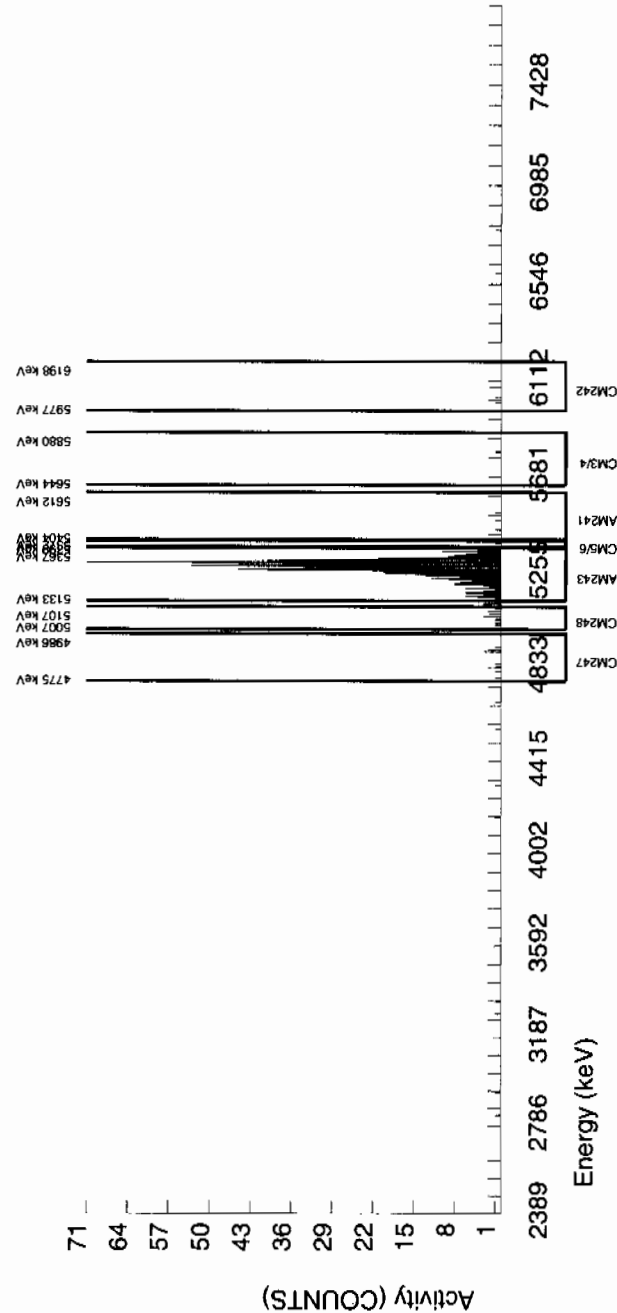
<p>TRACER ID : 445-96-2-SS NUCLIDE : AM243 NOMINAL : 2.9166E+00 dpm RESULTS : 2.4700E+00 dpm</p>	<p>MS/MSD ID : 0244-B NUCLIDE : AM-241 NOMINAL : 3.3153E+01 pCi/G</p>	<p>LCS/LCSD ID : 0244-B NUCLIDE : AM-241 NOMINAL : 3.3153E+01 pCi/G</p>
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## NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
AM-241	5479.150	5469.102	0.000	4.000	-0.147	2.880	2.7707	99.94000	-2.11E-04	3.15E-03	8.57E-03	2.10E-02	3.14E-03
AM243	5270.000	5283.353	47.363	729.000	728.280	0.720	0.8485	99.78000	1.05E+00	7.66E-02	2.63E-03	9.15E-03	3.88E-02
CM-242	6102.000	6060.450	4.935	4.000	4.000	0.000	4.0092	100.00000	6.45E-03	3.25E-03	1.24E-02	2.87E-02	3.22E-03
CM-3/4	5795.020	5796.647	9.252	2.000	2.000	0.000	4.8510	100.00000	2.87E-03	2.04E-03	1.50E-02	3.39E-02	2.03E-03
CM-5/6	5386.000	5377.298	0.000	6.000	6.000	0.000	6.1294	86.09000	9.99E-03	4.13E-03	2.20E-02	4.85E-02	4.08E-03
CM-247	4946.000	4868.362	4.935	10.000	10.000	0.000	6.3427	79.30000	1.81E-02	5.83E-03	2.47E-02	5.44E-02	5.71E-03
CM-248	5078.600	5074.572	0.000	14.000	13.280	0.720	11.0244	91.00000	2.09E-02	6.14E-03	3.75E-02	7.92E-02	6.00E-03

## NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 8-MAR-2010)
- \* BKG Sg of AM243 calculated as sqrt(BKG AREA).
- \* Corrections made to the following net area due to tracer impurity:  
AM-241



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 961200	CHAMBER : 044	LIB FILE : ENV_ALPHA_AM
SAMPLE ID : S0247797002_AM	DETECTOR S/N : 79459	BKG FILE : B044.CNF;1125
SAMPLE QTY : 1.256 G	AVERAGE %EFFICIENCY : 35.5933	BKG DATE : 14-MAR-2010
SAMPLE DATE : 17-FEB-2010 00:00:00	COUNT DATE : 17-MAR-2010 07:28:17	BKG LIVE TIME(SEC) : 59999.99
ANALYST : AYB1	ELAPSED LIVE TIME(SEC) : 43200.00	EFF FILE : W044.CNF;309
% YIELD : 91.217		CAL DATE : 5-MAR-2010

TRACER ID : 445-96-2-SS	MS/MSD ID : 0244-B	LCS/LCSD ID : 0244-B
NUCLIDE : AM243	NUCLIDE : AM-241	NUCLIDE : AM-241
NOMINAL : 2.9166E+00 dpm	NOMINAL : 3.3153E+01 pCi/G	NOMINAL : 3.3153E+01 pCi/G
RESULTS : 2.6604E+00 dpm		

## NUCLIDE ACTIVITY SUMMARY

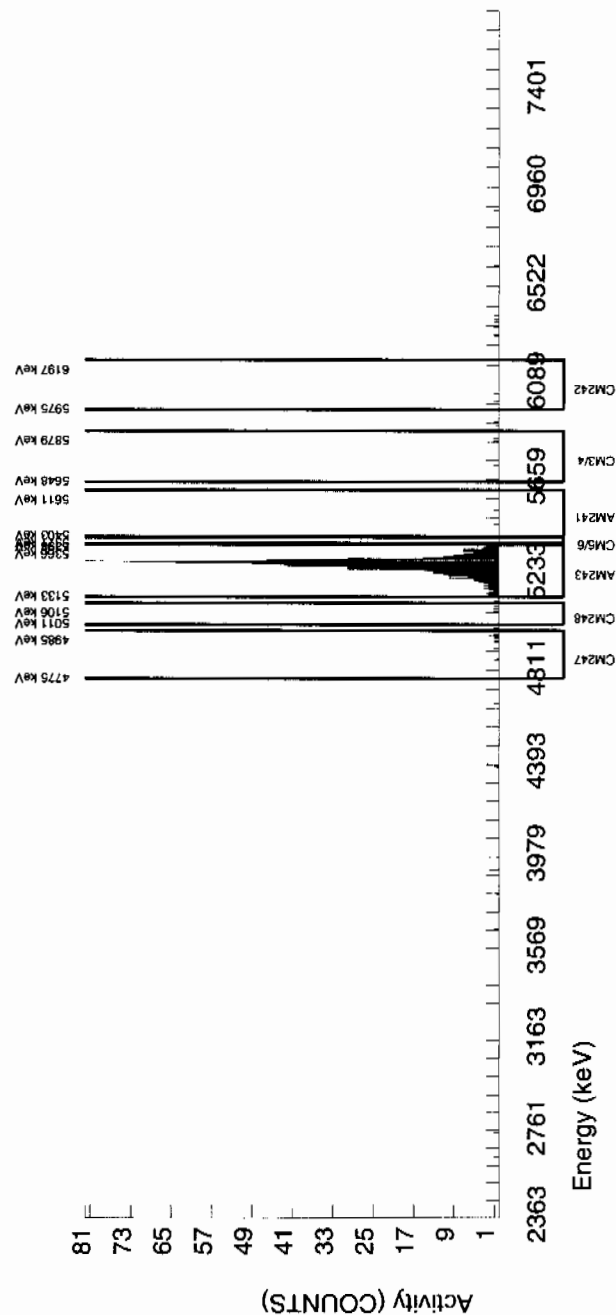
NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLG pCi/G	MDC pCi/G	UNC pCi/G
AM-241	5479.150	5493.476	64.397	2.000	0.816	0.000	2.7707	99.94000	1.25E-03	1.54E-03	9.18E-03	2.25E-02	1.54E-03
AM243	5270.000	5279.464	25.994	681.000	680.280	0.720	0.8485	99.78000	1.05E+00	7.81E-02	2.81E-03	9.80E-03	4.01E-02
CM-242	6102.000	6025.744	44.582	3.000	3.000	0.000	4.0092	100.00000	5.20E-03	3.02E-03	1.33E-02	3.07E-02	3.00E-03
CM-3/4	5795.020	5807.104	118.886	3.000	2.280	0.720	4.8510	100.00000	3.51E-03	2.90E-03	1.61E-02	3.63E-02	2.89E-03
CM-5/6	5386.000	5384.382	0.000	3.000	3.000	0.000	6.1294	86.09000	5.35E-03	3.11E-03	2.36E-02	5.20E-02	3.09E-03
CM-247	4946.000	4926.316	9.907	9.000	7.560	1.440	6.3427	79.30000	1.46E-02	6.20E-03	2.65E-02	5.82E-02	6.13E-03
CM-248	5078.600	5085.045	24.768	3.000	2.280	0.720	11.0244	91.00000	3.84E-03	3.17E-03	4.01E-02	8.48E-02	3.16E-03

## NOTES:

\* BKG Sg calculated via blank population.  
(Sg updated 8-MAR-2010)

\* BKG Sg of AM243 calculated as sqrt(BKG AREA).

\* Corrections made to the following net area  
due to tracer impurity:  
AM-241





GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 961200	CHAMBER : 239	LIB FILE : ENV_ALPHA_AM
SAMPLE ID : S0247797003_AM	DETECTOR S/N : 79432	BKG FILE : B239.CNF:89
SAMPLE QTY : 1.253 G	AVERAGE %EFFICIENCY : 39.3422	BKG DATE : 14-MAR-2010
SAMPLE DATE : 17-FEB-2010 00:00:00	COUNT DATE : 16-MAR-2010 07:38:54	BKG LIVE TIME(SEC) : 60000.00
ANALYST : AYB1	ELAPSED LIVE TIME(SEC) : 43200.00	EFF FILE : W239.CNF:30
% YIELD : 85.922		CAL DATE : 28-FEB-2010

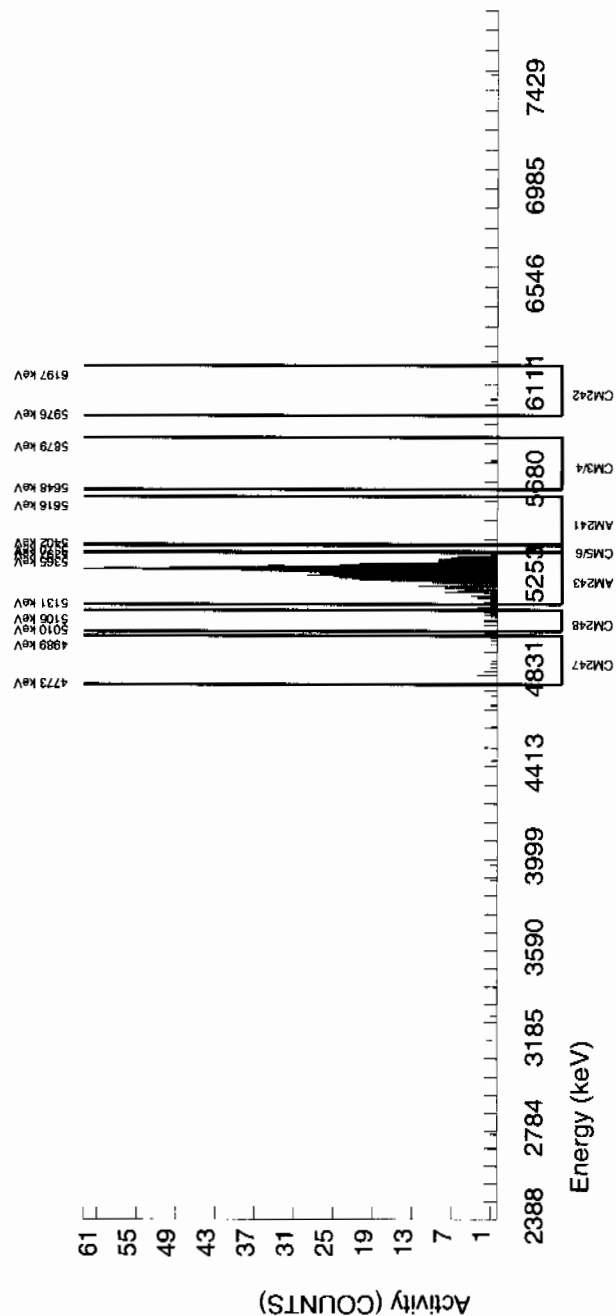
TRACER	MS/MSD	LCS/LCSD
ID : 445-96-2-SS	ID : 0244-B	ID : 0244-B
NUCLIDE : AM243	NUCLIDE : AM-241	NUCLIDE : AM-241
NOMINAL : 2.9166E+00 dpm	NOMINAL : 3.3153E+01 pCi/g	NOMINAL : 3.3153E+01 pCi/g
RESULTS : 2.5060E+00 dpm		

## NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/g	TPU 1-SIGMA	DLC pCi/g	MDC pCi/g	UNC pCi/g
AM-241	5479.150	5508.743	0.000	0.000	-4.112	2.880	2.7707	99.94000	-6.08E-03	2.59E-03	8.83E-03	2.17E-02	2.59E-03
AM243	5270.000	5279.079	30.635	709.000	708.280	0.720	0.8485	99.78000	1.05E+00	7.74E-02	2.71E-03	9.43E-03	3.94E-02
CM-242	6102.000	6036.822	54.219	3.000	3.000	0.000	4.0092	100.0000	4.98E-03	2.89E-03	1.28E-02	2.96E-02	2.88E-03
CM-3/4	5795.020	5776.448	14.787	2.000	2.000	0.000	4.8510	100.0000	2.96E-03	2.10E-03	1.55E-02	3.49E-02	2.09E-03
CM-5/6	5386.000	5372.193	0.000	8.000	7.280	0.720	6.1294	86.09000	1.25E-02	5.07E-03	2.27E-02	5.00E-02	5.01E-03
CM-247	4946.000	4875.719	4.929	10.000	9.280	0.720	6.3427	79.30000	1.73E-02	6.14E-03	2.55E-02	5.60E-02	6.04E-03
CM-248	5078.600	5066.921	0.000	14.000	14.000	0.000	11.0244	91.00000	2.27E-02	6.24E-03	3.86E-02	8.16E-02	6.07E-03

## NOTES:

- \* BKG Sg calculated via blank population.
- (Sg updated 8-MAR-2010)
- \* BKG Sg of AM243 calculated as sqrt(BKG AREA).
- \* Corrections made to the following net area due to tracer impurity:
- AM-241



# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 961200	CHAMBER : 240	LIB FILE : ENV_ALPHA_AM
SAMPLE ID : S0247797004_AM	DETECTOR S/N : 79433	BKG FILE : B240.CNF:89
SAMPLE QTY : 1.259 G	AVERAGE %EFFICIENCY : 38.7048	BKG DATE : 14-MAR-2010
SAMPLE DATE : 17-FEB-2010 00:00:00	COUNT DATE : 16-MAR-2010 07:38:57	BKG LIVE TIME(SEC) : 60000.00
ANALYST : AYB1	ELAPSED LIVE TIME(SEC) : 43200.00	EFF FILE : W240.CNF:30
% YIELD : 84.693		CAL DATE : 28-FEB-2010

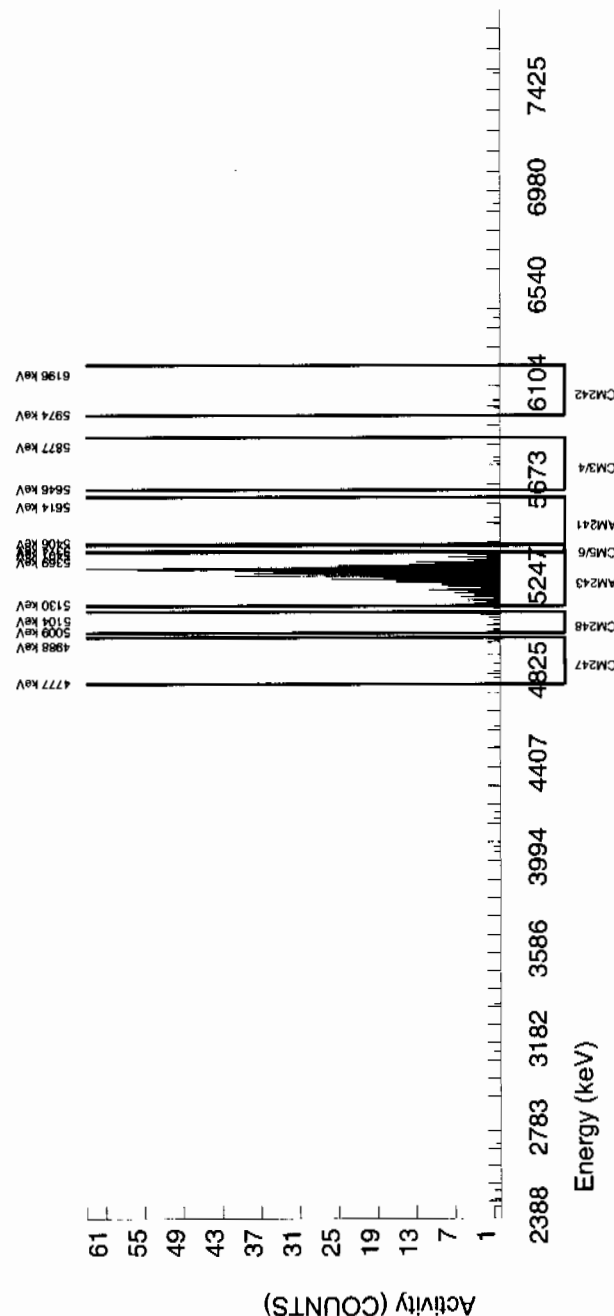
TRACER	MS/MSD	LCS/LCSD
ID : 445-96-2-SS	ID : 0244-B	ID : 0244-B
NUCLIDE : AM243	NUCLIDE : AM-241	NUCLIDE : AM-241
NOMINAL : 2.9166E+00 dpm	NOMINAL : 3.3153E+01 pCi/g	NOMINAL : 3.3153E+01 pCi/g
RESULTS : 2.4701E+00 dpm		

## NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/g	TPU 1-SIGMA	DLC pCi/g	MDC pCi/g	UNC pCi/g
AM-241	5479.150	5512.676	28.812	3.000	0.365	1.440	2.7707	99.94000	5.54E-04	2.56E-03	9.07E-03	2.22E-02	2.56E-03
AM243	5270.000	5274.815	42.123	689.000	686.840	2.160	1.4697	99.78000	1.04E+00	7.77E-02	4.82E-03	1.38E-02	3.99E-02
CM-242	6102.000	6035.686	39.233	3.000	3.000	0.000	4.0092	100.0000	5.11E-03	2.97E-03	1.31E-02	3.03E-02	2.95E-03
CM-3/4	5795.020	5788.566	19.616	2.000	0.560	1.440	4.8510	100.0000	8.51E-04	2.65E-03	1.59E-02	3.58E-02	2.65E-03
CM-5/6	5386.000	5377.064	0.000	9.000	9.000	0.000	6.1294	86.09000	1.58E-02	5.38E-03	2.33E-02	5.13E-02	5.28E-03
CM-247	4946.000	4892.158	4.904	7.000	6.280	0.720	6.3427	79.30000	1.20E-02	5.30E-03	2.62E-02	5.75E-02	5.24E-03
CM-248	5078.600	5068.760	49.041	13.000	13.000	0.000	11.0244	91.00000	2.17E-02	6.16E-03	3.96E-02	8.38E-02	6.01E-03

## NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 8-MAR-2010)
- \* BKG Sg of AM243 calculated as sqrt(BKG AREA).
- \* Corrections made to the following net area due to tracer impurity:  
AM-241



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 961200	CHAMBER : 241	LIB FILE : ENV_ALPHA_AM
SAMPLE ID : S0247797005_AM	DETECTOR S/N : 79434	BKG FILE : B241.CNF:89
SAMPLE QTY : 1.250 G	AVERAGE %EFFICIENCY : 39.4182	BKG DATE : 14-MAR-2010
SAMPLE DATE : 17-FEB-2010 00:00:00	COUNT DATE : 16-MAR-2010 07:39:00	BKG LIVE TIME(SEC) : 60000.00
ANALYST : AYB1	ELAPSED LIVE TIME(SEC) : 43200.00	EFF FILE : W241.CNF:30
% YIELD : 84.754		CAL DATE : 28-FEB-2010

TRACER	MS/MSD	LCS/LCSD
ID : 445-96-2-SS	ID : 0244-B	ID : 0244-B
NUCLIDE : AM243	NUCLIDE : AM-241	NUCLIDE : AM-241
NOMINAL : 2.9166E+00 dpm	NOMINAL : 3.3153E+01 pCi/G	NOMINAL : 3.3153E+01 pCi/G
RESULTS : 2.4719E+00 dpm		

## NUCLIDE ACTIVITY SUMMARY

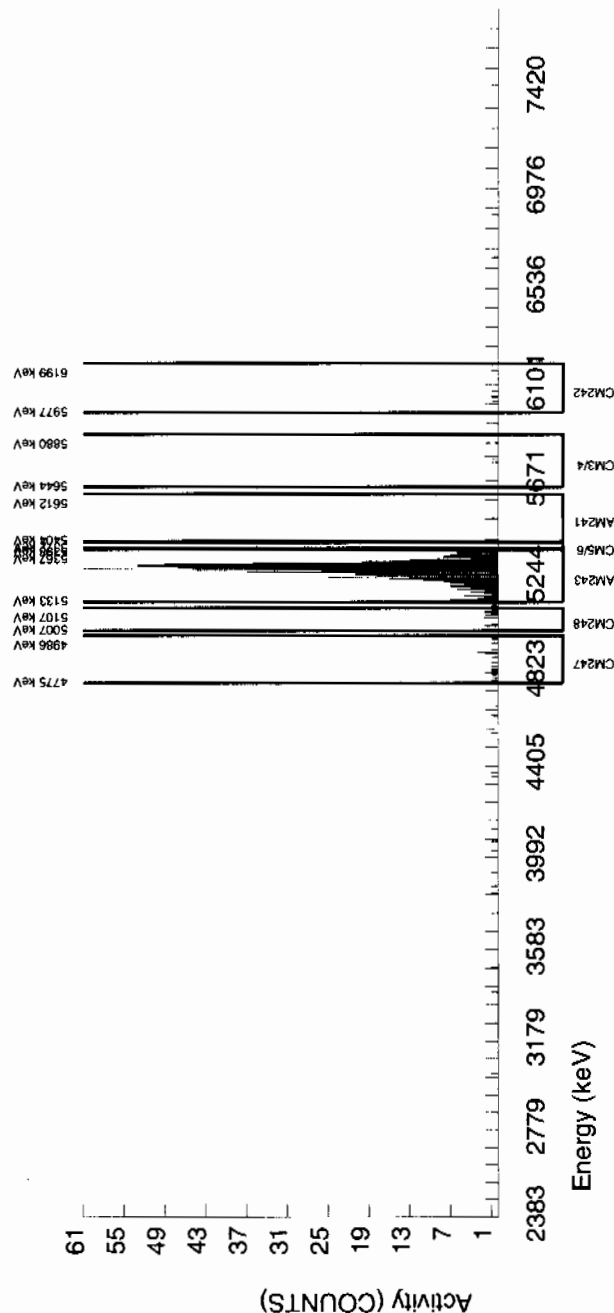
NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
AM-241	5479.150	5515.667	4.917	1.000	-0.218	0.000	2.7707	99.94000	-3.27E-04	1.50E-03	8.96E-03	2.20E-02	1.50E-03
AM243	5270.000	5278.663	43.015	700.000	700.000	0.000	0.0000	99.78000	1.05E+00	7.78E-02	0.00E+00	4.07E-03	3.97E-02
CM-242	6102.000	6068.880	142.581	6.000	6.000	0.000	4.0092	100.0000	1.01E-02	4.18E-03	1.30E-02	3.00E-02	4.13E-03
CM-3/4	5795.020	5823.066	0.000	5.000	3.560	1.440	4.8510	100.0000	5.35E-03	3.71E-03	1.57E-02	3.54E-02	3.69E-03
CM-5/6	5386.000	5377.170	0.000	6.000	6.000	0.000	6.1294	86.09000	1.04E-02	4.31E-03	2.30E-02	5.07E-02	4.26E-03
CM-247	4946.000	4880.002	4.917	17.000	14.840	2.160	6.3427	79.30000	2.80E-02	8.33E-03	2.59E-02	5.68E-02	8.14E-03
CM-248	5078.600	5066.867	66.374	14.000	14.000	0.000	11.0244	91.00000	2.30E-02	6.33E-03	3.92E-02	8.28E-02	6.16E-03

## NOTES:

\* BKG Sg calculated via blank population.  
(Sg updated 8-MAR-2010)

\* BKG Sg of AM243 calculated as sqrt(BKG AREA).

\* Corrections made to the following net area  
due to tracer impurity:  
AM-241



**GEL Laboratories LLC**  
**ALPHA SPECTROSCOPY REPORT**

BATCH NUMBER : 961200			CHAMBER : 253			LIB FILE : ENV_ALPHA_AM		
SAMPLE ID : S1202061744_AM			DETECTOR S/N : 79446			BKG FILE : B253.CNF;91		
SAMPLE QTY : 1.000 G			AVERAGE %EFFICIENCY : 39.9556			BKG DATE : 14-MAR-2010		
SAMPLE DATE : 11-MAR-2010 00:00:00			COUNT DATE : 16-MAR-2010 07:39:28			BKG LIVE TIME(SEC) : 60000.00		
ANALYST : AYB1			ELAPSED LIVE TIME(SEC) : 43200.00			EFF FILE : W253.CNF;30		
% YIELD : 77.708						CAL DATE : 28-FEB-2010		
TRACER			MS/MSD			LCS/LCSD		
ID : 445-96-2-SS			ID : 0244-B			ID : 0244-B		
NUCLIDE : AM243			NUCLIDE : AM-241			NUCLIDE : AM-241		
NOMINAL : 2.9165E+00 dpm			NOMINAL : 3.3150E+01 pCi/g			NOMINAL : 3.3150E+01 pCi/g		
RESULTS : 2.2664E+00 dpm								
NUCLIDE ACTIVITY SUMMARY								
NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN
AM-241	5479.150	5497.710	4.926	1.000	-6.612	6.480	2.7707	99.94000
AM243	5270.000	5277.490	37.739	652.000	650.560	1.440	1.2000	99.78000
CM-242	6102.000	6040.755	0.000	3.000	3.000	0.000	4.0092	100.0000
CM-3/4	5795.020	5789.049	137.938	7.000	-5.960	12.960	4.8510	100.0000
CM-5/6	5386.000	5377.852	0.000	6.000	6.000	0.000	6.1294	86.09000
CM-247	4946.000	4912.012	0.000	20.000	6.320	13.680	6.3427	79.30000
CM-248	5078.600	5063.972	38.538	20.000	20.000	0.000	11.0244	91.00000

## NOTES:

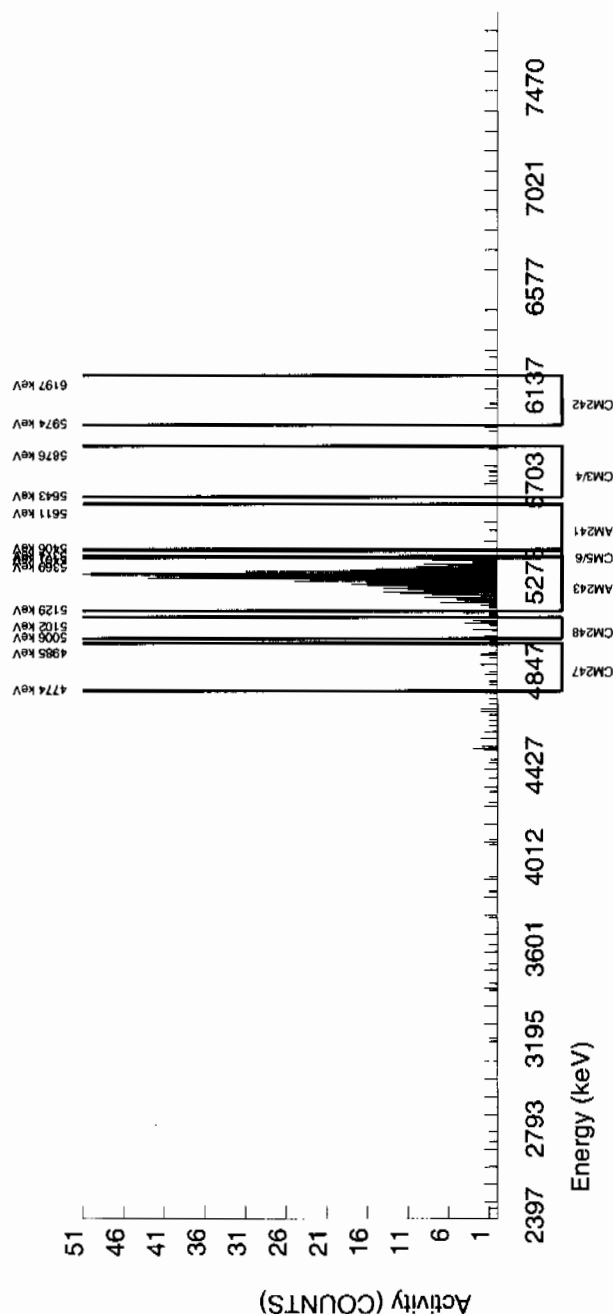
\* BKG Sg calculated via blank population.

(Sg updated 8-MAR-2010)

\* BKG Sg of AM243 calculated as sqrt(BKG AREA).

\* Corrections made to the following net area due to tracer impurity:

AM-241



# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

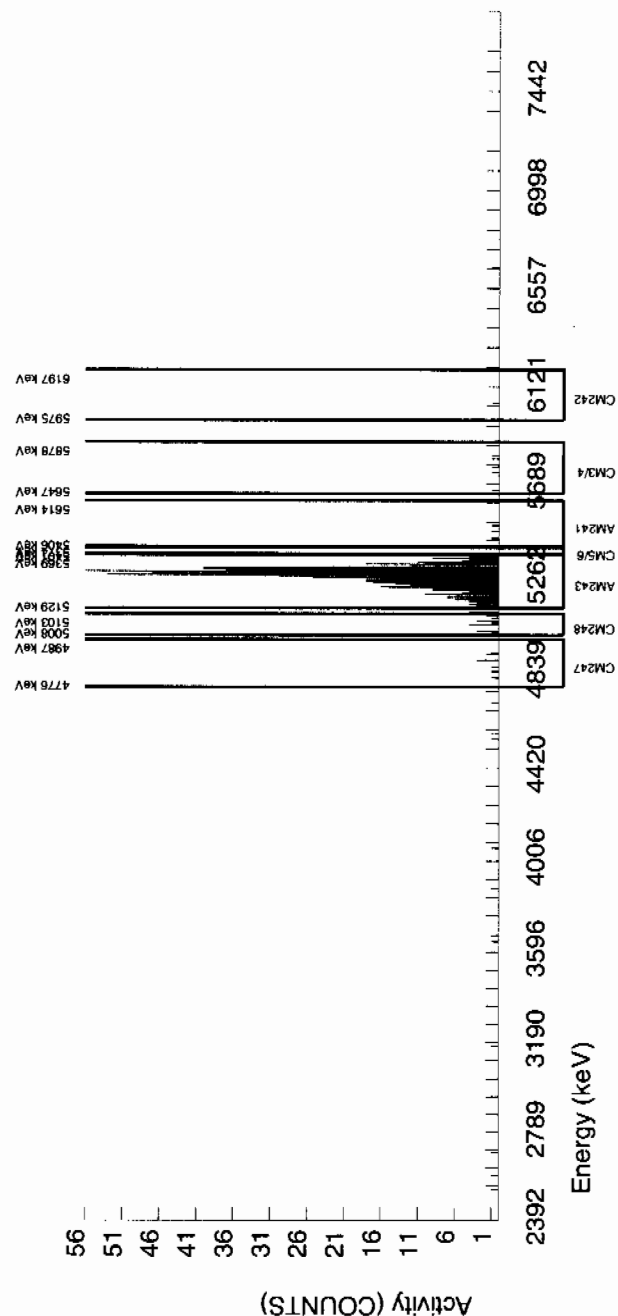
BATCH NUMBER : 961200 SAMPLE ID : S1202061745_AM SAMPLE QTY : 1.260 G SAMPLE DATE : 17-FEB-2010 00:00:00 ANALYST : AYB1 % YIELD : 87.411	CHAMBER : 254 DETECTOR S/N : 79447 AVERAGE %EFFICIENCY : 40.1306 COUNT DATE : 16-MAR-2010 07:39:31 ELAPSED LIVE TIME(SEC) : 43200.00	LIB FILE : ENV_ALPHA_AM BKG FILE : B254.CNF.89 BKG DATE : 14-MAR-2010 BKG LIVE TIME(SEC) : 60000.00 EFF FILE : W254.CNF.30 CAL DATE : 28-FEB-2010
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<b>TRACER</b> ID : 445-96-2-SS NUCLIDE : AM243 NOMINAL : 2.9166E+00 dpm RESULTS : 2.5494E+00 dpm	<b>MS/MSD</b> ID : 0244-B NUCLIDE : AM-241 NOMINAL : 3.3153E+01 pCi/G	<b>LCS/LCSD</b> ID : 0244-B NUCLIDE : AM-241 NOMINAL : 3.3153E+01 pCi/G
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NUCLIDE ACTIVITY SUMMARY									
NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G
AM-241	5479.150	5473.466	68.479	6.000	4.001	0.720	2.7707	99.94000	5.67E-03
AM-243	5270.000	5276.364	46.576	735.000	735.000	0.000	0.0000	99.78000	1.04E+00
CM-242	6102.000	6023.712	69.096	4.000	4.000	0.000	4.0092	100.0000	6.37E-03
CM-3/4	5795.020	5758.457	148.063	6.000	6.000	0.000	4.8510	100.0000	8.52E-03
CM-5/6	5386.000	5376.905	0.000	7.000	7.000	0.000	6.1294	86.09000	1.15E-02
CM-247	4946.000	4872.351	13.572	12.000	10.560	1.440	6.3427	79.30000	1.88E-02
CM-248	5078.600	5063.371	48.532	19.000	19.000	0.000	11.0244	91.00000	2.96E-02

## NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 8-MAR-2010)
- \* BKG Sg of AM243 calculated as sqrt(BKG AREA).
- \* Corrections made to the following net area due to tracer impurity:  
AM-241



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 961200 SAMPLE ID : S1202061746_AM SAMPLE QTY : 0.106 G SAMPLE DATE : 11-MAR-2010 00:00:00 ANALYST : AYB1 % YIELD : 100.775		CHAMBER : 233 DETECTOR S/N : 79426 AVERAGE %EFFICIENCY : 39.4029 COUNT DATE : 16-MAR-2010 07:38:36 ELAPSED LIVE TIME(SEC) : 43200.00	LIB FILE : ENV_ALPHA_AM BKG FILE : B233.CNF:90 BKG DATE : 14-MAR-2010 BKG LIVE TIME(SEC) : 60000.00 EFF FILE : W233.CNF:31 CAL DATE : 2-MAR-2010
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TRACER ID : 445-96-2-SS NUCLIDE : AM243 NOMINAL : 2.9165E+00 dpm RESULTS : 2.9391E+00 dpm	MS/MSD ID : 0244-B NUCLIDE : AM-241 NOMINAL : 3.3150E+01 pCi/G	LCS/LCSD ID : 0244-B NUCLIDE : AM-241 NOMINAL : 3.3150E+01 pCi/G
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## NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
AM-241	5479.150	5503.848	45.463	2183.000	2181.552	0.000	2.7707	99.94000	3.24E+01	2.34E+00	8.89E-02	2.18E-01	6.95E-01
AM243	5270.000	5284.250	37.412	832.000	832.000	0.000	0.0000	99.78000	1.24E+01	9.55E-01	0.00E+00	4.04E-02	4.30E-01
CM-242	6102.000	6059.966	4.925	6.000	6.000	0.000	4.0092	100.0000	9.13E-02	3.78E-02	1.29E-01	2.97E-01	3.73E-02
CM-3/4	5795.020	5767.838	78.804	4.000	4.000	0.000	4.8510	100.0000	5.95E-02	3.00E-02	1.56E-01	3.51E-01	2.97E-02
CM-5/6	5386.000	5388.001	0.000	52.000	52.000	0.000	6.1294	86.09000	8.98E-01	1.39E-01	2.28E-01	5.03E-01	1.25E-01
CM-247	4946.000	4906.682	27.089	19.000	17.560	1.440	6.3427	79.30000	3.29E-01	8.69E-02	2.56E-01	5.64E-01	8.39E-02
CM-248	5078.600	5046.002	0.000	18.000	18.000	0.000	11.0244	91.00000	2.94E-01	7.22E-02	3.88E-01	8.21E-01	6.93E-02

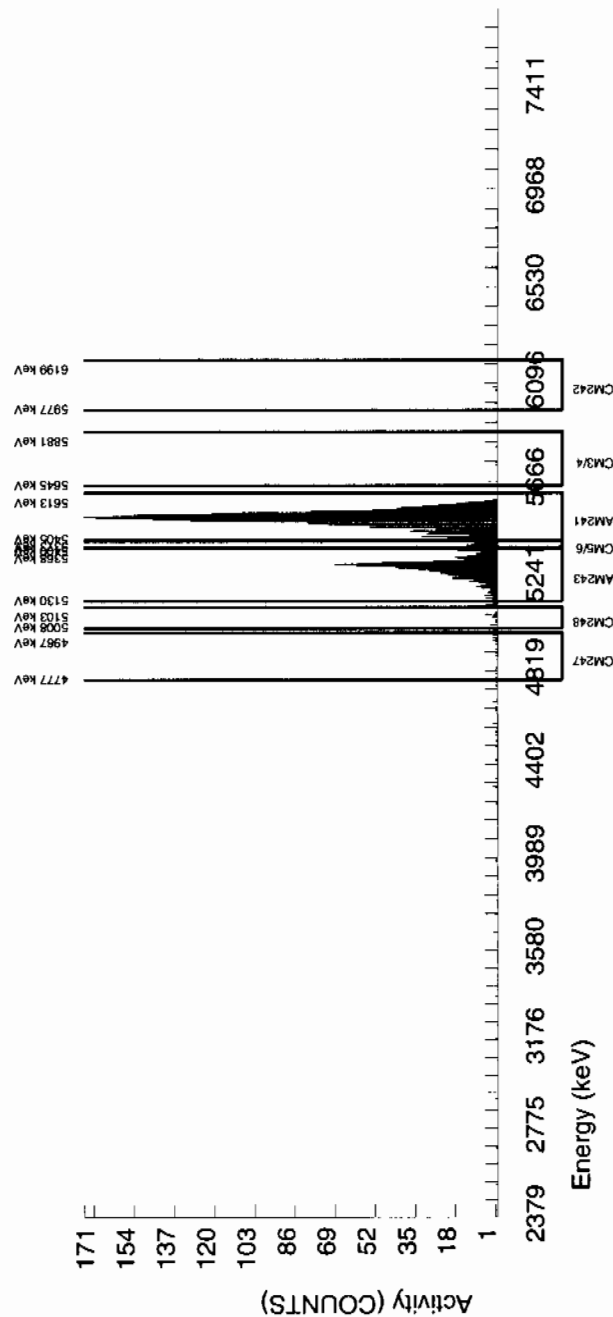
## NOTES:

\* BKG Sg calculated via blank population.  
(Sg updated 8-MAR-2010)

\* BKG Sg of AM243 calculated as sqrt(BKG AREA).

\* Corrections made to the following net area due to tracer impurity:

AM-241



## Radiochemistry Batch Checklist, Rev10

Batch# 9161201 Product: PU Date: 3/19/10

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.	✓		case narrative
(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.			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 statused.	✓		
QC data entered into QC database and batch is in REVW	✓		
Hlt notification complete (if necessary)			N/A
Batch entered into Case Narrative.	✓		
Batch Data Exception Reports (DER) completed, if applicable.	✓		DER 806560
Batch Data Exception Reports (DER) second reviewed and disposition verified to be completed.	✓		DER 806560
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: Denise K Green 3/19/10Secondary Review Performed By: Paul A 3/19/109/20  
LANC

# Plutonium Que Sheet

04-MAR-10

Batch #: 961201 Analyst: AYB1 First Client Due Date: 20-MAR-10 Internal Due Date: 09-MAR-10  
 Tracer Isotope(s): Pu-239 Pu-238 Tracer Code: 1430-C Expiration Date: 3/4/11 Vol: 0.1  
 LCS Isotope(s): Pu-239/Pu-238 LCS Code: NA Expiration Date: NA Vol: NA  
 Spike Isotope(s): Pu-239/Pu-238 Spike Code: NA Expiration Date: NA Vol: NA  
 Prep Date: 3/11/10 Initials: AYB Pipet ID: 2971058 Balance ID: 50410272 Witness: MDA 3/11/10

Sample ID	Client Description	Type	Hazard Code	Min CRDL	Matrix	Client	Collection Date	Pos.	Label #	Wet/Dry Aliquot (g) (1/f)	Pu Det #
247549001-1	RE46-10-13324	SAMPLE	.05 pCi/g		SOIL	LANL010	18-FEB-10	1	1	1.259	71 83
247549002-1	RE46-10-13323	SAMPLE	.05 pCi/g		SOIL	LANL010	18-FEB-10	2	2	1.251	84
247549003-1	RE46-10-13361	SAMPLE	.05 pCi/g		SOIL	LANL010	18-FEB-10	3	3	1.256	85
247549004-1	RE46-10-13380	SAMPLE	.05 pCi/g		SOIL	LANL010	18-FEB-10	4	4	1.252	86
247551001-1	RE15-10-8349	SAMPLE	.05 pCi/g		SOIL	LANL010	15-FEB-10	5	5	1.260	87
247551002-1	RE15-10-8348	SAMPLE	.05 pCi/g		SOIL	LANL010	15-FEB-10	6	6	1.257	7A 88
247797001-1	RE15-10-8317	SAMPLE	.05 pCi/g		SOIL	LANL010	17-FEB-10	7	7	1.256	73 19
247797002-1	RE15-10-8319	SAMPLE	.05 pCi/g		SOIL	LANL010	17-FEB-10	8	8	1.286	20
247797003-1	RE15-10-8316	SAMPLE	.05 pCi/g		SOIL	LANL010	17-FEB-10	9	9	1.258	22
247797004-1	RE15-10-8326	SAMPLE	.05 pCi/g		SOIL	LANL010	17-FEB-10	10	10	1.259	71 23
247797005-1	RE15-10-8318	SAMPLE	.05 pCi/g		SOIL	LANL010	17-FEB-10	11	11	1.250	24
248239001-1	RE11-10-1859	SAMPLE	.05 pCi/g		SOIL	LANL010	23-FEB-10	12	12	1.254	107 98
248239002-1	RE11-10-1860	SAMPLE	.05 pCi/g		SOIL	LANL010	23-FEB-10	13	13	1.256	96
248239003-1	RE11-10-1872	SAMPLE	.05 pCi/g		SOIL	LANL010	23-FEB-10	14	14	1.255	97
248239004-1	RE11-10-1857	SAMPLE	.05 pCi/g		SOIL	LANL010	23-FEB-10	15	15	1.291	98
248239005-1	RE11-10-1856	SAMPLE	.05 pCi/g		SOIL	LANL010	23-FEB-10	16	16	1.250	108 99
248239006-1	RE11-10-1858	SAMPLE	.05 pCi/g		SOIL	LANL010	23-FEB-10	17	17	1.260	100
248239007-1	RE11-10-1871	SAMPLE	.05 pCi/g		SOIL	LANL010	23-FEB-10	18	18	1.259	109 101
1202061750-1	MB for batch 961201	MB	.05 pCi/g		SOIL	QC ACCOUNT		19	19	1.00	46
1202061751-1	RE15-10-8317(247797001DUP)	DUP	.05 pCi/g		SOIL	QC ACCOUNT	17-FEB-10	20	20	1.260	48
1202061752-1	LCS for batch 961201	LCS	.05 pCi/g		SOIL	QC ACCOUNT		21	21	0.106	45

ASRM 0244-B EXP: 4/30/20

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 EXCEPTION REPORT

<b>Mo. Day Yr.</b> 19-MAR-10	<b>Division:</b> Radiochemistry	<b>Quality Criteria:</b> SOP	<b>Type:</b> Process
<b>Instrument Type:</b> ALPHA SPECTROMETER	<b>Test / Method:</b> DOE EML HASL-300, Pu-11-RC Modified	<b>Matrix Type:</b> Solid	<b>Client Code:</b> LANL
<b>Batch ID:</b> 961201	<b>Sample Numbers:</b> see below		

Potentially affected work order(s)(SDG): 247549(10-1966),247551(10-1969),247797(10-1984),248239(10-2133)

**Application Issues:**

Other

<b>Specification and Requirements</b> <b>Exception Description:</b>	<b>DER Disposition:</b>
1. Samples 247549004 and 948239003 did not achieve 400 tracer counts due to shortened count time to minimize tailing from the Pu-236 tracer into the Pu-238 region off interest.	1. The client tracer yield recovery requirements and requested detection limits were met. Reporting results.

**Originator's Name:**

Denise Green 19-MAR-10

**Data Validator/Group Leader:**

Jessica Downey 19-MAR-10

# Blank Correction Report

Batch ID 961201

GEL Sample ID	Client sample ID	Parameter	Aliquot	Result	TPU	MDA	Aliquot Corrected Blank Result	Units	Activity <5X Corrected Blank
1202061751	DUP	Plutonium-238	1.26 g	0.00458	0.00982	0.0312	.021031746	pCi/g	YES
		Plutonium-239/240	1.26 g	0.00178	0.00793	0.0264	.003325397	pCi/g	YES
1202061752	LCS	Plutonium-238	0.106 g	6.23	0.574	0.311	.25	pCi/g	NO
		Plutonium-239/240	0.106 g	43.0	3.09	0.264	.039528302	pCi/g	NO
1202061750	MB	Plutonium-238	1.00 g	0.0265	0.00881	0.0312	.0265	pCi/g	YES
		Plutonium-239/240	1.00 g	0.00419	0.00561	0.0264	.00419	pCi/g	YES
247549001	RE46-10-13324	Plutonium-238	1.26 g	-0.000259	0.00671	0.0278	.021031746	pCi/g	YES
		Plutonium-239/240	1.26 g	0.00298	0.00332	0.0235	.003325397	pCi/g	YES
247549002	RE46-10-13323	Plutonium-238	1.25 g	0.0177	0.00634	0.0276	.0212	pCi/g	YES
		Plutonium-239/240	1.25 g	0.0122	0.00556	0.0234	.003352	pCi/g	YES
247549003	RE46-10-13361	Plutonium-238	1.26 g	0.00844	0.00496	0.0299	.021031746	pCi/g	YES
		Plutonium-239/240	1.26 g	0.00479	0.0034	0.0264	.003325397	pCi/g	YES
247549004	RE46-10-13380	Plutonium-238	1.25 g	0.0214	0.00827	0.0355	.0212	pCi/g	YES
		Plutonium-239/240	1.25 g	0.0142	0.00642	0.0301	.003352	pCi/g	YES
247551001	RE15-10-8349	Plutonium-238	1.26 g	0.0205	0.00847	0.0242	.021031746	pCi/g	YES
		Plutonium-239/240	1.26 g	0.0148	0.00665	0.0205	.003325397	pCi/g	YES
247551002	RE15-10-8348	Plutonium-238	1.26 g	0.0047	0.00708	0.0289	.021031746	pCi/g	YES
		Plutonium-239/240	1.26 g	0.00397	0.00434	0.0245	.003325397	pCi/g	YES
247797001	RE15-10-8317	Plutonium-238	1.26 g	0.000845	0.00256	0.0282	.021031746	pCi/g	YES
		Plutonium-239/240	1.26 g	0.00302	0.00336	0.0238	.003325397	pCi/g	YES
247797002	RE15-10-8319	Plutonium-238	1.26 g	0.020	0.0105	0.0304	.021031746	pCi/g	YES
		Plutonium-239/240	1.26 g	7.75E-05	0.00295	0.0258	.003325397	pCi/g	YES
247797003	RE15-10-8316	Plutonium-238	1.25 g	0.020	0.0112	0.0323	.0212	pCi/g	YES
		Plutonium-239/240	1.25 g	0.0194	0.00751	0.0274	.003352	pCi/g	NO
247797004	RE15-10-8326	Plutonium-238	1.26 g	0.00397	0.00433	0.0289	.021031746	pCi/g	YES
		Plutonium-239/240	1.26 g	0.000866	0.00262	0.0245	.003325397	pCi/g	YES
247797005	RE15-10-8318	Plutonium-238	1.25 g	0.0136	0.0102	0.0326	.0212	pCi/g	YES
		Plutonium-239/240	1.25 g	0.0144	0.00657	0.0276	.003352	pCi/g	YES
248239001	RE11-10-1859	Plutonium-238	1.25 g	0.000845	0.00256	0.0282	.0212	pCi/g	YES
		Plutonium-239/240	1.25 g	0.00303	0.00337	0.0239	.003352	pCi/g	YES
248239002	RE11-10-1860	Plutonium-238	1.26 g	0.0243	0.00766	0.0257	.021031746	pCi/g	YES
		Plutonium-239/240	1.26 g	-0.00031	0.00365	0.0217	.003325397	pCi/g	YES
248239003	RE11-10-1872	Plutonium-238	1.26 g	0.0291	0.0105	0.0343	.021031746	pCi/g	YES
		Plutonium-239/240	1.26 g	0.00417	0.0041	0.0291	.003325397	pCi/g	YES
248239004	RE11-10-1857	Plutonium-238	1.25 g	0.0222	0.00757	0.0291	.0212	pCi/g	YES
		Plutonium-239/240	1.25 g	0.0234	0.00801	0.0247	.003352	pCi/g	NO
248239005	RE11-10-1856	Plutonium-238	1.25 g	0.00469	0.00333	0.0304	.0212	pCi/g	YES
		Plutonium-239/240	1.25 g	-0.00197	0.00342	0.0257	.003352	pCi/g	YES
248239006	RE11-10-1858	Plutonium-238	1.26 g	0.0151	0.00623	0.0314	.021031746	pCi/g	YES

## Blank Correction Report

GEL Sample ID	Client sample ID	Parameter	Aliquot	Result	TPU	MDA	Aliquot Corrected Blank Result	Units	Activity <5X Corrected Blank
248239006	RE11-10-1858	Plutonium-239/240	1.26 g	0.00382	0.00376	0.0266	.003325397	pCi/g	YES
248239007	RE11-10-1871	Plutonium-238	1.26 g	0.0187	0.0067	0.0302	.021031746	pCi/g	YES
		Plutonium-239/240	1.26 g	0.0498	0.0115	0.0255	.003325397	pCi/g	NO

# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 961201	CHAMBER : 073	LIB FILE : ENV_ALPHA_PU
SAMPLE ID : S0247797001_PU	DETECTOR S/N : 78775	BKG FILE : B073.CNF.1110
SAMPLE QTY : 1.256 G	AVERAGE %EFFICIENCY : 33.1763	BKG DATE : 14-MAR-2010
SAMPLE DATE : 17-FEB-2010 00:00:00	COUNT DATE : 18-MAR-2010 20:59:49	BKG LIVE TIME(SEC) : 59999.99
ANALYST : AYB1	ELAPSED LIVE TIME(SEC) : 36727.53	EFF FILE : W073.CNF.287
% YIELD : 81.183		CAL DATE : 12-MAR-2010

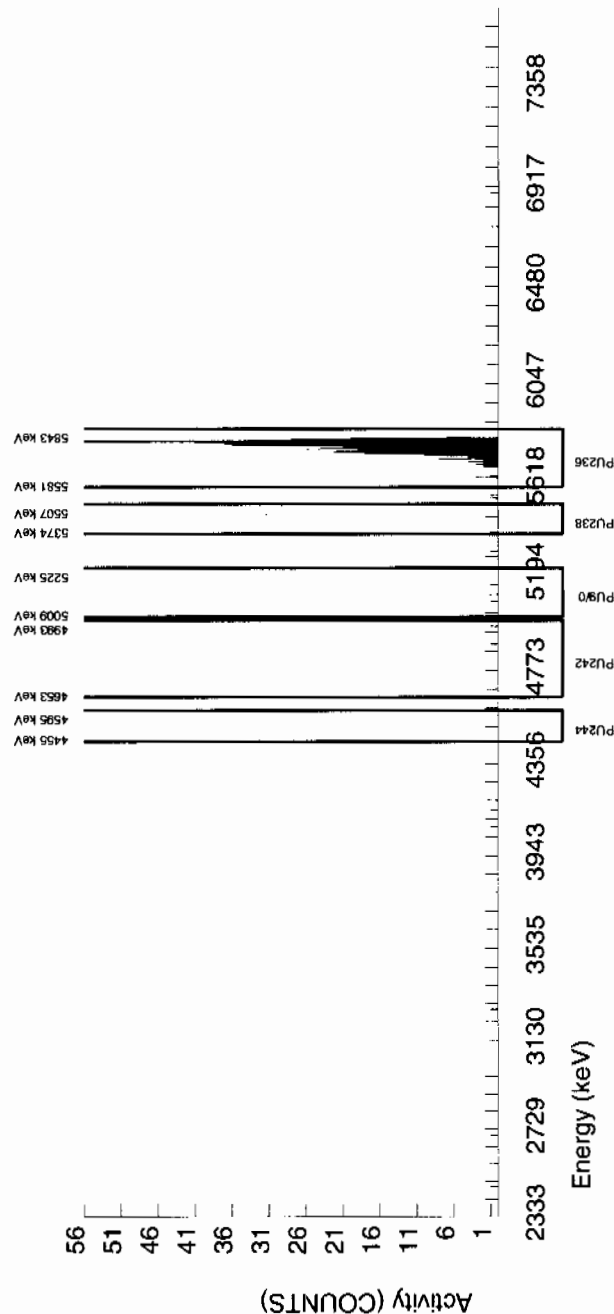
TRACER	MS/MSD	LCS/LCSD
ID : 1430-C	ID : 0244-B	ID : 0244-B
NUCLIDE : PU-236	NUCLIDE : PU-9/0	NUCLIDE : PU-9/0
NOMINAL : 3.0321E+00 dpm	NOMINAL : 4.1778E+01 pCi/g	NOMINAL : 4.1778E+01 pCi/g
RESULTS : 2.4615E+00 dpm		

## NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/g	TPU 1-SIGMA	DLG pCi/g	MDC pCi/g	UNC pCi/g
PU-236	5749.000	5768.294	26.813	490.000	490.000	0.000	0.0000	100.0000	1.09E+00	8.29E-02	0.00E+00	5.90E-03	4.91E-02
PU-238	5499.000	5389.579	4.931	1.000	0.388	0.612	2.4495	99.90000	8.45E-04	2.56E-03	1.11E-02	2.82E-02	2.55E-03
PU-9/0	5155.000	5119.669	73.970	2.000	1.388	0.612	1.9732	99.90000	3.02E-03	3.36E-03	8.97E-03	2.38E-02	3.36E-03
PU242	4890.000	4932.760	78.901	2.000	-1.673	3.673	*****	100.0000	-3.64E-03	4.49E-03	5.66E-01	1.14E+00	4.48E-03
PU-244	4589.000	4524.877	0.000	0.000	0.000	0.000	6.4609	99.90000	0.00E+00	2.18E-03	2.94E-02	6.47E-02	2.18E-03

## NOTES:

- \* BKG Sg calculated via blank population.
- (Sg updated 8-MAR-2010)
- \* BKG Sg of PU-236 calculated as sqrt(BKG AREA).



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 961201 SAMPLE ID : S0247797002_PU SAMPLE QTY : 1.256 G SAMPLE DATE : 17-FEB-2010 00:00:00 ANALYST : AYB1 % YIELD : 87.472	CHAMBER : 020 DETECTOR S/N : 78787 AVERAGE %EFFICIENCY : 34.9079 COUNT DATE : 17-MAR-2010 08:50:52 ELAPSED LIVE TIME(SEC) : 29042.66	LIB FILE : ENV_ALPHA_PU BKG FILE : B020.CNF:1105 BKG DATE : 14-MAR-2010 BKG LIVE TIME(SEC) : 59999.99 EFF FILE : W020.CNF:322 CAL DATE : 4-MAR-2010
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TRACER ID : 1430-C NUCLIDE : PU-236 NOMINAL : 3.0321E+00 dpm RESULTS : 2.6523E+00 dpm	MS/MSD ID : 0244-B NUCLIDE : PU-9/0 NOMINAL : 4.1778E+01 pCi/G	LCS/LCSD ID : 0244-B NUCLIDE : PU-9/0 NOMINAL : 4.1778E+01 pCi/G
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## NUCLIDE ACTIVITY SUMMARY

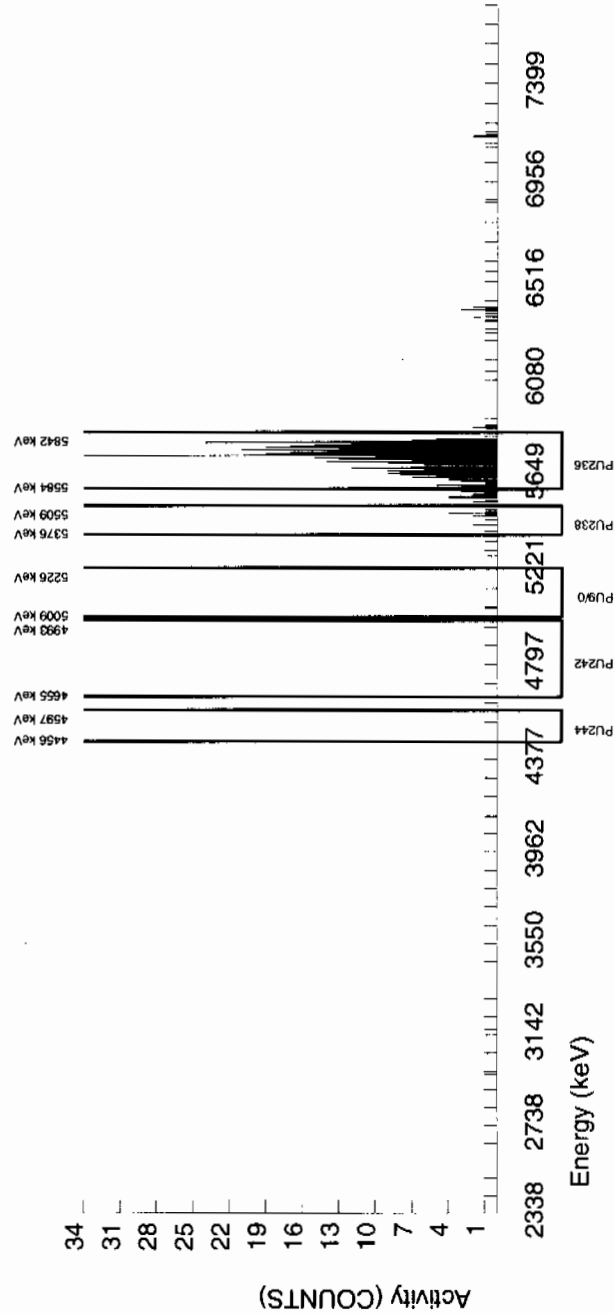
NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
PU-236	5749.000	5732.996	63.564	447.000	439.739	7.261	2.6946	100.0000	1.09E+00	8.70E-02	1.31E-02	3.28E-02	5.25E-02
PU-238	5499.000	5465.313	6.633	15.000	8.223	6.777	2.4495	99.900000	2.00E-02	1.05E-02	1.19E-02	3.04E-02	1.04E-02
PU-9/0	5155.000	5061.550	4.975	1.000	0.032	0.968	1.9732	99.900000	7.75E-05	2.95E-03	9.60E-03	2.58E-02	2.94E-03
PU242	4890.000	4823.531	0.000	1.000	0.516	0.484	*****	100.0000	1.25E-03	2.70E-03	6.06E-01	1.22E+00	2.70E-03
PU-244	4589.000	4526.460	0.000	0.000	0.000	0.000	6.4609	99.900000	0.00E+00	2.43E-03	3.14E-02	6.95E-02	2.43E-03

## NOTES:

\* BKG Sg calculated via blank population.

(Sg updated 8-MAR-2010)

\* BKG Sg of PU-236 calculated as sqrt(BKG AREA).



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 961201  
SAMPLE ID : S0247797003\_PU  
SAMPLE QTY : 1.253 G  
SAMPLE DATE : 17-FEB-2010 00:00:00  
ANALYST : AYB1  
% YIELD : 89.004

CHAMBER : 022  
DETECTOR S/N : 72530  
AVERAGE %EFFICIENCY : 32.3779  
COUNT DATE : 17-MAR-2010 08:50:52  
ELAPSED LIVE TIME(SEC) : 29045.69

LIB FILE : ENV\_ALPHA\_PU  
BKG FILE : B022.CNF;1117  
BKG DATE : 14-MAR-2010  
BKG LIVE TIME(SEC) : 59999.99  
EFF FILE : W022.CNF;320  
CAL DATE : 4-MAR-2010

TRACER ID : 1430-C  
NUCLIDE : PU-236  
NOMINAL : 3.0321E+00 dpm  
RESULTS : 2.6987E+00 dpm

MS/MSD ID : 0244-B  
NUCLIDE : PU-9/0  
NOMINAL : 4.1778E+01 pCi/G

LCS/LCSD ID : 0244-B  
NUCLIDE : PU-9/0  
NOMINAL : 4.1778E+01 pCi/G

## NUCLIDE ACTIVITY SUMMARY

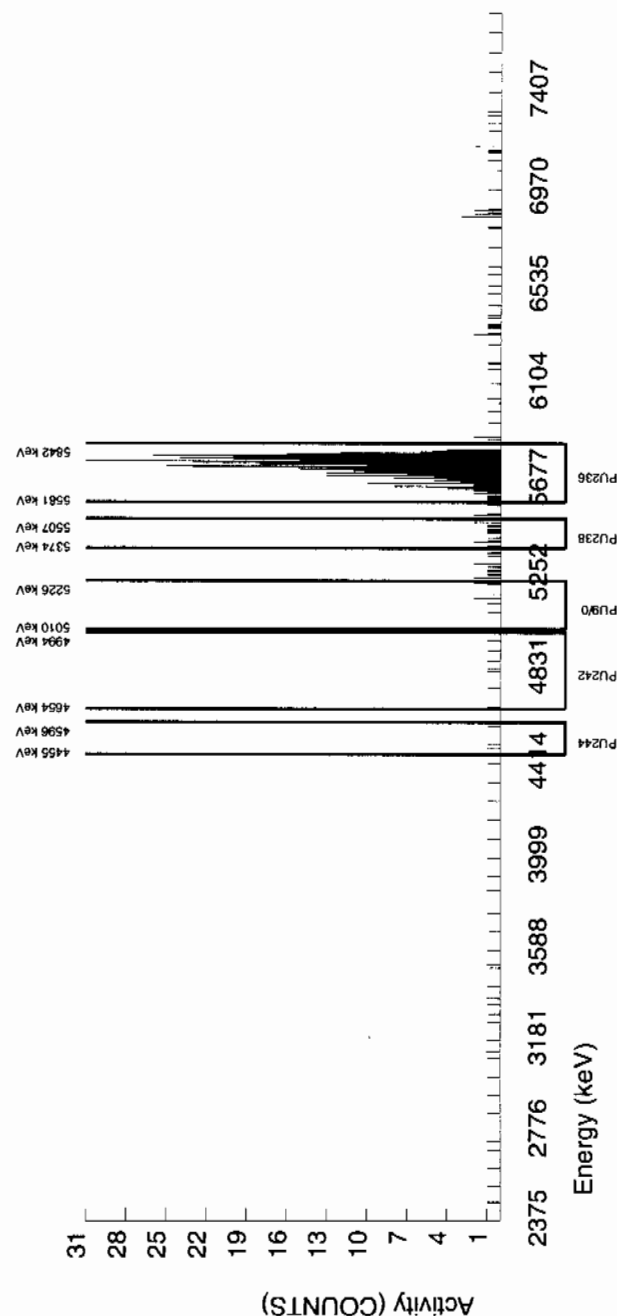
NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
PU-236	5749.000	5744.705	58.987	432.000	415.057	16.943	4.1162	100.0000	1.09E+00	9.02E-02	2.13E-02	4.95E-02	5.51E-02
PU-238	5499.000	5442.648	109.716	15.000	7.739	7.261	2.4495	99.900000	2.00E-02	1.12E-02	1.27E-02	3.23E-02	1.11E-02
PU-9/0	5155.000	5166.668	72.382	8.000	7.516	0.484	1.9732	99.900000	1.94E-02	7.51E-03	1.02E-02	2.74E-02	7.40E-03
PU242	4890.000	4887.382	134.780	3.000	2.032	0.968	*****	100.0000	5.24E-03	4.81E-03	6.44E-01	1.29E+00	4.80E-03
PU-244	4589.000	4486.603	4.992	1.000	1.000	0.000	6.4609	99.900000	2.58E-03	2.59E-03	3.34E-02	7.38E-02	2.58E-03

## NOTES:

\* BKG Sg calculated via blank population.

(Sg updated 8-MAR-2010)

\* BKG Sg of PU-236 calculated as sqrt(BKG AREA).



**GEL Laboratories LLC**  
**ALPHA SPECTROSCOPY REPORT**

BATCH NUMBER	: 961201
SAMPLE ID	: S024777
SAMPLE QTY	: 1.25
SAMPLE DATE	: 17-FEB-
ANALYST	: AYB1
% YIELD	: 82.630

CHAMBER	:	074
DETECTOR S/N	:	78266
AVERAGE %EFFICIENCY	:	31.7138
COUNT DATE	:	18-MAR-2010 20:59:49
ELAPSED LIVE TIME(SEC)	:	36729.53

LIB FILE	:	ENV_ALPHA.PU
BKG FILE	:	B074.CNF:1132
BKG DATE	:	14-MAR-2010
BKG LIVE TIME(SEC)	:	59999.99
EFF FILE	:	W074.CNF:334
CAL DATE	:	12-MAR-2010

TRACER ID : 1430-C  
NUCLIDE : PU-236  
NOMINAL : 3.0321E+00 dpm  
RESULTS : 2.5054E+00 dpm

MS/MSD  
ID : 0244-B  
NUCLIDE : PU-9/0  
NOMINAL : 4.1778E+01 pCi/G

LCS/LCSD ID	NUCLIDE	NOMINAL
1	137Cs	1000
2	137Cs	1000
3	137Cs	1000
4	137Cs	1000
5	137Cs	1000
6	137Cs	1000
7	137Cs	1000
8	137Cs	1000
9	137Cs	1000
10	137Cs	1000
11	137Cs	1000
12	137Cs	1000
13	137Cs	1000
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97	137Cs	1000
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99	137Cs	1000
100	137Cs	1000

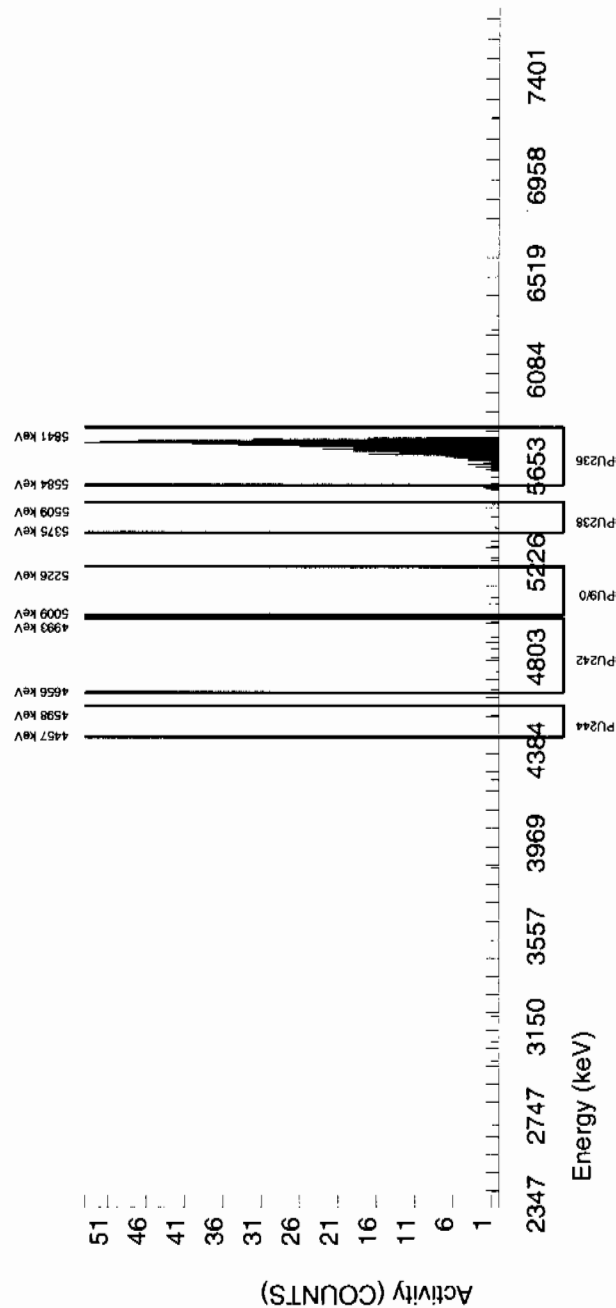
## NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLG pCi/G	MDC pCi/G	UNC pCi/G
PU-236	5749.000	5761.787	30.306	478.000	476.776	1.224	1.1065	100.0000	1.08E+00	8.37E-02	5.15E-03	1.64E-02	4.98E-02
PU-238	5499.000	5442.773	0.000	3.000	1.776	1.224	2.4495	99.900000	3.97E-03	4.33E-03	1.14E-02	2.89E-02	4.33E-03
PU-9/0	5155.000	5093.555	4.968	1.000	0.388	0.612	1.9732	99.900000	8.66E-04	2.62E-03	9.20E-03	2.45E-02	2.62E-03
PU242	4890.000	4834.701	293.098	6.000	4.776	1.224	*****	100.0000	1.07E-02	5.83E-03	5.81E-01	1.17E+00	5.79E-03
PU-244	4589.000	4511.905	99.355	2.000	0.164	1.836	6.4609	99.900000	3.65E-04	3.95E-03	3.01E-02	6.63E-02	3.95E-03

## NOTES:

\* BKG Sg calculated via blank population.  
(Sg updated 8-MAR-2010)

\* BKG Sg of PU-236 calculated as  $\sqrt{\text{BKG AREA}}$ .



# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 961201	CHAMBER : 024	LIB FILE : ENV_ALPHA_PU
SAMPLE ID : S0247797005_PU	DETECTOR S/N : 76542	BKG FILE : B024.CNF:1110
SAMPLE QTY : 1.250 G	AVERAGE %EFFICIENCY : 34.2324	BKG DATE : 14-MAR-2010
SAMPLE DATE : 17-FEB-2010 00:00:00	COUNT DATE : 17-MAR-2010 08:50:52	BKG LIVE TIME(SEC) : 59999.99
ANALYST : AYB1	ELAPSED LIVE TIME(SEC) : 29050.28	EFF FILE : W024.CNF:303
% YIELD : 83.601		CAL DATE : 4-MAR-2010

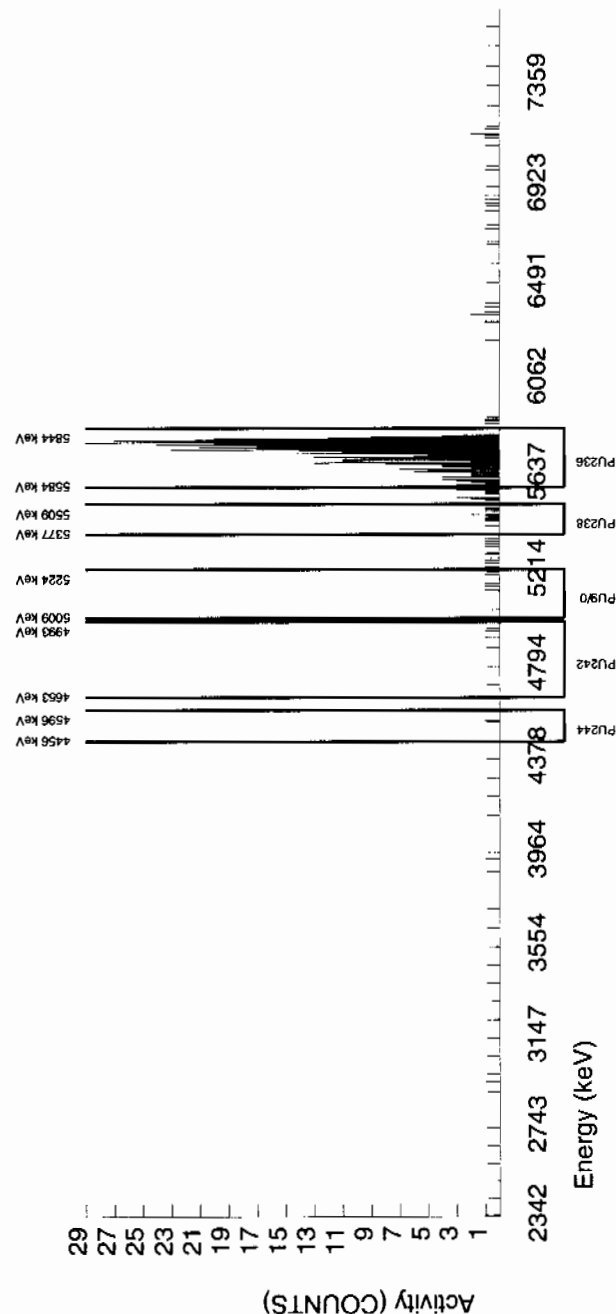
TRACER ID : 1430-C	MS/MSD ID : 0244-B	LCS/LCSD ID : 0244-B
NUCLIDE : PU-236	NUCLIDE : PU-9/0	NUCLIDE : PU-9/0
NOMINAL : 3.0321E+00 dpm	NOMINAL : 4.1778E+01 pCi/G	NOMINAL : 4.1778E+01 pCi/G
RESULTS : 2.5349E+00 dpm		

## NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	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-236	5749.000	5747.258	63.499	420.000	412.253	7.747	2.7833	100.0000	1.09E+00	8.96E-02	1.45E-02	3.61E-02	5.46E-02
PU-238	5499.000	5456.073	7.331	12.000	5.222	6.778	2.4495	99.900000	1.36E-02	1.02E-02	1.28E-02	3.26E-02	1.02E-02
PU-9/0	5155.000	5162.962	89.847	6.000	5.516	0.484	1.9732	99.900000	1.44E-02	6.57E-03	1.03E-02	2.76E-02	6.50E-03
PU242	4890.000	4877.897	204.650	3.000	2.032	0.968	*****	100.0000	5.28E-03	4.86E-03	6.50E-01	1.31E+00	4.84E-03
PU-244	4589.000	4554.362	4.991	1.000	0.516	0.484	6.4609	99.900000	1.34E-03	2.90E-03	3.37E-02	7.45E-02	2.89E-03

## NOTES:

- \* BKG Sg calculated via blank population.
- (Sg updated 8-MAR-2010)
- \* BKG Sg of PU-236 calculated as  $\sqrt{\text{BKG AREA}}$ .





# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 961201 SAMPLE ID : S1202061750_PU SAMPLE QTY : 1.000 G SAMPLE DATE : 11-MAR-2010 00:00:00 ANALYST : AYB1 % YIELD : 92.652	CHAMBER : 046 DETECTOR S/N : 76544 AVERAGE %EFFICIENCY : 35.0500 COUNT DATE : 17-MAR-2010 07:28:17 ELAPSED LIVE TIME(SEC) : 34199.26	LIB FILE : ENV_ALPHA_PU BKG FILE : B046.CNF:1125 BKG DATE : 14-MAR-2010 BKG LIVE TIME(SEC) : 59999.99 EFF FILE : W046.CNF:291 CAL DATE : 5-MAR-2010
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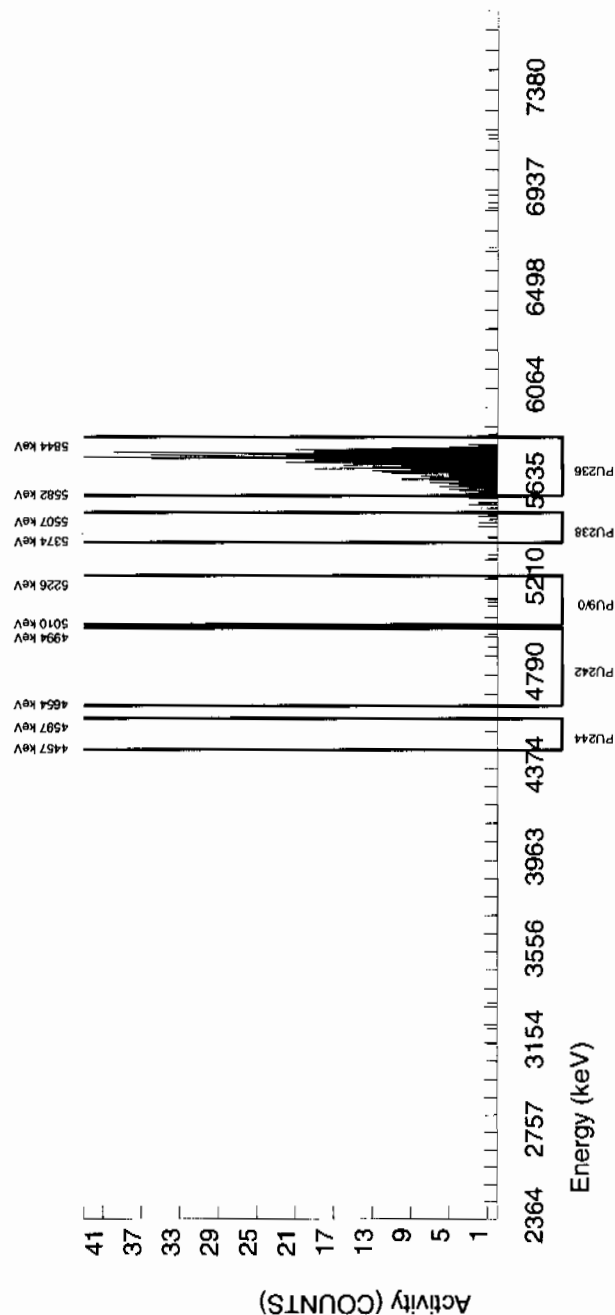
TRACER ID : 1430-C NUCLIDE : PU-236 NOMINAL : 2.9881E+00 dpm RESULTS : 2.7686E+00 dpm	MS/MSD ID : 0244-B NUCLIDE : PU-9/0 NOMINAL : 4.1778E+01 pCi/g	LCS/LCSD ID : 0244-B NUCLIDE : PU-9/0 NOMINAL : 4.1778E+01 pCi/g
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## NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	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-236	5749.000	5734.530	43.299	553.000	550.720	2.280	1.5100	100.0000	1.35E+00	9.89E-02	7.57E-03	2.17E-02	5.75E-02
PU-238	5499.000	5467.047	51.262	12.000	10.860	1.140	2.4495	99.900000	2.65E-02	8.81E-03	1.23E-02	3.12E-02	8.67E-03
PU-9/0	5155.000	5140.104	117.170	4.000	1.720	2.280	1.9732	99.900000	4.19E-03	5.61E-03	9.91E-03	2.64E-02	5.61E-03
PU242	4890.000	4944.193	58.585	2.000	0.290	1.710	*****	100.0000	7.06E-04	4.20E-03	6.25E-01	1.26E+00	4.20E-03
PU-244	4589.000	4526.790	0.000	0.000	-0.570	0.570	6.4609	99.900000	-1.39E-03	2.81E-03	3.24E-02	7.15E-02	2.80E-03

## NOTES:

- \* BKG Sg calculated via blank population.
- (Sg updated 8-MAR-2010)
- \* BKG Sg of PU-236 calculated as sqrt(BKG AREA).



**GEL Laboratories LLC**  
**ALPHA SPECTROSCOPY REPORT**

BATCH NUMBER	: 961201
SAMPLE ID	: S1202061751_PU
SAMPLE QTY	: 1.260 G
SAMPLE DATE	: 17-FEB-2010 00:00:00
ANALYST	: AYB1
% YIELD	: 77.408

CHAMBER : 048  
DETECTOR S/N : 42483  
AVERAGE %EFFICIENCY : 33.2770  
COUNT DATE : 17-MAR-2010 07:28:17  
ELAPSED LIVE TIME(SEC) : 34202.81

LIB FILE : ENV\_ALPHA\_PU  
BKG FILE : B048.CNF:1121  
BKG DATE : 14-MAR-2010  
BKG LIVE TIME(SEC) : 59999.99  
EFF FILE : W048.CNF:318  
CAL DATE : 5-MAR-2010

**TRACER**

ID : 1430-C  
NUCLIDE : PU-236  
NOMINAL : 3.0321E+00 dpm  
RESULTS : 2.3471E+00 dpm

## MS/MSD

ID : 0244-B  
NUCLIDE : PU-9/0  
NOMINAL : 4.1778E+01 pCi/G

## LCS/LCSD

ID : 0244-B  
NUCLIDE : PU-9/0  
NOMINAL : 4.1778E+01 pCi/G

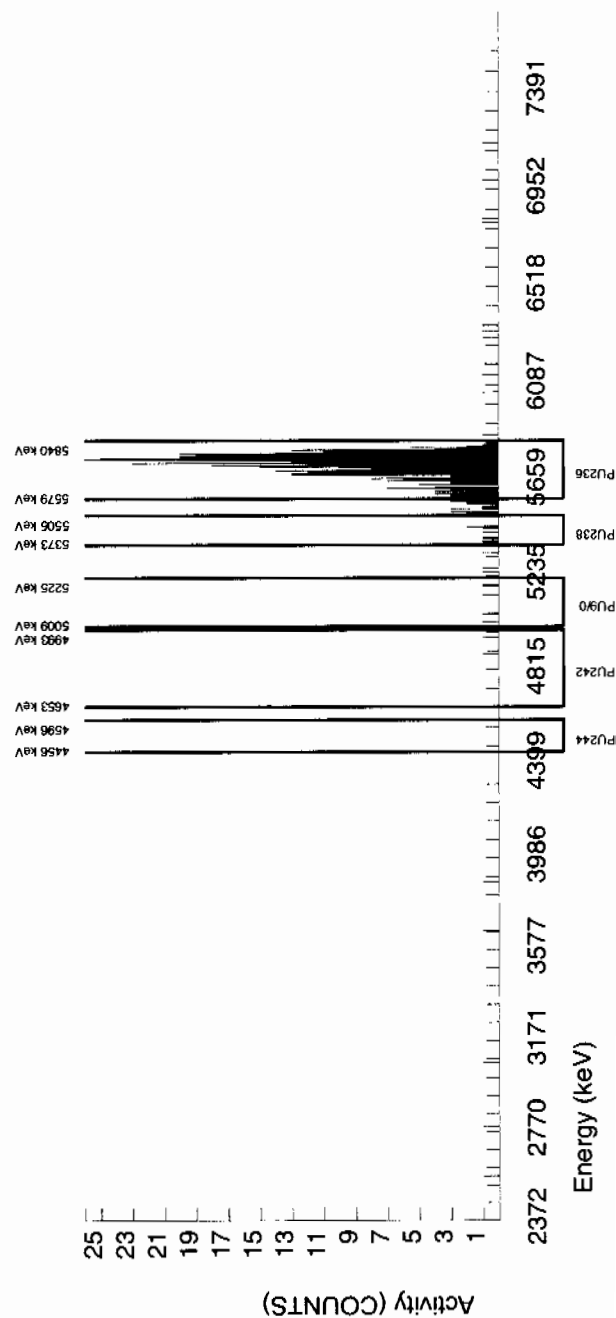
## NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	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-236	5749.000	5733.764	77.501	446.000	436.879	9.121	3.0201	100.0000	1.08E+00	8.72E-02	1.52E-02	3.69E-02	5.27E-02
PU-238	5499.000	5422.227	9.906	11.000	1.879	9.121	2.4495	99.90000	4.58E-03	9.82E-03	1.23E-02	3.12E-02	9.81E-03
PU-9/0	5155.000	5096.906	177.690	7.000	0.729	6.271	1.9732	98.90000	1.78E-03	7.93E-03	9.91E-03	2.64E-02	7.93E-03
PU242	4890.000	4925.159	74.295	2.000	0.290	1.710	*****	100.0000	7.06E-04	4.20E-03	6.25E-01	1.26E+00	4.20E-03
PU-244	4589.000	4525.932	0.000	0.000	0.000	0.000	6.4609	99.90000	0.00E+00	2.44E-03	3.25E-02	7.15E-02	2.44E-03

## NOTES:

\* BKG Sg calculated via blank population.  
(Sg updated 8-MAR-2010)

\* BKG Sg of PU-236 calculated as sqrt(BKG AREA).



GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 961201	CHAMBER : 045	LIB FILE : ENV_ALPHA_PU
SAMPLE ID : S1202061752_PU	DETECTOR S/N : 78783	BKG FILE : B045.CNF:1114
SAMPLE QTY : 0.106 G	AVERAGE %EFFICIENCY : 33.9687	BKG DATE : 14-MAR-2010
SAMPLE DATE : 11-MAR-2010 00:00:00	COUNT DATE : 17-MAR-2010 07:28:17	BKG LIVE TIME(SEC) : 59999.99
ANALYST : AYB1	ELAPSED LIVE TIME(SEC) : 34194.18	EFF FILE : W045.CNF:300
% YIELD : 90.357		CAL DATE : 5-MAR-2010

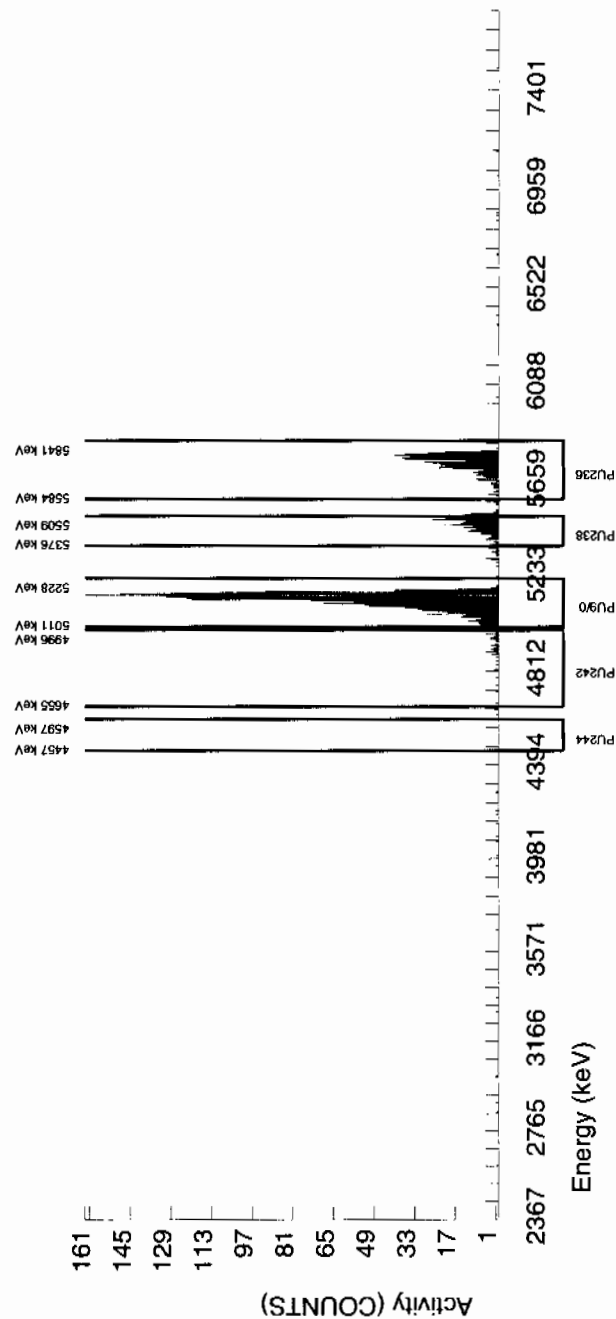
TRACER	MS/MSD	LCS/LCSD
ID : 1430-C	ID : 0244-B	ID : 0244-B
NUCLIDE : PU-236	NUCLIDE : PU-9/0	NUCLIDE : PU-9/0
NOMINAL : 2.9881E+00 dpm	NOMINAL : 4.1778E+01 pCi/G	NOMINAL : 4.1778E+01 pCi/G
RESULTS : 2.7000E+00 dpm		

## NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	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-236	5749.000	5748.433	67.271	521.000	520.430	0.570	0.7549	100.0000	1.27E+01	1.02E+00	3.78E-02	1.41E-01	5.57E-01
PU-238	5499.000	5472.456	0.000	256.000	256.000	0.000	2.4495	99.900000	6.23E+00	5.74E-01	1.23E-01	3.11E-01	3.89E-01
PU-9/0	5155.000	5135.736	39.358	1770.000	1769.430	0.570	1.9732	99.900000	4.30E+01	3.09E+00	9.89E-02	2.64E-01	1.02E+00
PU242	4890.000	4921.010	0.000	55.000	53.860	1.140	*****	100.0000	1.31E+00	2.02E-01	6.24E+00	1.25E+01	1.81E-01
PU-244	4589.000	4477.349	4.942	1.000	1.000	0.000	6.4609	99.900000	2.43E-02	2.44E-02	3.24E-01	7.14E-01	2.43E-02

## NOTES:

\* BKG Sg calculated via blank population.  
(Sg updated 8-MAR-2010)  
\* BKG Sg of PU-236 calculated as sqrt(BKG AREA).



# Radiochemistry Batch Checklist, Rev10

Batch# 961204

Product: U

Date: 3/18/10

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)	✓		Case narrative
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: S. [Signature]

3/18/10

Secondary Review Performed By: [Signature]

2/16/10

LANL

PL

# Uranium Que Sheet

04-MAR-10

Batch #: 961204 Analyst: AYBI First Client Due Date: 20-MAR-10 Internal Due Date: 09-MAR-10  
Tracer Isotope: U-236 Tracer Code: 1293-14 Expiration Date: 12/9/10 Vol: 0.1  
LCS Isotope: U-238 LCS Code: --- Expiration Date: --- Vol: ---  
Spike Isotope: U-238 Spike Code: --- Expiration Date: --- Vol: ---  
Prep Date: 3/4/10 Initials: AYB Pipet ID: 291058 Balance ID: 5010712

Witness: MDA 3/11/10

Sample ID	Client Description	Type	Hazard Code	Min CRDL	Matrix	Client	Collection Date	Pos.	Label #	Wet/Dry Aliquot (g/l/f)	U Det #
247549001-1	RE46-10-13324	SAMPLE		.1 pCi/g	SOIL	LANL010	18-FEB-10	1	1	0.507	1
247549002-1	RE46-10-13323	SAMPLE		.1 pCi/g	SOIL	LANL010	18-FEB-10	2	2	0.506	2
247549003-1	RE46-10-13361	SAMPLE		.1 pCi/g	SOIL	LANL010	18-FEB-10	3	3	0.513	3
247549004-1	RE46-10-13380	SAMPLE		.1 pCi/g	SOIL	LANL010	18-FEB-10	4	4	0.506	4
247551001-1	RE15-10-8349	SAMPLE		.1 pCi/g	SOIL	LANL010	15-FEB-10	5	5	0.504	5
247551002-1	RE15-10-8348	SAMPLE		.1 pCi/g	SOIL	LANL010	15-FEB-10	6	6	0.509	6
247797001-1	RE15-10-8317	SAMPLE		.1 pCi/g	SOIL	LANL010	17-FEB-10	7	7	0.506	7
247797002-1	RE15-10-8319	SAMPLE		.1 pCi/g	SOIL	LANL010	17-FEB-10	8	8	0.514	8
247797003-1	RE15-10-8316	SAMPLE		.1 pCi/g	SOIL	LANL010	17-FEB-10	9	9	0.505	9
247797004-1	RE15-10-8326	SAMPLE		.1 pCi/g	SOIL	LANL010	17-FEB-10	10	10	0.508	10
247797005-1	RE15-10-8318	SAMPLE		.1 pCi/g	SOIL	LANL010	17-FEB-10	11	11	0.508	11
248239001-1	RE11-10-1859	SAMPLE		.1 pCi/g	SOIL	LANL010	23-FEB-10	12	12	0.517	12
248239002-1	RE11-10-1860	SAMPLE		.1 pCi/g	SOIL	LANL010	23-FEB-10	13	13	0.520	13
248239003-1	RE11-10-1872	SAMPLE		.1 pCi/g	SOIL	LANL010	23-FEB-10	14	14	0.505	14
248239004-1	RE11-10-1857	SAMPLE		.1 pCi/g	SOIL	LANL010	23-FEB-10	15	15	0.500	15
248239005-1	RE11-10-1856	SAMPLE		.1 pCi/g	SOIL	LANL010	23-FEB-10	16	16	0.514	16
248239006-1	RE11-10-1858	SAMPLE		.1 pCi/g	SOIL	LANL010	23-FEB-10	17	17	0.515	17
248239007-1	RE11-10-1871	SAMPLE		.1 pCi/g	SOIL	LANL010	23-FEB-10	18	18	0.503	18
1202061756-1	MB for batch 961204	MB		.1 pCi/g	SOIL	QC ACCOUNT		19	19	1	129
1202061757-1	RE15-10-8317(247797001DUP)	DUP		.1 pCi/g	SOIL	QC ACCOUNT	17-FEB-10	20	20	0.505	130
1202061758-1	LCS for batch 961204	LCS		.1 pCi/g	SOIL	QC ACCOUNT		21	21	0.108	131

A SEM 0244-A exp. 10/31/20  
10/31/20  
10/31/10

Choose SOP used: GL-RAD-A-011

Solid Sample Dissolution by: LEACH OR DIGESTION

Data Reviewed By: [Signature] 3/18/10

# Blank Correction Report

**Batch ID 961204**

GEL Sample ID	Client sample ID	Parameter	Aliquot	Result	TPU	MDA	Aliquot Corrected Blank Result	Units	Activity <5X Corrected Blank
1202061757	DUP	Uranium-233/234	0.505 g	0.869	0.0915	0.138	.017366337	pCi/g	NO
		Uranium-235/236	0.505 g	0.0789	0.0226	0.0845	.008831683	pCi/g	NO
		Uranium-238	0.505 g	0.829	0.0878	0.0973	0	pCi/g	NO
1202061758	LCS	Uranium-233/234	0.108 g	6.03	0.564	0.492	.081203704	pCi/g	NO
		Uranium-235/236	0.108 g	0.302	0.0839	0.300	.041296296	pCi/g	NO
		Uranium-238	0.108 g	5.86	0.551	0.346	0	pCi/g	NO
1202061756	MB	Uranium-233/234	1.00 g	0.00877	0.00476	0.0509	.00877	pCi/g	YES
		Uranium-235/236	1.00 g	0.00446	0.00317	0.0311	.00446	pCi/g	YES
		Uranium-238	1.00 g	0.00	0.00361	0.0358	0	pCi/g	NO
247549001	RE46-10-13324	Uranium-233/234	0.507 g	0.887	0.0869	0.108	.017297830	pCi/g	NO
		Uranium-235/236	0.507 g	0.0617	0.0177	0.0662	.008796844	pCi/g	NO
		Uranium-238	0.507 g	0.880	0.0865	0.0761	0	pCi/g	NO
247549002	RE46-10-13323	Uranium-233/234	0.506 g	1.05	0.106	0.135	.017332016	pCi/g	NO
		Uranium-235/236	0.506 g	0.0531	0.0181	0.0822	.008814229	pCi/g	NO
		Uranium-238	0.506 g	1.06	0.106	0.0945	0	pCi/g	NO
247549003	RE46-10-13361	Uranium-233/234	0.513 g	0.928	0.0908	0.111	.017095517	pCi/g	NO
		Uranium-235/236	0.513 g	0.0826	0.022	0.0677	.008693957	pCi/g	NO
		Uranium-238	0.513 g	1.05	0.0999	0.0779	0	pCi/g	NO
247549004	RE46-10-13380	Uranium-233/234	0.506 g	0.841	0.078	0.0843	.017332016	pCi/g	NO
		Uranium-235/236	0.506 g	0.0295	0.014	0.0515	.008814229	pCi/g	YES
		Uranium-238	0.506 g	0.720	0.0691	0.0592	0	pCi/g	NO
247551001	RE15-10-8349	Uranium-233/234	0.504 g	0.958	0.0906	0.101	.017400794	pCi/g	NO
		Uranium-235/236	0.504 g	0.0621	0.0172	0.0619	.008849206	pCi/g	NO
		Uranium-238	0.504 g	1.45	0.127	0.0712	0	pCi/g	NO
247551002	RE15-10-8348	Uranium-233/234	0.509 g	0.886	0.0847	0.0988	.017229862	pCi/g	NO
		Uranium-235/236	0.509 g	0.0693	0.020	0.0603	.008762279	pCi/g	NO
		Uranium-238	0.509 g	0.960	0.0903	0.0694	0	pCi/g	NO
247797001	RE15-10-8317	Uranium-233/234	0.506 g	0.862	0.0897	0.130	.017332016	pCi/g	NO
		Uranium-235/236	0.506 g	0.0455	0.0164	0.0793	.008814229	pCi/g	NO
		Uranium-238	0.506 g	0.769	0.0827	0.0913	0	pCi/g	NO
247797002	RE15-10-8319	Uranium-233/234	0.514 g	0.815	0.0744	0.0775	.017062257	pCi/g	NO
		Uranium-235/236	0.514 g	0.051	0.016	0.0473	.008677043	pCi/g	NO
		Uranium-238	0.514 g	0.899	0.0805	0.0545	0	pCi/g	NO
247797003	RE15-10-8316	Uranium-233/234	0.505 g	0.948	0.0883	0.0929	.017366337	pCi/g	NO
		Uranium-235/236	0.505 g	0.0448	0.0161	0.0568	.008831683	pCi/g	NO
		Uranium-238	0.505 g	0.867	0.0819	0.0653	0	pCi/g	NO
247797004	RE15-10-8326	Uranium-233/234	0.503 g	0.824	0.088	0.136	.017435388	pCi/g	NO
		Uranium-235/236	0.503 g	0.0655	0.0203	0.0829	.008866799	pCi/g	NO
		Uranium-238	0.503 g	0.939	0.0974	0.0954	0	pCi/g	NO
247797005	RE15-10-8318	Uranium-233/234	0.509 g	0.822	0.0861	0.116	.017229862	pCi/g	NO
		Uranium-235/236	0.509 g	0.0675	0.0201	0.0718	.008762279	pCi/g	NO

## Blank Correction Report

GEL Sample ID	Client sample ID	Parameter	Aliquot	Result	TPU	MDA	Aliquot Corrected Blank Result	Units	Activity <5X Corrected Blank
247797005	RE15-10-8318	Uranium-238	0.509 g	0.809	0.0853	0.0821	0	pCi/g	NO
248239001	RE11-10-1859	Uranium-233/234	0.517 g	0.771	0.093	0.164	.016863250	pCi/g	NO
		Uranium-235/236	0.517 g	0.0238	0.0139	0.101	.008626682	pCi/g	YES
		Uranium-238	0.517 g	0.760	0.0918	0.116	0	pCi/g	NO
248239002	RE11-10-1860	Uranium-233/234	0.520 g	0.717	0.0869	0.159	.016865385	pCi/g	NO
		Uranium-235/236	0.520 g	0.0569	0.0227	0.0982	.008576923	pCi/g	NO
		Uranium-238	0.520 g	0.653	0.0978	0.112	0	pCi/g	NO
248239003	RE11-10-1872	Uranium-233/234	0.505 g	1.50	0.156	0.181	.017366337	pCi/g	NO
		Uranium-235/236	0.505 g	0.0892	0.0324	0.112	.008831683	pCi/g	NO
		Uranium-238	0.505 g	1.84	0.183	0.128	0	pCi/g	NO
248239004	RE11-10-1857	Uranium-233/234	0.500 g	2.76	0.242	0.143	.01754	pCi/g	NO
		Uranium-235/236	0.500 g	0.131	0.0316	0.0881	.00892	pCi/g	NO
		Uranium-238	0.500 g	3.06	0.265	0.101	0	pCi/g	NO
248239005	RE11-10-1856	Uranium-233/234	0.514 g	0.832	0.0996	0.175	.017062257	pCi/g	NO
		Uranium-235/236	0.514 g	0.0151	0.0164	0.108	.008677043	pCi/g	YES
		Uranium-238	0.514 g	0.809	0.0976	0.123	0	pCi/g	NO
248239006	RE11-10-1858	Uranium-233/234	0.515 g	0.899	0.101	0.157	.017029126	pCi/g	NO
		Uranium-235/236	0.515 g	0.053	0.0205	0.0968	.008660194	pCi/g	NO
		Uranium-238	0.515 g	1.02	0.111	0.111	0	pCi/g	NO
248239007	RE11-10-1871	Uranium-233/234	0.503 g	2.69	0.229	0.124	.017435388	pCi/g	NO
		Uranium-235/236	0.503 g	0.163	0.0351	0.0767	.008866799	pCi/g	NO
		Uranium-238	0.503 g	3.02	0.254	0.0877	0	pCi/g	NO

# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 961204  
 SAMPLE ID : S0247797001\_UU  
 SAMPLE QTY : 0.506 G  
 SAMPLE DATE : 17-FEB-2010 00:00:00  
 ANALYST : AYB1  
 % YIELD : 57.790

CHAMBER : 008  
 DETECTOR S/N : 78788  
 AVERAGE %EFFICIENCY : 33.4538  
 COUNT DATE : 17-MAR-2010 18:34:42  
 ELAPSED LIVE TIME(SEC) : 60000.00

LIB FILE : ENV\_ALPHA\_UU  
 BKG FILE : B008.CNF:1123  
 BKG DATE : 14-MAR-2010  
 BKG LIVE TIME(SEC) : 59999.99  
 EFF FILE : W008.CNF:345  
 CAL DATE : 4-MAR-2010

TRACER ID : 1283-H  
 NUCLIDE : U232  
 NOMINAL : 4.5037E+00 dpm  
 RESULTS : 2.6027E+00 dpm

MS/MSD ID : 0244-A  
 NUCLIDE : U-238  
 NOMINAL : 5.7500E+00 pCi/g

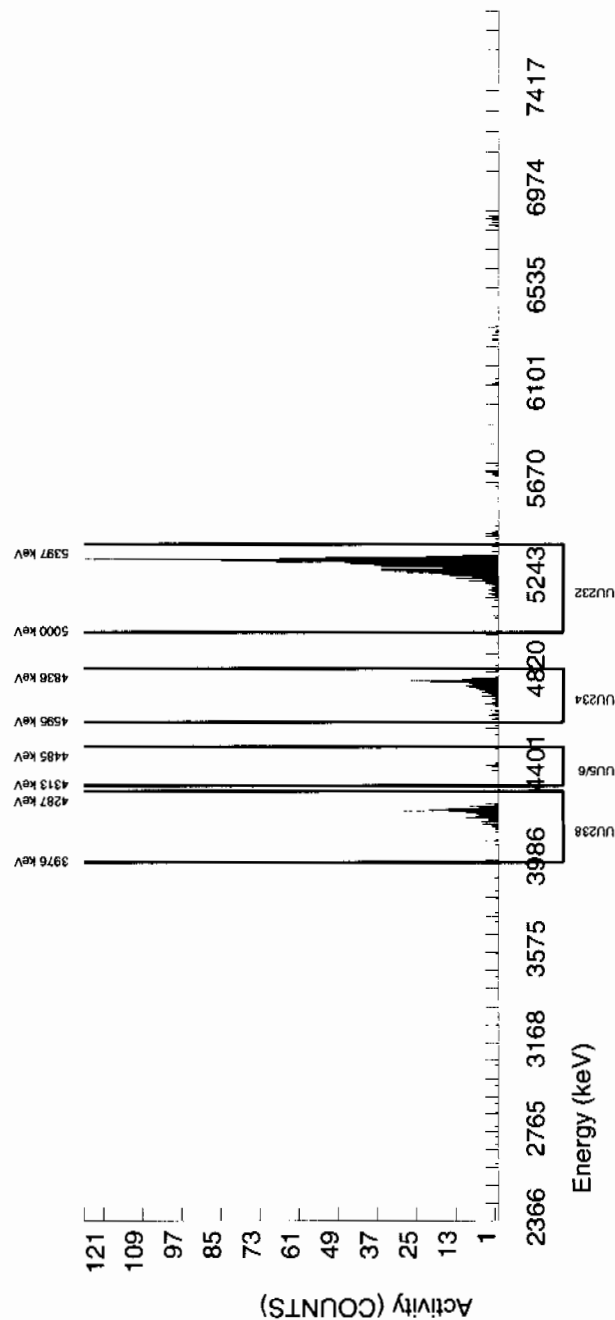
LCS/LCSD ID : 0244-A  
 NUCLIDE : U-238  
 NOMINAL : 5.7500E+00 pCi/g

## NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/g	TPU 1-SIGMA	DLC pCi/g	MDC pCi/g	UNC pCi/g
U232	5302.100	5307.536	17.078	878.000	870.000	8.000	2.8284	100.0000	4.01E+00	3.26E-01	3.03E-02	7.31E-02	1.37E-01
U-3/4	4763.020	4757.727	17.097	189.000	187.119	1.000	5.4790	100.0000	8.62E-01	8.97E-02	5.87E-02	1.30E-01	6.33E-02
U-235	4391.000	4413.111	19.854	8.000	8.000	0.000	2.4127	80.90000	4.55E-02	1.64E-02	3.19E-02	7.93E-02	1.61E-02
U-238	4184.730	4195.104	15.505	169.000	167.000	2.000	3.6781	100.0000	7.69E-01	8.27E-02	3.94E-02	9.13E-02	6.02E-02

## NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 8-MAR-2010)
- \* BKG Sg of U232 calculated as sqrt(BKG AREA).
- \* Corrections made to the following net area due to tracer impurity:  
U-3/4





GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 961204	CHAMBER : 009	LIB FILE : ENV_ALPHA_UU
SAMPLE ID : S0247797002_UU	DETECTOR S/N : 72528	BKG FILE : B009.CNF:1114
SAMPLE QTY : 0.514 G	AVERAGE %EFFICIENCY : 34.3260	BKG DATE : 14-MAR-2010
SAMPLE DATE : 17-FEB-2010 00:00:00	COUNT DATE : 17-MAR-2010 18:34:42	BKG LIVE TIME(SEC) : 59999.99
ANALYST : AYB1	ELAPSED LIVE TIME(SEC) : 60000.00	EFF FILE : W009.CNF:309
% YIELD : 92.899		CAL DATE : 4-MAR-2010

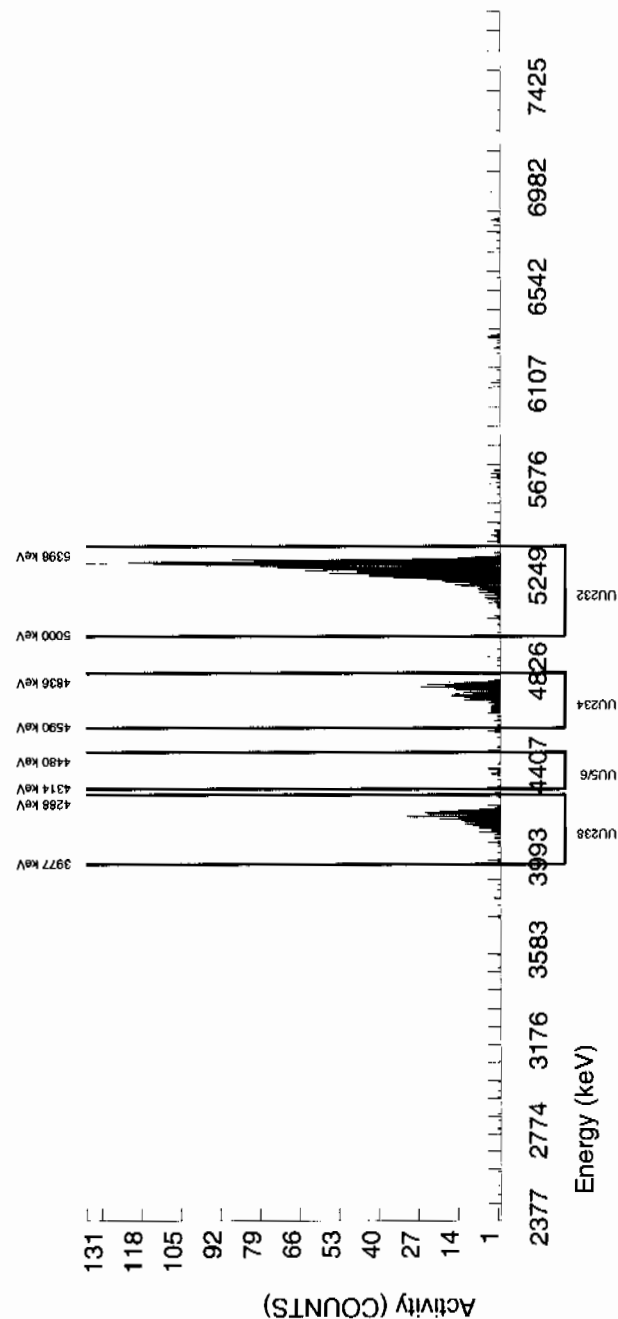
TRACER	MS/MSD	LCS/LCSD
ID : 1283-H	ID : 0244-A	ID : 0244-A
NUCLIDE : U232	NUCLIDE : U-238	NUCLIDE : U-238
NOMINAL : 4.5037E+00 dpm	NOMINAL : 5.7500E+00 pCi/G	NOMINAL : 5.7500E+00 pCi/G
RESULTS : 4.1839E+00 dpm		

## NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
U232	5302.100	5300.957	37.901	1441.000	1435.000	6.000	2.4495	100.0000	3.95E+00	2.97E-01	1.57E-02	3.88E-02	1.05E-01
U-3/4	4763.020	4752.494	64.582	298.000	296.547	0.000	5.4790	100.0000	8.15E-01	7.44E-02	3.50E-02	7.75E-02	4.73E-02
U-235	4391.000	4398.927	23.880	18.000	15.000	3.000	2.4127	80.90000	5.10E-02	1.60E-02	1.91E-02	4.73E-02	1.56E-02
U-238	4184.730	4184.653	41.080	328.000	327.000	1.000	3.6781	100.0000	8.99E-01	8.05E-02	2.35E-02	5.45E-02	4.98E-02

## NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 8-MAR-2010)
- \* BKG Sg of U232 calculated as sqrt(BKG AREA).
- \* Corrections made to the following net area due to tracer impurity:  
U-3/4

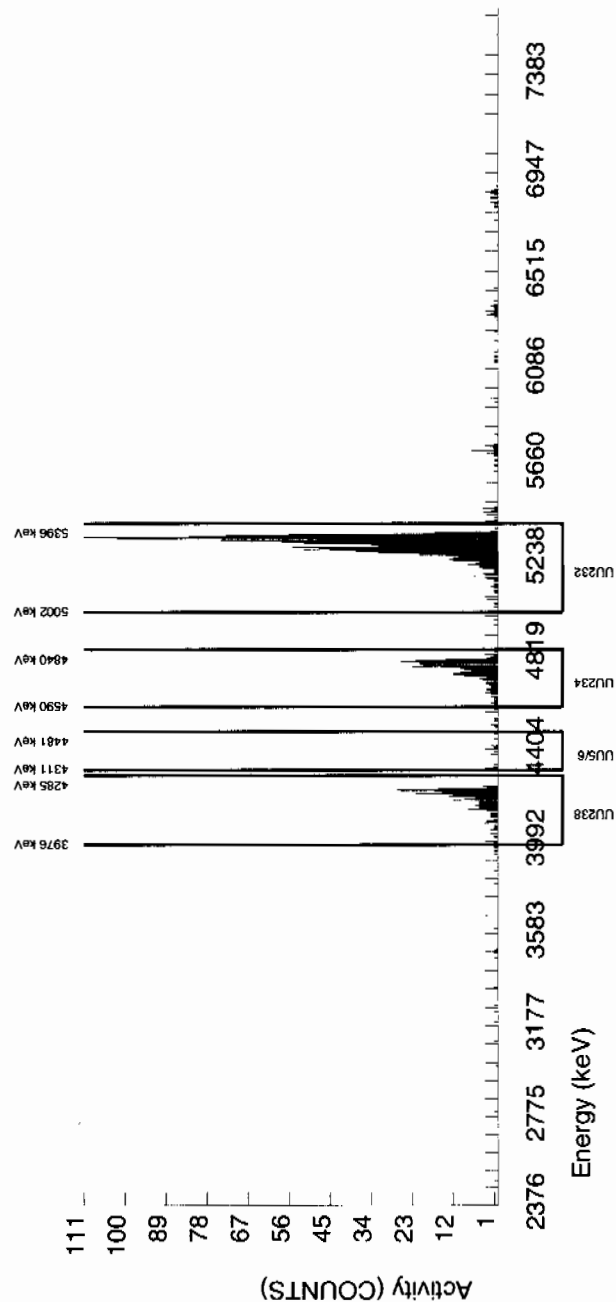


GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 961204 SAMPLE ID : S0247797003_UU SAMPLE QTY : 0.505 G SAMPLE DATE : 17-FEB-2010 00:00:00 ANALYST : AYB1 % YIELD : 86.344				CHAMBER : 010 DETECTOR S/N : 72529 AVERAGE %EFFICIENCY : 31.3468 COUNT DATE : 17-MAR-2010 18:34:42 ELAPSED LIVE TIME(SEC) : 60000.00				LIB FILE : ENV_ALPHA_UU BKG FILE : B010.CNF;1132 BKG DATE : 14-MAR-2010 BKG LIVE TIME(SEC) : 59999.99 EFF FILE : W010.CNF;337 CAL DATE : 4-MAR-2010					
TRACER ID : 1283-H NUCLIDE : U232 NOMINAL : 4.5037E+00 dpm RESULTS : 3.8887E+00 dpm				MS/MSD ID : 0244-A NUCLIDE : U-238 NOMINAL : 5.7500E+00 pCi/G				LCS/LCSD ID : 0244-A NUCLIDE : U-238 NOMINAL : 5.7500E+00 pCi/G					
NUCLIDE ACTIVITY SUMMARY													
NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
U232	5302.100	5305.543	36.286	1225.000	1218.000	7.000	2.6458	100.0000	4.02E+00	3.09E-01	2.03E-02	4.95E-02	1.16E-01
U-3/4	4763.020	4757.304	37.181	293.000	287.766	4.000	5.4790	100.0000	9.48E-01	8.83E-02	4.20E-02	9.29E-02	5.67E-02
U-235	4391.000	4411.690	39.718	13.000	11.000	2.000	2.4127	80.90000	4.48E-02	1.61E-02	2.29E-02	5.68E-02	1.58E-02
U-238	4184.730	4184.852	29.541	264.000	263.000	1.000	3.6781	100.0000	8.67E-01	8.19E-02	2.82E-02	6.53E-02	5.36E-02

## NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 8-MAR-2010)
- \* BKG Sg of U232 calculated as sqrt(BKG AREA).
- \* Corrections made to the following net area due to tracer impurity:  
U-3/4

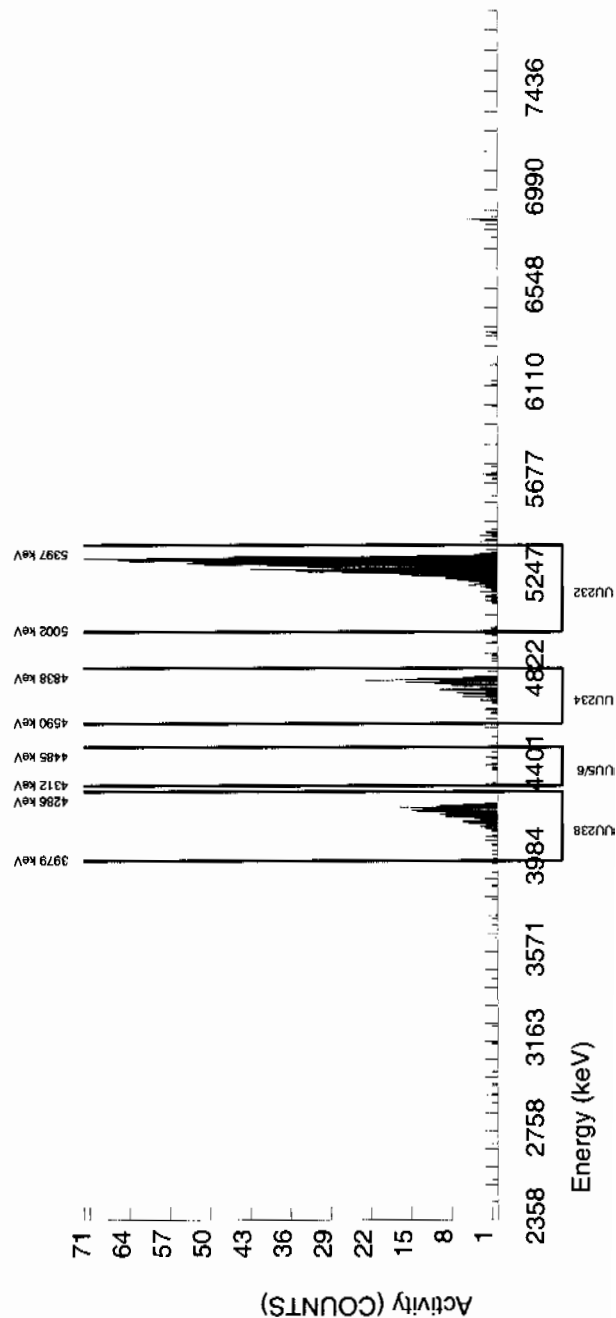


GEL Laboratories LLC  
ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 961204				CHAMBER : 011				LIB FILE : ENV_ALPHA_UU					
SAMPLE ID : S0247797004_UU				DETECTOR S/N : 72531				BKG FILE : B011.CNF;1124					
SAMPLE QTY : 0.503 G				AVERAGE %EFFICIENCY : 31.2445				BKG DATE : 14-MAR-2010					
SAMPLE DATE : 17-FEB-2010 00:00:00				COUNT DATE : 17-MAR-2010 18:34:42				BKG LIVE TIME(SEC) : 59999.99					
ANALYST : AYB1				ELAPSED LIVE TIME(SEC) : 60000.00				EFF FILE : W011.CNF;315					
% YIELD : 59.530								CAL DATE : 4-MAR-2010					
TRACER ID : 1283-H				MS/MSD ID : 0244-A				LCS/LCSD ID : 0244-A					
NUCLIDE : U232				NUCLIDE : U-238				NUCLIDE : U-238					
NOMINAL : 4.5037E+00 dpm				NOMINAL : 5.7500E+00 pCi/G				NOMINAL : 5.7500E+00 pCi/G					
RESULTS : 2.6810E+00 dpm													
NUCLIDE ACTIVITY SUMMARY													
NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
U232	5302.100	5305.035	60.595	847.000	837.000	10.000	3.1623	100.0000	4.03E+00	3.30E-01	3.54E-02	8.39E-02	1.41E-01
U-3/4	4763.020	4757.063	51.531	173.000	171.152	1.000	5.4790	100.0000	8.24E-01	8.80E-02	6.14E-02	1.36E-01	6.34E-02
U-235	4391.000	4412.476	34.741	11.000	11.000	0.000	2.4127	80.90000	6.55E-02	2.03E-02	3.34E-02	8.29E-02	1.97E-02
U-238	4184.730	4183.265	54.080	198.000	195.000	3.000	3.6781	100.0000	9.39E-01	9.74E-02	4.12E-02	9.54E-02	6.83E-02

## NOTES:

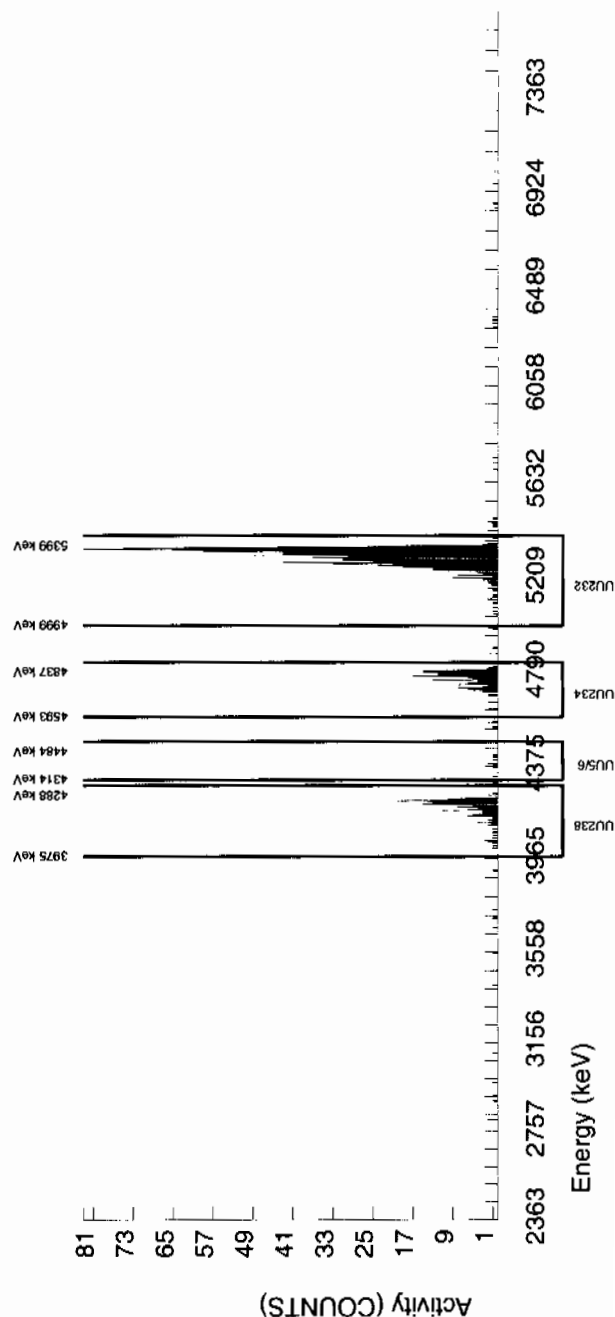
- \* BKG Sg calculated via blank population.  
(Sg updated 8-MAR-2010)
- \* BKG Sg of U232 calculated as sqrt(BKG AREA).
- \* Corrections made to the following net area due to tracer impurity:  
U-3/4



BATCH NUMBER : 961204			CHAMBER : 001			LIB FILE : ENV_ALPHA_UU							
SAMPLE ID : S0247797005_UU			DETECTOR S/N : 79451			BKG FILE : B001.CNF:1133							
SAMPLE QTY : 0.509 G			AVERAGE %EFFICIENCY : 34.8147			BKG DATE : 14-MAR-2010							
SAMPLE DATE : 17-FEB-2010 00:00:00			COUNT DATE : 18-MAR-2010 11:45:29			BKG LIVE TIME(SEC) : 60000.00							
ANALYST : AYB1			ELAPSED LIVE TIME(SEC) : 36313.16			EFF FILE : W001.CNF:384							
% YIELD : 92.260						CAL DATE : 4-MAR-2010							
TRACER ID : 1283-H			MS/MSD ID : 0244-A			LCS/LCSD ID : 0244-A							
NUCLIDE : U232			NUCLIDE : U-238			NUCLIDE : U-238							
NOMINAL : 4.5037E+00 dpm			NOMINAL : 5.7500E+00 pCi/G			NOMINAL : 5.7500E+00 pCi/G							
RESULTS : 4.1551E+00 dpm													
NUCLIDE ACTIVITY SUMMARY													
NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
U232	5302.100	5311.331	64.834	876.000	874.790	1.210	1.1002	100.0000	3.99E+00	3.23E-01	1.04E-02	3.32E-02	1.35E-01
U-3/4	4763.020	4765.102	44.457	182.000	180.509	0.605	5.4790	100.0000	8.22E-01	8.61E-02	5.20E-02	1.16E-01	6.13E-02
U-235	4391.000	4387.063	17.170	12.000	12.000	0.000	2.4127	80.90000	6.75E-02	2.01E-02	2.83E-02	7.18E-02	1.95E-02
U-238	4184.730	4193.751	49.658	179.000	177.790	1.210	3.6781	100.0000	8.09E-01	8.53E-02	3.49E-02	8.21E-02	6.10E-02

## NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 8-MAR-2010)
- \* BKG Sg of U232 calculated as  $\sqrt{\text{BKG AREA}}$ .
- \* Corrections made to the following net area  
due to tracer impurity:  
U-3/4



# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 961204	CHAMBER : 129	LIB FILE : ENV_ALPHA_UU
SAMPLE ID : S1202061756_UU	DETECTOR S/N : 76227	BKG FILE : B129.CNF;459
SAMPLE QTY : 1.000 G	AVERAGE %EFFICIENCY : 26.1672	BKG DATE : 14-MAR-2010
SAMPLE DATE : 11-MAR-2010 00:00:00	COUNT DATE : 17-MAR-2010 13:28:29	BKG LIVE TIME(SEC) : 60000.00
ANALYST : AYB1	ELAPSED LIVE TIME(SEC) : 60000.00	EFF FILE : W129.CNF;130
% YIELD : 95.452		CAL DATE : 18-FEB-2010

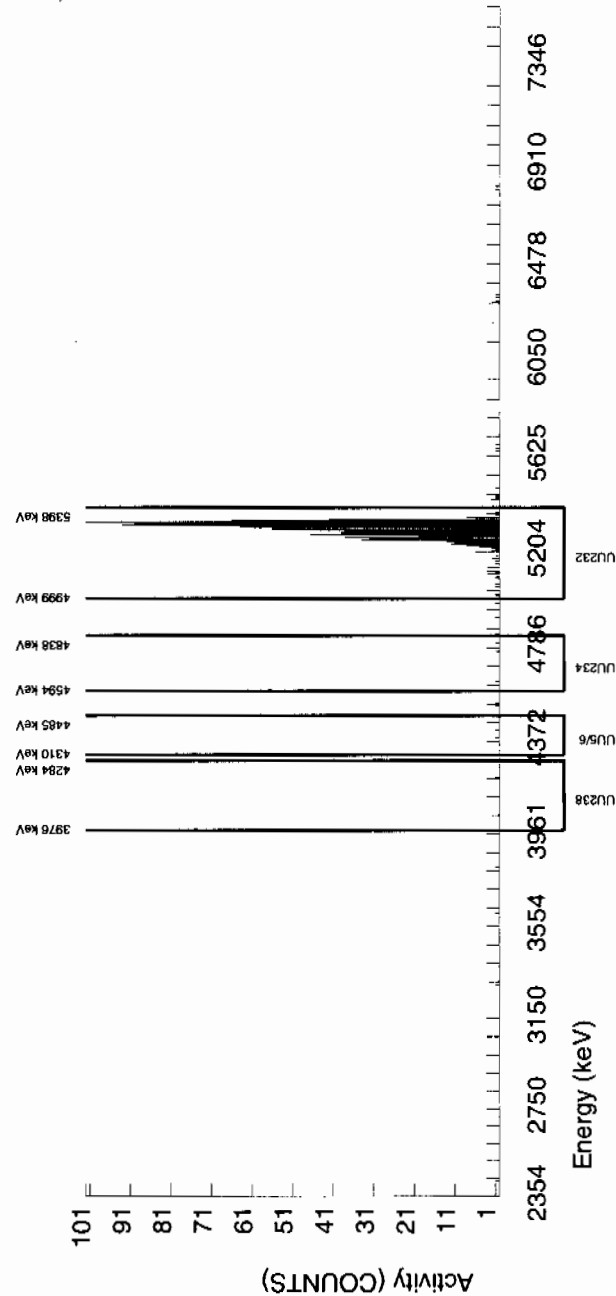
TRACER ID : 1283-H	MS/MSD ID : 0244-A	LCS/LCSD ID : 0244-A
NUCLIDE : U232	NUCLIDE : U-238	NUCLIDE : U-238
NOMINAL : 4.5010E+00 dpm	NOMINAL : 5.7500E+00 pCi/G	NOMINAL : 5.7500E+00 pCi/G
RESULTS : 4.2963E+00 dpm		

## NUCLIDE ACTIVITY SUMMARY

NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
U232	5302.100	5306.934	38.623	1124.000	1124.000	0.000	0.0000	100.0000	2.03E+00	1.55E-01	0.00E+00	4.89E-03	6.05E-02
U-3/4	4763.020	4714.521	0.000	7.000	4.862	1.000	5.4790	100.0000	8.77E-03	4.76E-03	2.30E-02	5.09E-02	4.72E-03
U-235	4391.000	4410.237	39.462	2.000	2.000	0.000	2.4127	80.90000	4.46E-03	3.17E-03	1.25E-02	3.11E-02	3.15E-03
U-238	4184.730	4211.996	14.798	2.000	0.000	2.000	3.6781	100.0000	0.00E+00	3.61E-03	1.54E-02	3.58E-02	3.61E-03

## NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 8-MAR-2010)
- \* BKG Sg of U232 calculated as sqrt(BKG AREA).
- \* Corrections made to the following net area due to tracer impurity:  
U-3/4

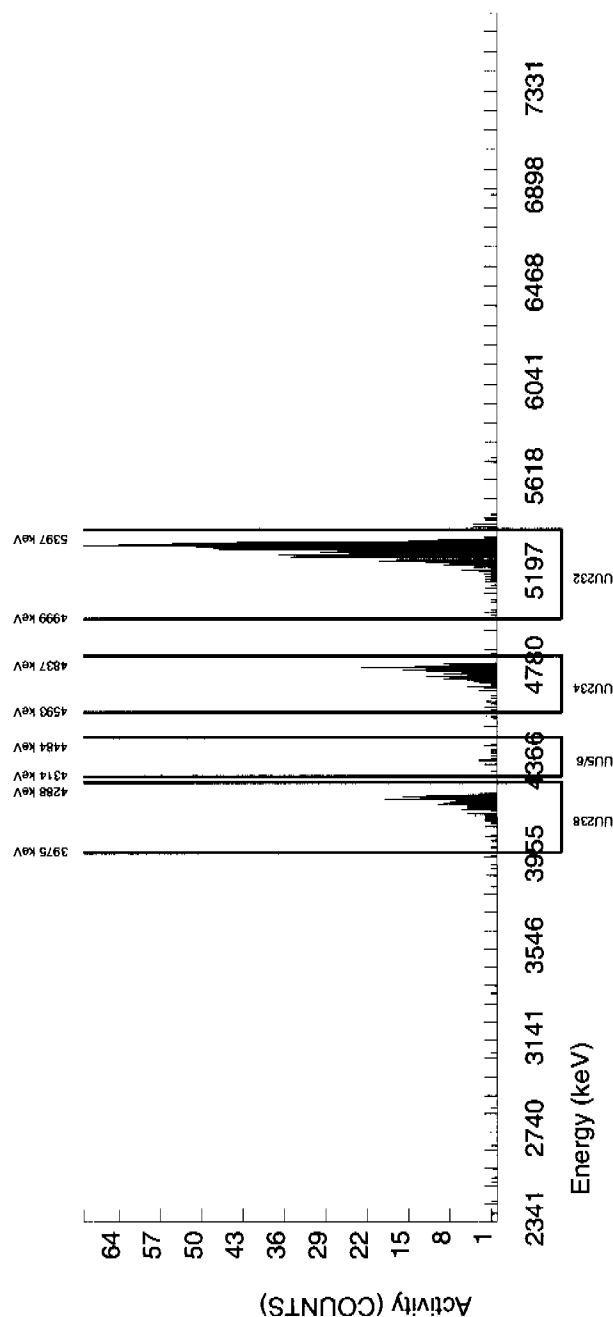


LIB FILE	:	ENV_ALPHA_UU
BKG FILE	:	B130.CNF:459
BKG DATE	:	14-MAR-2010
BKG LIVE TIME(SEC)	:	60000.00
EFF FILE	:	W130.CNF:132
CAL DATE	:	18-FEB-2010

LCS/LCSD	
ID	: 0244-A
NUCLIDE	: U-238
NOMINAL	: 5.7500EE

NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 8-MAR-2010)
- \* \* BKG Sg of U232 calculated as  $\sqrt{\text{BKG AREA}}$ .
- \* Corrections made to the following net area  
due to tracer impurity:  
U-3/4

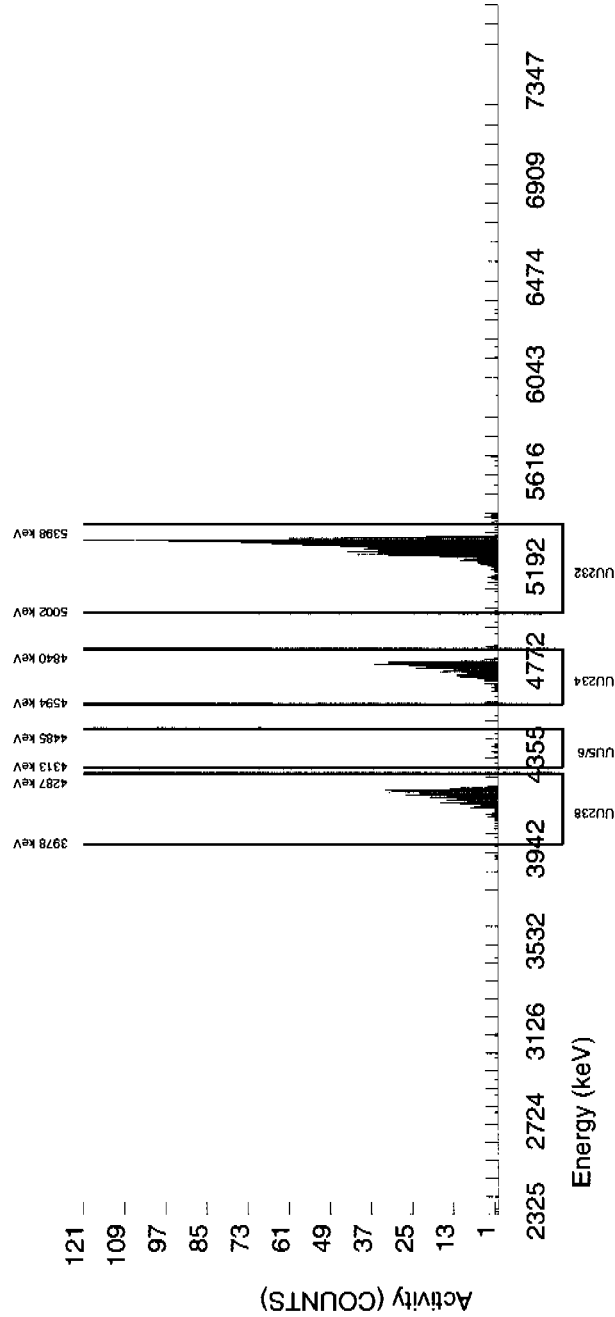


# GEL Laboratories LLC ALPHA SPECTROSCOPY REPORT

BATCH NUMBER : 961204 SAMPLE ID : S1202061758_UU SAMPLE QTY : 0.108 G SAMPLE DATE : 11-MAR-2010 00:00:00 ANALYST : AYB1 % YIELD : 93.536				CHAMBER : 131 DETECTOR S/N : 80008 AVERAGE %EFFICIENCY : 25.5629 COUNT DATE : 17-MAR-2010 13:28:33 ELAPSED LIVE TIME(SEC) : 60000.00				LIB FILE : ENV_ALPHA_UU BKG FILE : B131.CNF:457 BKG DATE : 14-MAR-2010 BKG LIVE TIME(SEC) : 60000.00 EFF FILE : W131.CNF:134 CAL DATE : 18-FEB-2010					
TRACER ID : 1283-H NUCLIDE : U232 NOMINAL : 4.5010E+00 dpm RESULTS : 4.2100E+00 dpm		MS/MSD ID : 0244-A NUCLIDE : U-238 NOMINAL : 5.7500E+00 pCi/G		LCS/LCSD ID : 0244-A NUCLIDE : U-238 NOMINAL : 5.7500E+00 pCi/G									
NUCLIDE ACTIVITY SUMMARY													
NUCLIDE	LIBRARY ENERGY	PEAK ENERGY	PEAK FWHM	GROSS AREA	NET AREA	BKG AREA	BKG Sg	%ABUN	ACTIVITY pCi/G	TPU 1-SIGMA	DLC pCi/G	MDC pCi/G	UNC pCi/G
U232	5302.100	5304.314	27.971	1078.000	1076.000	2.000	1.4142	100.0000	1.88E+01	1.55E+00	5.74E-02	1.62E-01	5.73E-01
U-3/4	4763.020	4759.739	35.459	347.000	345.910	0.000	5.4790	100.0000	6.03E+00	5.64E-01	2.22E-01	4.92E-01	3.24E-01
U-235	4391.000	4401.522	34.116	14.000	14.000	0.000	2.4127	80.90000	3.02E-01	8.39E-02	1.21E-01	3.00E-01	8.07E-02
U-238	4184.730	4189.964	40.458	336.000	336.000	0.000	3.6781	100.0000	5.86E+00	5.51E-01	1.49E-01	3.46E-01	3.20E-01

## NOTES:

- \* BKG Sg calculated via blank population.  
(Sg updated 8-MAR-2010)
- \* BKG Sg of U232 calculated as sqrt(BKG AREA).
- \* Corrections made to the following net area due to tracer impurity:  
U-3/4



# Radiochemistry Batch Checklist, Rev10

Batch# 957136 Product: 8-5 Date: 3/8/10

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: KDot 3/8/10

Secondary Review Performed By: Gi Hart 3/8/10

LANL  
3/9



# Gamma Spec Que Sheet

03/05/2010

Batch #: 957136 Analyst: CR/M/12 First Client Due Date: 03/09/2010 Internal Due Date: 02/27/2010  
 Gamma Spike Isotope: Mixed Gamma Spike Code: NA Expiration Date: NA Vol: NA Nominal Concentration: NA 6.38  
 Gamma LCS Isotope: Mixed Gamma LCS Code: 1032-A Expiration Date: 12/2/10 Vol: 1.00 mL Nominal Concentration: 5.553 15.90  
 Initials: MS Prep Date: 2/26/10 Library: SOLIP Witness: NA

Sample ID	Client Description / Container ID	Type	Hazard Code	Client	Matrix	Collect Date	Geometry	Aliquot (1/6) F	Detector	Sealing Date/Time (if Applicable)
247784002-1	WST15-10-11622	SAMPLE		LANL010	SOIL	17-FEB-10 12:00:00	CG	120.70	2	2/26/10
247790002-1	RE15-10-8386	SAMPLE		LANL010	SOIL	17-FEB-10 12:00:00	CG	120.93	6	
247790003-1	RE15-10-8387	SAMPLE		LANL010	SOIL	17-FEB-10 12:00:00	CG	111.69	23	
247797001-1	RE15-10-8317	SAMPLE		LANL010	SOIL	17-FEB-10 12:00:00	CG	128.85	5	
247797002-1	RE15-10-8319	SAMPLE		LANL010	SOIL	17-FEB-10 12:00:00	CG	143.98	7	
247797003-1	RE15-10-8316	SAMPLE		LANL010	SOIL	17-FEB-10 12:00:00	CG	129.87	11	
247797004-1	RE15-10-8326	SAMPLE		LANL010	SOIL	17-FEB-10 12:00:00	CG	138.46	4	
247797005-1	RE15-10-8318	SAMPLE		LANL010	SOIL	17-FEB-10 12:00:00	CG	134.33	6	
247809001-1	RE46-10-13335	SAMPLE		LANL010	SOIL	19-FEB-10 12:00:00	CG	132.54	15	
247809002-1	RE46-10-13322	SAMPLE		LANL010	SOIL	19-FEB-10 12:00:00	CG	117.29	22	
247809003-1	RE46-10-13321	SAMPLE		LANL010	SOIL	19-FEB-10 12:00:00	CG	126.49	1	
247809004-1	RE46-10-13333	SAMPLE		LANL010	SOIL	19-FEB-10 12:00:00	CG	126.04	9	
247809005-1	RE46-10-13336	SAMPLE		LANL010	SOIL	19-FEB-10 12:00:00	CG	117.52	14	
247809006-1	RE46-10-13327	SAMPLE		LANL010	SOIL	19-FEB-10 12:00:00	CG	134.91	17	
247809008-1	RE46-10-13325	SAMPLE		LANL010	SOIL	19-FEB-10 12:00:00	CG	129.75	18	
247809009-1	RE46-10-13326	SAMPLE		LANL010	SOIL	19-FEB-10 12:00:00	CG	127.53	21	
247809012-1	RE46-10-13362	SAMPLE		LANL010	SOIL	19-FEB-10 12:00:00	CG	124.74	20	
1202052272-1	MB	MB		QC ACCOUNT	SOIL	2/26/10	CG	143.98	10	
1202052273-1	DUP RE46-10-13335(247809001)	DUP		QC ACCOUNT	SOIL	2/26/10	CG	132.54	7	
1202052274-1	LCS	LCS		QC ACCOUNT	SOIL	2/26/10	CG	155.44	6	2

3/6/10

GEL Laboratories LLC, Radiochemistry Division

Data Reviewed By: WOST 3/8/10

Two b. story  
1 b. lies

# Failed RDL Report

Batch Id	Samp Id	Sample Type	Run Date	YIELD	Parmname	Result	MDA	RDL
957136	247784002	SAMPLE	05-MAR-10		Americium-241	0.2994	0.361	0.200
					Cerium-139	-0.01999	0.05579	0.050
					Sodium-22	0.02689	0.08853	0.080
957136	247790002	SAMPLE	05-MAR-10		Americium-241	-0.06284	0.2197	0.200
957136	247790003	SAMPLE	05-MAR-10		Americium-241	-0.3174	0.3583	0.200
					Cerium-139	0.02974	0.05596	0.050
					Sodium-22	-0.01377	0.09138	0.080
					Thorium-234	0.5738	3.105	2.00
957136	247797001	SAMPLE	05-MAR-10		Cerium-139	0.0387	0.06366	0.050
					Cesium-134	0.05422	0.1113	0.100
					Sodium-22	0.04605	0.1035	0.080
957136	247797002	SAMPLE	05-MAR-10		Cerium-139	0.00688	0.05351	0.050
957136	247797003	SAMPLE	05-MAR-10					
957136	247797004	SAMPLE	05-MAR-10		Americium-241	0.09625	0.3947	0.200
					Thorium-234	-0.1887	3.168	2.00
957136	247797005	SAMPLE	05-MAR-10		Americium-241	-0.1616	0.3462	0.200
					Cerium-139	-0.00268	0.06017	0.050
					Cesium-134	0.1134	0.1184	0.100
					Europium-152	0.0672	0.2058	0.200
					Sodium-22	0.00205	0.09402	0.080
					Thorium-234	1.696	3.085	2.00
957136	247809001	SAMPLE	05-MAR-10		Americium-241	-0.08072	0.5404	0.200
					Cerium-139	0.00264	0.06395	0.050
					Cesium-134	0.09552	0.1113	0.100
					Europium-152	0.00217	0.2167	0.200
					Sodium-22	0.01033	0.09235	0.080
					Thorium-234	0.2318	4.262	2.00
957136	247809002	SAMPLE	05-MAR-10		Americium-241	0.04182	0.2429	0.200
					Cerium-139	-0.02171	0.05053	0.050
957136	247809003	SAMPLE	05-MAR-10		Americium-241	-0.04399	0.3105	0.200
					Cerium-139	0.00601	0.05826	0.050
					Sodium-22	0.01431	0.09405	0.080
					Thorium-234	2.003	2.965	2.00
957136	247809004	SAMPLE	05-MAR-10		Americium-241	-0.1439	0.2695	0.200
					Cerium-139	-0.00138	0.05387	0.050
					Sodium-22	0.01853	0.08392	0.080
					Thorium-234	-0.09398	2.429	2.00
957136	247809005	SAMPLE	05-MAR-10		Americium-241	-0.1277	0.246	0.200
					Cerium-139	0.01313	0.05544	0.050
					Sodium-22	0.05543	0.09111	0.080
					Thorium-234	0.9532	2.303	2.00
957136	247809006	SAMPLE	05-MAR-10		Cesium-134	0.09935	0.1107	0.100
					Cesium-137	0.07992	0.1016	0.100
					Sodium-22	-0.00021	0.09581	0.080

Failed RDL Report

Batch Id	Samp Id	Sample Type	Run Date	YIELD	Parmname	Result	MDA	RDL
957136	247809008	SAMPLE	05-MAR-10		Americium-241	-0.02271	0.293	0.200
					Thorium-234	0.7292	2.544	2.00
957136	247809009	SAMPLE	05-MAR-10		Sodium-22	0.01264	0.09505	0.080
957136	247809012	SAMPLE	05-MAR-10		Cerium-139	0.01201	0.05097	0.050
					Sodium-22	0.0278	0.08419	0.080
957136	1202052272	MB	05-MAR-10					
957136	1202052273	DUP	05-MAR-10		Americium-241	0.03488	0.3213	0.200
					Cerium-139	-0.00471	0.05414	0.050
					Sodium-22	-0.01237	0.08179	0.080
957136	1202052274	LCS	08-MAR-10		Cerium-139	0.01681	0.0818	0.050
					Cesium-134	0.112	0.1771	0.100
					Europium-152	-0.06939	0.3047	0.200
					Mercury-203	0.02499	0.1171	0.100
					Ruthenium-106	-0.8931	0.9587	0.800
					Sodium-22	-0.01664	0.1013	0.080
					Thorium-234	0.3924	4.497	2.00
					Tin-113	0.00831	0.1603	0.100
					Uranium-235	0.1704	0.5833	0.500

# GEL QUALS

Batch ID: 957136

Report run on: March 8, 2010 12:04 PM

Samp Id	Parname	Cofa	Edd	Qual	Comments	Auto	Result	MDA	Uncert	SQL
247784002-1 05-MAR-2010 10:25	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.213			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		3.806			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.1448		.1	.1
	Cesium-137	UI	UI	UI	Data rejected due to high peak-width.		.1387		.1	.1
	Radium-224	UI	UI	UI	Data rejected due to interference.		5.213			
247790002-1 05-MAR-2010 10:26	Bismuth-211	UI	UI	UI	Data rejected due to interference.		3.416			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		3.87			
	Radium-224	UI	UI	UI	Data rejected due to interference.		3.873			
247790003-1 05-MAR-2010 10:26	Bismuth-211	UI	UI	UI	Data rejected due to interference.		3.04		.2	.2
	Bismuth-214	UI	UI	UI	Data rejected due to low abundance.		.8893			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		2.319			
	Radium-224	UI	UI	UI	Data rejected due to interference.		4.25			
	Radium-226	UI	UI	UI	Data rejected due to low abundance.		.8893			
247797001-1 05-MAR-2010 10:27	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.856			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		5.488			
	Radium-224	UI	UI	UI	Data rejected due to interference.		6.48			
247797002-1 05-MAR-2010 10:28	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.708			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		2.722			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.1194		.1	.1
	Mercury-203	UI	UI	UI	Data rejected due to interference.		.06999		.1	.1

# GEL QUALS

Batch ID: 957136

Report run on: March 8, 2010 12:04 PM

Samp Id	Parname	Cofa	Edd	Qual	Comments	Auto	Result	MDA	Uncert	SQL
247797002-1 05-MAR-2010 10:28	Radium-224	UI	UI	UI	Data rejected due to interference.		5.789			
	Strontium-85	UI	UI	UI	Data rejected due to low abundance.		.08566			
247797003-1 05-MAR-2010 10:29	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.98			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		3.926			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.09815		.1	.1
	Radium-224	UI	UI	UI	Data rejected due to interference.		4.376			
	Strontium-85	UI	UI	UI	Data rejected due to low abundance.		.0744			
247797004-1 05-MAR-2010 10:29	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.608			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		3.703			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.102		.1	.1
	Radium-224	UI	UI	UI	Data rejected due to interference.		4.579			
	Strontium-85	UI	UI	UI	Data rejected due to low abundance.		.07566			
247797005-1 05-MAR-2010 10:30	Bismuth-211	UI	UI	UI	Data rejected due to interference.		5.155			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		3.492			
	Radium-224	UI	UI	UI	Data rejected due to interference.		5.254			
247809001-1 05-MAR-2010 10:31	Bismuth-211	UI	UI	UI	Data rejected due to interference.		3.887			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		2.81			
	Radium-224	UI	UI	UI	Data rejected due to interference.		5.098			
	Strontium-85	UI	UI	UI	Data rejected due to low abundance.		.1406			

# GEL QUALS

Batch ID: 957136

Report run on: March 8, 2010 12:04 PM

Samp Id	Parmname	Cofa	Edd	Qual	Comments	Auto	Result	MDA	Uncert	SQL
247809002-1 05-MAR-2010 10:32	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.174			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		3.187			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.1207		.1	.1
	Radium-224	UI	UI	UI	Data rejected due to interference.		6.118			
	Strontium-85	UI	UI	UI	Data rejected due to low abundance.		.2135			
247809003-1 05-MAR-2010 10:33	Bismuth-211	UI	UI	UI	Data rejected due to interference.		3.774			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		2.318			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.1196		.1	.1
	Radium-224	UI	UI	UI	Data rejected due to interference.		4.133			
	Strontium-85	UI	UI	UI	Data rejected due to low abundance.		.122			
247809004-1 05-MAR-2010 10:34	Bismuth-211	UI	UI	UI	Data rejected due to interference.		3.979			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		3.498			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.1197		.1	.1
	Radium-224	UI	UI	UI	Data rejected due to interference.		4.542			
	Strontium-85	UI	UI	UI	Data rejected due to low abundance.		.0826			
247809005-1 05-MAR-2010 10:35	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.427			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		2.102			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.1382		.1	.1
	Radium-224	UI	UI	UI	Data rejected due to interference.		5.395			
	Strontium-85	UI	UI	UI	Data rejected due to low abundance.		.09389			

# GEL QUALS

Batch ID: 957136

Report run on: March 8, 2010 12:04 PM

Samp Id	Parname	Cofa	Edd	Qual	Comments	Auto	Result	MDA	Uncert	SQL
247809006-1 05-MAR-2010 10:35	Bismuth-211	UI	UI	UI	Data rejected due to interference.		3.349			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		3.361			
	Radium-224	UI	UI	UI	Data rejected due to interference.		3.655			
247809008-1 05-MAR-2010 10:36	Bismuth-211	UI	UI	UI	Data rejected due to interference.		3.616			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		2.45			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.08371		.1	.1
	Radium-224	UI	UI	UI	Data rejected due to interference.		3.978			
	Strontium-85	UI	UI	UI	Data rejected due to low abundance.		.07514			
247809009-1 05-MAR-2010 10:37	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.558			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		4.31			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.1482		.1	.1
	Radium-224	UI	UI	UI	Data rejected due to interference.		5.791			
247809012-1 05-MAR-2010 10:38	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.485			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		3.425			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.1501		.1	.1
	Radium-224	UI	UI	UI	Data rejected due to interference.		5.541			
1202052273-1 DUP 05-MAR-2010 13:05	Bismuth-211	UI	UI	UI	Data rejected due to interference.		4.371			
	Cadmium-109	UI	UI	UI	Data rejected due to interference.		2.54			
	Cesium-134	UI	UI	UI	Data rejected due to low abundance.		.1485		.1	.1
	Radium-224	UI	UI	UI	Data rejected due to interference.		5.179			

# GEL QUALS

Batch ID: 957136

Report run on: March 8, 2010 12:04 PM

Samp Id	Parmname	Cofa	Edd	Qual Comments	Auto	Result	MDA	Uncert	SQL
1202052273-1 DUP 05-MAR-2010 13:05	Strontium-85	UI	UI	UI		.07853			
				Data rejected due to low abundance.					



## Gamma Review Report based on Result &gt; MDA for Batch:957136

Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue
247784002	17-FEB-10 12:00	05-MAR-10 10:25	15.9	SAMPLE	LOAD	1	LANL	LANL01004GEL	N	RGSP
Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment
Actinium-228 ✓	1.847	0.2094	pCi/g	0.2692	N	910.7 3	1.94	IDENTIFIED 9.367	<input type="checkbox"/>	
Annihilation Rad. —	0.1562	0.0435	pCi/g	0.04713	N	510.7 1	2.004	IDENTIFIED 27.41	<input type="checkbox"/>	
Barium-137m HE	0.1313	0.04797	pCi/g	0.06453	N	662.2 2	5.29	IDENTIFIED 36.28	<input type="checkbox"/>	
Bismuth-211 INT	4.213	0.3696	pCi/g	0.3532	Y	351.5 2	1.231	IDENTIFIED 6.612	<input checked="" type="checkbox"/> UI	
Bismuth-214 ✓	1.306	0.1117	pCi/g	0.1332	0.200	608.9 2	1.659	IDENTIFIED 6.701	<input type="checkbox"/>	
Cadmium-109 INT	3.806	0.5984	pCi/g	1.35	Y	86.82 3	1.144	IDENTIFIED 14.92	<input checked="" type="checkbox"/> UI	
Cerium-143 —	1210	207.6	pCi/g	0	N	0 3	0	SHORT_HLIF 0	<input type="checkbox"/>	
Cesium-134 LA	0.1448	0.03379	pCi/g	0.1073	0.100	0 3	0	FAIL_ABUND 0	<input checked="" type="checkbox"/> UI	Data rejected due to low abundance.
Cesium-137 4 PW	0.1387	0.05068	pCi/g	0.06817	0.100	662.2 2	5.29	IDENTIFIED 36.28	<input checked="" type="checkbox"/> UI	Data rejected due to high peak-width.
Gross Gamma —	9.287	1.389	pCi/g	3.236	N	0			<input type="checkbox"/>	
Iodine-135 —	3.55E+16 0		pCi/g	0	N	0 3	0	SHORT_HLIF 0	<input type="checkbox"/>	
Lead-212 ✓	1.76	0.1282	pCi/g	0.1054	0.100	238.4 2	1.105	IDENTIFIED 3.64	<input type="checkbox"/>	
Lead-214 ✓	1.529	0.1406	pCi/g	0.1285	0.100	351.5 2	1.231	IDENTIFIED 6.612	<input type="checkbox"/>	
Neptunium-237 INT	1.109	0.2095	pCi/g	0.4011	N	86.82 3	1.144	IDENTIFIED 14.92	<input type="checkbox"/>	
Potassium-40 ✓	23.6	1.472	pCi/g	0.6183	1.00	1460 1	2.17	IDENTIFIED 4.037	<input type="checkbox"/>	
Radium-224 INT	5.213	0.8299	pCi/g	1.131	Y	241.3 1	1.895	IDENTIFIED 14.79	<input checked="" type="checkbox"/> UI	
Radium-226 ✓	1.306	0.1117	pCi/g	0.1332	Y	608.9 2	1.659	IDENTIFIED 6.701	<input type="checkbox"/>	
Radium-228 ✓	1.847	0.2094	pCi/g	0.2692	0.500	910.7 3	1.94	IDENTIFIED 9.367	<input type="checkbox"/>	
Thallium-208 ✓	0.4657	0.05652	pCi/g	0.06766	0.080	582.9 1	1.387	IDENTIFIED 11.06	<input type="checkbox"/>	
Thorium-228 NR	1.76	0.1282	pCi/g	0.1054	N	238.4 2	1.105	IDENTIFIED 3.64	<input type="checkbox"/>	
Thorium-232 NR	1.847	0.2094	pCi/g	0.2692	N	910.7 3	1.94	IDENTIFIED 9.367	<input type="checkbox"/>	
Thorium-234 ✓	4.821	1.613	pCi/g	2.785	2.00	63.13 2	0.9495	IDENTIFIED 32.23	<input type="checkbox"/>	
Tin-126 NR	0.3715	0.05842	pCi/g	0.1325	N	86.82 3	1.144	IDENTIFIED 14.92	<input type="checkbox"/>	
Total Uranium —	14.443	4.80E-06 ug/g		4.1461	N	0			<input type="checkbox"/>	
Uranium-238 HE	4.821	1.613	pCi/g	2.785	N	63.13 2	0.9495	IDENTIFIED 32.23	<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
247790002	17-FEB-10 12:00	05-MAR-10 10:26	15.9	SAMPLE	LOAD	1	LANL	LANL01004GEL	N	RGSP
Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment
Actinium-228 ✓	1.609	0.1886	pCi/g	0.1915	N	911.4 3	1.73	IDENTIFIED 10.01	<input type="checkbox"/>	
Annihilation Rad. —	0.1667	0.03584	pCi/g	0.04404	N	511 1	2	IDENTIFIED 20.97	<input type="checkbox"/>	
Bismuth-211 INT	3.416	0.2917	pCi/g	0.2895	Y	351.9 2	1.266	IDENTIFIED 6.571	<input checked="" type="checkbox"/> UI	
Bismuth-212 HE	1.782	0.3928	pCi/g	1.19	N	0 3	0	FAIL_ABUND 0	<input type="checkbox"/>	
Bismuth-214 ✓	1.046	0.09136	pCi/g	0.1061	0.200	609.3 2	1.084	IDENTIFIED 6.932	<input type="checkbox"/>	
Cadmium-109 INT	3.87	0.3808	pCi/g	1.08	Y	87.24 3	1.077	IDENTIFIED 8.604	<input checked="" type="checkbox"/> UI	
Cerium-143 —	560.8	130.6	pCi/g	0	N	0 3	0	SHORT_HLIF 0	<input type="checkbox"/>	
Gross Gamma —	8.889	1.188	pCi/g	2.769	N	0			<input type="checkbox"/>	
Iodine-133 HE	1677	5257	pCi/g	0	N	0 3	0	SHORT_HLIF 0	<input type="checkbox"/>	
Lead-212 ✓	1.385	0.09785	pCi/g	0.08265	0.100	238.6 2	0.931	IDENTIFIED 3.828	<input type="checkbox"/>	
Lead-214 ✓	1.24	0.1113	pCi/g	0.1053	0.100	351.9 2	1.266	IDENTIFIED 6.571	<input type="checkbox"/>	

Neptunium-237	INT	1.127	0.1621	pCi/g	0.3515	N	87.24	3	1.077	IDENTIFIED	8.604	<input type="checkbox"/>	
Potassium-40	✓	34.57	1.788	pCi/g	0.5153	1.00	1461	1	1.923	IDENTIFIED	2.725	<input type="checkbox"/>	
Radium-224	INT	3.873	0.6232	pCi/g	0.8859	Y	241.6	1	1.737	IDENTIFIED	15.12	<input checked="" type="checkbox"/>	UI
Radium-226	✓	1.046	0.09136	pCi/g	0.1061	Y	609.3	2	1.084	IDENTIFIED	6.932	<input type="checkbox"/>	
Radium-228	✓	1.609	0.1886	pCi/g	0.1915	0.500	911.4	3	1.73	IDENTIFIED	10.01	<input type="checkbox"/>	
Thallium-208	✓	0.4589	0.04501	pCi/g	0.05369	0.080	583.2	1	1.342	IDENTIFIED	8.469	<input type="checkbox"/>	
Thorium-228	NR	1.385	0.09785	pCi/g	0.08265	N	238.6	2	0.931	IDENTIFIED	3.828	<input type="checkbox"/>	
Thorium-232	NR	1.609	0.1886	pCi/g	0.1915	N	911.4	3	1.73	IDENTIFIED	10.01	<input type="checkbox"/>	
Thorium-234	✓	2.426	0.9054	pCi/g	1.767	2.00	63.65	2	1.194	IDENTIFIED	36.24	<input type="checkbox"/>	
Tin-126	NR	0.3778	0.03718	pCi/g	0.1059	N	87.24	3	1.077	IDENTIFIED	8.604	<input type="checkbox"/>	
Total Uranium	-	7.1967	2.69E-06	ug/g	2.6303	N		0				<input type="checkbox"/>	
Uranium-238	HE	2.426	0.9054	pCi/g	1.767	N	63.65	2	1.194	IDENTIFIED	36.24	<input type="checkbox"/>	

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Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quas	Zero?	queue
247790003	17-FEB-10 12:00	05-MAR-10 10:26	15.9	SAMPLE	LOAD	1	LANL	LANL01004IGEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act	Rpt Err(%)	Qual	Qual Comment		
Actinium-228	✓	1.655	0.197	pCi/g	0.2956	N	910.4	3	2.207	IDENTIFIED	10.32	<input type="checkbox"/>	
Annihilation Rad. HE		0.08871	0.04252	pCi/g	0.05998	N	510.2	1	2.474	IDENTIFIED	47.84	<input type="checkbox"/>	
Bismuth-211	INT	3.04	0.2558	pCi/g	0.3616	Y	351.4	2	1.336	IDENTIFIED	7.759	<input checked="" type="checkbox"/>	UI
Bismuth-212	HE	1.436	0.419	pCi/g	1.304	N	0	5	0	FAIL_ABUND	0	<input type="checkbox"/>	
Bismuth-214	✓	0.8893	0.09469	pCi/g	0.285	0.200	0	5	0	FAIL_ABUND	0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Cadmium-109	INT	2.319	0.5107	pCi/g	1.479	Y	87.01	3	0.8834	IDENTIFIED	21.49	<input checked="" type="checkbox"/>	UI
Cerium-143	—	1258	205.4	pCi/g	0	N	0	5	0	SHORT_HLIF	0	<input type="checkbox"/>	
Cesium-135	HE	0.4496	0.1424	pCi/g	0.2924	N	269.6	1	0.8403	IDENTIFIED	31.43	<input type="checkbox"/>	
Gross Gamma	—	8.266	1.291	pCi/g	2.724	N		0				<input type="checkbox"/>	
Lead-212	✓	1.416	0.07889	pCi/g	0.1051	0.100	238.3	2	1.109	IDENTIFIED	4.228	<input type="checkbox"/>	
Lead-214	✓	1.103	0.09769	pCi/g	0.143	0.100	351.4	2	1.336	IDENTIFIED	7.759	<input type="checkbox"/>	
Neptunium-237	HE	0.6754	0.1648	pCi/g	0.4636	N	87.01	3	0.8834	IDENTIFIED	21.49	<input type="checkbox"/>	
Niobium-95m	HE	0.481	0.09587	pCi/g	0.3071	N	0	5	0	NOT_IDENTI	0	<input type="checkbox"/>	
Potassium-40	✓	33.57	1.695	pCi/g	0.6584	1.00	1459	1	2.305	IDENTIFIED	3.389	<input type="checkbox"/>	
Radium-224	INT	4.25	0.5953	pCi/g	1.126	Y	241.2	1	2.281	IDENTIFIED	13.72	<input checked="" type="checkbox"/>	UI
Radium-226	LA	0.8893	0.09469	pCi/g	0.285	Y	0	5	0	FAIL_ABUND	0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Radium-228	✓	1.655	0.197	pCi/g	0.2956	0.500	910.4	3	2.207	IDENTIFIED	10.32	<input type="checkbox"/>	
Thallium-208	✓	0.4877	0.05098	pCi/g	0.07181	0.080	582.5	1	1.543	IDENTIFIED	9.937	<input type="checkbox"/>	
Thorium-228	NR	1.416	0.07889	pCi/g	0.1051	N	238.3	2	1.109	IDENTIFIED	4.228	<input type="checkbox"/>	
Thorium-232	NR	1.655	0.197	pCi/g	0.2956	N	910.4	3	2.207	IDENTIFIED	10.32	<input type="checkbox"/>	
Tin-126	HE	0.2264	0.04985	pCi/g	0.1522	N	87.01	3	0.8834	IDENTIFIED	21.49	<input type="checkbox"/>	

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Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quas	Zero?	queue
247797001	17-FEB-10 12:00	05-MAR-10 10:27	15.9	SAMPLE	LOAD	1	LANL	LANL01004IGEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy	***	FWHM	Comb Act	Rpt Err(%)	Qual	Qual Comment	
Actinium-228	✓	2.151	0.2188	pCi/g	0.2727	N	910.2	3	1.532	IDENTIFIED	7.947	<input type="checkbox"/>	
Annihilation Rad.	HE	0.1207	0.04627	pCi/g	0.0593	N	510.1	1	2.476	IDENTIFIED	38.2	<input type="checkbox"/>	
Bismuth-211	INT	4.856	0.3555	pCi/g	0.4018	Y	351.3	2	1.519	IDENTIFIED	6.159	<input checked="" type="checkbox"/>	UI
Bismuth-212	—	2.876	0.6385	pCi/g	1.534	N	0	5	0	FAIL_ABUND	0	<input type="checkbox"/>	
Bismuth-214	✓	1.672	0.1239	pCi/g	0.1516	0.200	608.6	2	1.475	IDENTIFIED	6.093	<input type="checkbox"/>	

Cadmium-109	INT	5.488	0.5402	pCi/g 1.155	Y	86.73	3	1.539	IDENTIFIED	9.074	<input checked="" type="checkbox"/>	UI
Cerium-143	—	2704	349.8	pCi/g 0	N	0	5	0	SHORT_HLIF	0	<input type="checkbox"/>	
Cesium-135	HE	0.4954	0.1246	pCi/g 0.2889	N	269.5	1	0.7655	IDENTIFIED	24.59	<input type="checkbox"/>	
Gross Gamma	—	12.18	1.576	pCi/g 4.118	N	0					<input type="checkbox"/>	
Iodine-133	HE	6907	7247	pCi/g 0	N	0	5	0	SHORT_HLIF	0	<input type="checkbox"/>	
Iodine-135	—	1.45E+15	0	pCi/g 0	N	0	5	0	SHORT_HLIF	0	<input type="checkbox"/>	
Lead-210	✓	2.544	0.6122	pCi/g 0.959	N	46.12	1	1.392	IDENTIFIED	23.75	<input type="checkbox"/>	
Lead-212	✓	2.245	0.1392	pCi/g 0.1133	0.100	238.1	2	1.266	IDENTIFIED	3.027	<input type="checkbox"/>	
Lead-214	✓	1.762	0.1379	pCi/g 0.1462	0.100	351.3	2	1.519	IDENTIFIED	6.159	<input type="checkbox"/>	
Neptunium-237	INT	1.599	0.2299	pCi/g 0.335	N	86.73	3	1.539	IDENTIFIED	9.074	<input type="checkbox"/>	
Niobium-95m	—	1.748	0.1444	pCi/g 0.4198	N	0	5	0	NOT_IDENTI	0	<input type="checkbox"/>	
Potassium-40	✓	36.11	1.544	pCi/g 0.6908	1.00	1459	1	2.233	IDENTIFIED	2.933	<input type="checkbox"/>	
Radium-224	INT	6.48	0.7577	pCi/g 1.214	Y	241.2	1	1.732	IDENTIFIED	10.62	<input checked="" type="checkbox"/>	UI
Radium-226	✓	1.672	0.1239	pCi/g 0.1516	Y	608.6	2	1.475	IDENTIFIED	6.093	<input type="checkbox"/>	
Radium-228	✓	2.151	0.2188	pCi/g 0.2727	0.500	910.2	3	1.532	IDENTIFIED	7.947	<input type="checkbox"/>	
Thallium-208	✓	0.7045	0.06107	pCi/g 0.07516	0.080	582.6	1	1.407	IDENTIFIED	7.853	<input type="checkbox"/>	
Thorium-228	NR	2.245	0.1392	pCi/g 0.1133	N	238.1	2	1.266	IDENTIFIED	3.027	<input type="checkbox"/>	
Thorium-232	NR	2.151	0.2188	pCi/g 0.2727	N	910.2	3	1.532	IDENTIFIED	7.947	<input type="checkbox"/>	
Thorium-234	✓	1.959	0.5944	pCi/g 1.263	2.00	62.93	2	1.168	IDENTIFIED	28.95	<input type="checkbox"/>	
Tin-126	NR	0.5358	0.05274	pCi/g 0.1126	N	86.73	3	1.539	IDENTIFIED	9.074	<input type="checkbox"/>	
Total Uranium	—	5.9643	1.77E-06 ug/g	1.8821	N	0					<input type="checkbox"/>	
Uranium-238	HE	1.959	0.5944	pCi/g 1.263	N	62.93	2	1.168	IDENTIFIED	28.95	<input type="checkbox"/>	

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Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue	
247797002	17-FEB-10 12:00	05-MAR-10 10:28	15.9	SAMPLE	LOAD	1	LANL	LANL01004GEL	N	RGSP	
Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment	
Actinium-228	✓	2.343	0.2055	pCi/g 0.2335	N	911.6	3	1.887 IDENTIFIED	6.402	<input type="checkbox"/>	
Annihilation Rad.	—	0.198	0.03682	pCi/g 0.04727	N	511.1	1	2.03 IDENTIFIED	18.06	<input type="checkbox"/>	
Bismuth-211	INT	4.708	0.3407	pCi/g 0.3628	Y	352.1	2	1.184 IDENTIFIED	5.678	<input checked="" type="checkbox"/>	UI
Bismuth-212	—	2.266	0.3764	pCi/g 1.252	N	0	4	0 FAIL_ABUND	0	<input type="checkbox"/>	
Bismuth-214	✓	1.556	0.118	pCi/g 0.1154	0.200	609.6	2	1.711 IDENTIFIED	5.523	<input type="checkbox"/>	
Cadmium-109	INT	2.722	0.5467	pCi/g 1.232	Y	87.36	3	1.218 IDENTIFIED	19.53	<input checked="" type="checkbox"/>	UI
Cerium-143	—	1023	165.7	pCi/g 0	N	0	4	0 SHORT_HLIF	0	<input type="checkbox"/>	
Cesium-134	LA	0.1194	0.04244	pCi/g 0.09375	0.100	0	4	0 FAIL_ABUND	0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Gross Gamma	—	11.89	1.61	pCi/g 4.762	N	0				<input type="checkbox"/>	
Lead-212	✓	2.209	0.1222	pCi/g 0.09701	0.100	238.8	2	1.1 IDENTIFIED	2.741	<input type="checkbox"/>	
Lead-214	✓	1.709	0.1323	pCi/g 0.132	0.100	352.1	2	1.184 IDENTIFIED	5.678	<input type="checkbox"/>	
Mercury-203	INT	0.06999	0.02745	pCi/g 0.06607	0.100	278.1	1	0.8814 IDENTIFIED	38.98	<input checked="" type="checkbox"/>	UI
Neptunium-237	INT	0.7929	0.1796	pCi/g 0.4019	N	87.36	3	1.218 IDENTIFIED	19.53	<input type="checkbox"/>	
Potassium-40	✓	37	1.849	pCi/g 0.5419	1.00	1461	1	1.864 IDENTIFIED	2.556	<input type="checkbox"/>	
Radium-224	INT	5.789	0.6547	pCi/g 1.04	Y	241.8	1	1.828 IDENTIFIED	10.49	<input checked="" type="checkbox"/>	UI
Radium-226	✓	1.556	0.118	pCi/g 0.1154	Y	609.6	2	1.711 IDENTIFIED	5.523	<input type="checkbox"/>	
Radium-228	✓	2.343	0.2055	pCi/g 0.2335	0.500	911.6	3	1.887 IDENTIFIED	6.402	<input type="checkbox"/>	
Strontium-85	LA	0.08566	0.02137	pCi/g 0.07371	Y	0	4	0 NOT_IDENTI	0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Thallium-208	✓	0.6982	0.05521	pCi/g 0.05674	0.080	583.5	1	1.426 IDENTIFIED	6.301	<input type="checkbox"/>	
Thorium-228	NR	2.209	0.1222	pCi/g 0.09701	N	238.8	2	1.1 IDENTIFIED	2.741	<input type="checkbox"/>	

Thorium-232	NR	2.343	0.2055	pCi/g	0.2335	N	911.6	3	1.887	IDENTIFIED	6.402	<input type="checkbox"/>	
Tin-126	NR	0.2657	0.05337	pCi/g	0.1206	N	87.36	3	1.218	IDENTIFIED	19.53	<input type="checkbox"/>	
Total Uranium	✓	4.1718	2.19E-06	ug/g	2.5576	N	0					<input type="checkbox"/>	

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Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue
247797003	17-FEB-10 12:00	05-MAR-10 10:29	15.9	SAMPLE	LOAD	1	LANL	LANL01004IGEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment		
Actinium-228	✓	1.93	0.1967	pCi/g	0.2453	N	911.6	3	1.664	IDENTIFIED 8.056	<input type="checkbox"/>	
Annihilation Rad.	—	0.1455	0.03744	pCi/g	0.04584	N	511.1	1	1.596	IDENTIFIED 25.17	<input type="checkbox"/>	
Bismuth-211	INT	4.99	0.4094	pCi/g	0.3028	Y	352	2	1.17	IDENTIFIED 4.906	<input checked="" type="checkbox"/>	UI
Bismuth-212	HE	2.071	0.4233	pCi/g	1.231	N	0	5	0	FAIL_ABUND 0	<input type="checkbox"/>	
Bismuth-214	✓	1.437	0.1117	pCi/g	0.09625	0.200	609.4	2	1.294	IDENTIFIED 5.323	<input type="checkbox"/>	
Cadmium-109	INT	3.926	0.5168	pCi/g	1.035	Y	87.29	3	1.191	IDENTIFIED 12.29	<input checked="" type="checkbox"/>	UI
Cerium-143	—	510.3	129.6	pCi/g	0	N	0	5	0	SHORT_HLIF 0	<input type="checkbox"/>	
Cesium-134	LA	0.09815	0.04584	pCi/g	0.0963	0.100	0	5	0	FAIL_ABUND 0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Gross Gamma	—	11.7	1.522	pCi/g	3.41	N	0				<input type="checkbox"/>	
Iodine-133	HE	6019	5093	pCi/g	0	N	0	5	0	SHORT_HLIF 0	<input type="checkbox"/>	
Lead-212	✓	2.109	0.1594	pCi/g	0.09212	0.100	238.6	2	0.9118	IDENTIFIED 2.811	<input type="checkbox"/>	
Lead-214	✓	1.811	0.1568	pCi/g	0.1101	0.100	352	2	1.17	IDENTIFIED 4.906	<input type="checkbox"/>	
Neptunium-237	INT	1.144	0.1925	pCi/g	0.305	N	87.29	3	1.191	IDENTIFIED 12.29	<input type="checkbox"/>	
Potassium-40	✓	40.93	2.023	pCi/g	0.5393	1.00	1461	1	1.905	IDENTIFIED 2.396	<input type="checkbox"/>	
Radium-224	INT	4.376	0.6136	pCi/g	0.9875	Y	241.7	1	1.433	IDENTIFIED 12.31	<input checked="" type="checkbox"/>	UI
Radium-226	✓	1.437	0.1117	pCi/g	0.09625	Y	609.4	2	1.294	IDENTIFIED 5.323	<input type="checkbox"/>	
Radium-228	✓	1.93	0.1967	pCi/g	0.2453	0.500	911.6	3	1.664	IDENTIFIED 8.056	<input type="checkbox"/>	
Strontium-85	LA	0.0744	0.02029	pCi/g	0.06872	Y	0	5	0	NOT_IDENTI 0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Thallium-208	✓	0.6044	0.04901	pCi/g	0.05759	0.080	583.4	1	1.211	IDENTIFIED 6.055	<input type="checkbox"/>	
Thorium-228	NR	2.109	0.1594	pCi/g	0.09212	N	238.6	2	0.9118	IDENTIFIED 2.811	<input type="checkbox"/>	
Thorium-232	NR	1.93	0.1967	pCi/g	0.2453	N	911.6	3	1.664	IDENTIFIED 8.056	<input type="checkbox"/>	
Tin-126	NR	0.3833	0.05045	pCi/g	0.1014	N	87.29	3	1.191	IDENTIFIED 12.29	<input type="checkbox"/>	
Total Uranium	—	4.3618	2.20E-06	ug/g	2.497	N	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
247797004	17-FEB-10 12:00	05-MAR-10 10:29	15.9	SAMPLE	LOAD	1	LANL	LANL01004IGEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment		
Actinium-228	✓	1.972	0.2017	pCi/g	0.2263	N	912.1	3	1.617	IDENTIFIED 8.542	<input type="checkbox"/>	
Annihilation Rad.	HE	0.1033	0.03244	pCi/g	0.04808	N	511.1	1	1.419	IDENTIFIED 31.27	<input type="checkbox"/>	
Bismuth-211	INT	4.608	0.2816	pCi/g	0.3096	Y	352.2	2	1.316	IDENTIFIED 5.096	<input checked="" type="checkbox"/>	UI
Bismuth-212	✓	1.823	0.4117	pCi/g	0.8577	N	727.8	1	0.9303	IDENTIFIED 21.95	<input type="checkbox"/>	
Bismuth-214	✓	1.324	0.108	pCi/g	0.1132	0.200	610	2	1.355	IDENTIFIED 7.267	<input type="checkbox"/>	
Cadmium-109	INT	3.703	0.4953	pCi/g	1.358	Y	87.24	3	1.1	IDENTIFIED 11.97	<input checked="" type="checkbox"/>	UI
Cerium-143	—	453.3	124.2	pCi/g	0	N	0	5	0	SHORT_HLIF 0	<input type="checkbox"/>	
Cesium-134	LA	0.102	0.05326	pCi/g	0.09539	0.100	0	5	0	FAIL_ABUND 0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Gross Gamma	—	10.83	1.48	pCi/g	3.304	N	0				<input type="checkbox"/>	
Iodine-133	HE	4057	5230	pCi/g	0	N	0	5	0	SHORT_HLIF 0	<input type="checkbox"/>	
Lead-212	✓	1.998	0.1008	pCi/g	0.09182	0.100	238.8	2	1.149	IDENTIFIED 3.017	<input type="checkbox"/>	
Lead-214	✓	1.673	0.1121	pCi/g	0.1126	0.100	352.2	2	1.316	IDENTIFIED 5.096	<input type="checkbox"/>	

Neptunium-237	INT	1.079	0.1833	pCi/g	0.4629	N	87.24	3	1.1	IDENTIFIED	11.97	<input type="checkbox"/>	
Potassium-40	✓	39.07	1.706	pCi/g	0.5113	1.00	1462	1	2.08	IDENTIFIED	2.539	<input type="checkbox"/>	
Radium-224	INT	4.579	0.7021	pCi/g	0.9842	Y	241.6	1	1.876	IDENTIFIED	14.97	<input checked="" type="checkbox"/>	UI
Radium-226	✓	1.324	0.108	pCi/g	0.1132	Y	610	2	1.355	IDENTIFIED	7.267	<input type="checkbox"/>	
Radium-228	✓	1.972	0.2017	pCi/g	0.2263	0.500	912.1	3	1.617	IDENTIFIED	8.542	<input type="checkbox"/>	
Sodium-24	HE	4.93E+05	7.65E+05	pCi/g	0	N	0	5	0	SHORT_HLIF	0	<input type="checkbox"/>	
Strontium-85	LA	0.07566	0.02168	pCi/g	0.07255	Y	0	5	0	NOT_IDENTI	0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Thallium-208	✓	0.5469	0.04887	pCi/g	0.0574	0.080	583.6	1	1.446	IDENTIFIED	8.366	<input type="checkbox"/>	
Thorium-228	NR	1.998	0.1008	pCi/g	0.09182	N	238.8	2	1.149	IDENTIFIED	3.017	<input type="checkbox"/>	
Thorium-232	NR	1.972	0.2017	pCi/g	0.2263	N	912.1	3	1.617	IDENTIFIED	8.542	<input type="checkbox"/>	
Tin-126	NR	0.3615	0.04836	pCi/g	0.1336	N	87.24	3	1.1	IDENTIFIED	11.97	<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		
247797005	17-FEB-10 12:00	05-MAR-10 10:30	15.9	SAMPLE	LOAD	1	LANL	LANL01004KJEL	N	RGSP		
Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment		
Actinium-228	✓	2.318	0.224	pCi/g	0.2676	N	911.3	3	1.722	IDENTIFIED 7.543	<input type="checkbox"/>	
Annihilation Rad.	—	0.1899	0.03967	pCi/g	0.05296	N	511	1	1.412	IDENTIFIED 20.44	<input type="checkbox"/>	
Bismuth-211	INT	5.155	0.3686	pCi/g	0.4164	Y	352.1	2	1.267	IDENTIFIED 5.399	<input checked="" type="checkbox"/>	UI
Bismuth-212	HE	2.364	0.5562	pCi/g	1.406	N	0	5	0	FAIL_ABUND 0	<input type="checkbox"/>	
Bismuth-214	✓	1.618	0.1307	pCi/g	0.1401	0.200	609.5	2	1.469	IDENTIFIED 6.373	<input type="checkbox"/>	
Cadmium-109	INT	3.492	0.6553	pCi/g	1.546	Y	87.21	3	1.142	IDENTIFIED 17.93	<input checked="" type="checkbox"/>	UI
Cerium-143	—	1131	192.3	pCi/g	0	N	0	5	0	SHORT_HLIF 0	<input type="checkbox"/>	
Europium-155	HE	0.2333	0.06085	pCi/g	0.2192	N	0	5	0	FAIL_ABUND 0	<input type="checkbox"/>	
Gross Gamma	—	12.28	1.703	pCi/g	4.446	N	0				<input type="checkbox"/>	
Iodine-135	—	1.83E+16	0	pCi/g	0	N	0	5	0	SHORT_HLIF 0	<input type="checkbox"/>	
Lead-212	✓	2.231	0.1344	pCi/g	0.1077	0.100	238.7	2	1.22	IDENTIFIED 3.153	<input type="checkbox"/>	
Lead-214	✓	1.871	0.1434	pCi/g	0.1423	0.100	352.1	2	1.267	IDENTIFIED 5.399	<input type="checkbox"/>	
Neptunium-237	INT	1.017	0.2187	pCi/g	0.49	N	87.21	3	1.142	IDENTIFIED 17.93	<input type="checkbox"/>	
Potassium-40	✓	38.01	2.104	pCi/g	0.7007	1.00	1461	1	2.11	IDENTIFIED 2.905	<input type="checkbox"/>	
Radium-224	INT	5.254	0.7213	pCi/g	1.154	Y	241.8	1	1.678	IDENTIFIED 12.93	<input checked="" type="checkbox"/>	UI
Radium-226	✓	1.618	0.1307	pCi/g	0.1401	Y	609.5	2	1.469	IDENTIFIED 6.373	<input type="checkbox"/>	
Radium-228	✓	2.318	0.224	pCi/g	0.2676	0.500	911.3	3	1.722	IDENTIFIED 7.543	<input type="checkbox"/>	
Sodium-24	HE	1.29E+06	1.13E+06	pCi/g	0	N	0	5	0	SHORT_HLIF 0	<input type="checkbox"/>	
Thallium-208	✓	0.6889	0.05748	pCi/g	0.06749	0.080	583.4	1	1.237	IDENTIFIED 6.984	<input type="checkbox"/>	
Thorium-228	NR	2.231	0.1344	pCi/g	0.1077	N	238.7	2	1.22	IDENTIFIED 3.153	<input type="checkbox"/>	
Thorium-232	NR	2.318	0.224	pCi/g	0.2676	N	911.3	3	1.722	IDENTIFIED 7.543	<input type="checkbox"/>	
Tin-126	NR	0.341	0.06397	pCi/g	0.1517	N	87.21	3	1.142	IDENTIFIED 17.93	<input type="checkbox"/>	
Total Uranium	—	5.0829	2.59E-06	ug/g	4.5931	N	0				<input type="checkbox"/>	

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Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue
247809001	19-FEB-10 12:00	05-MAR-10 10:31	13.9	SAMPLE	LOAD	1	LANL	LANL01004KJEL	N	RGSP
Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment
Actinium-228 ✓	2.011	0.1989	pCi/g	0.3027	N	911.2	3	1.673	IDENTIFIED 7.817	<input type="checkbox"/> <input type="checkbox"/>
Annihilation Rad. HE	0.1237	0.045	pCi/g	0.05362	N	510.7	1	2.267	IDENTIFIED 36.13	<input type="checkbox"/> <input type="checkbox"/>
Barium-137m HE	0.1241	0.03259	pCi/g	0.08224	N	661.5	2	1.058	IDENTIFIED 25.94	<input type="checkbox"/> <input type="checkbox"/>
Bismuth-211 INT	3.887	0.3321	pCi/g	0.4451	Y	352.1	2	1.483	IDENTIFIED 6.95	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>

Bismuth-212	HE	2.048	0.5334	pCi/g	1.328	N	0	4	0	FAIL_ABUND	0	<input type="checkbox"/>	
Bismuth-214	✓	1.181	0.1128	pCi/g	0.147	0.200	609.4	2	1.575	IDENTIFIED	8.152	<input type="checkbox"/>	
Cadmium-109	INT	2.81	0.6502	pCi/g	1.99	Y	87.25	3	1.165	IDENTIFIED	22.3	<input checked="" type="checkbox"/>	UI
Cerium-143	—	511.2	82.41	pCi/g	0	N	0	4	0	SHORT_HLIF	0	<input type="checkbox"/>	
Cesium-137	✓	0.1311	0.03443	pCi/g	0.08688	0.100	661.5	2	1.058	IDENTIFIED	25.94	<input type="checkbox"/>	
Gross Gamma	—	10.09	1.521	pCi/g	3.96	N		0				<input type="checkbox"/>	
Lead-212	✓	1.896	0.1336	pCi/g	0.1207	0.100	238.7	2	1.318	IDENTIFIED	3.738	<input type="checkbox"/>	
Lead-214	✓	1.411	0.1266	pCi/g	0.1577	0.100	352.1	2	1.483	IDENTIFIED	6.95	<input type="checkbox"/>	
Neptunium-237	HE	0.8212	0.2086	pCi/g	0.5501	N	87.25	3	1.165	IDENTIFIED	22.3	<input type="checkbox"/>	
Niobium-95m	—	0.512	0.09706	pCi/g	0.3167	N	0	4	0	NOT_IDENTI	0	<input type="checkbox"/>	
Potassium-40	✓	34.95	2.035	pCi/g	0.6605	1.00	1461	1	2	IDENTIFIED	3.124	<input type="checkbox"/>	
Radium-224	INT	5.098	0.8076	pCi/g	1.293	Y	241.8	1	1.854	IDENTIFIED	14.85	<input checked="" type="checkbox"/>	UI
Radium-226	✓	1.181	0.1128	pCi/g	0.147	Y	609.4	2	1.575	IDENTIFIED	8.152	<input type="checkbox"/>	
Radium-228	✓	2.011	0.1989	pCi/g	0.3027	0.500	911.2	3	1.673	IDENTIFIED	7.817	<input type="checkbox"/>	
Strontium-85	LA	0.1406	0.02497	pCi/g	0.09352	Y	0	4	0	NOT_IDENTI	0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Thallium-208	✓	0.5444	0.056	pCi/g	0.07274	0.080	583.3	1	1.709	IDENTIFIED	9.214	<input type="checkbox"/>	
Thorium-228	NR	1.896	0.1336	pCi/g	0.1207	N	238.7	2	1.318	IDENTIFIED	3.738	<input type="checkbox"/>	
Thorium-232	NR	2.011	0.1989	pCi/g	0.3027	N	911.2	3	1.673	IDENTIFIED	7.817	<input type="checkbox"/>	
Tin-126	HE	0.2752	0.06367	pCi/g	0.2024	N	87.25	3	1.165	IDENTIFIED	22.3	<input type="checkbox"/>	

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Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue		
247809002	19-FEB-10 12:00	05-MAR-10 10:32	13.9	SAMPLE	LOAD	1	LANL	LANL01004GEL	N	RGSP		
Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment		
Actinium-228	✓	1.955	0.2222	pCi/g	0.2287	N	911.6	3	2.192	IDENTIFIED 9.131	<input type="checkbox"/>	
Annihilation Rad.	—	0.2254	0.03999	pCi/g	0.04341	N	511.3	1	2.325	IDENTIFIED 17.02	<input type="checkbox"/>	
Bismuth-211	INT	4.174	0.3212	pCi/g	0.3373	Y	352	2	1.268	IDENTIFIED 5.043	<input checked="" type="checkbox"/>	UI
Bismuth-212	HE	1.315	0.4016	pCi/g	1.092	N	0	7	0	FAIL_ABUND 0	<input type="checkbox"/>	
Bismuth-214	✓	1.463	0.12	pCi/g	0.116	0.200	609.3	2	1.752	IDENTIFIED 5.763	<input type="checkbox"/>	
Cadmium-109	INT	3.187	0.535	pCi/g	1.311	Y	86.86	3	1.241	IDENTIFIED 16.12	<input checked="" type="checkbox"/>	UI
Cerium-143	—	543.6	82.09	pCi/g	0	N	0	7	0	SHORT_HLIF 0	<input type="checkbox"/>	
Cesium-134	LA	0.1207	0.03665	pCi/g	0.08512	0.100	0	7	0	FAIL_ABUND 0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Cesium-135	HE	0.329	0.1027	pCi/g	0.309	N	0	7	0	NOT_IDENTI 0	<input type="checkbox"/>	
Gross Gamma	—	11.49	1.419	pCi/g	2.609	N	0				<input type="checkbox"/>	
Iodine-133	HE	2320	1182	pCi/g	0	N	0	7	0	SHORT_HLIF 0	<input type="checkbox"/>	
Lead-212	✓	2.166	0.1558	pCi/g	0.09429	0.100	238.7	2	1.287	IDENTIFIED 2.796	<input type="checkbox"/>	
Lead-214	✓	1.515	0.1238	pCi/g	0.1267	0.100	352	2	1.268	IDENTIFIED 5.043	<input type="checkbox"/>	
Neptunium-237	INT	0.9311	0.1843	pCi/g	0.324	N	86.86	3	1.241	IDENTIFIED 16.12	<input type="checkbox"/>	
Niobium-95m	HE	0.2861	0.07815	pCi/g	0.2382	N	0	7	0	NOT_IDENTI 0	<input type="checkbox"/>	
Potassium-40	✓	41.46	2.107	pCi/g	0.5014	1.00	1461	1	2.661	IDENTIFIED 2.202	<input type="checkbox"/>	
Radium-224	INT	6.118	0.7456	pCi/g	1.01	Y	241.7	1	1.886	IDENTIFIED 10.45	<input checked="" type="checkbox"/>	UI
Radium-226	✓	1.463	0.12	pCi/g	0.116	Y	609.3	2	1.752	IDENTIFIED 5.763	<input type="checkbox"/>	
Radium-228	✓	1.955	0.2222	pCi/g	0.2287	0.500	911.6	3	2.192	IDENTIFIED 9.131	<input type="checkbox"/>	
Strontium-85	LA	0.2135	0.02396	pCi/g	0.08381	Y	0	7	0	NOT_IDENTI 0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Thallium-208	✓	0.6115	0.0487	pCi/g	0.05379	0.080	583.2	1	1.679	IDENTIFIED 5.838	<input type="checkbox"/>	
Thorium-228	NR	2.166	0.1558	pCi/g	0.09429	N	238.7	2	1.287	IDENTIFIED 2.796	<input type="checkbox"/>	
Thorium-232	NR	1.955	0.2222	pCi/g	0.2287	N	911.6	3	2.192	IDENTIFIED 9.131	<input type="checkbox"/>	

Thorium-234	✓	2.36	1.002	pCi/g	2.056	2.00	63.07	2	1.073	IDENTIFIED	41.51	<input type="checkbox"/>	
Tin-126	NR	0.312	0.05239	pCi/g	0.1292	N	86.86	3	1.241	IDENTIFIED	16.12	<input type="checkbox"/>	
Total Uranium	✓	7.1077	2.98E-06	ug/g	3.0611	N		0				<input type="checkbox"/>	
Uranium-238	HE	2.36	1.002	pCi/g	2.056	N	63.07	2	1.073	IDENTIFIED	41.51	<input type="checkbox"/>	

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Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue
247809003	19-FEB-10 12:00	05-MAR-10 10:33	13.9	SAMPLE	LOAD	1	LANL	LANL01004KGEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act	Rpt Err(%)	Qual	Qual Comment	
Actinium-228	✓	1.755	0.2119	pCi/g 0.2593	N	911.7	3	2.094	IDENTIFIED	10.5	<input type="checkbox"/>	
Annihilation Rad.	—	0.1772	0.04109	pCi/g 0.05608	N	511.4	1	1.951	IDENTIFIED	22.8	<input type="checkbox"/>	
Bismuth-211	INT	3.774	0.3229	pCi/g 0.3815	Y	352.1	2	1.369	IDENTIFIED	7.251	<input checked="" type="checkbox"/>	UI
Bismuth-212	HE	1.372	0.4236	pCi/g 1.293	N	0	6	0	FAIL_ABUND	0	<input type="checkbox"/>	
Bismuth-214	✓	1.235	0.1141	pCi/g 0.1339	0.200	609.8	2	1.564	IDENTIFIED	7.805	<input type="checkbox"/>	
Cadmium-109	INT	2.318	0.6496	pCi/g 1.468	Y	87.63	3	1.161	IDENTIFIED	27.63	<input checked="" type="checkbox"/>	UI
Cerium-143	—	184.5	51.15	pCi/g 0	N	0	6	0	SHORT_HLIF	0	<input type="checkbox"/>	
Cesium-134	LA	0.1196	0.04001	pCi/g 0.1096	0.100	0	6	0	FAIL_ABUND	0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance
Gross Gamma	—	9.504	1.493	pCi/g 3.64	N	0					<input type="checkbox"/>	
Iodine-133	HE	1224	1275	pCi/g 0	N	0	6	0	SHORT_HLIF	0	<input type="checkbox"/>	
Iodine-135	HE	3.28E+13	2.06E+14	pCi/g 0	N	0	6	0	SHORT_HLIF	0	<input type="checkbox"/>	
Lead-212	✓	1.735	0.1096	pCi/g 0.1085	0.100	239	2	1.228	IDENTIFIED	3.746	<input type="checkbox"/>	
Lead-214	✓	1.37	0.1231	pCi/g 0.1387	0.100	352.1	2	1.369	IDENTIFIED	7.251	<input type="checkbox"/>	
Neptunium-237	HE	0.6772	0.2027	pCi/g 0.4968	N	87.63	3	1.161	IDENTIFIED	27.63	<input type="checkbox"/>	
Potassium-40	✓	35.09	1.87	pCi/g 0.5895	1.00	1461	1	1.981	IDENTIFIED	2.939	<input type="checkbox"/>	
Radium-224	INT	4.133	0.6191	pCi/g 1.163	Y	242	1	1.553	IDENTIFIED	14.27	<input checked="" type="checkbox"/>	UI
Radium-226	✓	1.235	0.1141	pCi/g 0.1339	Y	609.8	2	1.564	IDENTIFIED	7.805	<input type="checkbox"/>	
Radium-228	✓	1.755	0.2119	pCi/g 0.2593	0.500	911.7	3	2.094	IDENTIFIED	10.5	<input type="checkbox"/>	
Strontium-85	LA	0.122	0.02771	pCi/g 0.09243	Y	0	6	0	NOT_IDENTI	0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Thallium-208	✓	0.4097	0.05356	pCi/g 0.07031	0.080	583.8	1	1.641	IDENTIFIED	12.26	<input type="checkbox"/>	
Thorium-228	NR	1.735	0.1096	pCi/g 0.1085	N	239	2	1.228	IDENTIFIED	3.746	<input type="checkbox"/>	
Thorium-232	NR	1.755	0.2119	pCi/g 0.2593	N	911.7	3	2.094	IDENTIFIED	10.5	<input type="checkbox"/>	
Tin-126	HE	0.2269	0.06361	pCi/g 0.1795	N	87.63	3	1.161	IDENTIFIED	27.63	<input type="checkbox"/>	
Total Uranium	—	5.8919	2.55E-06	ug/g 4.4137	N	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
247809004	19-FEB-10 12:00	05-MAR-10 10:34	13.9	SAMPLE	LOAD	1	LANL	LANL01004KGEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act	Rpt Err(%)	Qual	Qual Comment		
Actinium-228	✓	1.908	0.178	pCi/g	0.235	N	911.5	3	2.127	IDENTIFIED	7.288	<input type="checkbox"/>	
Annihilation Rad.	—	0.1573	0.03595	pCi/g	0.04805	N	510.7	1	1.731	IDENTIFIED	22.65	<input type="checkbox"/>	
Bismuth-211	INT	3.979	0.2903	pCi/g	0.3511	Y	351.6	2	1.454	IDENTIFIED	6.561	<input checked="" type="checkbox"/>	UI
Bismuth-212	—	2.472	0.5016	pCi/g	1.276	N	0	6	0	FAIL_ABUND	0	<input type="checkbox"/>	
Bismuth-214	✓	1.252	0.09686	pCi/g	0.1218	0.200	609.3	2	1.608	IDENTIFIED	6.642	<input type="checkbox"/>	
Cadmium-109	INT	3.498	0.5093	pCi/g	1.317	Y	87.26	3	1.186	IDENTIFIED	13.86	<input checked="" type="checkbox"/>	UI
Cerium-143	—	583.8	80.04	pCi/g	0	N	0	6	0	SHORT_HLIF	0	<input type="checkbox"/>	
Cesium-134	LA	0.1197	0.04168	pCi/g	0.08807	0.100	0	6	0	FAIL_ABUND	0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Europium-155	HE	0.2123	0.05846	pCi/g	0.2094	N	0	6	0	FAIL_ABUND	0	<input type="checkbox"/>	
Gross Gamma	—	9.962	1.451	pCi/g	3.595	N	0					<input type="checkbox"/>	



Lead-212	✓	1.8	0.08875 pCi/g	0.0993	0.100	238.5	2	1.352	IDENTIFIED	3.323	<input type="checkbox"/>	
Lead-214	✓	1.444	0.1127 pCi/g	0.1277	0.100	351.6	2	1.454	IDENTIFIED	6.561	<input type="checkbox"/>	
Neptunium-237	INT	1.022	0.1834 pCi/g	0.371	N	87.26	3	1.186	IDENTIFIED	13.86	<input type="checkbox"/>	
Niobium-95m	—	0.5371	0.08633 pCi/g	0.2819	N	0	6	0	NOT_IDENTI	0	<input type="checkbox"/>	
Potassium-40	✓	30.91	1.487 pCi/g	0.605	1.00	1461	1	2.084	IDENTIFIED	3.048	<input type="checkbox"/>	
Radium-224	INT	4.542	0.6542 pCi/g	1.064	Y	241.5	1	1.798	IDENTIFIED	14.12	<input checked="" type="checkbox"/>	UI
Radium-226	✓	1.252	0.09686 pCi/g	0.1218	Y	609.3	2	1.608	IDENTIFIED	6.642	<input type="checkbox"/>	
Radium-228	✓	1.908	0.178 pCi/g	0.235	0.500	911.5	3	2.127	IDENTIFIED	7.288	<input type="checkbox"/>	
Strontium-85	LA	0.0826	0.02214 pCi/g	0.07445	Y	0	6	0	NOT_IDENTI	0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Thallium-208	✓	0.5445	0.04585 pCi/g	0.06138	0.080	583.2	1	1.67	IDENTIFIED	7.706	<input type="checkbox"/>	
Thorium-228	NR	1.8	0.08875 pCi/g	0.0993	N	238.5	2	1.352	IDENTIFIED	3.323	<input type="checkbox"/>	
Thorium-232	NR	1.908	0.178 pCi/g	0.235	N	911.5	3	2.127	IDENTIFIED	7.288	<input type="checkbox"/>	
Tin-126	NR	0.3426	0.04987 pCi/g	0.1295	N	87.26	3	1.186	IDENTIFIED	13.86	<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
247809005	19-FEB-10 12:00	05-MAR-10 10:35	13.9	SAMPLE	LOAD	I	LANL	LANL01004IGEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy	***	FWHM	Comb Act	Rpt Err(%)	Qual	Qual Comment
Actinium-228	✓	1.969	0.2327 pCi/g	0.262	N	911.3	3	1.677	IDENTIFIED	10.16	<input type="checkbox"/>	
Annihilation Rad.	—	0.1621	0.03423 pCi/g	0.05118	N	510.8	1	2.193	IDENTIFIED	20.91	<input type="checkbox"/>	
Bismuth-211	INT	4.427	0.2608 pCi/g	0.3641	Y	351.7	2	1.287	IDENTIFIED	4.966	<input checked="" type="checkbox"/>	UI
Bismuth-212	—	2.692	0.52 pCi/g	1.401	N	0	10	0	FAIL_ABUND	0	<input type="checkbox"/>	
Bismuth-214	✓	1.357	0.1057 pCi/g	0.1371	0.200	609.4	2	1.728	IDENTIFIED	6.694	<input type="checkbox"/>	
Cadmium-109	INT	2.102	0.6535 pCi/g	1.578	Y	87.61	3	1.077	IDENTIFIED	30.78	<input checked="" type="checkbox"/>	UI
Cerium-143	—	714.3	92.9 pCi/g	0	N	0	10	0	SHORT_HLIF	0	<input type="checkbox"/>	
Cesium-134	LA	0.1382	0.0484 pCi/g	0.1008	0.100	0	10	0	FAIL_ABUND	0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Cesium-135	HE	0.4934	0.1037 pCi/g	0.3412	N	0	10	0	NOT_IDENTI	0	<input type="checkbox"/>	
Gross Gamma	—	10.72	1.58 pCi/g	4.712	N	0					<input type="checkbox"/>	
Iodine-133	HE	1782	1196 pCi/g	0	N	0	10	0	SHORT_HLIF	0	<input type="checkbox"/>	
Iodine-135	HE	7.91E+13	1.71E+14 pCi/g	0	N	0	10	0	SHORT_HLIF	0	<input type="checkbox"/>	
Lead-212	✓	2.042	0.09692 pCi/g	0.09984	0.100	238.5	2	1.352	IDENTIFIED	3.004	<input type="checkbox"/>	
Lead-214	✓	1.607	0.1045 pCi/g	0.1329	0.100	351.7	2	1.287	IDENTIFIED	4.966	<input type="checkbox"/>	
Neptunium-237	HE	0.6143	0.2015 pCi/g	0.4756	N	87.61	3	1.077	IDENTIFIED	30.78	<input type="checkbox"/>	
Niobium-95	HE	0.1051	0.02748 pCi/g	0.09095	N	0	10	0	NOT_IDENTI	0	<input type="checkbox"/>	
Niobium-95m	—	0.7484	0.09302 pCi/g	0.3101	N	0	10	0	NOT_IDENTI	0	<input type="checkbox"/>	
Potassium-40	✓	33.16	1.565 pCi/g	0.6029	1.00	1461	1	2.143	IDENTIFIED	3.014	<input type="checkbox"/>	
Radium-224	INT	5.395	0.7298 pCi/g	1.069	Y	241.4	1	2.062	IDENTIFIED	13.22	<input checked="" type="checkbox"/>	UI
Radium-226	✓	1.357	0.1057 pCi/g	0.1371	Y	609.4	2	1.728	IDENTIFIED	6.694	<input type="checkbox"/>	
Radium-228	✓	1.969	0.2327 pCi/g	0.262	0.500	911.3	3	1.677	IDENTIFIED	10.16	<input type="checkbox"/>	
Sodium-24	—	2.18E+05	1.01E+05 pCi/g	0	N	0	10	0	SHORT_HLIF	0	<input type="checkbox"/>	
Strontium-85	LA	0.09389	0.02295 pCi/g	0.0765	Y	0	10	0	NOT_IDENTI	0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Thallium-208	✓	0.5549	0.04743 pCi/g	0.06704	0.080	583.2	1	1.339	IDENTIFIED	7.837	<input type="checkbox"/>	
Thorium-228	NR	2.042	0.09692 pCi/g	0.09984	N	238.5	2	1.352	IDENTIFIED	3.004	<input type="checkbox"/>	
Thorium-232	NR	1.969	0.2327 pCi/g	0.262	N	911.3	3	1.677	IDENTIFIED	10.16	<input type="checkbox"/>	
Tin-126	HE	0.2059	0.064 pCi/g	0.1651	N	87.61	3	1.077	IDENTIFIED	30.78	<input type="checkbox"/>	

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Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue
247809006	19-FEB-10 12:00	05-MAR-10 10:35	13.9	SAMPLE	LOAD	1	LANL	LANL01004GEL	N	RGSP
Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment
Actinium-228	✓	2.094	0.217	pCi/g 0.229	N	910.5	3	1.484 IDENTIFIED	8.558	<input type="checkbox"/>
Annihilation Rad.	HE	0.1233	0.038	pCi/g 0.05182	N	510.7	1	1.777 IDENTIFIED	30.48	<input type="checkbox"/>
Bismuth-211	INT	3.349	0.276	pCi/g 0.3426	Y	351.7	2	1.219 IDENTIFIED	6.796	<input checked="" type="checkbox"/> UI
Bismuth-212	HE	2.416	0.5916	pCi/g 1.455	N	0	3	0 FAIL_ABUND	0	<input type="checkbox"/>
Bismuth-214	✓	1.297	0.1157	pCi/g 0.1312	0.200	608.8	2	1.469 IDENTIFIED	7.315	<input type="checkbox"/>
Cadmium-109	INT	3.361	0.434	pCi/g 0.9634	Y	87.18	3	1.162 IDENTIFIED	11.96	<input checked="" type="checkbox"/> UI
Cerium-143	—	301.7	56.01	pCi/g 0	N	0	3	0 SHORT_HLIF	0	<input type="checkbox"/>
Cesium-135	HE	0.4438	0.1445	pCi/g 0.2456	N	269.5	1	1.137 IDENTIFIED	32.15	<input type="checkbox"/>
Gross Gamma	—	9.666	1.526	pCi/g 4.325	N	0				<input type="checkbox"/>
Iodine-135	HE	1.11E+14	2.40E+14	pCi/g 0	N	0	3	0 SHORT_HLIF	0	<input type="checkbox"/>
Lead-210	HE	1.373	0.4328	pCi/g 0.7882	N	46.57	1	0.8012 IDENTIFIED	31.05	<input type="checkbox"/>
Lead-212	✓	1.523	0.097	pCi/g 0.09471	0.100	238.5	2	1.003 IDENTIFIED	3.862	<input type="checkbox"/>
Lead-214	✓	1.215	0.1056	pCi/g 0.121	0.100	351.7	2	1.219 IDENTIFIED	6.796	<input type="checkbox"/>
Neptunium-237	INT	0.982	0.1633	pCi/g 0.2802	N	87.18	3	1.162 IDENTIFIED	11.96	<input type="checkbox"/>
Potassium-40	✓	30.93	1.785	pCi/g 0.7169	1.00	1460	1	2.059 IDENTIFIED	3.69	<input type="checkbox"/>
Radium-224	INT	3.655	0.7391	pCi/g 1.016	Y	241.3	1	1.82 IDENTIFIED	19.71	<input checked="" type="checkbox"/> UI
Radium-226	✓	1.297	0.1157	pCi/g 0.1312	Y	608.8	2	1.469 IDENTIFIED	7.315	<input type="checkbox"/>
Radium-228	✓	2.094	0.217	pCi/g 0.229	0.500	910.5	3	1.484 IDENTIFIED	8.558	<input type="checkbox"/>
Thallium-208	✓	0.5192	0.05616	pCi/g 0.0788	0.080	582.9	1	1.086 IDENTIFIED	9.731	<input type="checkbox"/>
Thorium-228	NR	1.523	0.097	pCi/g 0.09471	N	238.5	2	1.003 IDENTIFIED	3.862	<input type="checkbox"/>
Thorium-232	NR	2.094	0.217	pCi/g 0.229	N	910.5	3	1.484 IDENTIFIED	8.558	<input type="checkbox"/>
Thorium-234	✓	2.068	0.5009	pCi/g 1.009	2.00	63.11	2	1.054 IDENTIFIED	22.27	<input type="checkbox"/>
Tin-126	NR	0.3291	0.04249	pCi/g 0.09421	N	87.18	3	1.162 IDENTIFIED	11.96	<input type="checkbox"/>
Total Uranium	—	6.2289	1.49E-06	ug/g 1.5032	N	0				<input type="checkbox"/>
Uranium-238	NR	2.068	0.5009	pCi/g 1.009	N	63.11	2	1.054 IDENTIFIED	22.27	<input type="checkbox"/>

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Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue
247809008	19-FEB-10 12:00	05-MAR-10 10:36	13.9	SAMPLE	LOAD	1	LANL	LANL01004GEL	N	RGSP
Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment
Actinium-228	✓	1.702	0.1611	pCi/g 0.1726	N	910.8	3	1.635 IDENTIFIED	6.614	<input type="checkbox"/>
Annihilation Rad.	HE	0.07925	0.02519	pCi/g 0.03779	N	510.8	1	1.912 IDENTIFIED	31.61	<input type="checkbox"/>
Bismuth-211	INT	3.616	0.2272	pCi/g 0.2618	Y	351.9	2	1.413 IDENTIFIED	5.402	<input checked="" type="checkbox"/> UI
Bismuth-212	—	2.084	0.4675	pCi/g 0.9673	N	0	6	0 FAIL_ABUND	0	<input type="checkbox"/>
Bismuth-214	✓	1.073	0.08528	pCi/g 0.08936	0.200	609.1	2	1.716 IDENTIFIED	6.553	<input type="checkbox"/>
Cadmium-109	INT	2.45	0.4872	pCi/g 1.091	Y	87.11	3	1.253 IDENTIFIED	19.35	<input checked="" type="checkbox"/> UI
Cerium-143	—	372.9	54.61	pCi/g 0	N	0	6	0 SHORT_HLIF	0	<input type="checkbox"/>
Cesium-134	LA	0.08371	0.02753	pCi/g 0.07074	0.100	0	6	0 FAIL_ABUND	0	<input checked="" type="checkbox"/> UI Data rejected due to low abundance.
Cesium-135	HE	0.2856	0.07224	pCi/g 0.2359	N	0	6	0 NOT_IDENTI	0	<input type="checkbox"/>
Gross Gamma	—	9.469	1.252	pCi/g 2.581	N	0				<input type="checkbox"/>
Iodine-135	HE	4.35E+13	1.50E+14	pCi/g 0	N	0	6	0 SHORT_HLIF	0	<input type="checkbox"/>
Lead-212	✓	1.701	0.07879	pCi/g 0.07584	0.100	238.7	2	1.277 IDENTIFIED	2.907	<input type="checkbox"/>
Lead-214	✓	1.312	0.09006	pCi/g 0.09519	0.100	351.9	2	1.413 IDENTIFIED	5.402	<input type="checkbox"/>

Neptunium-237	HE	0.7159	0.1609	pCi/g	0.3949	N	87.11	3	1.253	IDENTIFIED	19.35	<input type="checkbox"/>	
Potassium-40	✓	33.03	1.454	pCi/g	0.4606	1.00	1460	1	2.287	IDENTIFIED	2.229	<input type="checkbox"/>	
Radium-224	INT	3.978	0.4425	pCi/g	0.8118	Y	241.7	1	1.607	IDENTIFIED	10.77	<input checked="" type="checkbox"/>	UI
Radium-226	✓	1.073	0.08528	pCi/g	0.08936	Y	609.1	2	1.716	IDENTIFIED	6.553	<input type="checkbox"/>	
Radium-228	✓	1.702	0.1611	pCi/g	0.1726	0.500	910.8	3	1.635	IDENTIFIED	6.614	<input type="checkbox"/>	
Strontium-85	LA	0.07514	0.01756	pCi/g	0.05815	Y	0	6	0	NOT_IDENTI	0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Thallium-208	✓	0.5067	0.03751	pCi/g	0.04466	0.080	583.1	1	1.739	IDENTIFIED	6.285	<input type="checkbox"/>	
Thorium-228	NR	1.701	0.07879	pCi/g	0.07584	N	238.7	2	1.277	IDENTIFIED	2.907	<input type="checkbox"/>	
Thorium-232	NR	1.702	0.1611	pCi/g	0.1726	N	910.8	3	1.635	IDENTIFIED	6.614	<input type="checkbox"/>	
Tin-126	NR	0.2399	0.04771	pCi/g	0.1313	N	87.11	3	1.253	IDENTIFIED	19.35	<input type="checkbox"/>	

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Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project	Quals	Zero?	queue	
247809009	19-FEB-10 12:00	05-MAR-10 10:37	13.9	SAMPLE	LOAD	1	LANL	LANL01004GEL		N	RGSP	
Name		Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act	Rpt Err (%)	Qual	Qual Comment
Actinium-228	✓	1.982	0.2717	pCi/g	0.3003	N	911.1	3	1.548	IDENTIFIED 12.4	<input type="checkbox"/>	
Annihilation Rad.	HE	0.1228	0.03779	pCi/g	0.05395	N	510.5	1	1.793	IDENTIFIED 30.4	<input type="checkbox"/>	
Bismuth-211	INT	4.558	0.3267	pCi/g	0.378	Y	351.7	2	1.03	IDENTIFIED 5.571	<input checked="" type="checkbox"/>	UI
Bismuth-212	HE	2.34	0.5008	pCi/g	1.486	N	0	6	0	FAIL_ABUND 0	<input type="checkbox"/>	
Bismuth-214	✓	1.507	0.1342	pCi/g	0.1363	0.200	609	2	1.143	IDENTIFIED 6.647	<input type="checkbox"/>	
Cadmium-109	INT	4.31	0.4369	pCi/g	0.7664	Y	87.3	3	1.193	IDENTIFIED 8.994	<input checked="" type="checkbox"/>	UI
Cerium-143	-	219.1	49.72	pCi/g	0	N	0	6	0	SHORT_HLIF 0	<input type="checkbox"/>	
Cesium-134	LA	0.1482	0.0513	pCi/g	0.1327	0.100	0	6	0	FAIL_ABUND 0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Gross Gamma	-	10.94	1.374	pCi/g	4.566	N	0				<input type="checkbox"/>	
Iodine-133	HE	1325	1372	pCi/g	0	N	0	6	0	SHORT_HLIF 0	<input type="checkbox"/>	
Iodine-135	HE	1.37E+14	2.41E+14	pCi/g	0	N	0	6	0	SHORT_HLIF 0	<input type="checkbox"/>	
Lead-210	HE	1.052	0.354	pCi/g	0.6618	N	46.62	1	0.7442	IDENTIFIED 33.31	<input type="checkbox"/>	
Lead-212	✓	2.08	0.1214	pCi/g	0.0863	0.100	238.5	2	0.8556	IDENTIFIED 3.021	<input type="checkbox"/>	
Lead-214	✓	1.654	0.127	pCi/g	0.1376	0.100	351.7	2	1.03	IDENTIFIED 5.571	<input type="checkbox"/>	
Neptunium-237	INT	1.259	0.1836	pCi/g	0.2227	N	87.3	3	1.193	IDENTIFIED 8.994	<input type="checkbox"/>	
Potassium-40	✓	29.83	1.734	pCi/g	0.6458	1.00	1460	1	1.969	IDENTIFIED 3.948	<input type="checkbox"/>	
Radium-224	INT	5.791	0.6572	pCi/g	0.9275	Y	241.3	1	1.628	IDENTIFIED 10.44	<input checked="" type="checkbox"/>	UI
Radium-226	✓	1.507	0.1342	pCi/g	0.1363	Y	609	2	1.143	IDENTIFIED 6.647	<input type="checkbox"/>	
Radium-228	✓	1.982	0.2717	pCi/g	0.3003	0.500	911.1	3	1.548	IDENTIFIED 12.4	<input type="checkbox"/>	
Technetium-99m	HE	4.85E+14	6.84E+14	pCi/g	0	N	0	6	0	SHORT_HLIF 0	<input type="checkbox"/>	
Thallium-208	✓	0.6736	0.06554	pCi/g	0.07331	0.080	582.9	1	1.2	IDENTIFIED 8.067	<input type="checkbox"/>	
Thorium-228	NR	2.08	0.1214	pCi/g	0.0863	N	238.5	2	0.8556	IDENTIFIED 3.021	<input type="checkbox"/>	
Thorium-232	NR	1.982	0.2717	pCi/g	0.3003	N	911.1	3	1.548	IDENTIFIED 12.4	<input type="checkbox"/>	
Thorium-234	✓	1.74	0.4244	pCi/g	0.824	2.00	63.17	2	0.9399	IDENTIFIED 22.66	<input type="checkbox"/>	
Tin-126	NR	0.422	0.04278	pCi/g	0.07492	N	87.3	3	1.193	IDENTIFIED 8.994	<input type="checkbox"/>	
Total Uranium	-	5.1332	1.26E-06	ug/g	1.2282	N	0				<input type="checkbox"/>	
Uranium-238	NR	1.74	0.4244	pCi/g	0.824	N	63.17	2	0.9399	IDENTIFIED 22.66	<input type="checkbox"/>	

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Sample ID	Collect Date	Run Date	Days Past	Sample Type	Status	Instance	Client	Project Quals	Zero?	queue
247809012	19-FEB-10 12:00	05-MAR-10 10:38	13.9	SAMPLE	LOAD	1	LANL	LANL01004GEL	N	RGSP
Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act Rpt Err(%)	Qual	Qual Comment
Actinium-228	✓	1.958	0.1955	pCi/g	0.2256	N	911.4	3 1.37	IDENTIFIED 7.757	<input type="checkbox"/> <input type="checkbox"/>

Annihilation Rad.	—	0.1426	0.03156	pCi/g	0.04626	N	511	1	1.785	IDENTIFIED	21.65	<input type="checkbox"/>	
Bismuth-211	INT	4.485	0.3178	pCi/g	0.3417	Y	352	2	1.252	IDENTIFIED	5.225	<input checked="" type="checkbox"/>	UI
Bismuth-212	✓	2.446	0.4549	pCi/g	0.8212	N	727.6	1	1.126	IDENTIFIED	17.32	<input type="checkbox"/>	
Bismuth-214	✓	1.534	0.1208	pCi/g	0.1121	0.200	609.6	2	1.439	IDENTIFIED	5.555	<input type="checkbox"/>	
Cadmium-109	INT	3.425	0.527	pCi/g	1.218	Y	87.36	3	1.186	IDENTIFIED	14.65	<input checked="" type="checkbox"/>	UI
Cerium-143	—	310.7	57.33	pCi/g	0	N	0	4	0	SHORT_HLIF	0	<input type="checkbox"/>	
Cesium-134	LA	0.1501	0.03655	pCi/g	0.1007	0.100	0	4	0	FAIL_ABUND	0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Cesium-135	HE	0.3059	0.08674	pCi/g	0.2859	N	0	4	0	NOT_IDENTI	0	<input type="checkbox"/>	
Gross Gamma	—	11.82	1.467	pCi/g	4.719	N	0					<input type="checkbox"/>	
Lead-212	✓	2.079	0.1264	pCi/g	0.09227	0.100	238.7	2	1.053	IDENTIFIED	2.909	<input type="checkbox"/>	
Lead-214	✓	1.628	0.1238	pCi/g	0.1276	0.100	352	2	1.252	IDENTIFIED	5.225	<input type="checkbox"/>	
Neptunium-237	INT	1.001	0.1863	pCi/g	0.4139	N	87.36	3	1.186	IDENTIFIED	14.65	<input type="checkbox"/>	
Potassium-40	✓	39.88	2.008	pCi/g	0.4964	1.00	1461	1	1.836	IDENTIFIED	2.517	<input type="checkbox"/>	
Radium-224	INT	5.541	0.6484	pCi/g	0.9887	Y	241.7	1	1.729	IDENTIFIED	10.65	<input checked="" type="checkbox"/>	UI
Radium-226	✓	1.534	0.1208	pCi/g	0.1121	Y	609.6	2	1.439	IDENTIFIED	5.555	<input type="checkbox"/>	
Radium-228	✓	1.958	0.1955	pCi/g	0.2256	0.500	911.4	3	1.37	IDENTIFIED	7.757	<input type="checkbox"/>	
Sodium-24	HE	91930	95250	pCi/g	0	N	0	4	0	SHORT_HLIF	0	<input type="checkbox"/>	
Thallium-208	✓	0.6521	0.05451	pCi/g	0.05876	0.080	583.4	1	1.345	IDENTIFIED	6.596	<input type="checkbox"/>	
Thorium-228	NR	2.079	0.1264	pCi/g	0.09227	N	238.7	2	1.053	IDENTIFIED	2.909	<input type="checkbox"/>	
Thorium-232	NR	1.958	0.1955	pCi/g	0.2256	N	911.4	3	1.37	IDENTIFIED	7.757	<input type="checkbox"/>	
Thorium-234	✓	2.395	1.027	pCi/g	1.812	2.00	62.98	2	0.9753	IDENTIFIED	41.95	<input type="checkbox"/>	
Tin-126	NR	0.3354	0.05161	pCi/g	0.1196	N	87.36	3	1.186	IDENTIFIED	14.65	<input type="checkbox"/>	
Total Uranium	—	7.1208	3.06E-06	ug/g	2.6977	N	0					<input type="checkbox"/>	
Uranium-238	HE	2.395	1.027	pCi/g	1.812	N	62.98	2	0.9753	IDENTIFIED	41.95	<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
1202052272		05-MAR-10 10:54	0	MB	LOAD	1		GEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act	Rpt Err(%)	Qual	Qual Comment
Iodine-133 IIE	4.006	3.032	pCi/g	0	N	0	2	0	SHORT_HLIF	0	<input type="checkbox"/>
Iodine-135 HE	2.73E+06	4.77E+06	pCi/g	0	N	0	2	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
1202052273	19-FEB-10 12:00	05-MAR-10 13:05	14	DUP	LOAD	1		LANL01004GEL	N	RGSP

Name	Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act	Rpt Err(%)	Qual	Qual Comment
Actinium-228	✓	2.093	0.2095	pCi/g	0.2625	N	910.6	3	1.924	IDENTIFIED	7.707
Annihilation Rad.	—	0.1958	0.04043	pCi/g	0.05143	N	510.4	1	1.69	IDENTIFIED	20.05
Barium-137m	HE	0.1186	0.0268	pCi/g	0.06705	N	661.2	2	1.261	IDENTIFIED	22.17
Bismuth-211	INT	4.371	0.3483	pCi/g	0.3561	Y	351.6	2	1.312	IDENTIFIED	5.502
Bismuth-212	—	2.544	0.5093	pCi/g	1.394	N	0	6	0	FAIL_ABUND	0
Bismuth-214	✓	1.308	0.1144	pCi/g	0.1263	0.200	608.8	2	1.573	IDENTIFIED	6.949
Cadmium-109	INT	2.54	0.474	pCi/g	1.381	Y	86.9	3	0.8682	IDENTIFIED	17.99
Cerium-143	—	591.5	90.54	pCi/g	0	N	0	6	0	SHORT_HLIF	0
Cesium-134	LA	0.1485	0.03599	pCi/g	0.1055	0.100	0	6	0	FAIL_ABUND	0
Cesium-135	HE	0.3935	0.09621	pCi/g	0.3219	N	0	6	0	NOT_IDENTI	0
Cesium-137	✓	0.1253	0.02831	pCi/g	0.07084	0.100	661.2	2	1.261	IDENTIFIED	22.17
Gross Gamma	—	10.89	1.586	pCi/g	3.876	N	0				

Iodine-133	HE	743.6	1474	pCi/g 0	N	0	6	0	SHORT_HLIF 0	<input type="checkbox"/>	
Lead-212	✓	1.96	0.1393	pCi/g 0.09883	0.100	238.3	2	1.106	IDENTIFIED 3.269	<input type="checkbox"/>	
Lead-214	✓	1.586	0.1337	pCi/g 0.1295	0.100	351.6	2	1.312	IDENTIFIED 5.502	<input type="checkbox"/>	
Neptunium-237	INT	0.7421	0.1588	pCi/g 0.4116	N	86.9	3	0.8682	IDENTIFIED 17.99	<input type="checkbox"/>	
Potassium-40	✓	34.07	1.928	pCi/g 0.6641	1.00	1460	1	2.248	IDENTIFIED 3.071	<input type="checkbox"/>	
Radium-224	INT	5.179	0.7018	pCi/g 1.06	Y	241.3	1	1.723	IDENTIFIED 12.2	<input checked="" type="checkbox"/>	UI
Radium-226	✓	1.308	0.1144	pCi/g 0.1263	Y	608.8	2	1.573	IDENTIFIED 6.949	<input type="checkbox"/>	
Radium-228	✓	2.093	0.2095	pCi/g 0.2625	0.500	910.6	3	1.924	IDENTIFIED 7.707	<input type="checkbox"/>	
Strontium-85	LA	0.07953	0.02254	pCi/g 0.0746	Y	0	6	0	NOT_IDENTI 0	<input checked="" type="checkbox"/>	UI Data rejected due to low abundance.
Thallium-208	✓	0.5749	0.05339	pCi/g 0.06488	0.080	582.8	1	1.345	IDENTIFIED 7.823	<input type="checkbox"/>	
Thorium-228	NR	1.96	0.1393	pCi/g 0.09883	N	238.3	2	1.106	IDENTIFIED 3.269	<input type="checkbox"/>	
Thorium-232	NR	2.093	0.2095	pCi/g 0.2625	N	910.6	3	1.924	IDENTIFIED 7.707	<input type="checkbox"/>	
Thorium-234	✓	3.257	1.357	pCi/g 2.557	2.00	62.5	2	1.033	IDENTIFIED 40.68	<input type="checkbox"/>	
Tin-126	NR	0.2487	0.04641	pCi/g 0.136	N	86.9	3	0.8682	IDENTIFIED 17.99	<input type="checkbox"/>	
Total Uranium	-	9.7422	4.04E-06 ug/g	3.8069	N		0			<input type="checkbox"/>	
Uranium-238	HE	3.257	1.357	pCi/g 2.557	N	62.5	2	1.033	IDENTIFIED 40.68	<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			
1202052274		08-MAR-10 09:46	0	LCS	LOAD	1		GEL	N	RGSP			
Name		Result	Uncert.	Units	MDA	RDL	Energy ***	FWHM	Comb Act	Rpt Err(%)	Qual	Qual Comment	
Actinium-228	HE	0.8237	0.2252	pCi/g	0.573	N	910.9	3	1.309	IDENTIFIED	26.58	<input type="checkbox"/>	
Americium-241	✓	14.84	0.7621	pCi/g	0.6275	0.200	59.18	1	1.009	IDENTIFIED	3.08	<input type="checkbox"/>	
Barium-137m		5.262	0.2615	pCi/g	0.1217	N	661.2	2	1.561	IDENTIFIED	2.471	<input type="checkbox"/>	
Bismuth-211		2.445	0.3813	pCi/g	0.7451	Y	351.6	2	1.181	IDENTIFIED	14.49	<input type="checkbox"/>	
Bismuth-214		0.7682	0.1436	pCi/g	0.2166	0.200	609.1	2	1.113	IDENTIFIED	17.92	<input type="checkbox"/>	
Cadmium-109		32.98	2.239	pCi/g	2.343	Y	87.73	3	1.05	IDENTIFIED	4.585	<input type="checkbox"/>	
Cerium-143	HE	57.02	14.22	pCi/g	44.57	N	0	4	0	NOT_IDENTI	0	<input type="checkbox"/>	
Cesium-137	✓	5.559	0.2766	pCi/g	0.1285	0.100	661.2	2	1.561	IDENTIFIED	2.471	<input type="checkbox"/>	
Cobalt-57		0.1982	0.03721	pCi/g	0.07159	N	121.8	1	0.9876	IDENTIFIED	18.3	<input type="checkbox"/>	
Cobalt-60	✓	6.655	0.3587	pCi/g	0.09702	0.100	1332	1	1.908	IDENTIFIED	2.717	<input type="checkbox"/>	
Gross Gamma		27.64	2.657	pCi/g	4.72	N		0				<input type="checkbox"/>	
Iodine-133	HE	50.96	140.1	pCi/g	0	N	0	4	0	SHORT_HLIF	0	<input type="checkbox"/>	
Lead-212		1.188	0.119	pCi/g	0.2237	0.100	238.3	2	0.972	IDENTIFIED	7.783	<input type="checkbox"/>	
Lead-214		0.8874	0.1405	pCi/g	0.2624	0.100	351.6	2	1.181	IDENTIFIED	14.49	<input type="checkbox"/>	
Neptunium-237		9.689	1.21	pCi/g	0.7023	N	87.73	3	1.05	IDENTIFIED	4.585	<input type="checkbox"/>	
Radium-224		2.821	0.6803	pCi/g	2.332	Y	0	4	0	NOT_IDENTI	0	<input type="checkbox"/>	
Radium-226		0.7682	0.1436	pCi/g	0.2166	Y	609.1	2	1.113	IDENTIFIED	17.92	<input type="checkbox"/>	
Radium-228		0.8237	0.2252	pCi/g	0.573	0.500	910.9	3	1.309	IDENTIFIED	26.58	<input type="checkbox"/>	
Silver-110m		0.3007	0.05027	pCi/g	0.1778	N	0	4	0	NOT_IDENTI	0	<input type="checkbox"/>	
Thallium-208		0.4778	0.07405	pCi/g	0.1132	0.080	582.9	1	1.603	IDENTIFIED	14.67	<input type="checkbox"/>	
Thorium-228		1.188	0.119	pCi/g	0.2237	N	238.3	2	0.972	IDENTIFIED	7.783	<input type="checkbox"/>	
Thorium-232	HE	0.8237	0.2252	pCi/g	0.573	N	910.9	3	1.309	IDENTIFIED	26.58	<input type="checkbox"/>	
Tin-126		3.247	0.2205	pCi/g	0.232	N	87.73	3	1.05	IDENTIFIED	4.585	<input type="checkbox"/>	

\*\*\* = Number of isotopes identified with a keyline at this energy.

\*\*\* = Number of isotopes identified with a keyline at this energy.

# Result Greater Than DL

Batch Id	Sample Id	Sample Type	Run Date	Paramname	Result	Uncertainty	Units	DL	RDL
957136	247809012	SAMPLE	05-MAR-10	Thorium-234	2.995	1.027	pCi/g	0.8064	2.00
957136	1202052272	MB	05-MAR-10	Iodine-135	2.73E+06	4.77E+06	pCi/g	0	N
957136	1202052273	DUP	05-MAR-10	Bismuth-211	4.371	0.3483	pCi/g	0.1782	Y
				Bismuth-214	1.308	0.1144	pCi/g	0.0632	0.200
				Cadmium-109	2.54	0.474	pCi/g	0.691	Y
				Cerium-143	581.5	90.54	pCi/g	0	N
				Cesium-134	0.1485	0.03599	pCi/g	0.05277	0.100
				Cesium-137	0.1253	0.02831	pCi/g	0.03544	0.100
				Gross Gamma	10.89	1.586	pCi/g	1.881	N
				Iodine-133	743.8	1474	pCi/g	0	N
				Lead-212	1.96	0.1393	pCi/g	0.04944	0.100
				Lead-214	1.586	0.1337	pCi/g	0.06479	0.100
				Potassium-40	34.07	1.928	pCi/g	0.3322	1.00
				Protactinium-234m	5.259	2.867	pCi/g	5.055	N
				Radium-224	5.179	0.7018	pCi/g	0.5302	Y
				Radium-226	1.308	0.1144	pCi/g	0.0632	Y
				Radium-228	2.093	0.2095	pCi/g	0.1313	0.500
				Strontium-85	0.07953	0.02254	pCi/g	0.03732	Y
				Thallium-208	0.5749	0.05339	pCi/g	0.03246	0.080
				Thorium-234	3.257	1.357	pCi/g	1.279	2.00
957136	1202052274	LCS	08-MAR-10	Americium-241	14.84	0.7621	pCi/g	0.3139	0.200
				Barium-137m	5.262	0.2615	pCi/g	0.06086	N
				Bismuth-211	2.445	0.3813	pCi/g	0.3728	Y
				Bismuth-214	0.7682	0.1436	pCi/g	0.1084	0.200
				Cadmium-109	32.98	2.239	pCi/g	1.172	Y
				Cerium-143	57.02	14.22	pCi/g	22.3	N
				Cesium-134	0.112	0.04899	pCi/g	0.0886	0.100
				Cesium-137	5.559	0.2766	pCi/g	0.0643	0.100
				Cobalt-60	6.655	0.3587	pCi/g	0.04854	0.100
				Gross Gamma	27.64	2.657	pCi/g	2.287	N
				Iodine-133	50.96	140.1	pCi/g	0	N
				Lead-212	1.188	0.119	pCi/g	0.1119	0.100
				Lead-214	0.8874	0.1405	pCi/g	0.1313	0.100
				Neptunium-237	9.689	1.21	pCi/g	0.3514	N
				Potassium-40	0.869	0.3553	pCi/g	0.3398	1.00
				Radium-224	2.821	0.6803	pCi/g	1.167	Y
				Radium-226	0.7682	0.1436	pCi/g	0.1084	Y

# Blank Results Greater Than CSU

Batch ID	Blank ID & Run Seq.	Run Date	Parmname	Result Units	1 Sigma			RDL	MDA	Report Parm?
					1 Sigma TPU	1 Sigma TPU x1.65	1 Sigma TPU x2			
957136	1202052272-1	05-MAR-10 10:54	Actinium-228	0.0381 pCi/g	0.0386	0.0637	0.0772		0.1434	N
957136	1202052272-1	05-MAR-10 10:54	Americium-241	0.0922 pCi/g	0.049	0.0809	0.098	0.200	0.1875	Y
957136	1202052272-1	05-MAR-10 10:54	Antimony-127	0.136 pCi/g	0.0784	0.129	0.157		0.2985	N
957136	1202052272-1	05-MAR-10 10:54	Barium-140	0.0625 pCi/g	0.041	0.0677	0.0821		0.1462	N
957136	1202052272-1	05-MAR-10 10:54	Bismuth-207	0.0142 pCi/g	0.0115	0.019	0.023		0.04235	N
957136	1202052272-1	05-MAR-10 10:54	Californium-249	0.0162 pCi/g	0.0094 3	0.0156	0.0189		0.03501	N
957136	1202052272-1	05-MAR-10 10:54	Cesium-134	0.0188 pCi/g	0.0098 4	0.0162	0.0197	0.100	0.03803	Y
957136	1202052272-1	05-MAR-10 10:54	Cobalt-57	0.0105 pCi/g	0.0051 7	0.0085 3	0.0103		0.01936	N
957136	1202052272-1	05-MAR-10 10:54	Iodine-131	0.0121 pCi/g	0.0139	0.0229	0.0277		0.04951	N
957136	1202052272-1	05-MAR-10 10:54	Iodine-133	4.01 pCi/g	3.03	5	6.06		0	N
957136	1202052272-1	05-MAR-10 10:54	Lead-210	2.58 pCi/g	2.05	3.37	4.09		7.356	N
957136	1202052272-1	05-MAR-10 10:54	Lead-212	0.0169 pCi/g	0.0155	0.0255	0.0309	0.100	0.05287	Y ✓
957136	1202052272-1	05-MAR-10 10:54	Molybdenum-99	0.640 pCi/g	0.436	0.72	0.872		1.621	N
957136	1202052272-1	05-MAR-10 10:54	Neodymium-147	0.132 pCi/g	0.081	0.134	0.162		0.2972	N
957136	1202052272-1	05-MAR-10 10:54	Promethium-149	2.22 pCi/g	1.97	3.26	3.95		7.19	N
957136	1202052272-1	05-MAR-10 10:54	Radium-228	0.0381 pCi/g	0.0386	0.0637	0.0772	0.500	0.1434	Y ✓
957136	1202052272-1	05-MAR-10 10:54	Scandium-46	0.00578 pCi/g	0.0066 5	0.011	0.0133		0.02426	N
957136	1202052272-1	05-MAR-10 10:54	Silver-108m	0.00754 pCi/g	0.0075 1	0.0124	0.015		0.02668	N
957136	1202052272-1	05-MAR-10 10:54	Tellurium-132	0.0742 pCi/g	0.0309	0.0511	0.0619		0.1184	N
957136	1202052272-1	05-MAR-10 10:54	Thorium-228	0.0169 pCi/g	0.0155	0.0255	0.0309		0.05287	N
957136	1202052272-1	05-MAR-10 10:54	Thorium-232	0.0381 pCi/g	0.0386	0.0637	0.0772		0.1434	N
957136	1202052272-1	05-MAR-10 10:54	Yttrium-88	0.0144 pCi/g	0.0064 4	0.0106	0.0129	0.100	0.02988	Y
957136	1202052272-1	05-MAR-10 10:54	Zinc-65	0.0347 pCi/g	0.0203	0.0336	0.0407		0.07637	N

VAX/VMS Nuclide Identification Report Generated 5-MAR-2010 12:28:38.41

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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797001.CNF;1
Sample date        : 17-FEB-2010 12:00:00 Acquisition date : 5-MAR-2010 10:27:27.
Sample ID          : G247797001      Sample quantity   : 1.28850E+02 GRAM
Detector name      : GAM05           Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00   Elapsed real time: 0 02:00:02.02  0.0%
Energy tolerance   : 1.50000 keV     Analyst Initials : MXR1
Abundance limit    : 75.00000        Sensitivity      : 5.00000
Batch ID           : 957136          Detector SN#     :
Matrix Spike ID    :                 LCS ID            : 1032-A
*****

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Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.12*	282	817	1.39	93.22	86	15	3.92E-02	23.8	
2	0	62.93*	201	876	1.17	126.85	122	10	2.79E-02	29.0	
3	2	74.28*	1019	775	1.49	149.55	142	19	1.42E-01	6.1	6.23E+00
4	2	76.61*	1307	573	1.17	154.20	142	19	1.82E-01	4.3	
5	4	83.81*	236	417	1.83	168.60	165	29	3.28E-02	15.9	9.47E-01
6	4	86.73*	535	528	1.54	174.44	165	29	7.44E-02	9.1	
7	4	89.42	302	405	1.19	179.82	165	29	4.19E-02	12.9	
8	4	92.36*	449	626	1.76	185.69	165	29	6.24E-02	12.7	
9	0	128.92	154	510	1.18	258.81	254	11	2.14E-02	29.6	
10	0	185.60*	221	438	1.58	372.15	367	11	3.07E-02	20.0	
11	0	208.71	180	408	1.29	418.36	412	13	2.51E-02	24.3	
12	3	238.15*	1606	241	1.27	477.22	469	21	2.23E-01	3.0	1.49E+00
13	3	241.21*	432	263	1.73	483.34	469	21	6.00E-02	10.6	
14	0	269.53	119	224	0.77	539.96	536	9	1.65E-02	24.6	
15	1	294.69*	518	132	1.55	590.28	582	25	7.19E-02	6.0	2.59E+00
16	1	299.60	144	138	1.74	600.10	582	25	2.00E-02	18.0	
17	0	327.69	58	224	0.86	656.25	649	11	7.99E-03	52.4	
18	0	337.71	269	253	1.32	676.30	668	13	3.74E-02	13.6	
19	0	351.34*	758	277	1.52	703.55	695	16	1.05E-01	6.2	
20	0	462.73	86	126	1.25	926.25	922	11	1.20E-02	27.6	
21	0	510.05*	106	224	2.48	1020.85	1014	20	1.47E-02	38.2	
22	0	582.57*	465	166	1.41	1165.82	1158	16	6.46E-02	7.9	
23	0	608.59*	567	131	1.48	1217.82	1212	14	7.88E-02	6.1	
24	0	726.67	122	108	1.86	1453.86	1447	17	1.69E-02	21.4	
25	0	769.17	109	122	1.94	1538.79	1529	21	1.51E-02	27.5	
26	0	794.11	66	44	1.35	1588.65	1583	11	9.14E-03	23.1	
27	0	860.24	78	79	1.67	1720.81	1713	17	1.08E-02	28.7	
28	0	910.18*	288	55	1.53	1820.62	1815	12	4.00E-02	7.9	
29	1	963.42	55	62	2.19	1927.01	1921	26	7.69E-03	31.1	1.56E+00
30	1	968.02*	169	67	1.81	1936.20	1921	26	2.35E-02	12.3	
31	0	1119.72	92	97	1.85	2239.34	2233	16	1.27E-02	27.2	
32	0	1459.47*	1327	33	2.23	2918.10	2908	18	1.84E-01	2.9	
33	0	1763.00	105	11	2.43	3524.33	3517	14	1.46E-02	11.7	

Flag: "\*" = Peak area was modified by background subtraction

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797001.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 17-FEB-2010 12:00:00 Acquisition date : 5-MAR-2010 10:27:27
Sample ID        : G247797001 Sample quantity : 128.85 GRAM
Sample type      : SOLID Sample geometry :
Detector name    : GAMMA5 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:02.02 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

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## 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	+	1460.82	*	3.611E+01	3.087E+00	6.905E-01	4.295E-02	52.292
CD-109	+	88.03	*	5.488E+00	1.080E+00	1.105E+00	8.417E-02	4.965
SN-126	+	64.28		7.551E-01	4.515E-01	4.620E-01	6.886E-02	1.634
	+	86.94		2.228E+00	1.002E+00	4.472E-01	1.841E-01	4.981
	+	87.57	*	5.358E-01	1.055E-01	1.078E-01	8.207E-03	4.972
CS-135	+	268.22	*	4.954E-01	2.493E-01	2.812E-01	3.008E-02	1.762
TL-208		277.37		5.033E-01	4.758E-01	8.215E-01	1.069E-01	0.613
	+	583.19	*	7.045E-01	1.221E-01	7.405E-02	5.438E-03	9.515
	+	860.56		1.141E+00	6.658E-01	5.368E-01	5.447E-02	2.126
PB-210	+	46.54	*	2.544E+00	1.224E+00	9.093E-01	7.013E-02	2.798
BI-211	+	72.87		3.002E+01	4.350E+00	3.597E+00	2.831E-01	8.346
	+	351.06	*	4.856E+00	7.110E-01	3.927E-01	3.113E-02	12.364
PB-212	+	74.82		3.592E+00	6.269E-01	4.318E-01	5.391E-02	8.319
	+	77.11		2.778E+00	3.217E-01	2.607E-01	2.029E-02	10.655
	+	238.63	*	2.245E+00	2.785E-01	1.101E-01	1.192E-02	20.389
	+	300.09		3.163E+00	1.188E+00	1.414E+00	1.519E-01	2.236
BI-214	+	609.32	*	1.672E+00	2.478E-01	1.494E-01	1.261E-02	11.189
	+	1120.29		1.422E+00	7.854E-01	6.715E-01	6.451E-02	2.118
	+	1764.49		2.330E+00	5.626E-01	4.493E-01	2.597E-02	5.186
PB-214	+	74.82		6.366E+00	1.052E+00	7.653E-01	8.529E-02	8.319
	+	77.11		4.897E+00	6.962E-01	4.596E-01	5.212E-02	10.655
	+	242.00		3.665E+00	8.829E-01	6.483E-01	7.366E-02	5.653
	+	295.22		2.016E+00	3.297E-01	2.498E-01	2.769E-02	8.072
	+	351.93	*	1.762E+00	2.757E-01	1.429E-01	1.376E-02	12.336
RA-224	+	240.99	*	6.480E+00	1.515E+00	1.180E+00	1.155E-01	5.491
RA-226	+	609.32	*	1.672E+00	2.478E-01	1.494E-01	1.261E-02	11.189
	+	1120.29		1.422E+00	7.854E-01	6.715E-01	6.451E-02	2.118
	+	1764.49		2.330E+00	5.626E-01	4.493E-01	2.597E-02	5.186
AC-228	+	338.32		1.913E+00	9.499E-01	4.384E-01	1.822E-01	4.364
	+	911.20	*	2.151E+00	4.376E-01	2.706E-01	3.434E-02	7.948
	+	968.97		2.179E+00	7.588E-01	5.581E-01	1.375E-01	3.905
RA-228	+	338.32		1.913E+00	9.499E-01	4.384E-01	1.822E-01	4.364
	+	911.20	*	2.151E+00	4.376E-01	2.706E-01	3.434E-02	7.948
	+	968.97		2.179E+00	7.588E-01	5.581E-01	1.375E-01	3.905



---- Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TH-228	+	74.82		3.592E+00	5.222E-01	4.318E-01	3.418E-02	8.319
	+	77.11		2.778E+00	3.217E-01	2.607E-01	2.029E-02	10.655
	+	238.63	*	2.245E+00	2.785E-01	1.101E-01	1.192E-02	20.389
	+	300.09		3.163E+00	2.247E+00	1.414E+00	8.663E-01	2.236
TH-229	+	85.43		1.349E+00	2.655E-01	2.696E-01	2.061E-02	5.002
	+	88.47		4.689E-01	1.264E-01	1.666E-01	1.281E-02	2.815
		193.51	*	-6.867E-01	6.639E-01	1.012E+00	1.011E-01	-0.678
		210.85		1.834E+00	1.235E+00	1.842E+00	1.835E-01	0.996
TH-232	+	338.32		1.913E+00	5.406E-01	4.384E-01	3.437E-02	4.364
	+	911.20	*	2.151E+00	4.376E-01	2.706E-01	3.434E-02	7.948
	+	968.97		2.179E+00	7.588E-01	5.581E-01	1.375E-01	3.905
TH-234	+	63.29	*	1.959E+00	1.189E+00	1.203E+00	2.183E-01	1.629
	+	92.59		3.989E+00	1.337E+00	9.572E-01	2.106E-01	4.167
U-235	+	89.96		3.243E+00	1.151E+00	1.157E+00	2.822E-01	2.803
	+	93.35		3.013E+00	1.031E+00	7.248E-01	1.672E-01	4.157
		143.76	*	2.939E-01	2.567E-01	4.181E-01	7.975E-02	0.703
		163.33		-8.047E-02	5.440E-01	8.712E-01	1.635E-01	-0.092
	+	185.72		1.990E-01	8.209E-02	7.913E-02	7.898E-03	2.514
		205.31		1.278E-01	6.704E-01	9.433E-01	1.776E-01	0.135
NP-237	+	86.48	*	1.599E+00	4.598E-01	3.205E-01	7.152E-02	4.988
		95.86		-2.401E-01	1.045E+00	1.482E+00	3.575E-01	-0.162
U-238	+	63.29	*	1.959E+00	1.189E+00	1.203E+00	2.183E-01	1.629
	+	92.59		3.989E+00	1.063E+00	9.572E-01	8.044E-02	4.167
ANH-511	+	511.00	*	1.207E-01	9.254E-02	5.830E-02	3.731E-03	2.070

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7		477.60	*	-1.442E-01	4.296E-01	6.866E-01	4.916E-02	-0.210
NA-22		1274.54	*	4.605E-02	5.970E-02	1.033E-01	6.015E-03	0.446
NA-24		1368.63	*	-1.404E+00	5.970E-02	Half-Life too short		
SC-46		889.28	*	-1.373E-02	5.410E-02	8.768E-02	8.807E-03	-0.157
	+	1120.55		2.422E-01	1.328E-01	1.597E-01	1.099E-02	1.517
V-48		944.13		-3.954E-01	1.255E+00	2.016E+00	1.950E-01	-0.196
		983.53	*	-6.882E-03	9.281E-02	1.516E-01	1.389E-02	-0.045
		1312.11		-4.057E-02	1.190E-01	1.858E-01	1.077E-02	-0.218
CR-51		320.08	*	-3.912E-01	4.755E-01	6.761E-01	5.974E-02	-0.579
MN-54		834.85	*	4.796E-02	5.216E-02	9.156E-02	8.388E-03	0.524
CO-56		846.77	*	1.193E-02	4.740E-02	8.026E-02	7.506E-03	0.149
		1037.84		-1.959E-01	4.078E-01	6.391E-01	5.632E-02	-0.307
		1238.28		1.649E-01	1.322E-01	2.317E-01	1.432E-02	0.712
		1771.35		-4.406E-01	3.923E-01	5.436E-01	3.139E-02	-0.810
CO-57		122.06	*	7.134E-03	3.040E-02	4.980E-02	7.066E-03	0.143
		136.47		-3.771E-03	2.476E-01	4.010E-01	5.370E-02	-0.009
CO-58		810.76	*	-2.455E-02	5.017E-02	8.009E-02	7.049E-03	-0.307
FE-59		1099.45	*	-5.674E-02	1.228E-01	1.922E-01	1.556E-02	-0.295
		1291.59		9.588E-02	1.611E-01	2.758E-01	2.048E-02	0.348
CO-60		1173.23		-2.278E-02	6.200E-02	9.780E-02	5.672E-03	-0.233

----- Non-Identified Nuclides -----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	1332.49	*		1.585E-02	5.459E-02	9.077E-02	5.253E-03	0.175
ZN-65	1115.54	*		1.123E-01	1.591E-01	2.382E-01	1.664E-02	0.471
SE-75	121.12			-3.004E-02	1.577E-01	2.548E-01	3.980E-02	-0.118
	136.00			-1.356E-02	4.787E-02	7.674E-02	1.001E-02	-0.177
	264.66	*		-5.980E-02	6.188E-02	8.421E-02	8.040E-03	-0.710
	279.54			6.341E-02	1.312E-01	2.234E-01	2.140E-02	0.284
	400.66			4.319E-01	3.252E-01	5.688E-01	5.186E-02	0.759
SR-85	514.00	*		6.484E-02	5.484E-02	8.467E-02	5.428E-03	0.766
Y-88	898.04			-1.687E-02	6.022E-02	9.746E-02	9.964E-03	-0.173
	1836.06	*		1.768E-02	4.596E-02	8.029E-02	4.594E-03	0.220
Y-91	1204.77	*		1.747E+01	3.065E+01	5.194E+01	3.018E+00	0.336
NB-94	702.65	*		-2.698E-02	4.444E-02	7.144E-02	5.112E-03	-0.378
	871.09			9.857E-03	4.227E-02	7.136E-02	6.955E-03	0.138
NB-95	765.81	*		8.565E-02	6.817E-02	1.084E-01	8.766E-03	0.790
NB-95M	235.69	*		1.748E+00	2.887E-01	4.078E-01	4.467E-02	4.287
ZR-95	724.19			2.618E-01	1.502E-01	2.462E-01	2.043E-02	1.063
	756.73	*		-8.131E-02	9.795E-02	1.534E-01	1.368E-02	-0.530
MO-99	140.51			-2.518E+01	3.364E+01	5.202E+01	1.324E+01	-0.484
	181.07			1.023E+01	3.052E+01	4.343E+01	8.446E+00	0.236
	366.42			-4.595E+01	1.399E+02	2.267E+02	1.556E+01	-0.203
	739.50	*		1.481E+01	2.061E+01	3.586E+01	5.476E+00	0.413
	777.92			8.653E+00	6.254E+01	9.118E+01	7.544E+00	0.095
TC-99M	140.51	*		-3.387E+11	6.254E+01	Half-Life too short		
RU-103	497.08	*		1.201E-02	5.217E-02	8.622E-02	1.094E-02	0.139
	610.33			1.599E+01	3.039E+00	3.611E+00	5.551E-01	4.428
RH-106	621.93	*		2.646E-01	3.948E-01	6.662E-01	8.019E-02	0.397
	1050.41			1.276E+00	3.367E+00	5.692E+00	4.635E-01	0.224
RU-106	621.93	*		2.646E-01	3.939E-01	6.662E-01	4.392E-02	0.397
	1050.41			1.276E+00	3.367E+00	5.692E+00	4.635E-01	0.224
AG-108M	433.94	*		-2.837E-02	3.793E-02	5.935E-02	3.832E-03	-0.478
	614.28			1.498E-03	5.247E-02	7.310E-02	5.085E-03	0.020
	722.91			1.722E-02	5.464E-02	8.127E-02	6.313E-03	0.212
AG-110M	657.76	*		-1.036E-02	4.434E-02	6.987E-02	4.830E-03	-0.148
	677.62			2.477E-01	3.919E-01	6.850E-01	4.871E-02	0.362
	706.68			1.049E-01	2.692E-01	4.624E-01	3.471E-02	0.227
	763.94			-2.009E-02	2.524E-01	3.547E-01	2.949E-02	-0.057
	884.68			-1.544E-02	6.581E-02	1.068E-01	1.090E-02	-0.145
	937.49			-2.556E-01	1.533E-01	2.133E-01	2.139E-02	-1.199
	1384.29			3.928E-03	1.717E-01	2.881E-01	1.776E-02	0.014
	1505.03			1.277E-01	3.179E-01	5.573E-01	3.276E-02	0.229
SN-113	391.69	*		9.478E-03	5.705E-02	9.482E-02	5.882E-03	0.100
CD-115	260.90			1.444E+02	2.081E+02	3.582E+02	3.425E+01	0.403
	492.35			3.115E+00	6.400E+01	1.047E+02	6.629E+00	0.030
	527.90	*		-1.134E+01	1.881E+01	2.924E+01	1.887E+00	-0.388
SN-117M	156.02			-8.930E-01	2.891E+00	4.609E+00	5.082E-01	-0.194
	158.56	*		5.344E-02	6.931E-02	1.146E-01	1.232E-02	0.466
TE-123M	159.00	*		1.923E-02	3.487E-02	5.730E-02	6.157E-03	0.336
SB-124	602.73			-1.072E-02	6.320E-02	8.650E-02	5.697E-03	-0.124
	645.85			1.991E-01	6.265E-01	1.032E+00	7.456E-02	0.193

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Activity Key	(pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
SB-125		722.78		6.557E-02	5.516E-01	8.053E-01	6.181E-02	0.081
		1690.97 *		3.466E-02	8.035E-02	1.438E-01	9.142E-03	0.241
		427.87 *		3.589E-02	1.151E-01	1.923E-01	1.204E-02	0.187
	+	463.37		8.674E-01	4.824E-01	6.610E-01	4.684E-02	1.312
		600.60		1.139E-01	2.524E-01	4.084E-01	3.021E-02	0.279
TE-125M		635.95		4.412E-01	3.396E-01	5.981E-01	4.476E-02	0.738
I-126		109.28 *		-7.516E+00	1.131E+01	1.798E+01	2.334E+00	-0.418
		388.63		-1.782E-01	2.308E-01	3.647E-01	2.170E-02	-0.489
		666.33 *		-6.602E-02	2.972E-01	4.687E-01	3.112E-02	-0.141
		753.82		2.281E+00	2.495E+00	4.411E+00	3.488E-01	0.517
SB-126		414.70		-6.841E-03	1.020E-01	1.670E-01	9.947E-03	-0.041
		666.50		-2.876E-02	1.018E-01	1.597E-01	1.061E-02	-0.180
		695.00		-3.098E-02	1.070E-01	1.760E-01	1.240E-02	-0.176
		697.00		-2.580E-04	4.006E-01	6.269E-01	4.435E-02	0.000
		720.70 *		2.877E-02	2.149E-01	3.144E-01	2.332E-02	0.092
SB-127		856.80		1.162E+00	7.120E-01	1.185E+00	1.128E-01	0.981
		252.40		-6.856E+00	6.293E+00	8.878E+00	3.713E+00	-0.772
		473.00		2.121E+00	2.308E+00	3.969E+00	4.585E-01	0.534
		685.70 *		7.712E-01	2.040E+00	3.502E+00	3.645E-01	0.220
		783.70		3.466E+00	5.112E+00	8.900E+00	1.104E+00	0.389
I-131		80.19		5.522E+00	5.821E+00	6.466E+00	5.040E-01	0.854
		284.31		-1.353E+00	1.854E+00	2.983E+00	2.866E-01	-0.454
		364.49 *		-1.143E-01	1.462E-01	2.304E-01	1.731E-02	-0.496
TE-132		636.99		2.057E+00	2.168E+00	3.729E+00	2.697E-01	0.552
		49.72		-7.255E+00	5.851E+00	8.034E+00	8.122E-01	-0.903
		111.76		1.328E+01	4.509E+01	7.418E+01	1.040E+01	0.179
		116.30		-2.507E+00	3.945E+01	6.410E+01	9.504E+00	-0.039
		228.16 *		2.050E-01	1.030E+00	1.746E+00	2.915E-01	0.117
BA-133		81.00		9.771E-02	1.137E-01	1.248E-01	1.876E-02	0.783
		276.40		6.851E-01	4.531E-01	7.682E-01	1.118E-01	0.892
		302.85		3.576E-02	1.820E-01	2.669E-01	3.520E-02	0.134
		356.01 *		-2.717E-02	5.822E-02	8.042E-02	9.717E-03	-0.338
		383.85		7.930E-02	3.700E-01	6.169E-01	6.701E-02	0.129
I-133		529.87 *		6.907E-03	3.700E-01	Half-Life	too short	
		875.33		3.242E-02	3.700E-01	Half-Life	too short	
		1298.22		-1.785E-01	3.700E-01	Half-Life	too short	
CS-134		563.25		2.305E-01	4.678E-01	7.824E-01	5.197E-02	0.295
		569.33		1.594E-01	2.419E-01	4.095E-01	2.743E-02	0.389
		604.72		-2.041E-04	5.481E-02	7.619E-02	5.038E-03	-0.003
		795.86 *		5.422E-02	7.166E-02	1.102E-01	9.489E-03	0.492
		801.95		2.463E-01	5.195E-01	8.668E-01	7.534E-02	0.284
I-135		1365.19		1.034E+00	1.491E+00	2.614E+00	1.670E-01	0.396
		546.56		9.613E+10	1.491E+00	Half-Life	too short	
		836.80		2.535E+11	1.491E+00	Half-Life	too short	
		1038.76		-1.327E+11	1.491E+00	Half-Life	too short	
		1131.51		6.269E+10	1.491E+00	Half-Life	too short	
		1260.41 *		1.447E+09	1.491E+00	Half-Life	too short	
		1457.56		1.446E+13	1.491E+00	Half-Life	too short	
		1678.03		-4.973E+10	1.491E+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	1791.20			-6.080E+10	1.491E+00	Half-Life too short		
	153.25			3.918E-02	1.088E+00	1.759E+00	2.221E-01	0.022
	176.60			-5.498E-01	6.486E-01	1.003E+00	1.077E-01	-0.548
	273.65			-1.225E+00	7.854E-01	1.022E+00	1.027E-01	-1.198
	340.55			3.292E-01	2.073E-01	3.270E-01	2.659E-02	1.007
	818.51			-3.357E-02	9.320E-02	1.500E-01	1.337E-02	-0.224
BA-137M	1048.07	*		-3.044E-02	1.489E-01	2.396E-01	2.052E-02	-0.127
	1235.36			1.443E+00	8.718E-01	1.554E+00	1.538E-01	0.929
	661.66	*		4.161E-02	4.411E-02	7.584E-02	4.987E-03	0.549
CS-137	661.66	*		4.395E-02	4.659E-02	8.012E-02	5.286E-03	0.549
CE-139	165.86	*		3.870E-02	3.694E-02	6.151E-02	6.106E-03	0.629
BA-140	162.66			-3.821E-01	1.047E+00	1.663E+00	1.793E-01	-0.230
	304.85			-2.899E-01	1.869E+00	2.672E+00	7.832E-01	-0.109
LA-140	423.72			2.021E+00	2.627E+00	4.366E+00	1.411E+00	0.463
	537.26	*		-1.361E-03	3.491E-01	5.664E-01	1.894E-01	-0.002
	328.76			5.279E-01	5.552E-01	6.850E-01	5.925E-02	0.771
	487.02			-5.186E-02	1.822E-01	2.916E-01	2.048E-02	-0.178
	815.77			3.459E-01	4.119E-01	7.286E-01	7.174E-02	0.475
CE-141	1596.21	*		-1.117E-01	1.087E-01	1.520E-01	8.933E-03	-0.735
	145.44	*		4.900E-02	7.923E-02	1.305E-01	1.596E-02	0.375
CE-143	57.36			6.532E-04	7.923E-02	Half-Life too short		
	293.27	*		2.704E-03	7.923E-02	Half-Life too short		
	664.57			-1.060E-04	7.923E-02	Half-Life too short		
CE-144	721.93			5.759E-04	7.923E-02	Half-Life too short		
	80.12			2.862E+00	2.937E+00	3.267E+00	2.525E-01	0.876
PM-144	133.52	*		9.318E-02	2.652E-01	3.821E-01	6.985E-02	0.244
	476.78			5.164E-02	8.476E-02	1.433E-01	1.041E-02	0.360
PR-144	618.01			1.422E-02	4.215E-02	6.957E-02	4.803E-03	0.204
	696.49	*		-1.796E-02	4.972E-02	7.603E-02	5.376E-03	-0.236
	696.51	*		-1.302E+00	3.725E+00	5.702E+00	4.030E-01	-0.228
PM-146	1489.16			-4.759E+00	1.622E+01	2.597E+01	1.526E+00	-0.183
	453.88	*		2.742E-02	5.328E-02	8.980E-02	7.824E-03	0.305
ND-147	633.25			-1.826E+00	1.968E+00	2.731E+00	1.032E+00	-0.668
	735.93			1.043E-01	2.126E-01	3.401E-01	9.434E-02	0.307
	747.24			-1.224E-01	1.273E-01	1.955E-01	2.761E-02	-0.626
	91.11			1.658E+00	4.460E-01	5.760E-01	5.126E-02	2.879
	319.41			-1.976E+00	4.117E+00	6.478E+00	5.436E-01	-0.305
PM-149	531.02	*		5.020E-01	7.470E-01	1.264E+00	1.746E-01	0.397
	285.90	*		1.878E+01	1.422E+02	2.327E+02	3.688E+01	0.081
EU-152	121.78			1.059E-02	8.747E-02	1.428E-01	2.134E-02	0.074
	244.70			9.941E-02	4.201E-01	6.227E-01	6.071E-02	0.160
	344.28	*		-9.318E-02	1.456E-01	1.865E-01	1.533E-02	-0.500
	778.90			-1.560E-02	3.520E-01	5.419E-01	4.491E-02	-0.029
	964.08			7.678E-01	4.824E-01	7.573E-01	7.135E-02	1.014
	1085.87			-3.038E-01	5.211E-01	8.069E-01	6.074E-02	-0.376
	1112.07			-1.596E-01	5.020E-01	7.074E-01	4.981E-02	-0.226
GD-153	1408.01			1.435E-01	2.495E-01	4.403E-01	2.573E-02	0.326
	69.67			6.832E-02	1.351E+00	1.962E+00	1.560E-01	0.035
	97.43	*		3.588E-02	9.624E-02	1.403E-01	1.301E-02	0.256

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
EU-154		103.18		-8.104E-02	1.241E-01	1.980E-01	2.048E-02	-0.409
		123.07		3.341E-02	6.692E-02	1.024E-01	1.631E-02	0.326
		723.31		2.176E-01	2.550E-01	3.965E-01	3.350E-02	0.549
		873.19		-1.041E-02	3.579E-01	5.912E-01	7.544E-02	-0.018
		996.26		6.793E-02	4.571E-01	7.607E-01	1.343E-01	0.089
EU-155		1004.73		-7.179E-02	2.548E-01	4.072E-01	4.810E-02	-0.176
		1274.44	*	1.304E-01	1.694E-01	2.925E-01	2.758E-02	0.446
	+	86.55		6.499E-01	1.282E-01	1.837E-01	1.420E-02	3.537
		105.31	*	1.166E-01	1.204E-01	1.988E-01	2.153E-02	0.586
	+	86.79		1.737E+00	3.420E-01	4.915E-01	3.748E-02	3.535
TB-160		197.04		6.956E-01	7.321E-01	1.191E+00	1.190E-01	0.584
		215.65		-1.878E-01	9.263E-01	1.464E+00	1.456E-01	-0.128
	+	298.57		4.489E-01	1.664E-01	2.483E-01	2.210E-02	1.808
		879.36	*	-2.442E-02	1.851E-01	3.031E-01	2.995E-02	-0.081
	+	962.29		1.453E+00	9.131E-01	1.351E+00	1.276E-01	1.076
HO-166M		966.15		1.898E+00	4.151E-01	7.624E-01	7.162E-02	2.490
		1177.93		1.471E-01	4.801E-01	8.009E-01	4.647E-02	0.184
		1271.85		1.791E-01	1.003E+00	1.649E+00	9.584E-02	0.109
		80.57		2.668E-01	3.202E-01	3.531E-01	2.726E-02	0.756
	+	184.41		1.581E-01	6.522E-02	8.180E-02	8.162E-03	1.933
TA-182		280.46		-7.584E-02	1.021E-01	1.647E-01	1.524E-02	-0.461
		410.95		7.957E-02	3.324E-01	5.531E-01	3.283E-02	0.144
		711.68	*	-2.174E-02	7.709E-02	1.265E-01	9.217E-03	-0.172
		752.31		3.865E-01	3.597E-01	6.421E-01	5.063E-02	0.602
		810.29		-3.316E-02	7.522E-02	1.206E-01	1.058E-02	-0.275
IR-192		67.75		4.501E-02	1.127E-01	1.211E-01	9.698E-03	0.372
		100.11		1.798E-01	1.915E-01	3.115E-01	3.041E-02	0.577
		152.43		2.377E-01	4.286E-01	7.046E-01	8.037E-02	0.337
		222.11		-5.211E-02	4.044E-01	6.779E-01	6.723E-02	-0.077
		1121.30		5.469E-01	2.519E-01	4.201E-01	2.883E-02	1.302
HG-203		1189.05		2.696E-01	4.384E-01	7.461E-01	4.332E-02	0.361
		1221.41	*	-3.019E-02	3.002E-01	4.838E-01	2.813E-02	-0.062
		1231.02		-1.413E+00	7.595E-01	1.051E+00	6.113E-02	-1.344
	+	295.96		1.502E+00	2.259E-01	3.415E-01	3.079E-02	4.399
		308.46		3.772E-02	1.150E-01	1.943E-01	1.694E-02	0.194
BI-207		316.51	*	1.707E-02	3.954E-02	6.714E-02	5.698E-03	0.254
		468.07		-3.800E-02	9.129E-02	1.219E-01	8.622E-03	-0.312
		70.83		9.659E-01	1.110E+00	1.642E+00	2.578E-01	0.588
	+	72.87		7.565E+00	1.469E+00	1.380E+00	2.089E-01	5.481
		279.20	*	2.731E-02	4.737E-02	8.093E-02	7.676E-03	0.337
PB-211		72.81		1.727E+00	2.503E-01	3.136E-01	2.470E-02	5.506
	+	74.97		1.035E+00	1.500E-01	2.393E-01	1.873E-02	4.326
		569.70		2.489E-02	3.695E-02	6.267E-02	4.101E-03	0.397
		1063.66	*	6.907E-02	7.054E-02	1.245E-01	9.856E-03	0.555
		1770.23		-2.183E+00	9.272E-01	1.062E+00	6.131E-02	-2.056
BI-212		404.85	*	-1.594E+00	1.225E+00	1.434E+00	6.879E-01	-1.112
		427.09		9.497E-01	2.005E+00	3.300E+00	1.513E+00	0.288
		832.01		1.873E-01	1.348E+00	2.255E+00	1.171E+00	0.083
	+	727.33	*	2.876E+00	1.277E+00	1.516E+00	1.777E-01	1.897

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
RN-219		785.37		1.430E+00	3.922E+00	6.574E+00	5.514E-01	0.217
		1620.50		2.515E-02	2.455E+00	4.074E+00	2.391E-01	0.006
		271.23		4.787E-01	3.433E-01	5.318E-01	5.812E-02	0.900
		401.81	*	3.429E-01	5.176E-01	8.786E-01	1.184E-01	0.390
RA-223		81.07		2.280E-01	2.563E-01	2.835E-01	2.187E-02	0.804
	+	83.79		3.517E-01	1.151E-01	1.912E-01	1.466E-02	1.840
		94.87		1.167E+00	5.065E-01	7.813E-01	6.881E-02	1.493
		144.24		1.159E+00	8.495E-01	1.405E+00	1.821E-01	0.825
AC-227		154.21		-6.109E-02	4.756E-01	7.640E-01	9.065E-02	-0.080
	+	269.46		5.702E-01	2.857E-01	4.199E-01	4.029E-02	1.358
		323.87	*	8.783E-01	8.497E-01	1.297E+00	2.225E-01	0.677
	+	338.28		7.593E+00	2.239E+00	2.795E+00	3.222E-01	2.717
TH-227		79.69		1.410E+00	1.509E+00	1.657E+00	2.785E-01	0.851
		235.96		3.152E+00	4.578E-01	5.625E-01	6.395E-02	5.603
		256.23	*	3.193E-03	2.941E-01	4.933E-01	6.307E-02	0.006
	+	299.98		3.479E+00	1.330E+00	1.964E+00	2.528E-01	1.772
PA-231		304.50		-4.949E-01	2.147E+00	3.053E+00	5.069E-01	-0.162
		334.37		-5.605E-02	2.424E+00	3.484E+00	5.308E-01	-0.016
		79.80		2.104E+00	1.970E+00	2.157E+00	4.625E-01	0.976
		235.96		3.152E+00	4.449E-01	5.625E-01	6.097E-02	5.603
TH-231		256.23	*	3.193E-03	2.941E-01	4.933E-01	7.034E-02	0.006
	+	299.98		3.479E+00	1.330E+00	1.964E+00	2.528E-01	1.772
		304.50		-4.949E-01	2.147E+00	3.053E+00	5.069E-01	-0.162
		334.37		-5.605E-02	2.424E+00	3.484E+00	5.308E-01	-0.016
PA-233		283.69	*	-8.824E-01	1.681E+00	2.729E+00	4.076E-01	-0.323
		301.36		1.399E+00	7.867E-01	1.235E+00	1.519E-01	1.133
		81.07		2.280E-01	2.563E-01	2.835E-01	2.187E-02	0.804
	+	83.79		3.517E-01	1.151E-01	1.912E-01	1.466E-02	1.840
PA-234		94.87		1.167E+00	5.065E-01	7.813E-01	6.881E-02	1.493
		144.24		1.159E+00	8.495E-01	1.405E+00	1.821E-01	0.825
		154.21		-6.109E-02	4.756E-01	7.640E-01	9.065E-02	-0.080
	+	269.46		5.702E-01	2.857E-01	4.199E-01	4.029E-02	1.358
PA-234M		323.87	*	8.783E-01	8.497E-01	1.297E+00	2.225E-01	0.677
	+	338.28		7.593E+00	2.239E+00	2.795E+00	3.222E-01	2.717
		300.13		1.574E+00	6.137E-01	8.829E-01	1.322E-01	1.783
	+	311.90	*	-1.255E-02	7.477E-02	1.233E-01	1.089E-02	-0.102
PA-234M		340.48		1.545E+00	9.249E-01	1.365E+00	3.246E-01	1.132
		94.67		6.026E-01	1.957E-01	2.943E-01	3.681E-02	2.048
		98.44		1.051E-01	1.199E-01	1.568E-01	8.769E-02	0.670
		111.00		-5.213E-02	2.124E-01	3.434E-01	5.008E-02	-0.152
PA-234M		131.20		4.345E-02	1.410E-01	2.029E-01	2.725E-02	0.214
		569.50		2.118E-01	3.326E-01	5.624E-01	3.680E-02	0.377
		733.00		-5.391E-01	5.997E-01	7.674E-01	1.674E-01	-0.702
		880.51		-6.439E-02	3.690E-01	6.020E-01	5.959E-02	-0.107
PA-234M		883.24		-5.568E-02	3.827E-01	6.229E-01	4.199E-01	-0.089
		926.50		-1.485E-01	2.450E-01	3.798E-01	9.775E-02	-0.391
		946.00	*	2.267E-01	4.168E-01	7.123E-01	1.372E-01	0.318
		949.00		1.495E-01	6.352E-01	1.065E+00	1.024E-01	0.140
PA-234M		766.42		2.466E+01	2.154E+01	2.839E+01	1.438E+01	0.869

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NP-239	1001.03	*		-6.025E+00	5.814E+00	8.574E+00	8.761E-01	-0.703
	99.53			1.832E-01	1.813E-01	2.842E-01	2.744E-02	0.644
	103.37			-5.592E-03	1.111E-01	1.812E-01	1.880E-02	-0.031
	106.12			8.345E-02	9.603E-02	1.583E-01	1.726E-02	0.527
	117.23	*		-6.115E-01	4.683E-01	7.159E-01	9.414E-02	-0.854
	228.18			4.830E-02	2.553E-01	4.328E-01	4.277E-02	0.112
AM-241	277.60			2.214E-01	2.169E-01	3.757E-01	3.497E-02	0.589
	59.54	*		5.972E-02	8.306E-02	1.239E-01	1.109E-02	0.482
	278.00			8.595E-01	9.165E-01	1.584E+00	1.473E-01	0.543
CM-247	287.50			1.427E+00	1.602E+00	2.456E+00	2.241E-01	0.581
	402.40	*		-1.982E-02	4.859E-02	7.818E-02	4.600E-03	-0.254
	252.80			-1.135E+00	1.082E+00	1.720E+00	1.662E-01	-0.660
CF-249	333.37			-1.463E-01	2.917E-01	3.500E-01	2.797E-02	-0.418
	388.16	*		-1.204E-02	5.160E-02	8.399E-02	5.016E-03	-0.143
CF-251	177.52	*		1.326E-01	1.618E-01	2.673E-01	2.663E-02	0.496
	227.38			1.254E-01	4.135E-01	7.038E-01	6.959E-02	0.178
	285.41			1.338E+00	2.530E+00	4.321E+00	3.961E-01	0.310

# VAX/VMS Nuclide Identification Report Generated

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*****
*                                     GEL Laboratories LLC
*                                     2040 Savage Road
*                                     Charleston, SC 29414
*****
*
*                               DETECTOR DATA
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797001
* Acquisition date   : 5-MAR-2010 10:27:27 Detector SN#      :
* Detector ID        : GAM05 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 02:00:02.02 Half life ratio      : 8.000
*****
*
*                               SAMPLE DATA
*
* Sample date        : 17-FEB-2010 12:00:00 Nuclide Library : SOLID
* Sample ID          : G247797001 Analyst initials: MXR1
* Batch Number       : 957136 Sample Quantity: 1.2885E+02 GRAM
* Recovery           : 1.00000 Carrier Weight : 0.00000
*****
*
*                               QC DATA
*
* Standard Weight    : 0.00000
* CALIB. DATE/TIME   : 11-JUN-2009 16:41:00 MS Isotope      :
* MSD DPM            : 0.000 MSD Isotope                    :
* LCS DPM            : 0.000 LCS Isotope                     :
* LCSD DPM           : 0.000 LCSD Isotope                    :
*****

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## Combined Activity-MDA Report

### ---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM )	Act error	MDA (pCi/GRAM )	
K-40	3.611E+01	3.025E+00	6.908E-01	0.000E+00
CD-109	5.488E+00	1.059E+00	1.155E+00	0.000E+00
SN-126	5.358E-01	1.034E-01	1.126E-01	0.000E+00
CS-135	4.954E-01	2.443E-01	2.889E-01	0.000E+00
TL-208	7.045E-01	1.197E-01	7.516E-02	0.000E+00
PB-210	2.544E+00	1.200E+00	9.590E-01	0.000E+00
BI-211	4.856E+00	6.968E-01	4.018E-01	0.000E+00
PB-212	2.245E+00	2.729E-01	1.133E-01	0.000E+00
BI-214	1.672E+00	2.429E-01	1.516E-01	0.000E+00
PB-214	1.762E+00	2.702E-01	1.462E-01	0.000E+00
RA-224	6.480E+00	1.485E+00	1.214E+00	0.000E+00
RA-226	1.672E+00	2.429E-01	1.516E-01	0.000E+00
AC-228	2.151E+00	4.288E-01	2.727E-01	0.000E+00
RA-228	2.151E+00	4.288E-01	2.727E-01	0.000E+00
TH-228	2.245E+00	2.729E-01	1.133E-01	0.000E+00
TH-229	-6.867E-01	6.507E-01	1.045E+00	0.000E+00
TH-232	2.151E+00	4.288E-01	2.727E-01	0.000E+00
TH-234	1.959E+00	1.165E+00	1.263E+00	0.000E+00
U-235	2.939E-01	2.516E-01	4.336E-01	0.000E+00
NP-237	1.599E+00	4.506E-01	3.350E-01	0.000E+00
U-238	1.959E+00	1.165E+00	1.263E+00	0.000E+00
ANH-511	1.207E-01	9.069E-02	5.930E-02	0.000E+00

### ---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	-1.442E-01	4.210E-01	6.991E-01	0.000E+00 NOT IDENT.
NA-22	4.605E-02	5.850E-02	1.035E-01	0.000E+00 NOT IDENT.
NA-24	0.000E+00	2.427E+06	0.000E+00	0.000E+00 SHORT HLIF
SC-46	-1.373E-02	5.302E-02	8.841E-02	0.000E+00 FAIL ABUN
V-48	-6.882E-03	9.095E-02	1.526E-01	0.000E+00 NOT IDENT.



CR-51	-3.912E-01	4.660E-01	6.927E-01	0.000E+00	NOT IDENT.
MN-54	4.796E-02	5.112E-02	9.242E-02	0.000E+00	NOT IDENT.
CO-56	1.193E-02	4.645E-02	8.099E-02	0.000E+00	NOT IDENT.
CO-57	7.134E-03	2.979E-02	5.178E-02	0.000E+00	NOT IDENT.
CO-58	-2.455E-02	4.916E-02	8.087E-02	0.000E+00	NOT IDENT.
FE-59	-5.674E-02	1.203E-01	1.932E-01	0.000E+00	NOT IDENT.
CO-60	1.585E-02	5.349E-02	9.094E-02	0.000E+00	NOT IDENT.
ZN-65	1.123E-01	1.559E-01	2.393E-01	0.000E+00	NOT IDENT.
SE-75	-5.980E-02	6.064E-02	8.653E-02	0.000E+00	NOT IDENT.
SR-85	6.484E-02	5.374E-02	8.612E-02	0.000E+00	NOT IDENT.
Y-88	1.768E-02	4.504E-02	8.001E-02	0.000E+00	NOT IDENT.
Y-91	1.747E+01	3.004E+01	5.212E+01	0.000E+00	NOT IDENT.
NB-94	-2.698E-02	4.356E-02	7.230E-02	0.000E+00	NOT IDENT.
NB-95	8.565E-02	6.680E-02	1.095E-01	0.000E+00	NOT IDENT.
NB-95M	0.000E+00	2.830E-01	4.198E-01	0.000E+00	NOT IDENT.
ZR-95	-8.131E-02	9.599E-02	1.551E-01	0.000E+00	NOT IDENT.
MO-99	1.481E+01	2.019E+01	3.626E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	4.481E+17	0.000E+00	0.000E+00	SHORT HLIF
RU-103	1.201E-02	5.113E-02	8.774E-02	0.000E+00	NOT IDENT.
RH-106	2.646E-01	3.869E-01	6.756E-01	0.000E+00	NOT IDENT.
RU-106	2.646E-01	3.860E-01	6.756E-01	0.000E+00	NOT IDENT.
AG-108M	-2.837E-02	3.717E-02	6.052E-02	0.000E+00	NOT IDENT.
AG-110M	-1.036E-02	4.345E-02	7.079E-02	0.000E+00	NOT IDENT.
SN-113	9.478E-03	5.591E-02	9.685E-02	0.000E+00	NOT IDENT.
CD-115	-1.134E+01	1.844E+01	2.973E+01	0.000E+00	NOT IDENT.
SN-117M	5.344E-02	6.792E-02	1.187E-01	0.000E+00	NOT IDENT.
TE-123M	1.923E-02	3.418E-02	5.934E-02	0.000E+00	NOT IDENT.
SB-124	3.466E-02	7.875E-02	1.435E-01	0.000E+00	NOT IDENT.
SB-125	3.589E-02	1.128E-01	1.961E-01	0.000E+00	FAIL ABUN
TE-125M	-7.516E+00	1.108E+01	1.873E+01	0.000E+00	NOT IDENT.
I-126	-6.602E-02	2.913E-01	4.747E-01	0.000E+00	NOT IDENT.
SB-126	2.877E-02	2.106E-01	3.181E-01	0.000E+00	NOT IDENT.
SB-127	7.712E-01	1.999E+00	3.545E+00	0.000E+00	NOT IDENT.
I-131	-1.143E-01	1.432E-01	2.356E-01	0.000E+00	NOT IDENT.
TE-132	2.050E-01	1.009E+00	1.798E+00	0.000E+00	NOT IDENT.
BA-133	-2.717E-02	5.706E-02	8.226E-02	0.000E+00	NOT IDENT.
I-133	0.000E+00	1.420E+04	0.000E+00	0.000E+00	SHORT HLIF
CS-134	5.422E-02	7.022E-02	1.113E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	6.391E+16	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-3.044E-02	1.459E-01	2.410E-01	0.000E+00	NOT IDENT.
BA-137M	4.161E-02	4.322E-02	7.683E-02	0.000E+00	NOT IDENT.
CS-137	4.395E-02	4.566E-02	8.116E-02	0.000E+00	NOT IDENT.
CE-139	3.870E-02	3.620E-02	6.366E-02	0.000E+00	NOT IDENT.
BA-140	-1.361E-03	3.421E-01	5.757E-01	0.000E+00	NOT IDENT.
LA-140	-1.117E-01	1.065E-01	1.518E-01	0.000E+00	FAIL ABUN
CE-141	4.900E-02	7.764E-02	1.354E-01	0.000E+00	NOT IDENT.
CE-143	0.000E+00	6.856E+02	0.000E+00	0.000E+00	SHORT HLIF
CE-144	9.318E-02	2.599E-01	3.967E-01	0.000E+00	NOT IDENT.
PM-144	-1.796E-02	4.872E-02	7.696E-02	0.000E+00	NOT IDENT.
PR-144	-1.302E+00	3.650E+00	5.772E+00	0.000E+00	NOT IDENT.
PM-146	2.742E-02	5.221E-02	9.151E-02	0.000E+00	NOT IDENT.
ND-147	5.020E-01	7.320E-01	1.285E+00	0.000E+00	FAIL ABUN
PM-149	1.878E+01	1.394E+02	2.388E+02	0.000E+00	NOT IDENT.
EU-152	-9.318E-02	1.427E-01	1.909E-01	0.000E+00	FAIL ABUN
GD-153	3.588E-02	9.431E-02	1.464E-01	0.000E+00	NOT IDENT.
EU-154	1.304E-01	1.660E-01	2.932E-01	0.000E+00	NOT IDENT.
EU-155	1.166E-01	1.179E-01	2.071E-01	0.000E+00	FAIL ABUN
TB-160	-2.442E-02	1.814E-01	3.056E-01	0.000E+00	FAIL ABUN
HO-166M	-2.174E-02	7.555E-02	1.280E-01	0.000E+00	FAIL ABUN
TA-182	-3.019E-02	2.942E-01	4.853E-01	0.000E+00	NOT IDENT.
IR-192	1.707E-02	3.875E-02	6.881E-02	0.000E+00	FAIL ABUN
HG-203	2.731E-02	4.642E-02	8.310E-02	0.000E+00	FAIL ABUN
BI-207	6.907E-02	6.913E-02	1.251E-01	0.000E+00	FAIL ABUN
PB-211	-1.594E+00	1.201E+00	1.464E+00	0.000E+00	NOT IDENT.
BI-212	0.000E+00	1.251E+00	1.534E+00	0.000E+00	FAIL ABUN
RN-219	3.429E-01	5.073E-01	8.970E-01	0.000E+00	NOT IDENT.
RA-223	8.783E-01	8.327E-01	1.328E+00	0.000E+00	FAIL ABUN
AC-227	3.193E-03	2.882E-01	5.071E-01	0.000E+00	FAIL ABUN
TH-227	3.193E-03	2.882E-01	5.071E-01	0.000E+00	FAIL ABUN
PA-231	-8.824E-01	1.647E+00	2.801E+00	0.000E+00	NOT IDENT.
TH-231	8.783E-01	8.327E-01	1.328E+00	0.000E+00	FAIL ABUN
PA-233	-1.255E-02	7.327E-02	1.264E-01	0.000E+00	FAIL ABUN
PA-234	2.267E-01	4.085E-01	7.175E-01	0.000E+00	NOT IDENT.
PA-234M	-6.025E+00	5.697E+00	8.629E+00	0.000E+00	NOT IDENT.
NP-239	-6.115E-01	4.590E-01	7.448E-01	0.000E+00	NOT IDENT.
AM-241	5.972E-02	8.140E-02	1.302E-01	0.000E+00	NOT IDENT.
CM-247	-1.982E-02	4.761E-02	7.982E-02	0.000E+00	NOT IDENT.
CF-249	-1.204E-02	5.057E-02	8.580E-02	0.000E+00	NOT IDENT.

CF-251	1.326E-01	1.586E-01	2.763E-01	0.000E+00 NOT IDENT.
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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797001.CNF;1
Sample date        : 17-FEB-2010 12:00:00 Acquisition date : 5-MAR-2010 10:27:27.
Sample ID          : G247797001          Sample quantity  : 1.28850E+02 GRAM
Detector name      : GAM05                Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00        Elapsed real time: 0 02:00:02.02  0.0%
Energy tolerance   : 1.50000 keV          Analyst Initials : MXR1
Abundance limit    : 75.00000             Sensitivity       : 5.00000
Batch ID           : 957136               Detector SN#      :
Matrix Spike ID    :                     LCS ID           : 1032-A
*****

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## Nuclide Line Activity Report

## Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	1327	10.66*	1.004E+00	3.611E+01	3.611E+01	8.55
CD-109	88.03	535	3.70*	7.868E+00	5.358E+00	5.488E+00	19.69
SN-126	64.28	201	9.60	8.063E+00	7.551E-01	7.551E-01	59.80
	86.94	535	8.90	7.868E+00	2.228E+00	2.228E+00	44.99
	87.57	535	37.00*	7.868E+00	5.358E-01	5.358E-01	19.69
CS-135	268.22	119	16.00*	4.357E+00	4.954E-01	4.954E-01	50.32
TL-208	277.37	-----	6.60	4.261E+00	-----	Line Not Found	-----
	583.19	465	85.00*	2.261E+00	7.045E-01	7.045E-01	17.34
	860.56	78	12.50	1.590E+00	1.141E+00	1.141E+00	58.34
PB-210	46.54	282	4.25*	7.611E+00	2.541E+00	2.544E+00	48.13
BI-211	72.87	1019	1.23	8.041E+00	3.002E+01	3.002E+01	14.49
	351.06	758	12.92*	3.520E+00	4.856E+00	4.856E+00	14.64
PB-212	74.82	1019	10.28	8.041E+00	3.592E+00	3.592E+00	17.45
	77.11	1307	17.10	8.017E+00	2.778E+00	2.778E+00	11.58
	238.63	1606	43.60*	4.780E+00	2.245E+00	2.245E+00	12.41
	300.09	144	3.30	4.010E+00	3.163E+00	3.163E+00	37.56
BI-214	609.32	567	45.49*	2.174E+00	1.672E+00	1.672E+00	14.82
	1120.29	92	14.92	1.258E+00	1.422E+00	1.422E+00	55.21
	1764.49	105	15.30	8.617E-01	2.330E+00	2.330E+00	24.14
PB-214	74.82	1019	5.80	8.041E+00	6.366E+00	6.366E+00	16.52
	77.11	1307	9.70	8.017E+00	4.897E+00	4.897E+00	14.22
	242.00	432	7.25	4.735E+00	3.665E+00	3.665E+00	24.09
	295.22	518	18.42	4.063E+00	2.016E+00	2.016E+00	16.35
	351.93	758	35.60*	3.520E+00	1.762E+00	1.762E+00	15.65
RA-224	240.99	432	4.10*	4.735E+00	6.480E+00	6.480E+00	23.38
RA-226	609.32	567	45.49*	2.174E+00	1.672E+00	1.672E+00	14.82
	1120.29	92	14.92	1.258E+00	1.422E+00	1.422E+00	55.21
	1764.49	105	15.30	8.617E-01	2.330E+00	2.330E+00	24.14
AC-228	338.32	269	11.27	3.638E+00	1.913E+00	1.913E+00	49.64
	911.20	288	25.80*	1.511E+00	2.151E+00	2.151E+00	20.35
	968.97	169	15.80	1.431E+00	2.179E+00	2.179E+00	34.82
RA-228	338.32	269	11.27	3.638E+00	1.913E+00	1.913E+00	49.64

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	911.20	288	25.80*	1.511E+00	2.151E+00	2.151E+00	20.35
	968.97	169	15.80	1.431E+00	2.179E+00	2.179E+00	34.82
	74.82	1019	10.28	8.041E+00	3.592E+00	3.592E+00	14.54
	77.11	1307	17.10	8.017E+00	2.778E+00	2.778E+00	11.58
TH-229	238.63	1606	43.60*	4.780E+00	2.245E+00	2.245E+00	12.41
	300.09	144	3.30	4.010E+00	3.163E+00	3.163E+00	71.04
	85.43	535	14.70	7.868E+00	1.349E+00	1.349E+00	19.69
	88.47	302	24.00	7.818E+00	4.689E-01	4.689E-01	26.96
TH-232	193.51	-----	4.41*	5.516E+00	-----	Line Not Found	-----
	210.85	-----	2.80	5.209E+00	-----	Line Not Found	-----
	338.32	269	11.27	3.638E+00	1.913E+00	1.913E+00	28.25
	911.20	288	25.80*	1.511E+00	2.151E+00	2.151E+00	20.35
TH-234	968.97	169	15.80	1.431E+00	2.179E+00	2.179E+00	34.82
	63.29	201	3.70*	8.063E+00	1.959E+00	1.959E+00	60.68
	92.59	449	4.23	7.760E+00	3.989E+00	3.989E+00	33.53
U-235	89.96	302	3.47	7.818E+00	3.243E+00	3.243E+00	35.48
	93.35	449	5.60	7.760E+00	3.013E+00	3.013E+00	34.20
	143.76	-----	10.96*	6.557E+00	-----	Line Not Found	-----
	163.33	-----	5.08	6.119E+00	-----	Line Not Found	-----
NP-237	185.72	221	57.20	5.665E+00	1.990E-01	1.990E-01	41.26
	205.31	-----	5.01	5.304E+00	-----	Line Not Found	-----
	86.48	535	12.40*	7.868E+00	1.599E+00	1.599E+00	28.76
	95.86	-----	2.68	7.688E+00	-----	Line Not Found	-----
U-238	63.29	201	3.70*	8.063E+00	1.959E+00	1.959E+00	60.68
	92.59	449	4.23	7.760E+00	3.989E+00	3.989E+00	26.66
ANH-511	511.00	106	100.00*	2.547E+00	1.207E-01	1.207E-01	76.67

Flag: "\*" = Keyline

Total number of lines in spectrum 33  
Number of unidentified lines 4  
Number of lines tentatively identified by NID 29 87.88%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	3.611E+01	3.611E+01	0.309E+01	8.55	
CD-109	461.40D	1.02	5.358E+00	5.488E+00	1.080E+00	19.69	
SN-126	2.30E+05Y	1.00	5.358E-01	5.358E-01	1.055E-01	19.69	
CS-135	2.30E+06Y	1.00	4.954E-01	4.954E-01	2.493E-01	50.32	
TL-208	1.41E+10Y	1.00	7.045E-01	7.045E-01	1.221E-01	17.34	
PB-210	22.20Y	1.00	2.541E+00	2.544E+00	1.224E+00	48.13	
BI-211	7.04E+08Y	1.00	4.856E+00	4.856E+00	0.711E+00	14.64	
PB-212	1.41E+10Y	1.00	2.245E+00	2.245E+00	0.278E+00	12.41	
BI-214	1600.00Y	1.00	1.672E+00	1.672E+00	0.248E+00	14.82	
PB-214	1600.00Y	1.00	1.762E+00	1.762E+00	0.276E+00	15.65	
RA-224	1.41E+10Y	1.00	6.480E+00	6.480E+00	1.515E+00	23.38	
RA-226	1600.00Y	1.00	1.672E+00	1.672E+00	0.248E+00	14.82	
AC-228	1.41E+10Y	1.00	2.151E+00	2.151E+00	0.438E+00	20.35	
RA-228	1.41E+10Y	1.00	2.151E+00	2.151E+00	0.438E+00	20.35	
TH-228	1.41E+10Y	1.00	2.245E+00	2.245E+00	0.278E+00	12.41	
TH-229	7340.00Y	1.00	4.689E-01	4.689E-01	1.264E-01	26.96	K
TH-232	1.41E+10Y	1.00	2.151E+00	2.151E+00	0.438E+00	20.35	
TH-234	4.47E+09Y	1.00	1.959E+00	1.959E+00	1.189E+00	60.68	
U-235	7.04E+08Y	1.00	1.990E-01	1.990E-01	0.821E-01	41.26	K
NP-237	2.14E+06Y	1.00	1.599E+00	1.599E+00	0.460E+00	28.76	
U-238	4.47E+09Y	1.00	1.959E+00	1.959E+00	1.189E+00	60.68	
ANH-511	1.00E+09Y	1.00	1.207E-01	1.207E-01	0.925E-01	76.67	
Total Activity :			7.943E+01	7.957E+01			

Grand Total Activity : 7.943E+01 7.957E+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
4	83.81	236	417	1.83	168.60	165	29	3.28E-02	31.8	7.92E+00	T
0	128.92	154	510	1.18	258.81	254	11	2.14E-02	59.2	6.91E+00	
0	208.71	180	408	1.29	418.36	412	13	2.51E-02	48.5	5.25E+00	
0	327.69	58	224	0.86	656.25	649	11	7.99E-03	****	3.73E+00	T
0	462.73	86	126	1.25	926.25	922	11	1.20E-02	55.2	2.78E+00	T
0	726.67	122	108	1.86	1453.86	1447	17	1.69E-02	42.8	1.85E+00	T
0	769.17	109	122	1.94	1538.79	1529	21	1.51E-02	55.0	1.76E+00	
0	794.11	66	44	1.35	1588.65	1583	11	9.14E-03	46.2	1.71E+00	
1	963.42	55	62	2.19	1927.01	1921	26	7.69E-03	62.1	1.44E+00	T

Flags: "T" = Tentatively associated

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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797001.CNF;1
* Acquisition date   : 5-MAR-2010 10:27:27.  Detector SN#      :
* Detector ID        : GAM05                  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 02:00:02.02          Half life ratio : 8.00000
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 17-FEB-2010 12:00:00  Nuclide Library : SOLID
* Sample ID          : G247797001           Analyst initials: MXRl
* Batch Number       : 957136               Sample Quantity : 1.28850E+02 GRAM
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 11-JUN-2009 16:41:00.5MS Isotope      :
* MSD ID             :                      MSD Isotope       :
* LCS ID             : 1032-A               LCS Isotope       :
*****

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## Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	3.611E+01	3.087E+00	6.905E-01	4.295E-02	52.292
CD-109	5.488E+00	1.080E+00	1.105E+00	8.417E-02	4.965
SN-126	5.358E-01	1.055E-01	1.078E-01	8.207E-03	4.972
CS-135	4.954E-01	2.493E-01	2.812E-01	3.008E-02	1.762
TL-208	7.045E-01	1.221E-01	7.405E-02	5.438E-03	9.515
PB-210	2.544E+00	1.224E+00	9.093E-01	7.013E-02	2.798
BI-211	4.856E+00	7.110E-01	3.927E-01	3.113E-02	12.364
PB-212	2.245E+00	2.785E-01	1.101E-01	1.192E-02	20.389
BI-214	1.672E+00	2.478E-01	1.494E-01	1.261E-02	11.189
PB-214	1.762E+00	2.757E-01	1.429E-01	1.376E-02	12.336
RA-224	6.480E+00	1.515E+00	1.180E+00	1.155E-01	5.491
RA-226	1.672E+00	2.478E-01	1.494E-01	1.261E-02	11.189
AC-228	2.151E+00	4.376E-01	2.706E-01	3.434E-02	7.948
RA-228	2.151E+00	4.376E-01	2.706E-01	3.434E-02	7.948
TH-228	2.245E+00	2.785E-01	1.101E-01	1.192E-02	20.389
TH-229	4.689E-01	1.264E-01	1.012E+00	1.011E-01	0.463
TH-232	2.151E+00	4.376E-01	2.706E-01	3.434E-02	7.948
TH-234	1.959E+00	1.189E+00	1.203E+00	2.183E-01	1.629

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
U-235	1.990E-01	8.209E-02	4.181E-01	7.975E-02	0.476
NP-237	1.599E+00	4.598E-01	3.205E-01	7.152E-02	4.988
U-238	1.959E+00	1.189E+00	1.203E+00	2.183E-01	1.629
ANH-511	1.207E-01	9.254E-02	5.830E-02	3.731E-03	2.070

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	-1.442E-01		4.296E-01	6.866E-01	4.916E-02	-0.210
NA-22	4.605E-02		5.970E-02	1.033E-01	6.015E-03	0.446
NA-24	-1.404E+00		1.238E+00	Half-Life too short		
SC-46	-1.373E-02		5.410E-02	8.768E-02	8.807E-03	-0.157
V-48	-6.882E-03		9.281E-02	1.516E-01	1.389E-02	-0.045
CR-51	-3.912E-01		4.755E-01	6.761E-01	5.974E-02	-0.579
MN-54	4.796E-02		5.216E-02	9.156E-02	8.388E-03	0.524
CO-56	1.193E-02		4.740E-02	8.026E-02	7.506E-03	0.149
CO-57	7.134E-03		3.040E-02	4.980E-02	7.066E-03	0.143
CO-58	-2.455E-02		5.017E-02	8.009E-02	7.049E-03	-0.307
FE-59	-5.674E-02		1.228E-01	1.922E-01	1.556E-02	-0.295
CO-60	1.585E-02		5.459E-02	9.077E-02	5.253E-03	0.175
ZN-65	1.123E-01		1.591E-01	2.382E-01	1.664E-02	0.471
SE-75	-5.980E-02		6.188E-02	8.421E-02	8.040E-03	-0.710
SR-85	6.484E-02		5.484E-02	8.467E-02	5.428E-03	0.766
Y-88	1.768E-02		4.596E-02	8.029E-02	4.594E-03	0.220
Y-91	1.747E+01		3.065E+01	5.194E+01	3.018E+00	0.336
NB-94	-2.698E-02		4.444E-02	7.144E-02	5.112E-03	-0.378
NB-95	8.565E-02		6.817E-02	1.084E-01	8.766E-03	0.790
NB-95M	1.748E+00		2.887E-01	4.078E-01	4.467E-02	4.287
ZR-95	-8.131E-02		9.795E-02	1.534E-01	1.368E-02	-0.530
MO-99	1.481E+01		2.061E+01	3.586E+01	5.476E+00	0.413
TC-99M	-3.387E+11		2.286E+11	Half-Life too short		
RU-103	1.201E-02		5.217E-02	8.622E-02	1.094E-02	0.139
RH-106	2.646E-01		3.948E-01	6.662E-01	8.019E-02	0.397
RU-106	2.646E-01		3.939E-01	6.662E-01	4.392E-02	0.397
AG-108M	-2.837E-02		3.793E-02	5.935E-02	3.832E-03	-0.478
AG-110M	-1.036E-02		4.434E-02	6.987E-02	4.830E-03	-0.148
SN-113	9.478E-03		5.705E-02	9.482E-02	5.882E-03	0.100
CD-115	-1.134E+01		1.881E+01	2.924E+01	1.887E+00	-0.388
SN-117M	5.344E-02		6.931E-02	1.146E-01	1.232E-02	0.466
TE-123M	1.923E-02		3.487E-02	5.730E-02	6.157E-03	0.336
SB-124	3.466E-02		8.035E-02	1.438E-01	9.142E-03	0.241
SB-125	3.589E-02		1.151E-01	1.923E-01	1.204E-02	0.187
TE-125M	-7.516E+00		1.131E+01	1.798E+01	2.334E+00	-0.418
I-126	-6.602E-02		2.972E-01	4.687E-01	3.112E-02	-0.141
SB-126	2.877E-02		2.149E-01	3.144E-01	2.332E-02	0.092
SB-127	7.712E-01		2.040E+00	3.502E+00	3.645E-01	0.220
I-131	-1.143E-01		1.462E-01	2.304E-01	1.731E-02	-0.496



---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TE-132	2.050E-01		1.030E+00	1.746E+00	2.915E-01	0.117
BA-133	-2.717E-02		5.822E-02	8.042E-02	9.717E-03	-0.338
I-133	6.907E-03		7.247E-03	Half-Life too short		
CS-134	5.422E-02		7.166E-02	1.102E-01	9.489E-03	0.492
I-135	1.447E+09		3.261E+10	Half-Life too short		
CS-136	-3.044E-02		1.489E-01	2.396E-01	2.052E-02	-0.127
BA-137M	4.161E-02		4.411E-02	7.584E-02	4.987E-03	0.549
CS-137	4.395E-02		4.659E-02	8.012E-02	5.286E-03	0.549
CE-139	3.870E-02		3.694E-02	6.151E-02	6.106E-03	0.629
BA-140	-1.361E-03		3.491E-01	5.664E-01	1.894E-01	-0.002
LA-140	-1.117E-01		1.087E-01	1.520E-01	8.933E-03	-0.735
CE-141	4.900E-02		7.923E-02	1.305E-01	1.596E-02	0.375
CE-143	2.704E-03	+	3.498E-04	Half-Life too short		
CE-144	9.318E-02		2.652E-01	3.821E-01	6.985E-02	0.244
PM-144	-1.796E-02		4.972E-02	7.603E-02	5.376E-03	-0.236
PR-144	-1.302E+00		3.725E+00	5.702E+00	4.030E-01	-0.228
PM-146	2.742E-02		5.328E-02	8.980E-02	7.824E-03	0.305
ND-147	5.020E-01		7.470E-01	1.264E+00	1.746E-01	0.397
PM-149	1.878E+01		1.422E+02	2.327E+02	3.688E+01	0.081
EU-152	-9.318E-02		1.456E-01	1.865E-01	1.533E-02	-0.500
GD-153	3.588E-02		9.624E-02	1.403E-01	1.301E-02	0.256
EU-154	1.304E-01		1.694E-01	2.925E-01	2.758E-02	0.446
EU-155	1.166E-01		1.204E-01	1.988E-01	2.153E-02	0.586
TB-160	-2.442E-02		1.851E-01	3.031E-01	2.995E-02	-0.081
HO-166M	-2.174E-02		7.709E-02	1.265E-01	9.217E-03	-0.172
TA-182	-3.019E-02		3.002E-01	4.838E-01	2.813E-02	-0.062
IR-192	1.707E-02		3.954E-02	6.714E-02	5.698E-03	0.254
HG-203	2.731E-02		4.737E-02	8.093E-02	7.676E-03	0.337
BI-207	6.907E-02		7.054E-02	1.245E-01	9.856E-03	0.555
PB-211	-1.594E+00		1.225E+00	1.434E+00	6.879E-01	-1.112
BI-212	2.876E+00	+	1.277E+00	1.516E+00	1.777E-01	1.897
RN-219	3.429E-01		5.176E-01	8.786E-01	1.184E-01	0.390
RA-223	8.783E-01		8.497E-01	1.297E+00	2.225E-01	0.677
AC-227	3.193E-03		2.941E-01	4.933E-01	6.307E-02	0.006
TH-227	3.193E-03		2.941E-01	4.933E-01	7.034E-02	0.006
PA-231	-8.824E-01		1.681E+00	2.729E+00	4.076E-01	-0.323
TH-231	8.783E-01		8.497E-01	1.297E+00	2.225E-01	0.677
PA-233	-1.255E-02		7.477E-02	1.233E-01	1.089E-02	-0.102
PA-234	2.267E-01		4.168E-01	7.123E-01	1.372E-01	0.318
PA-234M	-6.025E+00		5.814E+00	8.574E+00	8.761E-01	-0.703
NP-239	-6.115E-01		4.683E-01	7.159E-01	9.414E-02	-0.854
AM-241	5.972E-02		8.306E-02	1.239E-01	1.109E-02	0.482
CM-247	-1.982E-02		4.859E-02	7.818E-02	4.600E-03	-0.254
CF-249	-1.204E-02		5.160E-02	8.399E-02	5.016E-03	-0.143
CF-251	1.326E-01		1.618E-01	2.673E-01	2.663E-02	0.496

## VAX/VMS Nuclide Identification Report Generated

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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*
*                                     DETECTOR DATA                          *
*
* Configuration      : SYSSYSROOT:[ALPHA.ARCHIVE.GAMMA]G247797001           *
* Acquisition date   : 5-MAR-2010 10:27:27 Detector SN#                   *
* Detector ID        : GAM05 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 02:00:02.02 Half life ratio : 8.000              *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date        : 17-FEB-2010 12:00:00 Nuclide Library : SOLID         *
* Sample ID          : G247797001 Analyst initials: MXR1                 *
* Batch Number       : 957136 Sample Quantity : 1.2885E+02 GRAM          *
* Recovery           : 1.00000 Carrier Weight : 0.00000                  *
*****
*
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 11-JUN-2009 16:41:00 MS Isotope                   :
* MSD DPM             : 0.000 MSD Isotope                               :
* LCS DPM             : 0.000 LCS Isotope                               :
* LCSD DPM            : 0.000 LCSD Isotope                              :
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## Combined Activity-MDA Report

## ---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM )	Act Error	DLC (pCi/GRAM )	TPU
K-40	3.611E+01	3.025E+00	3.456E-01	1.544E+00
CD-109	5.488E+00	1.059E+00	5.778E-01	5.402E-01
SN-126	5.358E-01	1.034E-01	5.634E-02	5.274E-02
CS-135	4.954E-01	2.443E-01	1.445E-01	1.246E-01
TL-208	7.045E-01	1.197E-01	3.760E-02	6.107E-02
PB-210	2.544E+00	1.200E+00	4.798E-01	6.122E-01
BI-211	4.856E+00	6.968E-01	2.010E-01	3.555E-01
PB-212	2.245E+00	2.729E-01	5.669E-02	1.392E-01
BI-214	1.672E+00	2.429E-01	7.583E-02	1.239E-01
PB-214	1.762E+00	2.702E-01	7.312E-02	1.379E-01
RA-224	6.480E+00	1.485E+00	6.076E-01	7.577E-01
RA-226	1.672E+00	2.429E-01	7.583E-02	1.239E-01
AC-228	2.151E+00	4.288E-01	1.364E-01	2.188E-01
RA-228	2.151E+00	4.288E-01	1.364E-01	2.188E-01
TH-228	2.245E+00	2.729E-01	5.669E-02	1.392E-01
TH-229	-6.867E-01	6.507E-01	5.230E-01	3.320E-01
TH-232	2.151E+00	4.288E-01	1.364E-01	2.188E-01
TH-234	1.959E+00	1.165E+00	6.317E-01	5.944E-01
U-235	2.939E-01	2.516E-01	2.170E-01	1.284E-01
NP-237	1.599E+00	4.506E-01	1.676E-01	2.299E-01
U-238	1.959E+00	1.165E+00	6.317E-01	5.944E-01
ANH-511	1.207E-01	9.069E-02	2.967E-02	4.627E-02

## ---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	-1.442E-01	4.210E-01	3.498E-01	2.148E-01 NOT IDENT.
NA-22	4.605E-02	5.850E-02	5.179E-02	2.985E-02 NOT IDENT.
NA-24	-1.404E+06	2.427E+06	0.000E+00	1.238E+06 SHORT HLIF
SC-46	-1.373E-02	5.302E-02	4.423E-02	2.705E-02 FAIL ABUN
V-48	-6.882E-03	9.095E-02	7.636E-02	4.640E-02 NOT IDENT.

CR-51	-3.912E-01	4.660E-01	3.466E-01	2.378E-01	NOT IDENT.
MN-54	4.796E-02	5.112E-02	4.624E-02	2.608E-02	NOT IDENT.
CO-56	1.193E-02	4.645E-02	4.052E-02	2.370E-02	NOT IDENT.
CO-57	7.134E-03	2.979E-02	2.591E-02	1.520E-02	NOT IDENT.
CO-58	-2.455E-02	4.916E-02	4.046E-02	2.508E-02	NOT IDENT.
FE-59	-5.674E-02	1.203E-01	9.664E-02	6.138E-02	NOT IDENT.
CO-60	1.585E-02	5.349E-02	4.549E-02	2.729E-02	NOT IDENT.
ZN-65	1.123E-01	1.559E-01	1.197E-01	7.953E-02	NOT IDENT.
SE-75	-5.980E-02	6.064E-02	4.329E-02	3.094E-02	NOT IDENT.
SR-85	6.484E-02	5.374E-02	4.309E-02	2.742E-02	NOT IDENT.
Y-88	1.768E-02	4.504E-02	4.003E-02	2.298E-02	NOT IDENT.
Y-91	1.747E+01	3.004E+01	2.607E+01	1.532E+01	NOT IDENT.
NB-94	-2.698E-02	4.356E-02	3.617E-02	2.222E-02	NOT IDENT.
NB-95	8.565E-02	6.680E-02	5.480E-02	3.408E-02	NOT IDENT.
NB-95M	1.748E+00	2.830E-01	2.100E-01	1.444E-01	NOT IDENT.
ZR-95	-8.131E-02	9.599E-02	7.758E-02	4.898E-02	NOT IDENT.
MO-99	1.481E+01	2.019E+01	1.814E+01	1.030E+01	NOT IDENT.
TC-99M	-3.387E+17	4.481E+17	0.000E+00	0.000E+00	SHORT HLIF
RU-103	1.201E-02	5.113E-02	4.390E-02	2.608E-02	NOT IDENT.
RH-106	2.646E-01	3.869E-01	3.380E-01	1.974E-01	NOT IDENT.
RU-106	2.646E-01	3.860E-01	3.380E-01	1.969E-01	NOT IDENT.
AG-108M	-2.837E-02	3.717E-02	3.028E-02	1.897E-02	NOT IDENT.
AG-110M	-1.036E-02	4.345E-02	3.541E-02	2.217E-02	NOT IDENT.
SN-113	9.478E-03	5.591E-02	4.845E-02	2.853E-02	NOT IDENT.
CD-115	-1.134E+01	1.844E+01	1.487E+01	9.407E+00	NOT IDENT.
SN-117M	5.344E-02	6.792E-02	5.940E-02	3.465E-02	NOT IDENT.
TE-123M	1.923E-02	3.418E-02	2.969E-02	1.744E-02	NOT IDENT.
SB-124	3.466E-02	7.875E-02	7.179E-02	4.018E-02	NOT IDENT.
SB-125	3.589E-02	1.128E-01	9.812E-02	5.756E-02	FAIL ABUN
TE-125M	-7.516E+00	1.108E+01	9.370E+00	5.655E+00	NOT IDENT.
I-126	-6.602E-02	2.913E-01	2.375E-01	1.486E-01	NOT IDENT.
SB-126	2.877E-02	2.106E-01	1.591E-01	1.074E-01	NOT IDENT.
SB-127	7.712E-01	1.999E+00	1.774E+00	1.020E+00	NOT IDENT.
I-131	-1.143E-01	1.432E-01	1.179E-01	7.308E-02	NOT IDENT.
TE-132	2.050E-01	1.009E+00	8.996E-01	5.150E-01	NOT IDENT.
BA-133	-2.717E-02	5.706E-02	4.116E-02	2.911E-02	NOT IDENT.
I-133	6.907E+03	1.420E+04	0.000E+00	7.247E+03	SHORT HLIF
CS-134	5.422E-02	7.022E-02	5.568E-02	3.583E-02	NOT IDENT.
I-135	1.447E+15	6.391E+16	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-3.044E-02	1.459E-01	1.206E-01	7.446E-02	NOT IDENT.
BA-137M	4.161E-02	4.322E-02	3.844E-02	2.205E-02	NOT IDENT.
CS-137	4.395E-02	4.566E-02	4.061E-02	2.330E-02	NOT IDENT.
CE-139	3.870E-02	3.620E-02	3.185E-02	1.847E-02	NOT IDENT.
BA-140	-1.361E-03	3.421E-01	2.880E-01	1.745E-01	NOT IDENT.
LA-140	-1.117E-01	1.065E-01	7.596E-02	5.434E-02	FAIL ABUN
CE-141	4.900E-02	7.764E-02	6.772E-02	3.961E-02	NOT IDENT.
CE-143	2.704E+03	6.856E+02	0.000E+00	3.498E+02	SHORT HLIF
CE-144	9.318E-02	2.599E-01	1.985E-01	1.326E-01	NOT IDENT.
PM-144	-1.796E-02	4.872E-02	3.850E-02	2.486E-02	NOT IDENT.
PR-144	-1.302E+00	3.650E+00	2.888E+00	1.862E+00	NOT IDENT.
PM-146	2.742E-02	5.221E-02	4.578E-02	2.664E-02	NOT IDENT.
ND-147	5.020E-01	7.320E-01	6.427E-01	3.735E-01	FAIL ABUN
PM-149	1.878E+01	1.394E+02	1.195E+02	7.110E+01	NOT IDENT.
EU-152	-9.318E-02	1.427E-01	9.552E-02	7.279E-02	FAIL ABUN
GD-153	3.588E-02	9.431E-02	7.323E-02	4.812E-02	NOT IDENT.
EU-154	1.304E-01	1.660E-01	1.467E-01	8.468E-02	NOT IDENT.
EU-155	1.166E-01	1.179E-01	1.036E-01	6.018E-02	FAIL ABUN
TB-160	-2.442E-02	1.814E-01	1.529E-01	9.254E-02	FAIL ABUN
HO-166M	-2.174E-02	7.555E-02	6.404E-02	3.855E-02	FAIL ABUN
TA-182	-3.019E-02	2.942E-01	2.428E-01	1.501E-01	NOT IDENT.
IR-192	1.707E-02	3.875E-02	3.442E-02	1.977E-02	FAIL ABUN
HG-203	2.731E-02	4.642E-02	4.157E-02	2.368E-02	FAIL ABUN
BI-207	6.907E-02	6.913E-02	6.261E-02	3.527E-02	FAIL ABUN
PB-211	-1.594E+00	1.201E+00	7.323E-01	6.127E-01	NOT IDENT.
BI-212	2.876E+00	1.251E+00	7.674E-01	6.385E-01	FAIL ABUN
RN-219	3.429E-01	5.073E-01	4.488E-01	2.588E-01	NOT IDENT.
RA-223	8.783E-01	8.327E-01	6.645E-01	4.249E-01	FAIL ABUN
AC-227	3.193E-03	2.882E-01	2.537E-01	1.471E-01	FAIL ABUN
TH-227	3.193E-03	2.882E-01	2.537E-01	1.471E-01	FAIL ABUN
PA-231	-8.824E-01	1.647E+00	1.402E+00	8.403E-01	NOT IDENT.
TH-231	8.783E-01	8.327E-01	6.645E-01	4.249E-01	FAIL ABUN
PA-233	-1.255E-02	7.327E-02	6.324E-02	3.739E-02	FAIL ABUN
PA-234	2.267E-01	4.085E-01	3.590E-01	2.084E-01	NOT IDENT.
PA-234M	-6.025E+00	5.697E+00	4.317E+00	2.907E+00	NOT IDENT.
NP-239	-6.115E-01	4.590E-01	3.726E-01	2.342E-01	NOT IDENT.
AM-241	5.972E-02	8.140E-02	6.514E-02	4.153E-02	NOT IDENT.
CM-247	-1.982E-02	4.761E-02	3.994E-02	2.429E-02	NOT IDENT.
CF-249	-1.204E-02	5.057E-02	4.293E-02	2.580E-02	NOT IDENT.

CF-251

1.326E-01

1.586E-01

1.382E-01

8.089E-02 NOT IDENT.

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 SAVAGE ROAD                               *
*                               CHARLESTON ,SC 29417                           *
*                               GAMMA SPECTROSCOPY BACKGROUND REPORT             *
*****

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ENERGY	MDA COUNTS
46.54	472.8221
49.72	563.5764
57.36	0.0000
59.54	635.9454
63.29	701.8396
63.29	701.8396
64.28	698.1517
67.75	682.7302
69.67	725.4503
70.83	731.3183
72.81	691.3776
72.87	691.4337
72.87	691.4337
74.82	693.2095
74.82	693.2095
74.82	693.2095
74.97	693.3430
77.11	695.2629
77.11	695.2629
77.11	695.2629
79.69	562.0206
79.80	530.2060
80.12	530.4191
80.19	530.4658
80.57	530.7174
81.00	531.0015
81.07	531.0482
81.07	531.0482
83.79	531.8285
83.79	531.8285
85.43	532.8859
86.48	533.5583
86.55	533.6029
86.79	533.7548
86.94	533.8521
87.57	534.2511
88.03	534.5428
88.47	534.8203
89.96	535.7561
91.11	536.4752
92.59	537.3908
92.59	537.3908
93.35	537.8587
94.67	441.4837
94.87	464.3119
94.87	464.3119
95.86	524.9657
97.43	455.8784
98.44	433.5699
99.53	432.4592
100.11	439.7325
103.18	533.5051
103.37	501.8638
105.31	453.6391
106.12	456.0830
109.28	518.4002
111.00	497.6399
111.76	461.8640
116.30	445.3045
117.23	478.9638
121.12	449.5113
121.78	448.7554
122.06	442.6150
123.07	431.9011
131.20	417.8219
133.52	395.0807
136.00	428.3380

136.47	417.9396
140.51	464.0558
140.51	0.0000
143.76	398.2938
144.24	386.7399
144.24	386.7399
145.44	427.6748
152.43	400.1998
153.25	414.4335
154.21	420.1389
154.21	420.1389
156.02	416.4697
158.56	362.3474
159.00	373.2662
162.66	406.8438
163.33	408.1472
165.86	353.6500
176.60	394.9319
177.52	349.2299
181.07	363.5665
184.41	348.6342
185.72	358.0078
193.51	387.7606
197.04	320.9952
205.31	330.6988
210.85	301.4648
215.65	321.8046
222.11	298.3394
227.38	290.3047
228.16	298.6221
228.18	298.6262
235.69	311.6290
235.96	311.6833
235.96	311.6833
238.63	286.0175
238.63	286.0175
240.99	286.4435
242.00	268.6156
244.70	255.3110
252.40	258.0618
252.80	255.3594
256.23	244.8056
256.23	244.8056
260.90	222.3340
264.66	266.1605
268.22	210.8952
269.46	236.4972
269.46	236.4972
271.23	260.9756
273.65	328.2322
276.40	227.4804
277.37	242.2624
277.60	244.1650
278.00	243.2834
279.20	239.7063
279.54	232.2608
280.46	259.5556
283.69	227.1763
284.31	231.0124
285.41	203.9064
285.90	214.0922
287.50	185.0160
293.27	0.0000
295.22	189.9048
295.96	189.9833
298.57	190.2556
299.98	190.4004
299.98	190.4004
300.09	190.4127
300.09	190.4127
300.13	190.4176
301.36	199.0770
302.85	196.0760
304.50	204.1634
304.50	204.1634
304.85	204.2028
308.46	193.1796
311.90	191.6272

316.51	167.2455
319.41	186.1108
320.08	192.8620
323.87	161.4927
323.87	161.4927
328.76	171.1990
333.37	219.3214
334.37	212.1985
334.37	212.1985
338.28	175.5704
338.28	175.5704
338.32	175.5749
338.32	175.5749
338.32	175.5749
340.48	177.3781
340.55	177.3849
344.28	201.6244
351.06	174.0967
351.93	174.1710
356.01	183.6158
364.49	169.3592
366.42	155.7975
383.85	167.9435
388.16	184.1132
388.63	202.9655
391.69	169.5388
400.66	142.3541
401.81	156.3733
402.40	185.3052
404.85	220.4146
410.95	189.0115
414.70	166.2837
423.72	135.7614
427.09	146.0302
427.87	144.0648
433.94	161.6094
453.88	129.3518
463.37	122.6982
468.07	116.1016
473.00	105.7259
476.78	127.4739
477.60	146.0249
487.02	127.9900
492.35	126.1893
497.08	122.2766
511.00	119.8052
514.00	118.2031
527.90	121.6159
529.87	0.0000
531.02	99.7152
537.26	108.3587
546.56	0.0000
563.25	107.2558
569.33	92.5883
569.50	92.5926
569.70	89.4059
583.19	110.1466
600.60	120.7266
602.73	136.3646
604.72	140.0483
609.32	118.6851
609.32	118.6851
610.33	113.3287
614.28	108.0762
618.01	99.5536
621.93	83.4292
621.93	83.4292
633.25	109.8424
635.95	70.7526
636.99	80.5762
645.85	85.1754
657.76	95.3665
661.66	76.8274
661.66	76.8274
664.57	0.0000
666.33	100.0222
666.50	100.0267
677.62	84.5664

685.70	98.6014
695.00	111.8201
696.49	107.2490
696.51	107.2490
697.00	98.0185
702.65	118.5651
706.68	91.8155
711.68	98.4563
720.70	86.2151
721.93	0.0000
722.78	94.2576
722.91	92.6620
723.31	91.0763
724.19	95.8949
727.33	88.6508
733.00	113.7704
735.93	91.0599
739.50	88.0332
747.24	103.2503
752.31	77.0819
753.82	80.8770
756.73	108.2407
763.94	101.8608
765.81	97.0626
766.42	92.2254
777.92	74.6714
778.90	82.0893
783.70	75.8773
785.37	75.5664
795.86	86.4670
801.95	68.6367
810.29	83.1272
810.76	83.1378
815.77	57.4146
818.51	70.8640
832.01	88.4231
834.85	87.5286
836.80	0.0000
846.77	62.7201
856.80	54.7322
860.56	61.9805
871.09	63.1222
873.19	69.9580
875.33	0.0000
879.36	75.9084
880.51	75.9307
883.24	76.9588
884.68	77.9622
889.28	82.9317
898.04	93.8730
911.20	60.5491
911.20	60.5491
911.20	60.5491
926.50	83.7151
937.49	99.7424
944.13	81.1125
946.00	71.2529
949.00	81.2092
962.29	81.7550
964.08	86.4761
966.15	86.5203
968.97	86.5787
968.97	86.5787
968.97	86.5787
983.53	63.9115
996.26	64.1055
1001.03	69.1909
1004.73	61.2221
1037.84	71.8060
1038.76	0.0000
1048.07	70.9599
1050.41	62.8830
1050.41	62.8830
1063.66	57.9857
1085.87	75.6531
1099.45	74.8535
1112.07	90.9991
1115.54	91.7291



1120.29	86.5259
1120.29	86.5259
1120.55	86.5293
1121.30	77.7121
1131.51	0.0000
1173.23	84.3783
1177.93	69.8625
1189.05	77.3393
1204.77	79.6862
1221.41	107.3125
1231.02	142.3059
1235.36	81.2391
1238.28	92.8984
1260.41	0.0000
1271.85	63.7646
1274.44	54.2269
1274.54	54.2269
1291.59	45.8747
1298.22	0.0000
1312.11	62.1230
1332.49	46.2351
1365.19	25.9648
1368.63	0.0000
1384.29	27.9189
1408.01	39.2563
1457.56	0.0000
1460.82	29.7224
1489.16	30.3449
1505.03	21.8705
1596.21	31.8675
1620.50	16.4824
1678.03	0.0000
1690.97	9.8061
1764.49	19.0942
1764.49	19.0942
1770.23	65.5235
1771.35	38.7252
1791.20	0.0000
1836.06	15.0403

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G247797001

Total Uranium Activity	5.9643E+00	ug/g
Total Uranium Counting Unc.	3.4681E+00	ug/g
Total Uranium Tpu	1.7694E-06	ug/g
Total Uranium Mda	1.8821E+00	ug/g

```

*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON , SC 29417              *
*               GROSS GAMMA REPORT                 *
*
*****
*
*   BATCH ID      : 957136                        SAMPLE ID   : G247797001
*   ANALYST       : MXR1                          DETECTOR    : GAM05
*   SAMPLE DATE   : 17-FEB-2010 12:00:00.00      COUNT TIME   : 0 02:00:00.00
*   ANALYSIS DATE : 5-MAR-2010 10:27:27.48      SAMPLE ALQT  : 128.850 GRAM
*
*****

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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.218E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.576E+00
GROSS GAMMA MDA     (pCi/GRAM ) : 4.118E+00
GROSS GAMMA DLC     (pCi/GRAM ) : 2.011E+00

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VAX/VMS Nuclide Identification Report Generated 5-MAR-2010 12:29:28.19

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797002.CNF;1
Sample date        : 17-FEB-2010 12:00:00 Acquisition date : 5-MAR-2010 10:28:21.
Sample ID          : G247797002      Sample quantity   : 1.43980E+02 GRAM
Detector name      : GAM07           Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00   Elapsed real time: 0 02:00:01.61  0.0%
Energy tolerance   : 1.50000 keV     Analyst Initials : MXR1
Abundance limit    : 75.00000        Sensitivity      : 5.00000
Batch ID           : 957136          Detector SN#     :
Matrix Spike ID    :                 LCS ID            : 1032-A
*****

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Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.39*	95	762	0.88	126.43	123	8	1.31E-02	52.3	
2	1	74.78	710	693	1.11	149.20	142	16	9.86E-02	7.3	2.35E+00
3	1	77.11*	1075	577	1.04	153.87	142	16	1.49E-01	4.8	
4	0	87.36*	258	754	1.22	174.36	170	8	3.58E-02	19.5	
5	7	89.98	198	549	0.96	179.60	177	13	2.76E-02	19.3	2.47E+00
6	7	92.98*	370	683	1.45	185.60	177	13	5.14E-02	14.5	
7	0	128.86	95	569	1.03	257.35	254	9	1.32E-02	46.5	
8	0	186.22*	362	544	1.42	372.04	365	14	5.02E-02	14.9	
9	0	209.43	149	444	1.19	418.47	414	11	2.07E-02	28.7	
10	4	238.75*	1813	200	1.10	477.10	470	20	2.52E-01	2.7	1.56E+00
11	4	241.77	443	271	1.83	483.14	470	20	6.15E-02	10.5	
12	0	270.41	118	237	1.03	540.39	536	9	1.64E-02	25.2	
13	0	278.08	76	241	0.88	555.74	551	9	1.05E-02	39.0	
14	0	295.39*	553	233	1.12	590.36	586	10	7.68E-02	6.7	
15	0	300.24	103	201	1.37	600.06	596	9	1.43E-02	26.7	
16	0	338.37*	332	185	1.41	676.30	671	10	4.62E-02	9.7	
17	0	352.08*	859	326	1.18	703.72	697	14	1.19E-01	5.7	
18	0	409.64	49	196	1.66	818.81	814	12	6.79E-03	58.9	
19	0	463.20	125	159	1.54	925.92	919	14	1.73E-02	23.4	
20	0	511.06*	209	179	2.03	1021.63	1013	18	2.91E-02	18.1	
21	0	583.49*	563	138	1.43	1166.46	1159	15	7.83E-02	6.3	
22	0	609.58*	648	131	1.71	1218.63	1212	14	9.01E-02	5.5	
23	0	727.49*	119	62	1.65	1454.42	1450	9	1.66E-02	15.3	
24	0	756.24	40	91	1.50	1511.93	1506	13	5.56E-03	51.6	
25	0	795.57	66	95	0.85	1590.56	1584	16	9.20E-03	35.2	
26	0	861.50	54	81	2.02	1722.40	1715	12	7.52E-03	35.9	
27	0	911.56*	393	54	1.89	1822.52	1817	12	5.46E-02	6.4	
28	3	965.05	73	61	1.87	1929.48	1924	22	1.01E-02	24.1	1.96E+00
29	3	969.24	243	61	1.84	1937.86	1924	22	3.38E-02	9.0	
30	0	1120.72	147	60	1.42	2240.79	2235	11	2.04E-02	13.2	
31	0	1461.35*	1708	35	1.86	2922.00	2914	17	2.37E-01	2.6	
32	0	1589.35	40	8	2.23	3177.97	3172	11	5.52E-03	21.2	
33	0	1730.98	44	8	3.75	3461.23	3453	16	6.18E-03	20.6	
34	0	1765.32*	107	20	2.17	3529.90	3522	14	1.49E-02	13.6	
35	0	1847.04	21	14	0.71	3693.33	3685	18	2.93E-03	46.4	
36	0	1937.91	14	0	1.38	3875.07	3869	11	1.94E-03	26.7	

Flag: "\*" = Peak area was modified by background subtraction

## VMS Nuclide Identification Report V3.1 Generated 5-MAR-2010 12:29:32

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797002.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 17-FEB-2010 12:00:00 Acquisition date : 5-MAR-2010 10:28:21
Sample ID         : G247797002 Sample quantity : 143.98 GRAM
Sample type       : SOLID Sample geometry :
Detector name     : GAMMA7 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:01.61 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	+	1460.82	*	3.700E+01	3.698E+00	5.392E-01	4.630E-02	68.627
CD-109	+	88.03	*	2.722E+00	1.093E+00	1.154E+00	1.087E-01	2.360
SN-126	+	64.28		5.341E-01	5.639E-01	5.887E-01	8.538E-02	0.907
	+	86.94		1.105E+00	6.298E-01	5.227E-01	2.170E-01	2.113
	+	87.57	*	2.657E-01	1.067E-01	1.129E-01	1.058E-02	2.354
HG-203		70.83		-2.698E-01	1.243E+00	1.804E+00	2.816E-01	-0.149
		72.87		1.690E+00	7.143E-01	1.169E+00	1.770E-01	1.446
	+	279.20	*	6.999E-02	5.491E-02	6.337E-02	5.520E-03	1.105
TL-208	+	277.37		6.819E-01	5.384E-01	6.291E-01	7.825E-02	1.084
	+	583.19	*	6.982E-01	1.104E-01	5.530E-02	5.283E-03	12.626
	+	860.56		6.343E-01	4.596E-01	4.902E-01	4.791E-02	1.294
BI-211		72.87		6.705E+00	2.699E+00	4.638E+00	3.661E-01	1.446
	+	351.06	*	4.708E+00	6.813E-01	3.497E-01	3.137E-02	13.464
PB-212	+	74.82		2.967E+00	5.737E-01	4.702E-01	5.938E-02	6.310
	+	77.11		2.619E+00	3.308E-01	2.750E-01	2.270E-02	9.525
	+	238.63	*	2.209E+00	2.445E-01	9.272E-02	8.914E-03	23.824
	+	300.09		1.964E+00	1.069E+00	1.196E+00	1.254E-01	1.643
BI-214	+	609.32	*	1.556E+00	2.360E-01	1.125E-01	1.170E-02	13.826
	+	1120.29		1.813E+00	5.162E-01	5.137E-01	5.542E-02	3.529
	+	1764.49		1.859E+00	5.281E-01	3.484E-01	2.865E-02	5.337
PB-214	+	74.82		5.259E+00	9.727E-01	8.335E-01	9.419E-02	6.310
	+	77.11		4.618E+00	6.965E-01	4.848E-01	5.657E-02	9.525
	+	242.00		3.274E+00	7.644E-01	5.641E-01	5.784E-02	5.803
	+	295.22		1.864E+00	3.212E-01	2.270E-01	2.439E-02	8.209
	+	351.93	*	1.709E+00	2.646E-01	1.272E-01	1.339E-02	13.434
RA-224	+	240.99	*	5.789E+00	1.309E+00	9.940E-01	8.406E-02	5.823
RA-226	+	609.32	*	1.556E+00	2.360E-01	1.125E-01	1.170E-02	13.826
	+	1120.29		1.813E+00	5.162E-01	5.137E-01	5.542E-02	3.529
	+	1764.49		1.859E+00	5.281E-01	3.484E-01	2.865E-02	5.337
AC-228	+	338.32		2.028E+00	9.321E-01	3.709E-01	1.547E-01	5.468
	+	911.20	*	2.343E+00	4.110E-01	2.299E-01	2.755E-02	10.193
	+	968.97		2.496E+00	7.589E-01	3.842E-01	9.418E-02	6.497
RA-228	+	338.32		2.028E+00	9.321E-01	3.709E-01	1.547E-01	5.468
	+	911.20	*	2.343E+00	4.110E-01	2.299E-01	2.755E-02	10.193

---- Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TH-228	+	968.97		2.496E+00	7.589E-01	3.842E-01	9.418E-02	6.497
	+	74.82		2.967E+00	4.970E-01	4.702E-01	3.826E-02	6.310
	+	77.11		2.619E+00	3.308E-01	2.750E-01	2.270E-02	9.525
	+	238.63	*	2.209E+00	2.445E-01	9.272E-02	8.914E-03	23.824
TH-232	+	300.09		1.964E+00	1.596E+00	1.196E+00	7.319E-01	1.643
	+	338.32		2.028E+00	4.283E-01	3.709E-01	3.175E-02	5.468
	+	911.20	*	2.343E+00	4.110E-01	2.299E-01	2.755E-02	10.193
	+	968.97		2.496E+00	7.589E-01	3.842E-01	9.418E-02	6.497
TH-234	+	63.29	*	1.386E+00	1.470E+00	1.597E+00	2.841E-01	0.868
	+	92.59		3.247E+00	1.187E+00	8.738E-01	1.948E-01	3.716
U-235	+	89.96		2.149E+00	9.856E-01	1.191E+00	2.961E-01	1.804
	+	93.35		2.453E+00	9.120E-01	6.586E-01	1.534E-01	3.724
		143.76	*	1.056E-01	2.043E-01	3.285E-01	5.505E-02	0.321
		163.33		3.331E-02	4.550E-01	7.233E-01	1.276E-01	0.046
NP-237	+	185.72		2.837E-01	8.775E-02	6.505E-02	5.266E-03	4.362
		205.31		-6.009E-01	5.547E-01	7.618E-01	1.370E-01	-0.789
	+	86.48	*	7.929E-01	3.593E-01	3.761E-01	8.618E-02	2.108
		95.86		-2.026E-01	8.840E-01	1.266E+00	3.054E-01	-0.160
U-238	+	63.29	*	1.386E+00	1.470E+00	1.597E+00	2.841E-01	0.868
	+	92.59		3.247E+00	9.867E-01	8.738E-01	7.995E-02	3.716
ANH-511	+	511.00	*	1.980E-01	7.364E-02	4.593E-02	4.081E-03	4.310

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7		477.60	*	2.004E-01	3.449E-01	5.735E-01	5.411E-02	0.349
NA-22		1274.54	*	1.441E-02	4.562E-02	7.747E-02	6.360E-03	0.186
NA-24		1368.63	*	-6.429E-01	4.562E-02	Half-Life too short		
SC-46		889.28	*	-4.783E-02	4.246E-02	6.157E-02	5.642E-03	-0.777
	+	1120.55		3.088E-01	8.544E-02	1.417E-01	1.197E-02	2.179
V-48		944.13		-1.300E-01	9.645E-01	1.539E+00	1.399E-01	-0.084
		983.53	*	4.287E-02	8.029E-02	1.352E-01	1.217E-02	0.317
		1312.11		6.026E-02	8.731E-02	1.531E-01	1.255E-02	0.394
CR-51		320.08	*	-3.328E-01	3.858E-01	6.036E-01	5.450E-02	-0.551
MN-54		834.85	*	-1.951E-02	4.029E-02	6.320E-02	5.801E-03	-0.309
CO-56		846.77	*	-3.396E-02	3.801E-02	5.646E-02	5.183E-03	-0.602
		1037.84		-8.393E-02	3.088E-01	5.063E-01	4.693E-02	-0.166
		1238.28		2.636E-01	1.124E-01	2.074E-01	1.753E-02	1.271
		1771.35		-3.704E-04	2.734E-01	3.912E-01	3.213E-02	-0.001
CO-57		122.06	*	1.850E-02	2.506E-02	4.137E-02	3.559E-03	0.447
		136.47		6.448E-02	2.078E-01	3.363E-01	3.024E-02	0.192
CO-58		810.76	*	-3.555E-02	4.572E-02	7.122E-02	6.543E-03	-0.499
FE-59		1099.45	*	7.195E-02	1.003E-01	1.763E-01	1.633E-02	0.408
		1291.59		-1.108E-01	1.386E-01	2.114E-01	1.991E-02	-0.524
CO-60		1173.23		1.389E-02	5.278E-02	8.936E-02	7.272E-03	0.155
		1332.49	*	-1.073E-02	3.663E-02	5.820E-02	4.768E-03	-0.184
ZN-65		1115.54	*	2.297E-02	1.050E-01	1.549E-01	1.314E-02	0.148
SE-75		121.12		1.198E-01	1.316E-01	2.181E-01	2.414E-02	0.549

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
		136.00		-1.269E-03	4.040E-02	6.456E-02	5.429E-03	-0.020
		264.66	*	8.122E-03	4.542E-02	7.076E-02	6.043E-03	0.115
	+	279.54		1.975E-01	1.550E-01	1.861E-01	1.641E-02	1.062
		400.66		5.323E-02	2.581E-01	4.238E-01	4.622E-02	0.126
SR-85		514.00	*	8.566E-02	4.275E-02	7.163E-02	6.370E-03	1.196
Y-88		898.04		-2.798E-02	4.167E-02	6.319E-02	5.811E-03	-0.443
		1836.06	*	-1.309E-02	3.139E-02	4.690E-02	3.806E-03	-0.279
Y-91		1204.77	*	3.826E+00	2.561E+01	4.294E+01	3.507E+00	0.089
NB-94		702.65	*	-2.730E-02	3.569E-02	5.567E-02	4.998E-03	-0.490
		871.09		-7.224E-03	3.612E-02	5.770E-02	5.294E-03	-0.125
NB-95		765.81	*	1.907E-02	4.587E-02	7.738E-02	7.054E-03	0.246
NB-95M		235.69	*	3.290E-02	1.360E-01	2.029E-01	1.974E-02	0.162
ZR-95		724.19		1.835E-02	1.080E-01	1.570E-01	1.527E-02	0.117
	+	756.73	*	1.144E-01	1.187E-01	1.408E-01	1.402E-02	0.812
MO-99		140.51		-1.569E+01	2.752E+01	4.256E+01	1.005E+01	-0.369
		181.07		9.079E+00	2.307E+01	3.514E+01	6.513E+00	0.258
		366.42		-4.301E-01	1.201E+02	1.958E+02	1.659E+01	-0.002
		739.50	*	8.696E+00	1.576E+01	2.689E+01	4.305E+00	0.323
		777.92		-2.055E+01	4.327E+01	6.803E+01	6.214E+00	-0.302
TC-99M		140.51	*	-2.113E+11	4.327E+01	Half-Life too short		
RU-103		497.08	*	5.506E-05	3.996E-02	6.389E-02	9.013E-03	0.001
	+	610.33		1.629E+01	3.238E+00	3.188E+00	5.269E-01	5.110
RH-106		621.93	*	-1.941E-01	3.010E-01	4.755E-01	6.402E-02	-0.408
		1050.41		1.082E-01	2.644E+00	4.449E+00	3.906E-01	0.024
RU-106		621.93	*	-1.941E-01	3.004E-01	4.755E-01	4.250E-02	-0.408
		1050.41		1.082E-01	2.644E+00	4.449E+00	3.906E-01	0.024
AG-108M		433.94	*	1.847E-02	3.078E-02	5.148E-02	4.563E-03	0.359
		614.28		-1.076E-02	3.906E-02	5.502E-02	5.073E-03	-0.196
		722.91		1.812E-02	4.140E-02	6.190E-02	5.754E-03	0.293
AG-110M		657.76	*	-1.577E-03	3.496E-02	5.783E-02	5.269E-03	-0.027
		677.62		1.657E-01	3.123E-01	5.364E-01	4.905E-02	0.309
		706.68		1.655E-01	2.316E-01	3.996E-01	3.687E-02	0.414
		763.94		-1.349E-01	1.921E-01	2.795E-01	2.610E-02	-0.483
		884.68		-1.351E-02	4.980E-02	7.884E-02	7.433E-03	-0.171
		937.49		-6.723E-02	1.231E-01	1.894E-01	1.780E-02	-0.355
		1384.29		-1.581E-01	1.663E-01	2.411E-01	2.051E-02	-0.656
		1505.03		-3.301E-01	3.010E-01	4.158E-01	3.475E-02	-0.794
SN-113		391.69	*	-5.837E-02	4.454E-02	6.577E-02	5.653E-03	-0.888
CD-115		260.90		-1.002E+02	1.772E+02	2.868E+02	2.437E+01	-0.349
		492.35		3.666E+00	5.136E+01	8.258E+01	7.294E+00	0.044
		527.90	*	-3.047E+00	1.434E+01	2.382E+01	2.125E+00	-0.128
SN-117M		156.02		-2.040E+00	2.469E+00	3.753E+00	3.023E-01	-0.544
		158.56	*	2.640E-02	5.811E-02	9.393E-02	7.531E-03	0.281
TE-123M		159.00	*	1.783E-02	2.943E-02	4.783E-02	3.858E-03	0.373
SB-124		602.73		1.576E-02	4.395E-02	6.589E-02	5.905E-03	0.239
		645.85		5.036E-02	5.117E-01	8.560E-01	8.023E-02	0.059
		722.78		1.874E-01	4.201E-01	6.286E-01	5.795E-02	0.298
		1690.97	*	-5.310E-03	6.912E-02	1.098E-01	9.535E-03	-0.048
SB-125		427.87	*	1.718E-02	9.738E-02	1.590E-01	1.385E-02	0.108

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Activity Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	+	463.37		1.044E+00	4.978E-01	5.671E-01	5.313E-02	1.841
		600.60		-1.096E-02	1.760E-01	2.927E-01	2.803E-02	-0.037
		635.95		-2.455E-02	2.882E-01	4.765E-01	4.571E-02	-0.052
TE-125M		109.28	*	-1.530E+00	9.456E+00	1.519E+01	1.598E+00	-0.101
I-126		388.63		-5.289E-02	1.777E-01	2.835E-01	2.365E-02	-0.187
		666.33	*	1.399E-01	2.331E-01	4.018E-01	3.563E-02	0.348
		753.82		1.533E+00	2.334E+00	3.540E+00	3.220E-01	0.433
SB-126		414.70		-4.907E-02	9.657E-02	1.305E-01	1.106E-02	-0.376
		666.50		3.403E-02	8.148E-02	1.388E-01	1.231E-02	0.245
		695.00		-3.012E-02	8.755E-02	1.406E-01	1.259E-02	-0.214
		697.00		-1.823E-02	2.873E-01	4.727E-01	4.237E-02	-0.039
		720.70	*	1.062E-01	1.590E-01	2.612E-01	2.357E-02	0.407
		856.80		-4.218E-01	6.169E-01	7.954E-01	7.301E-02	-0.530
SB-127		252.40		5.649E+00	5.646E+00	8.949E+00	3.720E+00	0.631
		473.00		1.381E-01	1.989E+00	3.205E+00	4.193E-01	0.043
		685.70	*	1.109E+00	1.583E+00	2.739E+00	3.244E-01	0.405
		783.70		-2.081E-01	4.398E+00	7.182E+00	9.294E-01	-0.029
I-131		80.19		-1.476E+00	4.579E+00	6.609E+00	5.691E-01	-0.223
		284.31		-5.315E-02	1.530E+00	2.529E+00	2.266E-01	-0.021
		364.49	*	-3.297E-02	1.254E-01	2.015E-01	1.805E-02	-0.164
		636.99		1.199E+00	1.828E+00	3.163E+00	2.972E-01	0.379
TE-132		49.72		-1.909E+01	1.209E+01	1.874E+01	2.009E+00	-1.019
		111.76		-1.684E+01	3.858E+01	6.119E+01	6.886E+00	-0.275
		116.30		1.663E+01	3.275E+01	5.374E+01	6.034E+00	0.309
		228.16	*	-1.027E-01	8.705E-01	1.452E+00	2.303E-01	-0.071
BA-133		81.00		-1.738E-01	9.611E-02	1.246E-01	1.935E-02	-1.394
		276.40		6.609E-01	4.206E-01	6.552E-01	9.195E-02	1.009
		302.85		-7.582E-03	1.550E-01	2.219E-01	2.890E-02	-0.034
		356.01	*	1.001E-02	4.930E-02	7.248E-02	9.337E-03	0.138
		383.85		-4.135E-04	3.057E-01	4.972E-01	6.093E-02	-0.001
I-133		529.87	*	-8.685E-03	3.057E-01	Half-Life	too short	
		875.33		5.497E-02	3.057E-01	Half-Life	too short	
		1298.22		2.435E-01	3.057E-01	Half-Life	too short	
CS-134		563.25		5.044E-01	3.763E-01	6.763E-01	6.117E-02	0.746
		569.33		1.638E-01	2.043E-01	3.581E-01	3.251E-02	0.457
		604.72		8.722E-03	3.773E-02	5.556E-02	4.989E-03	0.157
	+	795.86	*	1.194E-01	8.487E-02	9.200E-02	8.477E-03	1.298
		801.95		-5.636E-01	5.042E-01	6.266E-01	5.769E-02	-0.899
		1365.19		-3.016E-01	1.213E+00	1.939E+00	1.678E-01	-0.156
CS-135		268.22	*	1.080E-01	1.734E-01	2.627E-01	2.590E-02	0.411
I-135		546.56		-5.445E+10	1.734E-01	Half-Life	too short	
		836.80		-8.959E+10	1.734E-01	Half-Life	too short	
		1038.76		-2.798E+09	1.734E-01	Half-Life	too short	
		1131.51		-3.190E+09	1.734E-01	Half-Life	too short	
		1260.41	*	-2.005E+10	1.734E-01	Half-Life	too short	
		1457.56		3.164E+12	1.734E-01	Half-Life	too short	
		1678.03		-2.614E+10	1.734E-01	Half-Life	too short	
		1791.20		-6.752E+09	1.734E-01	Half-Life	too short	
CS-136		153.25		2.918E-01	9.285E-01	1.494E+00	1.469E-01	0.195



---- Non-Identified Nuclides ----

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		176.60		-2.768E-01	5.016E-01	8.334E-01	7.469E-02	-0.332
		273.65		-2.721E-01	8.270E-01	8.390E-01	7.748E-02	-0.324
		340.55		4.881E-01	1.917E-01	3.110E-01	2.764E-02	1.569
		818.51		-4.428E-02	7.837E-02	1.215E-01	1.116E-02	-0.364
		1048.07	*	3.639E-02	1.139E-01	1.960E-01	1.792E-02	0.186
		1235.36		5.923E-01	7.351E-01	1.272E+00	1.456E-01	0.466
BA-137M		661.66	*	-1.873E-03	3.568E-02	5.896E-02	5.218E-03	-0.032
CS-137		661.66	*	-1.978E-03	3.769E-02	6.228E-02	5.522E-03	-0.032
CE-139		165.86	*	6.876E-03	3.177E-02	5.076E-02	4.015E-03	0.135
BA-140		162.66		-4.109E-01	8.837E-01	1.373E+00	1.178E-01	-0.299
		304.85		6.939E-01	1.494E+00	2.217E+00	6.486E-01	0.313
		423.72		-7.206E-01	2.218E+00	3.494E+00	1.148E+00	-0.206
		537.26	*	-1.943E-01	2.964E-01	4.657E-01	1.583E-01	-0.417
LA-140		328.76		3.184E-01	3.216E-01	5.512E-01	4.998E-02	0.578
		487.02		3.629E-02	1.498E-01	2.438E-01	2.277E-02	0.149
		815.77		-2.599E-01	3.581E-01	5.476E-01	5.546E-02	-0.475
		1596.21	*	1.079E-01	9.475E-02	1.657E-01	1.386E-02	0.651
CE-141		145.44	*	4.401E-03	6.446E-02	1.031E-01	8.628E-03	0.043
CE-143		57.36		-3.057E-04	6.446E-02	Half-Life	too short	
		293.27	*	1.023E-03	6.446E-02	Half-Life	too short	
		664.57		8.233E-05	6.446E-02	Half-Life	too short	
		721.93		3.337E-03	6.446E-02	Half-Life	too short	
CE-144		80.12		-7.617E-01	2.310E+00	3.333E+00	2.847E-01	-0.229
		133.52	*	6.845E-03	2.191E-01	3.127E-01	4.739E-02	0.022
PM-144		476.78		5.851E-02	6.848E-02	1.157E-01	1.100E-02	0.506
		618.01		1.170E-02	3.177E-02	5.425E-02	4.978E-03	0.216
		696.49	*	1.418E-03	3.545E-02	5.876E-02	5.267E-03	0.024
PR-144		696.51	*	9.482E-02	2.653E+00	4.397E+00	3.940E-01	0.022
		1489.16		-2.478E+00	1.058E+01	1.655E+01	1.383E+00	-0.150
PM-146		453.88	*	4.483E-02	4.065E-02	6.993E-02	7.443E-03	0.641
		633.25		-2.172E-01	1.423E+00	2.339E+00	8.948E-01	-0.093
		735.93		-4.216E-02	1.481E-01	2.377E-01	6.694E-02	-0.177
		747.24		-7.082E-02	1.001E-01	1.546E-01	2.297E-02	-0.458
ND-147	+	91.11		7.329E-01	2.917E-01	4.875E-01	4.827E-02	1.503
		319.41		-2.482E+00	3.557E+00	5.624E+00	4.824E-01	-0.441
		531.02	*	-1.332E-01	5.700E-01	9.441E-01	1.428E-01	-0.141
PM-149		285.90	*	-9.149E+01	1.167E+02	1.842E+02	2.852E+01	-0.497
EU-152		121.78		5.738E-02	7.185E-02	1.188E-01	1.174E-02	0.483
		244.70		2.073E-01	3.339E-01	5.091E-01	4.312E-02	0.407
		344.28	*	2.680E-02	1.016E-01	1.631E-01	1.478E-02	0.164
		778.90		-2.174E-01	2.547E-01	3.857E-01	3.524E-02	-0.564
	+	964.08		8.038E-01	3.940E-01	5.971E-01	5.404E-02	1.346
		1085.87		-7.615E-02	4.202E-01	6.929E-01	5.976E-02	-0.110
		1112.07		-3.506E-01	3.473E-01	5.181E-01	4.402E-02	-0.677
		1408.01		2.252E-01	1.741E-01	3.265E-01	2.707E-02	0.690
GD-153		69.67		1.809E-01	1.581E+00	2.328E+00	1.783E-01	0.078
		97.43	*	-4.317E-02	8.546E-02	1.206E-01	1.079E-02	-0.358
		103.18		-3.488E-02	1.018E-01	1.628E-01	1.429E-02	-0.214
EU-154		123.07		-5.698E-02	5.316E-02	8.128E-02	9.200E-03	-0.701

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Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
EU-155	+	723.31		3.957E-02	1.920E-01	2.803E-01	2.767E-02	0.141
		873.19		-1.228E-01	2.948E-01	4.611E-01	5.672E-02	-0.266
		996.26		1.153E-01	3.979E-01	6.553E-01	1.156E-01	0.176
		1004.73		-7.773E-02	2.112E-01	3.269E-01	3.882E-02	-0.238
		1274.44	*	9.125E-03	1.315E-01	2.186E-01	2.419E-02	0.042
		86.55		3.223E-01	1.295E-01	1.695E-01	1.581E-02	1.902
		105.31	*	8.241E-02	9.818E-02	1.634E-01	1.443E-02	0.504
		86.79		8.616E-01	3.461E-01	4.578E-01	4.247E-02	1.882
		197.04		-3.179E-01	5.651E-01	9.208E-01	7.546E-02	-0.345
		215.65		-1.635E-01	7.984E-01	1.234E+00	1.028E-01	-0.132
TB-160	+	298.57		2.013E-01	1.715E-01	2.031E-01	1.737E-02	0.991
		879.36	*	7.442E-02	1.449E-01	2.455E-01	2.252E-02	0.303
		962.29		8.305E-01	5.657E-01	9.214E-01	8.342E-02	0.901
		966.15		5.659E-01	2.774E-01	5.282E-01	4.777E-02	1.071
		1177.93		1.850E-02	4.254E-01	7.095E-01	5.777E-02	0.026
		1271.85		-2.648E-02	7.726E-01	1.273E+00	1.044E-01	-0.021
		80.57		-9.258E-02	2.513E-01	3.618E-01	3.108E-02	-0.256
		184.41		9.024E-02	3.644E-02	6.504E-02	5.258E-03	1.387
		280.46		1.233E-02	9.415E-02	1.383E-01	1.174E-02	0.089
		410.95	+	3.472E-01	4.104E-01	4.664E-01	3.941E-02	0.744
HO-166M	+	711.68	*	-9.415E-02	6.444E-02	9.378E-02	8.443E-03	-1.004
		752.31		1.569E-01	3.157E-01	4.737E-01	4.308E-02	0.331
		810.29		-4.082E-02	6.620E-02	1.045E-01	9.579E-03	-0.391
		67.75		-7.400E-03	9.930E-02	1.460E-01	1.100E-02	-0.051
		100.11		1.156E-01	1.641E-01	2.725E-01	2.413E-02	0.424
		152.43		1.792E-01	3.577E-01	5.799E-01	4.701E-02	0.309
		222.11		-2.809E-01	3.568E-01	5.790E-01	4.847E-02	-0.485
		1121.30	+	8.538E-01	2.363E-01	3.938E-01	3.326E-02	2.168
		1189.05		1.200E-01	3.392E-01	5.781E-01	4.713E-02	0.208
		1221.41	*	8.151E-02	2.229E-01	3.788E-01	3.098E-02	0.215
TA-182	+	1231.02		-4.644E-01	5.554E-01	8.648E-01	7.077E-02	-0.537
		295.96		1.389E+00	2.221E-01	3.177E-01	2.735E-02	4.371
		308.46		-9.458E-02	9.717E-02	1.514E-01	1.304E-02	-0.625
		316.51	*	2.603E-02	3.560E-02	6.063E-02	5.211E-03	0.429
		468.07		-6.621E-02	7.845E-02	1.002E-01	9.382E-03	-0.661
		72.81		3.562E-01	1.541E-01	2.646E-01	2.087E-02	1.346
		74.97	+	8.552E-01	1.429E-01	2.108E-01	1.700E-02	4.058
		569.70		3.407E-02	3.185E-02	5.653E-02	5.069E-03	0.603
		1063.66	*	9.315E-03	5.627E-02	9.389E-02	8.192E-03	0.099
		1770.23		-2.190E-02	5.544E-01	7.864E-01	6.460E-02	-0.028
PB-210		46.54	*	2.438E+00	1.739E+00	3.019E+00	2.807E-01	0.807
PB-211		404.85	*	5.109E-01	8.067E-01	1.153E+00	5.575E-01	0.443
		427.09		8.732E-01	1.646E+00	2.664E+00	1.232E+00	0.328
		832.01		8.761E-01	1.153E+00	1.837E+00	9.545E-01	0.477
BI-212	+	727.33	*	2.266E+00	7.528E-01	1.226E+00	1.564E-01	1.848
		785.37		2.397E+00	3.437E+00	5.898E+00	5.392E-01	0.406
		1620.50		2.068E+00	2.496E+00	4.493E+00	3.754E-01	0.460
RN-219	+	271.23		6.370E-01	3.279E-01	4.500E-01	4.569E-02	1.415
		401.81	*	-2.902E-01	4.217E-01	6.516E-01	9.606E-02	-0.445

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
RA-223		81.07		-4.008E-01	2.117E-01	2.816E-01	2.433E-02	-1.423
		83.79		5.101E-02	1.216E-01	1.803E-01	1.610E-02	0.283
		94.87		1.009E+00	4.466E-01	6.992E-01	6.323E-02	1.443
		144.24		5.545E-01	6.826E-01	1.110E+00	1.030E-01	0.499
		154.21		1.729E-01	4.031E-01	6.469E-01	5.793E-02	0.267
+ 269.46				4.949E-01	2.534E-01	3.535E-01	3.065E-02	1.400
		323.87	*	3.929E-01	6.486E-01	1.093E+00	1.892E-01	0.360
		338.28		8.048E+00	1.831E+00	2.502E+00	3.009E-01	3.217
		79.69		1.489E-01	1.136E+00	1.671E+00	2.870E-01	0.089
		235.96		7.287E-02	1.669E-01	2.513E-01	2.561E-02	0.290
AC-227		256.23	*	-2.440E-01	2.672E-01	4.250E-01	5.082E-02	-0.574
		299.98		2.161E+00	1.186E+00	1.642E+00	2.079E-01	1.316
		304.50		4.167E-01	1.751E+00	2.555E+00	4.216E-01	0.163
		334.37		3.839E-01	1.873E+00	2.734E+00	4.253E-01	0.140
		79.80		1.120E-01	1.495E+00	2.195E+00	4.771E-01	0.051
TH-227		235.96		7.287E-02	1.669E-01	2.513E-01	2.412E-02	0.290
		256.23	*	-2.440E-01	2.677E-01	4.250E-01	5.748E-02	-0.574
		299.98		2.161E+00	1.186E+00	1.642E+00	2.079E-01	1.316
		304.50		4.167E-01	1.751E+00	2.555E+00	4.216E-01	0.163
		334.37		3.839E-01	1.873E+00	2.734E+00	4.253E-01	0.140
TH-229		85.43		2.375E-01	2.099E-01	3.168E-01	2.889E-02	0.749
		88.47		4.097E-01	1.646E-01	2.207E-01	2.072E-02	1.857
		193.51	*	-1.348E-01	5.137E-01	8.595E-01	7.018E-02	-0.157
		210.85		2.576E+00	1.495E+00	1.628E+00	1.351E-01	1.582
		283.69	*	1.792E-01	1.447E+00	2.332E+00	3.385E-01	0.077
PA-231		301.36		1.388E+00	7.604E-01	1.052E+00	1.274E-01	1.319
TH-231		81.07		-4.008E-01	2.117E-01	2.816E-01	2.433E-02	-1.423
		83.79		5.101E-02	1.216E-01	1.803E-01	1.610E-02	0.283
		94.87		1.009E+00	4.466E-01	6.992E-01	6.323E-02	1.443
		144.24		5.545E-01	6.826E-01	1.110E+00	1.030E-01	0.499
		154.21		1.729E-01	4.031E-01	6.469E-01	5.793E-02	0.267
+ 269.46				4.949E-01	2.534E-01	3.535E-01	3.065E-02	1.400
		323.87	*	3.929E-01	6.486E-01	1.093E+00	1.892E-01	0.360
		338.28		8.048E+00	1.831E+00	2.502E+00	3.009E-01	3.217
		300.13		9.777E-01	5.420E-01	7.408E-01	1.096E-01	1.320
		311.90	*	2.226E-02	6.644E-02	1.112E-01	9.809E-03	0.200
PA-233		340.48		2.205E+00	9.364E-01	1.298E+00	3.122E-01	1.698
PA-234		94.67		5.327E-01	1.751E-01	2.673E-01	3.396E-02	1.993
		98.44		7.288E-02	9.166E-02	1.376E-01	7.685E-02	0.529
		111.00		2.505E-02	1.741E-01	2.827E-01	3.423E-02	0.089
		131.20		1.115E-01	1.189E-01	1.771E-01	1.492E-02	0.629
		569.50		2.447E-01	2.828E-01	4.971E-01	4.458E-02	0.492
		733.00		-1.350E-01	4.464E-01	6.144E-01	1.374E-01	-0.220
		880.51		-2.223E-01	3.027E-01	4.591E-01	4.210E-02	-0.484
		883.24		1.745E-01	3.033E-01	4.800E-01	3.230E-01	0.364
		926.50		-8.899E-02	1.813E-01	2.777E-01	7.067E-02	-0.321
		946.00	*	-1.743E-01	3.198E-01	4.882E-01	9.267E-02	-0.357
		949.00		1.607E-01	4.826E-01	8.014E-01	7.278E-02	0.201
		766.42		1.542E+01	1.434E+01	2.139E+01	1.087E+01	0.721
PA-234M								

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	1001.03		*	-2.714E+00	4.921E+00	7.560E+00	7.752E-01	-0.359
NP-239	99.53			1.189E-01	1.506E-01	2.507E-01	2.225E-02	0.474
	103.37			-6.059E-02	9.417E-02	1.487E-01	1.304E-02	-0.408
	106.12			1.758E-02	7.941E-02	1.295E-01	1.129E-02	0.136
	117.23		*	-4.910E-01	3.921E-01	5.967E-01	5.133E-02	-0.823
	228.18			-2.510E-02	2.159E-01	3.601E-01	3.026E-02	-0.070
	277.60			3.117E-01	2.444E-01	3.217E-01	2.731E-02	0.969
AM-241	59.54		*	-2.654E-02	1.210E-01	1.777E-01	1.409E-02	-0.149
CM-247	278.00		+	1.324E+00	1.038E+00	1.351E+00	1.147E-01	0.980
	287.50			5.565E-01	1.162E+00	1.968E+00	1.676E-01	0.283
	402.40		*	-1.806E-02	3.795E-02	5.968E-02	5.010E-03	-0.303
CF-249	252.80			8.401E-01	1.000E+00	1.720E+00	1.460E-01	0.488
	333.37			8.057E-02	2.062E-01	3.047E-01	2.610E-02	0.264
	388.16		*	1.954E-02	3.993E-02	6.674E-02	5.570E-03	0.293
CF-251	177.52		*	-6.457E-02	1.238E-01	2.058E-01	1.651E-02	-0.314
	227.38			-1.957E-02	3.570E-01	5.970E-01	5.015E-02	-0.033
	285.41			-8.723E-01	2.122E+00	3.439E+00	2.927E-01	-0.254

## VAX/VMS Nuclide Identification Report Generated

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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797002      *
* Acquisition date   : 5-MAR-2010 10:28:21 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 02:00:01.61 Half life ratio : 8.000                  *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 17-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G247797002 Analyst initials: MXR1                   *
* Batch Number       : 957136 Sample Quantity : 1.4398E+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 :                               *
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## Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM )	Act error	MDA (pCi/GRAM )	
K-40	3.700E+01	3.624E+00	5.419E-01	0.000E+00
CD-109	2.722E+00	1.071E+00	1.232E+00	0.000E+00
SN-126	2.657E-01	1.046E-01	1.206E-01	0.000E+00
HG-203	6.999E-02	5.381E-02	6.607E-02	0.000E+00
TL-208	6.982E-01	1.082E-01	5.674E-02	0.000E+00
BI-211	4.708E+00	6.677E-01	3.628E-01	0.000E+00
PB-212	2.209E+00	2.396E-01	9.701E-02	0.000E+00
BI-214	1.556E+00	2.313E-01	1.154E-01	0.000E+00
PB-214	1.709E+00	2.593E-01	1.320E-01	0.000E+00
RA-224	5.789E+00	1.283E+00	1.040E+00	0.000E+00
RA-226	1.556E+00	2.313E-01	1.154E-01	0.000E+00
AC-228	2.343E+00	4.027E-01	2.335E-01	0.000E+00
RA-228	2.343E+00	4.027E-01	2.335E-01	0.000E+00
TH-228	2.209E+00	2.396E-01	9.701E-02	0.000E+00
TH-232	2.343E+00	4.027E-01	2.335E-01	0.000E+00
U-234	1.386E+00	1.441E+00	1.718E+00	0.000E+00
U-235	1.056E-01	2.003E-01	3.473E-01	0.000E+00
NP-237	7.929E-01	3.521E-01	4.019E-01	0.000E+00
U-238	1.386E+00	1.441E+00	1.718E+00	0.000E+00
ANH-511	1.980E-01	7.217E-02	4.727E-02	0.000E+00

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	2.004E-01	3.380E-01	5.911E-01	0.000E+00 NOT IDENT.
NA-22	1.441E-02	4.471E-02	7.811E-02	0.000E+00 NOT IDENT.
NA-24	0.000E+00	1.762E+06	0.000E+00	0.000E+00 SHORT HLIF
SC-46	-4.783E-02	4.161E-02	6.258E-02	0.000E+00 FAIL ABUN
V-48	4.287E-02	7.868E-02	1.371E-01	0.000E+00 NOT IDENT.
CR-51	-3.328E-01	3.780E-01	6.276E-01	0.000E+00 NOT IDENT.
MN-54	-1.951E-02	3.948E-02	6.433E-02	0.000E+00 NOT IDENT.

CO-56	-3.396E-02	3.725E-02	5.745E-02	0.000E+00	NOT IDENT.
CO-57	1.850E-02	2.456E-02	4.389E-02	0.000E+00	NOT IDENT.
CO-58	-3.555E-02	4.481E-02	7.255E-02	0.000E+00	NOT IDENT.
FE-59	7.195E-02	9.828E-02	1.783E-01	0.000E+00	NOT IDENT.
CO-60	-1.073E-02	3.590E-02	5.861E-02	0.000E+00	NOT IDENT.
ZN-65	2.297E-02	1.029E-01	1.566E-01	0.000E+00	NOT IDENT.
SE-75	8.122E-03	4.451E-02	7.387E-02	0.000E+00	FAIL ABUN
SR-85	0.000E+00	4.189E-02	7.371E-02	0.000E+00	NOT IDENT.
Y-88	-1.309E-02	3.077E-02	4.688E-02	0.000E+00	NOT IDENT.
Y-91	3.826E+00	2.510E+01	4.335E+01	0.000E+00	NOT IDENT.
NB-94	-2.730E-02	3.497E-02	5.689E-02	0.000E+00	NOT IDENT.
NB-95	1.907E-02	4.495E-02	7.892E-02	0.000E+00	NOT IDENT.
NB-95M	3.290E-02	1.333E-01	2.124E-01	0.000E+00	NOT IDENT.
ZR-95	1.144E-01	1.163E-01	1.436E-01	0.000E+00	FAIL ABUN
MO-99	8.696E+00	1.544E+01	2.745E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	3.655E+17	0.000E+00	0.000E+00	SHORT HLIF
RU-103	5.506E-05	3.916E-02	6.579E-02	0.000E+00	FAIL ABUN
RH-106	-1.941E-01	2.950E-01	4.872E-01	0.000E+00	NOT IDENT.
RU-106	-1.941E-01	2.944E-01	4.872E-01	0.000E+00	NOT IDENT.
AG-108M	1.847E-02	3.016E-02	5.316E-02	0.000E+00	NOT IDENT.
AG-110M	-1.577E-03	3.426E-02	5.918E-02	0.000E+00	NOT IDENT.
SN-113	-5.837E-02	4.365E-02	6.808E-02	0.000E+00	NOT IDENT.
CD-115	-3.047E+00	1.406E+01	2.449E+01	0.000E+00	NOT IDENT.
SN-117M	2.640E-02	5.694E-02	9.913E-02	0.000E+00	NOT IDENT.
TE-123M	1.783E-02	2.884E-02	5.047E-02	0.000E+00	NOT IDENT.
SB-124	-5.310E-03	6.774E-02	1.100E-01	0.000E+00	NOT IDENT.
SB-125	1.718E-02	9.544E-02	1.642E-01	0.000E+00	FAIL ABUN
TE-125M	-1.530E+00	9.267E+00	1.615E+01	0.000E+00	NOT IDENT.
I-126	1.399E-01	2.285E-01	4.111E-01	0.000E+00	NOT IDENT.
SB-126	1.062E-01	1.559E-01	2.667E-01	0.000E+00	NOT IDENT.
SB-127	1.109E+00	1.552E+00	2.800E+00	0.000E+00	NOT IDENT.
I-131	-3.297E-02	1.229E-01	2.089E-01	0.000E+00	NOT IDENT.
TE-132	-1.027E-01	8.531E-01	1.520E+00	0.000E+00	NOT IDENT.
BA-133	1.001E-02	4.831E-02	7.518E-02	0.000E+00	NOT IDENT.
I-133	0.000E+00	1.098E+04	0.000E+00	0.000E+00	SHORT HLIF
CS-134	0.000E+00	8.318E-02	9.375E-02	0.000E+00	FAIL ABUN
CS-135	1.080E-01	1.699E-01	2.742E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	5.815E+16	0.000E+00	0.000E+00	SHORT HLIF
CS-136	3.639E-02	1.117E-01	1.985E-01	0.000E+00	NOT IDENT.
BA-137M	-1.873E-03	3.496E-02	6.033E-02	0.000E+00	NOT IDENT.
CS-137	-1.978E-03	3.693E-02	6.373E-02	0.000E+00	NOT IDENT.
CE-139	6.876E-03	3.113E-02	5.351E-02	0.000E+00	NOT IDENT.
BA-140	-1.943E-01	2.905E-01	4.788E-01	0.000E+00	NOT IDENT.
LA-140	1.079E-01	9.285E-02	1.662E-01	0.000E+00	NOT IDENT.
CE-141	4.401E-03	6.317E-02	1.090E-01	0.000E+00	NOT IDENT.
CE-143	0.000E+00	3.248E+02	0.000E+00	0.000E+00	SHORT HLIF
CE-144	6.845E-03	2.147E-01	3.312E-01	0.000E+00	NOT IDENT.
PM-144	1.418E-03	3.474E-02	6.006E-02	0.000E+00	NOT IDENT.
PR-144	9.482E-02	2.600E+00	4.494E+00	0.000E+00	NOT IDENT.
PM-146	4.483E-02	3.984E-02	7.216E-02	0.000E+00	NOT IDENT.
ND-147	-1.332E-01	5.586E-01	9.707E-01	0.000E+00	FAIL ABUN
PM-149	-9.149E+01	1.144E+02	1.919E+02	0.000E+00	NOT IDENT.
EU-152	2.680E-02	9.953E-02	1.693E-01	0.000E+00	FAIL ABUN
GD-153	-4.317E-02	8.375E-02	1.286E-01	0.000E+00	NOT IDENT.
EU-154	9.125E-03	1.289E-01	2.204E-01	0.000E+00	NOT IDENT.
EU-155	8.241E-02	9.622E-02	1.740E-01	0.000E+00	FAIL ABUN
TB-160	7.442E-02	1.420E-01	2.496E-01	0.000E+00	FAIL ABUN
HO-166M	-9.415E-02	6.315E-02	9.580E-02	0.000E+00	FAIL ABUN
TA-182	8.151E-02	2.184E-01	3.823E-01	0.000E+00	FAIL ABUN
IR-192	2.603E-02	3.489E-02	6.305E-02	0.000E+00	FAIL ABUN
BI-207	9.315E-03	5.515E-02	9.505E-02	0.000E+00	FAIL ABUN
PB-210	2.438E+00	1.704E+00	3.267E+00	0.000E+00	NOT IDENT.
PB-211	5.109E-01	7.906E-01	1.192E+00	0.000E+00	NOT IDENT.
BI-212	0.000E+00	7.378E-01	1.252E+00	0.000E+00	FAIL ABUN
RN-219	-2.902E-01	4.133E-01	6.741E-01	0.000E+00	FAIL ABUN
RA-223	3.929E-01	6.356E-01	1.136E+00	0.000E+00	FAIL ABUN
AC-227	-2.440E-01	2.619E-01	4.440E-01	0.000E+00	FAIL ABUN
TH-227	-2.440E-01	2.623E-01	4.440E-01	0.000E+00	FAIL ABUN
TH-229	-1.348E-01	5.035E-01	9.033E-01	0.000E+00	FAIL ABUN
PA-231	1.792E-01	1.418E+00	2.431E+00	0.000E+00	FAIL ABUN
TH-231	3.929E-01	6.356E-01	1.136E+00	0.000E+00	FAIL ABUN
PA-233	2.226E-02	6.511E-02	1.157E-01	0.000E+00	FAIL ABUN
PA-234	-1.743E-01	3.134E-01	4.955E-01	0.000E+00	NOT IDENT.
PA-234M	-2.714E+00	4.822E+00	7.664E+00	0.000E+00	NOT IDENT.
NP-239	-4.910E-01	3.842E-01	6.337E-01	0.000E+00	FAIL ABUN
AM-241	-2.654E-02	1.186E-01	1.914E-01	0.000E+00	NOT IDENT.
CM-247	-1.806E-02	3.719E-02	6.175E-02	0.000E+00	FAIL ABUN
CF-249	1.954E-02	3.913E-02	6.910E-02	0.000E+00	NOT IDENT.

CF-251

-6.457E-02

1.213E-01

2.167E-01

0.000E+00 NOT IDENT.

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797002.CNF;1
Sample date        : 17-FEB-2010 12:00:00 Acquisition date : 5-MAR-2010 10:28:21.
Sample ID          : G247797002 Sample quantity : 1.43980E+02 GRAM
Detector name      : GAM07 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:01.61 0.0%
Energy tolerance   : 1.50000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 957136 Detector SN# :
Matrix Spike ID    : LCS ID : 1032-A
*****

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## Nuclide Line Activity Report

## Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	1708	10.66*	1.129E+00	3.700E+01	3.700E+01	9.99
CD-109	88.03	258	3.70*	6.841E+00	2.657E+00	2.722E+00	40.17
SN-126	64.28	95	9.60	4.810E+00	5.341E-01	5.341E-01	105.57
	86.94	258	8.90	6.841E+00	1.105E+00	1.105E+00	57.01
	87.57	258	37.00*	6.841E+00	2.657E-01	2.657E-01	40.17
HG-203	70.83	-----	3.69	5.700E+00	-----	Line Not Found	-----
	72.87	-----	6.19	5.899E+00	-----	Line Not Found	-----
	279.20	76	81.56*	4.393E+00	5.518E-02	6.999E-02	78.45
TL-208	277.37	76	6.60	4.393E+00	6.819E-01	6.819E-01	78.95
	583.19	563	85.00*	2.476E+00	6.982E-01	6.982E-01	15.81
	860.56	54	12.50	1.781E+00	6.343E-01	6.343E-01	72.45
BI-211	72.87	-----	1.23	5.899E+00	-----	Line Not Found	-----
	351.06	859	12.92*	3.680E+00	4.708E+00	4.708E+00	14.47
PB-212	74.82	710	10.28	6.070E+00	2.967E+00	2.967E+00	19.33
	77.11	1075	17.10	6.258E+00	2.619E+00	2.619E+00	12.63
	238.63	1813	43.60*	4.908E+00	2.209E+00	2.209E+00	11.07
	300.09	103	3.30	4.150E+00	1.964E+00	1.964E+00	54.45
BI-214	609.32	648	45.49*	2.388E+00	1.556E+00	1.556E+00	15.17
	1120.29	147	14.92	1.414E+00	1.813E+00	1.813E+00	28.47
	1764.49	107	15.30	9.830E-01	1.859E+00	1.859E+00	28.40
PB-214	74.82	710	5.80	6.070E+00	5.259E+00	5.259E+00	18.50
	77.11	1075	9.70	6.258E+00	4.618E+00	4.618E+00	15.08
	242.00	443	7.25	4.864E+00	3.274E+00	3.274E+00	23.35
	295.22	553	18.42	4.200E+00	1.864E+00	1.864E+00	17.24
	351.93	859	35.60*	3.680E+00	1.709E+00	1.709E+00	15.49
RA-224	240.99	443	4.10*	4.864E+00	5.789E+00	5.789E+00	22.62
RA-226	609.32	648	45.49*	2.388E+00	1.556E+00	1.556E+00	15.17
	1120.29	147	14.92	1.414E+00	1.813E+00	1.813E+00	28.47
	1764.49	107	15.30	9.830E-01	1.859E+00	1.859E+00	28.40
AC-228	338.32	332	11.27	3.793E+00	2.028E+00	2.028E+00	45.96
	911.20	393	25.80*	1.695E+00	2.343E+00	2.343E+00	17.54
	968.97	243	15.80	1.606E+00	2.496E+00	2.496E+00	30.40



Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
RA-228	338.32	332	11.27	3.793E+00	2.028E+00	2.028E+00	45.96
	911.20	393	25.80*	1.695E+00	2.343E+00	2.343E+00	17.54
	968.97	243	15.80	1.606E+00	2.496E+00	2.496E+00	30.40
TH-228	74.82	710	10.28	6.070E+00	2.967E+00	2.967E+00	16.75
	77.11	1075	17.10	6.258E+00	2.619E+00	2.619E+00	12.63
	238.63	1813	43.60*	4.908E+00	2.209E+00	2.209E+00	11.07
TH-232	300.09	103	3.30	4.150E+00	1.964E+00	1.964E+00	81.25
	338.32	332	11.27	3.793E+00	2.028E+00	2.028E+00	21.12
	911.20	393	25.80*	1.695E+00	2.343E+00	2.343E+00	17.54
TH-234	968.97	243	15.80	1.606E+00	2.496E+00	2.496E+00	30.40
	63.29	95	3.70*	4.810E+00	1.386E+00	1.386E+00	106.07
	92.59	370	4.23	7.023E+00	3.247E+00	3.247E+00	36.56
U-235	89.96	198	3.47	6.936E+00	2.149E+00	2.149E+00	45.86
	93.35	370	5.60	7.023E+00	2.453E+00	2.453E+00	37.18
	143.76	-----	10.96*	6.691E+00	-----	Line Not Found	-----
NP-237	163.33	-----	5.08	6.279E+00	-----	Line Not Found	-----
	185.72	362	57.20	5.809E+00	2.837E-01	2.837E-01	30.93
	205.31	-----	5.01	5.451E+00	-----	Line Not Found	-----
U-238	86.48	258	12.40*	6.841E+00	7.929E-01	7.929E-01	45.31
	95.86	-----	2.68	7.087E+00	-----	Line Not Found	-----
	63.29	95	3.70*	4.810E+00	1.386E+00	1.386E+00	106.07
ANH-511	92.59	370	4.23	7.023E+00	3.247E+00	3.247E+00	30.39
	511.00	209	100.00*	2.755E+00	1.980E-01	1.980E-01	37.20

Flag: "\*" = Keyline

Total number of lines in spectrum 36  
Number of unidentified lines 5  
Number of lines tentatively identified by NID 31 86.11%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	3.700E+01	3.700E+01	0.370E+01	9.99	
CD-109	461.40D	1.02	2.657E+00	2.722E+00	1.093E+00	40.17	
SN-126	2.30E+05Y	1.00	2.657E-01	2.657E-01	1.067E-01	40.17	
HG-203	46.59D	1.27	5.518E-02	6.999E-02	5.491E-02	78.45	
TL-208	1.41E+10Y	1.00	6.982E-01	6.982E-01	1.104E-01	15.81	
BI-211	7.04E+08Y	1.00	4.708E+00	4.708E+00	0.681E+00	14.47	
PB-212	1.41E+10Y	1.00	2.209E+00	2.209E+00	0.244E+00	11.07	
BI-214	1600.00Y	1.00	1.556E+00	1.556E+00	0.236E+00	15.17	
PB-214	1600.00Y	1.00	1.709E+00	1.709E+00	0.265E+00	15.49	
RA-224	1.41E+10Y	1.00	5.789E+00	5.789E+00	1.309E+00	22.62	
RA-226	1600.00Y	1.00	1.556E+00	1.556E+00	0.236E+00	15.17	
AC-228	1.41E+10Y	1.00	2.343E+00	2.343E+00	0.411E+00	17.54	
RA-228	1.41E+10Y	1.00	2.343E+00	2.343E+00	0.411E+00	17.54	
TH-228	1.41E+10Y	1.00	2.209E+00	2.209E+00	0.244E+00	11.07	
TH-232	1.41E+10Y	1.00	2.343E+00	2.343E+00	0.411E+00	17.54	
TH-234	4.47E+09Y	1.00	1.386E+00	1.386E+00	1.470E+00	106.07	
U-235	7.04E+08Y	1.00	2.837E-01	2.837E-01	0.878E-01	30.93	K
NP-237	2.14E+06Y	1.00	7.929E-01	7.929E-01	3.593E-01	45.31	
U-238	4.47E+09Y	1.00	1.386E+00	1.386E+00	1.470E+00	106.07	
ANH-511	1.00E+09Y	1.00	1.980E-01	1.980E-01	0.736E-01	37.20	
Total Activity :			7.149E+01	7.157E+01			

Grand Total Activity : 7.149E+01 7.157E+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	128.86	95	569	1.03	257.35	254	9	1.32E-02	92.9	6.97E+00	
0	209.43	149	444	1.19	418.47	414	11	2.07E-02	57.4	5.38E+00	T
0	270.41	118	237	1.03	540.39	536	9	1.64E-02	50.5	4.48E+00	T
0	409.64	49	196	1.66	818.81	814	12	6.79E-03	****	3.28E+00	T
0	463.20	125	159	1.54	925.92	919	14	1.73E-02	46.7	2.98E+00	T
0	727.49	119	62	1.65	1454.42	1450	9	1.66E-02	30.7	2.06E+00	T
0	756.24	40	91	1.50	1511.93	1506	13	5.56E-03	****	1.99E+00	T
0	795.57	66	95	0.85	1590.56	1584	16	9.20E-03	70.5	1.91E+00	T
3	965.05	73	61	1.87	1929.48	1924	22	1.01E-02	48.2	1.61E+00	T
0	1589.35	40	8	2.23	3177.97	3172	11	5.52E-03	42.3	1.06E+00	
0	1730.98	44	8	3.75	3461.23	3453	16	6.18E-03	41.2	9.96E-01	
0	1847.04	21	14	0.71	3693.33	3685	18	2.93E-03	92.9	9.55E-01	
0	1937.91	14	0	1.38	3875.07	3869	11	1.94E-03	53.5	9.29E-01	

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797002.CNF;1
* Acquisition date   : 5-MAR-2010 10:28:21.  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 02:00:01.61           Half life ratio : 8.00000
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 17-FEB-2010 12:00:00  Nuclide Library : SOLID
* Sample ID          : G247797002           Analyst initials: MXR1
* Batch Number       : 957136              Sample Quantity : 1.43980E+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        :
*****

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## Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	3.700E+01	3.698E+00	5.392E-01	4.630E-02	68.627
CD-109	2.722E+00	1.093E+00	1.154E+00	1.087E-01	2.360
SN-126	2.657E-01	1.067E-01	1.129E-01	1.058E-02	2.354
HG-203	6.999E-02	5.491E-02	6.337E-02	5.520E-03	1.105
TL-208	6.982E-01	1.104E-01	5.530E-02	5.283E-03	12.626
BI-211	4.708E+00	6.813E-01	3.497E-01	3.137E-02	13.464
PB-212	2.209E+00	2.445E-01	9.272E-02	8.914E-03	23.824
BI-214	1.556E+00	2.360E-01	1.125E-01	1.170E-02	13.826
PB-214	1.709E+00	2.646E-01	1.272E-01	1.339E-02	13.434
RA-224	5.789E+00	1.309E+00	9.940E-01	8.406E-02	5.823
RA-226	1.556E+00	2.360E-01	1.125E-01	1.170E-02	13.826
AC-228	2.343E+00	4.110E-01	2.299E-01	2.755E-02	10.193
RA-228	2.343E+00	4.110E-01	2.299E-01	2.755E-02	10.193
TH-228	2.209E+00	2.445E-01	9.272E-02	8.914E-03	23.824
TH-232	2.343E+00	4.110E-01	2.299E-01	2.755E-02	10.193
TH-234	1.386E+00	1.470E+00	1.597E+00	2.841E-01	0.868
U-235	2.837E-01	8.775E-02	3.285E-01	5.505E-02	0.864
NP-237	7.929E-01	3.593E-01	3.761E-01	8.618E-02	2.108

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
U-238	1.386E+00	1.470E+00	1.597E+00	2.841E-01	0.868
ANH-511	1.980E-01	7.364E-02	4.593E-02	4.081E-03	4.310

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	2.004E-01		3.449E-01	5.735E-01	5.411E-02	0.349
NA-22	1.441E-02		4.562E-02	7.747E-02	6.360E-03	0.186
NA-24	-6.429E-01		8.989E-01	Half-Life too short		
SC-46	-4.783E-02		4.246E-02	6.157E-02	5.642E-03	-0.777
V-48	4.287E-02		8.029E-02	1.352E-01	1.217E-02	0.317
CR-51	-3.328E-01		3.858E-01	6.036E-01	5.450E-02	-0.551
MN-54	-1.951E-02		4.029E-02	6.320E-02	5.801E-03	-0.309
CO-56	-3.396E-02		3.801E-02	5.646E-02	5.183E-03	-0.602
CO-57	1.850E-02		2.506E-02	4.137E-02	3.559E-03	0.447
CO-58	-3.555E-02		4.572E-02	7.122E-02	6.543E-03	-0.499
FE-59	7.195E-02		1.003E-01	1.763E-01	1.633E-02	0.408
CO-60	-1.073E-02		3.663E-02	5.820E-02	4.768E-03	-0.184
ZN-65	2.297E-02		1.050E-01	1.549E-01	1.314E-02	0.148
SE-75	8.122E-03		4.542E-02	7.076E-02	6.043E-03	0.115
SR-85	8.566E-02		4.275E-02	7.163E-02	6.370E-03	1.196
Y-88	-1.309E-02		3.139E-02	4.690E-02	3.806E-03	-0.279
Y-91	3.826E+00		2.561E+01	4.294E+01	3.507E+00	0.089
NB-94	-2.730E-02		3.569E-02	5.567E-02	4.998E-03	-0.490
NB-95	1.907E-02		4.587E-02	7.738E-02	7.054E-03	0.246
NB-95M	3.290E-02		1.360E-01	2.029E-01	1.974E-02	0.162
ZR-95	1.144E-01	+	1.187E-01	1.408E-01	1.402E-02	0.812
MO-99	8.696E+00		1.576E+01	2.689E+01	4.305E+00	0.323
TC-99M	-2.113E+11		1.865E+11	Half-Life too short		
RU-103	5.506E-05		3.996E-02	6.389E-02	9.013E-03	0.001
RH-106	-1.941E-01		3.010E-01	4.755E-01	6.402E-02	-0.408
RU-106	-1.941E-01		3.004E-01	4.755E-01	4.250E-02	-0.408
AG-108M	1.847E-02		3.078E-02	5.148E-02	4.563E-03	0.359
AG-110M	-1.577E-03		3.496E-02	5.783E-02	5.269E-03	-0.027
SN-113	-5.837E-02		4.454E-02	6.577E-02	5.653E-03	-0.888
CD-115	-3.047E+00		1.434E+01	2.382E+01	2.125E+00	-0.128
SN-117M	2.640E-02		5.811E-02	9.393E-02	7.531E-03	0.281
TE-123M	1.783E-02		2.943E-02	4.783E-02	3.858E-03	0.373
SB-124	-5.310E-03		6.912E-02	1.098E-01	9.535E-03	-0.048
SB-125	1.718E-02		9.738E-02	1.590E-01	1.385E-02	0.108
TE-125M	-1.530E+00		9.456E+00	1.519E+01	1.598E+00	-0.101
I-126	1.399E-01		2.331E-01	4.018E-01	3.563E-02	0.348
SB-126	1.062E-01		1.590E-01	2.612E-01	2.357E-02	0.407
SB-127	1.109E+00		1.583E+00	2.739E+00	3.244E-01	0.405
I-131	-3.297E-02		1.254E-01	2.015E-01	1.805E-02	-0.164
TE-132	-1.027E-01		8.705E-01	1.452E+00	2.303E-01	-0.071
BA-133	1.001E-02		4.930E-02	7.248E-02	9.337E-03	0.138

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
I-133	-8.685E-03		5.601E-03	Half-Life too short		
CS-134	1.194E-01	+	8.487E-02	9.200E-02	8.477E-03	1.298
CS-135	1.080E-01		1.734E-01	2.627E-01	2.590E-02	0.411
I-135	-2.005E+10		2.967E+10	Half-Life too short		
CS-136	3.639E-02		1.139E-01	1.960E-01	1.792E-02	0.186
BA-137M	-1.873E-03		3.568E-02	5.896E-02	5.218E-03	-0.032
CS-137	-1.978E-03		3.769E-02	6.228E-02	5.522E-03	-0.032
CE-139	6.876E-03		3.177E-02	5.076E-02	4.015E-03	0.135
BA-140	-1.943E-01		2.964E-01	4.657E-01	1.583E-01	-0.417
LA-140	1.079E-01		9.475E-02	1.657E-01	1.386E-02	0.651
CE-141	4.401E-03		6.446E-02	1.031E-01	8.628E-03	0.043
CE-143	1.023E-03		1.657E-04	Half-Life too short		
CE-144	6.845E-03		2.191E-01	3.127E-01	4.739E-02	0.022
PM-144	1.418E-03		3.545E-02	5.876E-02	5.267E-03	0.024
PR-144	9.482E-02		2.653E+00	4.397E+00	3.940E-01	0.022
PM-146	4.483E-02		4.065E-02	6.993E-02	7.443E-03	0.641
ND-147	-1.332E-01		5.700E-01	9.441E-01	1.428E-01	-0.141
PM-149	-9.149E+01		1.167E+02	1.842E+02	2.852E+01	-0.497
EU-152	2.680E-02		1.016E-01	1.631E-01	1.478E-02	0.164
GD-153	-4.317E-02		8.546E-02	1.206E-01	1.079E-02	-0.358
EU-154	9.125E-03		1.315E-01	2.186E-01	2.419E-02	0.042
EU-155	8.241E-02		9.818E-02	1.634E-01	1.443E-02	0.504
TB-160	7.442E-02		1.449E-01	2.455E-01	2.252E-02	0.303
HO-166M	-9.415E-02		6.444E-02	9.378E-02	8.443E-03	-1.004
TA-182	8.151E-02		2.229E-01	3.788E-01	3.098E-02	0.215
IR-192	2.603E-02		3.560E-02	6.063E-02	5.211E-03	0.429
BI-207	9.315E-03		5.627E-02	9.389E-02	8.192E-03	0.099
PB-210	2.438E+00		1.739E+00	3.019E+00	2.807E-01	0.807
PB-211	5.109E-01		8.067E-01	1.153E+00	5.575E-01	0.443
BI-212	2.266E+00	+	7.528E-01	1.226E+00	1.564E-01	1.848
RN-219	-2.902E-01		4.217E-01	6.516E-01	9.606E-02	-0.445
RA-223	3.929E-01		6.486E-01	1.093E+00	1.892E-01	0.360
AC-227	-2.440E-01		2.672E-01	4.250E-01	5.082E-02	-0.574
TH-227	-2.440E-01		2.677E-01	4.250E-01	5.748E-02	-0.574
TH-229	-1.348E-01		5.137E-01	8.595E-01	7.018E-02	-0.157
PA-231	1.792E-01		1.447E+00	2.332E+00	3.385E-01	0.077
TH-231	3.929E-01		6.486E-01	1.093E+00	1.892E-01	0.360
PA-233	2.226E-02		6.644E-02	1.112E-01	9.809E-03	0.200
PA-234	-1.743E-01		3.198E-01	4.882E-01	9.267E-02	-0.357
PA-234M	-2.714E+00		4.921E+00	7.560E+00	7.752E-01	-0.359
NP-239	-4.910E-01		3.921E-01	5.967E-01	5.133E-02	-0.823
AM-241	-2.654E-02		1.210E-01	1.777E-01	1.409E-02	-0.149
CM-247	-1.806E-02		3.795E-02	5.968E-02	5.010E-03	-0.303
CF-249	1.954E-02		3.993E-02	6.674E-02	5.570E-03	0.293
CF-251	-6.457E-02		1.238E-01	2.058E-01	1.651E-02	-0.314

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*
*                                     DETECTOR DATA                          *
*
* Configuration      : SYS$SYSROOT:[ALPHA.ARCHIVE.GAMMA]G247797002          *
* Acquisition date   : 5-MAR-2010 10:28:21 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 02:00:01.61 Half life ratio : 8.000     *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date       : 17-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID        : G247797002 Analyst initials: MXR1            *
* Batch Number     : 957136 Sample Quantity : 1.4398E+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          :                  *
*****

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## Combined Activity-MDA Report

### ---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM )	Act Error	DLC (pCi/GRAM )	TPU
K-40	3.700E+01	3.624E+00	2.711E-01	1.849E+00
CD-109	2.722E+00	1.071E+00	6.165E-01	5.467E-01
SN-126	2.657E-01	1.046E-01	6.033E-02	5.337E-02
HG-203	6.999E-02	5.381E-02	3.306E-02	2.745E-02
TL-208	6.982E-01	1.082E-01	2.839E-02	5.521E-02
BI-211	4.708E+00	6.677E-01	1.815E-01	3.407E-01
PB-212	2.209E+00	2.396E-01	4.853E-02	1.222E-01
BI-214	1.556E+00	2.313E-01	5.772E-02	1.180E-01
PB-214	1.709E+00	2.593E-01	6.602E-02	1.323E-01
RA-224	5.789E+00	1.283E+00	5.202E-01	6.547E-01
RA-226	1.556E+00	2.313E-01	5.772E-02	1.180E-01
AC-228	2.343E+00	4.027E-01	1.168E-01	2.055E-01
RA-228	2.343E+00	4.027E-01	1.168E-01	2.055E-01
TH-228	2.209E+00	2.396E-01	4.853E-02	1.222E-01
TH-232	2.343E+00	4.027E-01	1.168E-01	2.055E-01
TH-234	1.386E+00	1.441E+00	8.593E-01	7.350E-01
U-235	1.056E-01	2.003E-01	1.738E-01	1.022E-01
NP-237	7.929E-01	3.521E-01	2.011E-01	1.796E-01
U-238	1.386E+00	1.441E+00	8.593E-01	7.350E-01
ANH-511	1.980E-01	7.217E-02	2.365E-02	3.682E-02

### ---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	2.004E-01	3.380E-01	2.957E-01	1.725E-01 NOT IDENT.
NA-22	1.441E-02	4.471E-02	3.908E-02	2.281E-02 NOT IDENT.
NA-24	-6.429E+05	1.762E+06	0.000E+00	8.989E+05 SHORT HLIF
SC-46	-4.783E-02	4.161E-02	3.131E-02	2.123E-02 FAIL ABUN
V-48	4.287E-02	7.868E-02	6.858E-02	4.014E-02 NOT IDENT.
CR-51	-3.328E-01	3.780E-01	3.140E-01	1.929E-01 NOT IDENT.
MN-54	-1.951E-02	3.948E-02	3.218E-02	2.014E-02 NOT IDENT.

CO-56	-3.396E-02	3.725E-02	2.874E-02	1.900E-02	NOT IDENT.
CO-57	1.850E-02	2.456E-02	2.196E-02	1.253E-02	NOT IDENT.
CO-58	-3.555E-02	4.481E-02	3.629E-02	2.286E-02	NOT IDENT.
FE-59	7.195E-02	9.828E-02	8.921E-02	5.015E-02	NOT IDENT.
CO-60	-1.073E-02	3.590E-02	2.932E-02	1.832E-02	NOT IDENT.
ZN-65	2.297E-02	1.029E-01	7.836E-02	5.250E-02	NOT IDENT.
SE-75	8.122E-03	4.451E-02	3.696E-02	2.271E-02	FAIL ABUN
SR-85	8.566E-02	4.189E-02	3.688E-02	2.137E-02	NOT IDENT.
Y-88	-1.309E-02	3.077E-02	2.345E-02	1.570E-02	NOT IDENT.
Y-91	3.826E+00	2.510E+01	2.169E+01	1.281E+01	NOT IDENT.
NB-94	-2.730E-02	3.497E-02	2.846E-02	1.784E-02	NOT IDENT.
NB-95	1.907E-02	4.495E-02	3.948E-02	2.293E-02	NOT IDENT.
NB-95M	3.290E-02	1.333E-01	1.063E-01	6.799E-02	NOT IDENT.
ZR-95	1.144E-01	1.163E-01	7.185E-02	5.934E-02	FAIL ABUN
MO-99	8.696E+00	1.544E+01	1.373E+01	7.879E+00	NOT IDENT.
TC-99M	-2.113E+17	3.655E+17	0.000E+00	0.000E+00	SHORT HLIF
RU-103	5.506E-05	3.916E-02	3.291E-02	1.998E-02	FAIL ABUN
RH-106	-1.941E-01	2.950E-01	2.438E-01	1.505E-01	NOT IDENT.
RU-106	-1.941E-01	2.944E-01	2.438E-01	1.502E-01	NOT IDENT.
AG-108M	1.847E-02	3.016E-02	2.660E-02	1.539E-02	NOT IDENT.
AG-110M	-1.577E-03	3.426E-02	2.961E-02	1.748E-02	NOT IDENT.
SN-113	-5.837E-02	4.365E-02	3.406E-02	2.227E-02	NOT IDENT.
CD-115	-3.047E+00	1.406E+01	1.225E+01	7.172E+00	NOT IDENT.
SN-117M	2.640E-02	5.694E-02	4.959E-02	2.905E-02	NOT IDENT.
TE-123M	1.783E-02	2.884E-02	2.525E-02	1.472E-02	NOT IDENT.
SB-124	-5.310E-03	6.774E-02	5.503E-02	3.456E-02	NOT IDENT.
SB-125	1.718E-02	9.544E-02	8.216E-02	4.869E-02	FAIL ABUN
TE-125M	-1.530E+00	9.267E+00	8.082E+00	4.728E+00	NOT IDENT.
I-126	1.399E-01	2.285E-01	2.057E-01	1.166E-01	NOT IDENT.
SB-126	1.062E-01	1.559E-01	1.334E-01	7.952E-02	NOT IDENT.
SB-127	1.109E+00	1.552E+00	1.401E+00	7.916E-01	NOT IDENT.
I-131	-3.297E-02	1.229E-01	1.045E-01	6.272E-02	NOT IDENT.
TE-132	-1.027E-01	8.531E-01	7.606E-01	4.352E-01	NOT IDENT.
BA-133	1.001E-02	4.831E-02	3.761E-02	2.465E-02	NOT IDENT.
I-133	-8.685E+03	1.098E+04	0.000E+00	5.601E+03	SHORT HLIF
CS-134	1.194E-01	8.318E-02	4.690E-02	4.244E-02	FAIL ABUN
CS-135	1.080E-01	1.699E-01	1.372E-01	8.670E-02	NOT IDENT.
I-135	-2.005E+16	5.815E+16	0.000E+00	0.000E+00	SHORT HLIF
CS-136	3.639E-02	1.117E-01	9.929E-02	5.697E-02	NOT IDENT.
BA-137M	-1.873E-03	3.496E-02	3.018E-02	1.784E-02	NOT IDENT.
CS-137	-1.978E-03	3.693E-02	3.189E-02	1.884E-02	NOT IDENT.
CE-139	6.876E-03	3.113E-02	2.677E-02	1.588E-02	NOT IDENT.
BA-140	-1.943E-01	2.905E-01	2.395E-01	1.482E-01	NOT IDENT.
LA-140	1.079E-01	9.285E-02	8.314E-02	4.737E-02	NOT IDENT.
CE-141	4.401E-03	6.317E-02	5.451E-02	3.223E-02	NOT IDENT.
CE-143	1.023E+03	3.248E+02	0.000E+00	1.657E+02	SHORT HLIF
CE-144	6.845E-03	2.147E-01	1.657E-01	1.095E-01	NOT IDENT.
PM-144	1.418E-03	3.474E-02	3.005E-02	1.773E-02	NOT IDENT.
PR-144	9.482E-02	2.600E+00	2.248E+00	1.327E+00	NOT IDENT.
PM-146	4.483E-02	3.984E-02	3.610E-02	2.032E-02	NOT IDENT.
ND-147	-1.332E-01	5.586E-01	4.857E-01	2.850E-01	FAIL ABUN
PM-149	-9.149E+01	1.144E+02	9.602E+01	5.835E+01	NOT IDENT.
EU-152	2.680E-02	9.953E-02	8.470E-02	5.078E-02	FAIL ABUN
GD-153	-4.317E-02	8.375E-02	6.434E-02	4.273E-02	NOT IDENT.
EU-154	9.125E-03	1.289E-01	1.103E-01	6.575E-02	NOT IDENT.
EU-155	8.241E-02	9.622E-02	8.703E-02	4.909E-02	FAIL ABUN
TB-160	7.442E-02	1.420E-01	1.249E-01	7.243E-02	FAIL ABUN
HO-166M	-9.415E-02	6.315E-02	4.793E-02	3.222E-02	FAIL ABUN
TA-182	8.151E-02	2.184E-01	1.913E-01	1.115E-01	FAIL ABUN
IR-192	2.603E-02	3.489E-02	3.154E-02	1.780E-02	FAIL ABUN
BI-207	9.315E-03	5.515E-02	4.755E-02	2.814E-02	FAIL ABUN
PB-210	2.438E+00	1.704E+00	1.635E+00	8.696E-01	NOT IDENT.
PB-211	5.109E-01	7.906E-01	5.966E-01	4.033E-01	NOT IDENT.
BI-212	2.266E+00	7.378E-01	6.265E-01	3.764E-01	FAIL ABUN
RN-219	-2.902E-01	4.133E-01	3.373E-01	2.109E-01	FAIL ABUN
RA-223	3.929E-01	6.356E-01	5.683E-01	3.243E-01	FAIL ABUN
AC-227	-2.440E-01	2.619E-01	2.221E-01	1.336E-01	FAIL ABUN
TH-227	-2.440E-01	2.623E-01	2.221E-01	1.338E-01	FAIL ABUN
TH-229	-1.348E-01	5.035E-01	4.519E-01	2.569E-01	FAIL ABUN
PA-231	1.792E-01	1.418E+00	1.216E+00	7.237E-01	FAIL ABUN
TH-231	3.929E-01	6.356E-01	5.683E-01	3.243E-01	FAIL ABUN
PA-233	2.226E-02	6.511E-02	5.788E-02	3.322E-02	FAIL ABUN
PA-234	-1.743E-01	3.134E-01	2.479E-01	1.599E-01	NOT IDENT.
PA-234M	-2.714E+00	4.822E+00	3.834E+00	2.460E+00	NOT IDENT.
NP-239	-4.910E-01	3.842E-01	3.170E-01	1.960E-01	FAIL ABUN
AM-241	-2.654E-02	1.186E-01	9.573E-02	6.049E-02	NOT IDENT.
CM-247	-1.806E-02	3.719E-02	3.089E-02	1.898E-02	FAIL ABUN
CF-249	1.954E-02	3.913E-02	3.457E-02	1.997E-02	NOT IDENT.



CF-251

-6.457E-02

1.213E-01

1.084E-01

6.188E-02 NOT IDENT.

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*****
*                               GEL Laboratories LLC                               *
*                               2040 SAVAGE ROAD                               *
*                               CHARLESTON ,SC 29417                           *
*                               GAMMA SPECTROSCOPY BACKGROUND REPORT             *
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ENERGY	MDA COUNTS
46.54	348.3824
49.72	454.8817
57.36	0.0000
59.54	516.7047
63.29	546.7012
63.29	546.7012
64.28	528.2434
67.75	588.7823
69.67	594.1973
70.83	616.6013
72.81	584.0793
72.87	584.1535
72.87	584.1535
74.82	586.4842
74.82	586.4842
74.82	586.4842
74.97	586.6621
77.11	589.1826
77.11	589.1826
77.11	589.1826
79.69	539.3563
79.80	539.4724
80.12	565.7303
80.19	565.8067
80.57	566.2200
81.00	667.5026
81.07	667.5926
81.07	667.5926
83.79	569.7043
83.79	569.7043
85.43	577.6119
86.48	685.2238
86.55	685.3119
86.79	685.6100
86.94	685.8030
87.57	556.6965
88.03	557.1634
88.47	557.6111
89.96	559.1107
91.11	455.9906
92.59	457.1844
92.59	457.1844
93.35	457.7946
94.67	371.1515
94.87	382.2459
94.87	382.2459
95.86	408.0075
97.43	416.9719
98.44	371.9784
99.53	382.1352
100.11	382.5063
103.18	396.1043
103.37	418.4760
105.31	364.5334
106.12	394.8064
109.28	410.6992
111.00	381.7809
111.76	416.5896
116.30	351.3824
117.23	411.4231
121.12	348.4700
121.78	348.8086
122.06	352.2232
123.07	429.1881
131.20	366.2370
133.52	357.4388
136.00	377.0023

136.47	360.5515
140.51	394.9561
140.51	0.0000
143.76	350.5811
144.24	339.5595
144.24	339.5595
145.44	373.8715
152.43	355.6338
153.25	375.3354
154.21	357.5653
154.21	357.5653
156.02	388.0443
158.56	333.1592
159.00	336.7733
162.66	371.6353
163.33	358.1163
165.86	358.0402
176.60	343.8135
177.52	334.5145
181.07	310.2854
184.41	318.5129
185.72	318.9688
193.51	327.0215
197.04	337.2130
205.31	357.4746
210.85	280.8913
215.65	302.2172
222.11	319.1467
227.38	292.1033
228.16	286.7675
228.18	286.7746
235.69	286.1859
235.96	298.1836
235.96	298.1836
238.63	268.0903
238.63	268.0903
240.99	268.6684
242.00	268.9158
244.70	207.3908
252.40	228.8653
252.80	241.2453
256.23	282.7717
256.23	282.7717
260.90	238.1859
264.66	196.2566
268.22	214.7441
269.46	196.5437
269.46	196.5437
271.23	238.3541
273.65	238.8347
276.40	210.0363
277.37	227.2040
277.60	221.2567
278.00	221.3301
279.20	216.7095
279.54	209.0292
280.46	207.6346
283.69	195.3083
284.31	194.2963
285.41	207.1075
285.90	214.9705
287.50	175.3143
293.27	0.0000
295.22	210.1013
295.96	210.2223
298.57	188.6426
299.98	182.5556
299.98	182.5556
300.09	182.5697
300.09	182.5697
300.13	182.5754
301.36	187.4744
302.85	182.9606
304.50	162.6626
304.50	162.6626
304.85	162.7053
308.46	205.9243
311.90	189.5865

316.51	173.3097
319.41	197.6405
320.08	204.7279
323.87	175.2563
323.87	175.2563
328.76	184.9265
333.37	180.7039
334.37	167.9158
334.37	167.9158
338.28	171.0166
338.28	171.0166
338.32	171.0217
338.32	171.0217
338.32	171.0217
340.48	181.6199
340.55	181.6309
344.28	168.4022
351.06	188.8899
351.93	189.0028
356.01	157.3641
364.49	158.6833
366.42	148.5703
383.85	158.6310
388.16	137.0947
388.63	155.9798
391.69	162.5778
400.66	141.3486
401.81	163.6185
402.40	155.2320
404.85	116.7593
410.95	159.6646
414.70	161.7343
423.72	159.4084
427.09	131.8586
427.87	143.7163
433.94	124.8589
453.88	93.6439
463.37	118.2321
468.07	131.7133
473.00	124.3697
476.78	111.3934
477.60	116.9613
487.02	113.1251
492.35	113.4504
497.08	103.7012
511.00	108.9563
514.00	99.0007
527.90	106.9605
529.87	0.0000
531.02	105.3148
537.26	128.4147
546.56	0.0000
563.25	95.9334
569.33	103.6164
569.50	103.6246
569.70	99.9343
583.19	92.1937
600.60	107.0253
602.73	101.8032
604.72	97.1929
609.32	101.7958
609.32	101.7958
610.33	101.8433
614.28	102.3401
618.01	90.8414
621.93	95.7404
621.93	95.7404
633.25	95.2710
635.95	104.9216
636.99	98.2901
645.85	95.7983
657.76	94.3657
661.66	96.4502
661.66	96.4502
664.57	0.0000
666.33	88.9116
666.50	94.7174
677.62	81.5657

685.70	83.7891
695.00	103.6735
696.49	98.8424
696.51	98.8424
697.00	98.8621
702.65	116.7513
706.68	97.2888
711.68	118.1631
720.70	77.8252
721.93	0.0000
722.78	79.1250
722.91	79.1289
723.31	85.7378
724.19	94.0143
727.33	96.1119
733.00	92.6862
735.93	87.4908
739.50	79.6484
747.24	93.8692
752.31	75.0421
753.82	85.0975
756.73	85.1930
763.94	119.3472
765.81	99.5680
766.42	86.5144
777.92	79.8178
778.90	84.9003
783.70	96.1921
785.37	87.1317
795.86	69.1638
801.95	98.5405
810.29	93.0462
810.76	101.2430
815.77	86.0610
818.51	77.9408
832.01	74.1973
834.85	97.9966
836.80	0.0000
846.77	73.5481
856.80	91.8248
860.56	81.1878
871.09	75.2150
873.19	76.3149
875.33	0.0000
879.36	62.8564
880.51	83.8418
883.24	54.5479
884.68	68.2183
889.28	87.2452
898.04	72.7431
911.20	68.8260
911.20	68.8260
911.20	68.8260
926.50	71.3020
937.49	85.4414
944.13	70.6390
946.00	76.0373
949.00	69.6782
962.29	50.2373
964.08	44.8802
966.15	64.6699
968.97	64.7271
968.97	64.7271
968.97	64.7271
983.53	65.0229
996.26	71.8072
1001.03	74.0911
1004.73	64.3584
1037.84	66.1055
1038.76	0.0000
1048.07	62.6239
1050.41	68.1947
1050.41	68.1947
1063.66	63.8368
1085.87	76.3512
1099.45	67.3008
1112.07	95.1714
1115.54	70.8278

1120.29	79.9227
1120.29	79.9227
1120.55	78.0455
1121.30	75.7783
1131.51	0.0000
1173.23	91.5859
1177.93	94.5688
1189.05	79.5214
1204.77	98.1318
1221.41	90.8330
1231.02	117.2138
1235.36	112.4977
1238.28	89.2897
1260.41	0.0000
1271.85	64.6062
1274.44	61.7106
1274.54	56.8129
1291.59	71.8119
1298.22	0.0000
1312.11	44.4928
1332.49	38.7540
1365.19	34.0512
1368.63	0.0000
1384.29	48.2910
1408.01	22.2560
1457.56	0.0000
1460.82	28.6699
1489.16	19.5783
1505.03	42.3964
1596.21	15.8167
1620.50	20.1357
1678.03	0.0000
1690.97	13.9754
1764.49	18.6963
1764.49	18.6963
1770.23	19.6523
1771.35	18.0187
1791.20	0.0000
1836.06	15.3065

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G247797002

Total Uranium Activity	4.1718E+00	ug/g
Total Uranium Counting Unc.	4.2868E+00	ug/g
Total Uranium Tpu	2.1871E-06	ug/g
Total Uranium Mda	2.5576E+00	ug/g

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*****
*
*               GEL Laboratories LLC
*               2040 SAVAGE ROAD
*               CHARLESTON ,SC 29417
*               GROSS GAMMA REPORT
*
*****
*
*  BATCH ID      : 957136          SAMPLE ID   : G247797002
*  ANALYST       : MXR1           DETECTOR    : GAM07
*  SAMPLE DATE   : 17-FEB-2010 12:00:00.00  COUNT TIME : 0 02:00:00.00
*  ANALYSIS DATE : 5-MAR-2010 10:28:21.98  SAMPLE ALQT: 143.980 GRAM
*
*****

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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.189E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.610E+00
GROSS GAMMA MDA     (pCi/GRAM ) : 4.762E+00
GROSS GAMMA DLC     (pCi/GRAM ) : 2.327E+00

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## VAX/VMS Nuclide Identification Report Generated 5-MAR-2010 12:31:41.74

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*****
*                               GEL Laboratories LLC                      *
*                               2040 Savage Road                        *
*                               Charleston, SC 29414                    *
*****
Configuration   : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797003.CNF;1
Sample date     : 17-FEB-2010 12:00:00 Acquisition date : 5-MAR-2010 10:29:11.
Sample ID      : G247797003      Sample quantity   : 1.29870E+02 GRAM
Detector name   : GAM11          Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:02.04 0.0%
Energy tolerance: 1.50000 keV    Analyst Initials  : MXR1
Abundance limit : 75.00000       Sensitivity     : 5.00000
Batch ID       : 957136          Detector SN#    :
Matrix Spike ID:                 LCS ID           : 1032-A
*****

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Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.39*	80	524	1.20	125.66	122	7	1.11E-02	50.1	
2	3	74.81	536	535	0.98	148.53	144	16	7.45E-02	7.9	1.25E+00
3	3	77.08*	951	393	0.89	153.07	144	16	1.32E-01	4.6	
4	4	87.29*	333	471	1.19	173.49	163	27	4.63E-02	12.3	1.85E+00
5	4	89.89	232	457	1.17	178.71	163	27	3.23E-02	16.9	
6	4	92.82*	295	442	1.20	184.57	163	27	4.10E-02	14.3	
7	0	129.65	126	428	0.87	258.28	254	9	1.76E-02	30.8	
8	0	185.76*	273	392	1.22	370.59	366	11	3.79E-02	15.7	
9	0	209.28	134	287	0.88	417.66	414	8	1.87E-02	23.5	
10	6	238.64*	1657	208	0.91	476.42	472	20	2.30E-01	2.8	2.94E+00
11	6	241.67	321	304	1.43	482.48	472	20	4.45E-02	12.3	
12	0	270.42	107	310	1.38	540.03	533	11	1.48E-02	33.5	
13	0	295.28	504	193	1.00	589.77	586	9	7.00E-02	6.7	
14	0	299.94	92	198	1.02	599.10	595	9	1.28E-02	29.3	
15	0	328.44	56	197	1.01	656.14	652	8	7.78E-03	45.5	
16	0	338.49*	295	238	1.22	676.26	672	11	4.10E-02	11.8	
17	0	351.96*	875	217	1.17	703.21	697	13	1.21E-01	4.9	
18	0	463.20	114	126	1.48	925.83	920	12	1.58E-02	21.9	
19	0	511.11*	149	207	1.60	1021.72	1015	16	2.06E-02	25.2	
20	0	583.38*	473	90	1.21	1166.34	1162	10	6.57E-02	6.1	
21	0	609.43*	581	90	1.29	1218.48	1211	12	8.07E-02	5.3	
22	0	727.60*	106	75	1.55	1454.93	1448	11	1.48E-02	19.3	
23	0	768.37*	58	59	1.47	1536.53	1532	9	8.02E-03	28.0	
24	0	794.62	53	119	1.40	1589.04	1583	15	7.37E-03	46.4	
25	0	863.18	75	119	1.91	1726.23	1716	20	1.04E-02	37.7	
26	0	911.56*	316	78	1.66	1823.03	1816	12	4.39E-02	8.1	
27	0	965.49	56	72	1.90	1930.94	1924	12	7.78E-03	33.1	
28	0	969.26*	201	44	1.16	1938.49	1935	8	2.79E-02	9.2	
29	0	1121.28	105	80	1.56	2242.65	2236	12	1.45E-02	19.8	
30	0	1378.82	52	37	1.72	2757.89	2749	17	7.17E-03	30.7	
31	0	1461.39*	1849	22	1.90	2923.07	2914	16	2.57E-01	2.4	
32	0	1588.81	29	12	0.70	3177.96	3172	12	3.99E-03	30.6	
33	0	1730.11	33	2	0.79	3460.61	3454	11	4.55E-03	19.9	
34	0	1765.26*	108	14	1.82	3530.91	3525	14	1.50E-02	12.6	

Flag: "\*" = Peak area was modified by background subtraction

## VMS Nuclide Identification Report V3.1 Generated 5-MAR-2010 12:31:45

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797003.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 17-FEB-2010 12:00:00 Acquisition date : 5-MAR-2010 10:29:11
Sample ID        : G247797003 Sample quantity : 129.87 GRAM
Sample type       : SOLID Sample geometry :
Detector name     : GAMMA11 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:02.04 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

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## 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	+	1460.82	*	4.093E+01	4.046E+00	5.389E-01	4.660E-02	75.942
CD-109	+	88.03	*	3.926E+00	1.034E+00	9.890E-01	9.378E-02	3.970
SN-126	+	64.28		5.590E-01	5.665E-01	6.319E-01	9.166E-02	0.885
	+	86.94		1.594E+00	7.691E-01	4.045E-01	1.680E-01	3.939
	+	87.57	*	3.833E-01	1.009E-01	9.686E-02	9.137E-03	3.957
TL-208		277.37		4.275E-01	3.788E-01	6.326E-01	1.130E-01	0.676
	+	583.19	*	6.044E-01	9.803E-02	5.670E-02	6.117E-03	10.660
		860.56		5.054E-01	3.133E-01	5.765E-01	6.003E-02	0.877
BI-211		72.87		2.295E+00	2.932E+00	4.391E+00	3.488E-01	0.523
	+	351.06	*	4.990E+00	8.188E-01	2.957E-01	3.901E-02	16.876
PB-212	+	74.82		2.605E+00	5.293E-01	4.570E-01	5.786E-02	5.700
	+	77.11		2.670E+00	3.314E-01	2.649E-01	2.202E-02	10.078
	+	238.63	*	2.109E+00	3.189E-01	8.940E-02	1.255E-02	23.588
	+	300.09		1.831E+00	1.112E+00	1.158E+00	1.865E-01	1.581
BI-214	+	609.32	*	1.437E+00	2.235E-01	9.481E-02	1.076E-02	15.151
	+	1120.29		1.326E+00	5.433E-01	4.951E-01	5.371E-02	2.679
	+	1764.49		1.901E+00	5.038E-01	3.685E-01	3.037E-02	5.158
PB-214	+	74.82		4.617E+00	9.015E-01	8.100E-01	9.185E-02	5.700
	+	77.11		4.707E+00	7.015E-01	4.671E-01	5.468E-02	10.078
	+	242.00		2.475E+00	7.087E-01	5.440E-01	7.965E-02	4.549
	+	295.22		1.772E+00	3.754E-01	2.119E-01	3.477E-02	8.360
	+	351.93	*	1.811E+00	3.135E-01	1.075E-01	1.534E-02	16.839
RA-224	+	240.99	*	4.376E+00	1.227E+00	9.586E-01	1.284E-01	4.565
RA-226	+	609.32	*	1.437E+00	2.235E-01	9.481E-02	1.076E-02	15.151
	+	1120.29		1.326E+00	5.433E-01	4.951E-01	5.371E-02	2.679
	+	1764.49		1.901E+00	5.038E-01	3.685E-01	3.037E-02	5.158
AC-228	+	338.32		1.874E+00	9.188E-01	3.555E-01	1.528E-01	5.272
	+	911.20	*	1.930E+00	3.934E-01	2.432E-01	3.040E-02	7.933
	+	968.97		2.116E+00	6.521E-01	3.986E-01	9.850E-02	5.308
RA-228	+	338.32		1.874E+00	9.188E-01	3.555E-01	1.528E-01	5.272
	+	911.20	*	1.930E+00	3.934E-01	2.432E-01	3.040E-02	7.933
	+	968.97		2.116E+00	6.521E-01	3.986E-01	9.850E-02	5.308
TH-228	+	74.82		2.605E+00	4.657E-01	4.570E-01	3.742E-02	5.700
	+	77.11		2.670E+00	3.314E-01	2.649E-01	2.202E-02	10.078

## ---- Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	+	238.63	*	2.109E+00	3.189E-01	8.940E-02	1.255E-02	23.588
	+	300.09		1.831E+00	1.567E+00	1.158E+00	7.230E-01	1.581
TH-232	+	338.32		1.874E+00	5.092E-01	3.555E-01	4.793E-02	5.272
	+	911.20	*	1.930E+00	3.934E-01	2.432E-01	3.040E-02	7.933
	+	968.97		2.116E+00	6.521E-01	3.986E-01	9.850E-02	5.308
TH-234	+	63.29	*	1.450E+00	1.477E+00	1.594E+00	2.836E-01	0.910
	+	92.59		2.855E+00	1.033E+00	8.229E-01	1.834E-01	3.469
U-235	+	89.96		2.793E+00	1.172E+00	1.017E+00	2.529E-01	2.746
	+	93.35		2.156E+00	7.941E-01	6.195E-01	1.442E-01	3.481
		143.76	*	1.010E-01	1.857E-01	3.136E-01	5.372E-02	0.322
		163.33		3.379E-01	4.064E-01	6.935E-01	1.280E-01	0.487
	+	185.72		2.237E-01	7.429E-02	5.767E-02	6.116E-03	3.879
		205.31		2.715E-01	4.732E-01	7.185E-01	1.416E-01	0.378
NP-237	+	86.48	*	1.144E+00	3.849E-01	2.914E-01	6.683E-02	3.926
		95.86		1.666E-01	8.309E-01	1.198E+00	2.888E-01	0.139
U-238	+	63.29	*	1.450E+00	1.477E+00	1.594E+00	2.836E-01	0.910
	+	92.59		2.855E+00	8.550E-01	8.229E-01	7.524E-02	3.469
ANH-511	+	511.00	*	1.455E-01	7.488E-02	4.503E-02	4.815E-03	3.231

## ---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7		477.60	*	-1.197E-01	2.872E-01	4.643E-01	5.254E-02	-0.258
NA-22		1274.54	*	-2.434E-02	4.575E-02	7.036E-02	5.778E-03	-0.346
NA-24		1368.63	*	-1.159E+00	4.575E-02	Half-Life too short		
SC-46		889.28	*	-2.123E-02	3.729E-02	5.928E-02	5.839E-03	-0.358
	+	1120.55		2.259E-01	9.128E-02	1.307E-01	1.115E-02	1.728
V-48		944.13		2.423E-01	9.418E-01	1.605E+00	1.552E-01	0.151
		983.53	*	2.715E-02	6.784E-02	1.170E-01	1.110E-02	0.232
		1312.11		4.457E-02	8.280E-02	1.420E-01	1.171E-02	0.314
CR-51		320.08	*	-2.980E-01	3.599E-01	5.397E-01	7.830E-02	-0.552
MN-54		834.85	*	-6.066E-03	3.516E-02	5.849E-02	5.759E-03	-0.104
CO-56		846.77	*	-1.173E-02	3.836E-02	6.297E-02	6.205E-03	-0.186
		1037.84		-1.582E-02	3.067E-01	5.056E-01	4.847E-02	-0.031
		1238.28		6.170E-02	1.058E-01	1.791E-01	1.507E-02	0.345
		1771.35		2.421E-02	2.149E-01	3.156E-01	2.597E-02	0.077
CO-57		122.06	*	-6.461E-03	2.123E-02	3.562E-02	3.013E-03	-0.181
		136.47		-3.265E-02	1.817E-01	3.046E-01	2.859E-02	-0.107
CO-58		810.76	*	1.093E-02	3.483E-02	5.750E-02	5.662E-03	0.190
FE-59		1099.45	*	-5.794E-02	9.709E-02	1.513E-01	1.422E-02	-0.383
		1291.59		5.482E-02	1.116E-01	1.914E-01	1.806E-02	0.286
CO-60		1173.23		6.650E-03	4.821E-02	7.988E-02	6.418E-03	0.083
		1332.49	*	-8.043E-03	3.907E-02	6.285E-02	5.193E-03	-0.128
ZN-65		1115.54	*	-4.913E-02	1.099E-01	1.481E-01	1.270E-02	-0.332
SE-75		121.12		-1.099E-02	1.107E-01	1.874E-01	2.053E-02	-0.059
		136.00		-2.227E-03	3.489E-02	5.877E-02	5.175E-03	-0.038
		264.66	*	1.791E-03	4.582E-02	6.644E-02	9.767E-03	0.027
		279.54		-1.699E-01	1.110E-01	1.574E-01	2.464E-02	-1.080

----- Non-Identified Nuclides -----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	400.66			3.856E-03	2.295E-01	3.883E-01	4.958E-02	0.010
SR-85	514.00	*		7.440E-02	4.059E-02	6.751E-02	7.211E-03	1.102
Y-88	898.04			2.368E-02	4.181E-02	7.315E-02	7.229E-03	0.324
	1836.06	*		-6.023E-03	3.023E-02	4.768E-02	3.870E-03	-0.126
Y-91	1204.77	*		7.442E+00	2.312E+01	3.876E+01	3.138E+00	0.192
NB-94	702.65	*		2.243E-02	3.256E-02	5.552E-02	5.332E-03	0.404
	871.09			-1.068E-02	3.580E-02	5.032E-02	4.959E-03	-0.212
NB-95	765.81	*		-3.415E-03	5.027E-02	7.021E-02	6.854E-03	-0.049
NB-95M	235.69	*		-1.567E-02	1.372E-01	1.988E-01	2.779E-02	-0.079
ZR-95	724.19			-2.695E-02	1.035E-01	1.415E-01	1.460E-02	-0.191
	756.73	*		1.188E-02	7.409E-02	1.208E-01	1.274E-02	0.098
MO-99	140.51			-3.882E+00	2.421E+01	3.988E+01	9.506E+00	-0.097
	181.07			-5.531E+00	2.151E+01	3.151E+01	6.195E+00	-0.176
	366.42			-1.774E+01	1.182E+02	1.850E+02	2.242E+01	-0.096
	739.50	*		-8.208E-01	1.508E+01	2.419E+01	3.961E+00	-0.034
	777.92			-3.849E+01	4.148E+01	6.001E+01	5.871E+00	-0.641
TC-99M	140.51	*		-5.237E+10	4.148E+01	Half-Life too short		
RU-103	497.08	*		-2.538E-02	3.733E-02	5.869E-02	9.016E-03	-0.432
	610.33	+		1.504E+01	3.035E+00	2.987E+00	5.118E-01	5.037
RH-106	621.93	*		1.209E-01	3.248E-01	5.474E-01	7.737E-02	0.221
	1050.41			-4.003E-01	2.601E+00	4.244E+00	3.852E-01	-0.094
RU-106	621.93	*		1.209E-01	3.246E-01	5.474E-01	5.430E-02	0.221
	1050.41			-4.003E-01	2.601E+00	4.244E+00	3.852E-01	-0.094
AG-108M	433.94	*		-9.122E-04	2.779E-02	4.661E-02	5.129E-03	-0.020
	614.28			-6.233E-03	3.608E-02	5.072E-02	5.195E-03	-0.123
	722.91			-9.501E-03	4.246E-02	5.832E-02	5.780E-03	-0.163
AG-110M	657.76	*		2.515E-02	3.333E-02	5.740E-02	5.594E-03	0.438
	677.62			4.301E-02	3.140E-01	5.154E-01	5.024E-02	0.083
	706.68			-1.312E-01	2.222E-01	3.419E-01	3.364E-02	-0.384
	763.94			1.580E-01	1.683E-01	2.624E-01	2.615E-02	0.602
	884.68			1.732E-02	4.785E-02	8.269E-02	8.347E-03	0.209
	937.49			-1.324E-01	1.146E-01	1.713E-01	1.709E-02	-0.773
	1384.29			1.454E-01	1.480E-01	2.474E-01	2.120E-02	0.588
	1505.03			-2.054E-01	2.752E-01	4.151E-01	3.493E-02	-0.495
SN-113	391.69	*		1.701E-03	4.018E-02	6.820E-02	7.417E-03	0.025
CD-115	260.90			-1.126E+02	1.630E+02	2.525E+02	3.654E+01	-0.446
	492.35			2.621E+01	4.451E+01	7.710E+01	8.287E+00	0.340
	527.90	*		-6.850E+00	1.354E+01	2.153E+01	2.287E+00	-0.318
SN-117M	156.02			-2.027E+00	2.146E+00	3.446E+00	3.226E-01	-0.588
	158.56	*		2.696E-03	5.204E-02	8.649E-02	8.174E-03	0.031
TE-123M	159.00	*		3.712E-04	2.589E-02	4.295E-02	4.087E-03	0.009
SB-124	602.73			-1.005E-02	4.157E-02	5.815E-02	5.878E-03	-0.173
	645.85			-2.639E-01	4.723E-01	7.317E-01	7.391E-02	-0.361
	722.78			-8.131E-02	4.316E-01	5.954E-01	5.858E-02	-0.137
	1690.97	*		-1.258E-02	6.841E-02	1.095E-01	9.535E-03	-0.115
SB-125	427.87	*		2.160E-02	8.549E-02	1.460E-01	1.592E-02	0.148
	463.37	+		9.877E-01	4.461E-01	5.548E-01	6.279E-02	1.780
	600.60			2.517E-02	1.662E-01	2.757E-01	2.943E-02	0.091
	635.95			1.568E-01	2.476E-01	4.248E-01	4.415E-02	0.369

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TE-125M	109.28	*		2.925E+00	8.157E+00	1.411E+01	1.469E+00	0.207
I-126	388.63			-7.376E-02	1.592E-01	2.619E-01	2.841E-02	-0.282
	666.33	*		2.750E-01	2.263E-01	3.998E-01	3.790E-02	0.688
	753.82			1.691E+00	1.881E+00	3.246E+00	3.161E-01	0.521
SB-126	414.70			1.160E-02	6.883E-02	1.173E-01	1.260E-02	0.099
	666.50			9.761E-02	7.809E-02	1.382E-01	1.310E-02	0.706
	695.00			2.219E-02	8.312E-02	1.374E-01	1.317E-02	0.161
	697.00			4.386E-02	2.839E-01	4.654E-01	4.461E-02	0.094
	720.70	*		3.984E-02	1.625E-01	2.484E-01	2.399E-02	0.160
	856.80			4.148E-02	5.043E-01	7.470E-01	7.362E-02	0.056
SB-127	252.40			4.078E-01	4.685E+00	7.650E+00	3.292E+00	0.053
	473.00			1.600E+00	1.758E+00	3.089E+00	4.482E-01	0.518
	685.70	*		5.248E-01	1.505E+00	2.509E+00	3.091E-01	0.209
	783.70			-6.071E-01	3.917E+00	6.190E+00	8.299E-01	-0.098
I-131	80.19			3.984E-02	4.704E+00	5.935E+00	5.146E-01	0.007
	284.31			-1.261E+00	1.497E+00	2.269E+00	3.543E-01	-0.556
	364.49	*		-1.801E-02	1.183E-01	1.851E-01	2.324E-02	-0.097
	636.99			-6.062E-01	1.582E+00	2.496E+00	2.546E-01	-0.243
TE-132	49.72			-5.648E+00	1.413E+01	2.222E+01	2.384E+00	-0.254
	111.76			-1.956E+01	3.423E+01	5.656E+01	6.307E+00	-0.346
	116.30			1.442E+01	2.913E+01	5.045E+01	5.610E+00	0.286
	228.16	*		3.802E-01	8.209E-01	1.369E+00	2.535E-01	0.278
BA-133	81.00			-8.524E-03	9.052E-02	1.133E-01	1.762E-02	-0.075
	276.40			4.579E-01	3.499E-01	5.868E-01	1.113E-01	0.780
	302.85			4.136E-02	1.435E-01	2.097E-01	3.730E-02	0.197
	356.01	*		-1.891E-02	4.477E-02	6.042E-02	9.622E-03	-0.313
	383.85			1.032E-01	2.777E-01	4.798E-01	6.854E-02	0.215
I-133	529.87	*		6.019E-03	2.777E-01	Half-Life	too short	
	875.33			2.015E-01	2.777E-01	Half-Life	too short	
	1298.22			-2.151E-01	2.777E-01	Half-Life	too short	
CS-134	563.25			2.685E-01	3.464E-01	6.009E-01	6.304E-02	0.447
	569.33			2.637E-02	1.884E-01	3.081E-01	3.228E-02	0.086
	604.72			5.005E-03	3.283E-02	4.798E-02	4.849E-03	0.104
+	795.86	*		9.815E-02	9.168E-02	9.528E-02	9.400E-03	1.030
	801.95			-1.765E-01	4.582E-01	6.031E-01	5.947E-02	-0.293
	1365.19			-7.713E-02	1.151E+00	1.843E+00	1.607E-01	-0.042
CS-135	268.22	*		7.861E-02	1.647E-01	2.454E-01	3.850E-02	0.320
I-135	546.56			1.393E+10	1.647E-01	Half-Life	too short	
	836.80			-7.023E+08	1.647E-01	Half-Life	too short	
	1038.76			5.847E+10	1.647E-01	Half-Life	too short	
	1131.51			-5.208E+09	1.647E-01	Half-Life	too short	
	1260.41	*		-1.445E+10	1.647E-01	Half-Life	too short	
	1457.56			1.668E+12	1.647E-01	Half-Life	too short	
	1678.03			-4.648E+10	1.647E-01	Half-Life	too short	
	1791.20			-4.504E+10	1.647E-01	Half-Life	too short	
CS-136	153.25			6.198E-01	8.218E-01	1.413E+00	1.529E-01	0.439
	176.60			2.259E-03	4.779E-01	7.953E-01	8.709E-02	0.003
	273.65			-3.460E-01	5.731E-01	7.861E-01	1.226E-01	-0.440
	340.55			2.093E-01	1.723E-01	2.628E-01	3.574E-02	0.796

---- Non-Identified Nuclides ----

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		818.51		2.386E-02	6.911E-02	1.144E-01	1.126E-02	0.209
		1048.07	*	-1.908E-02	1.101E-01	1.793E-01	1.692E-02	-0.106
		1235.36		6.731E-02	7.187E-01	1.179E+00	1.347E-01	0.057
BA-137M		661.66	*	-4.908E-02	3.477E-02	4.917E-02	4.653E-03	-0.998
CS-137		661.66	*	-5.185E-02	3.673E-02	5.195E-02	4.923E-03	-0.998
CE-139		165.86	*	-7.059E-03	2.690E-02	4.442E-02	4.317E-03	-0.159
BA-140		162.66		6.388E-01	7.790E-01	1.340E+00	1.357E-01	0.477
		304.85		-4.867E-01	1.387E+00	2.052E+00	6.491E-01	-0.237
		423.72		-1.703E+00	1.871E+00	2.807E+00	9.410E-01	-0.607
		537.26	*	8.964E-02	2.529E-01	4.266E-01	1.470E-01	0.210
LA-140	+	328.76		4.608E-01	4.240E-01	5.820E-01	8.265E-02	0.792
		487.02		-8.913E-03	1.286E-01	2.132E-01	2.386E-02	-0.042
		815.77		-6.463E-02	2.930E-01	4.564E-01	4.897E-02	-0.142
		1596.21	*	-6.934E-02	9.796E-02	1.327E-01	1.116E-02	-0.523
CE-141		145.44	*	-1.331E-02	5.655E-02	9.425E-02	8.639E-03	-0.141
CE-143		57.36		1.080E-04	5.655E-02	Half-Life	too short	
		293.27	*	5.103E-04	5.655E-02	Half-Life	too short	
		664.57		1.497E-03	5.655E-02	Half-Life	too short	
		721.93		5.519E-04	5.655E-02	Half-Life	too short	
CE-144		80.12		1.027E-02	2.374E+00	2.994E+00	2.575E-01	0.003
		133.52	*	-1.322E-01	1.965E-01	2.867E-01	4.392E-02	-0.461
PM-144		476.78		-5.664E-02	5.805E-02	8.933E-02	1.017E-02	-0.634
		618.01		-4.310E-03	3.077E-02	4.978E-02	5.062E-03	-0.087
		696.49	*	2.163E-02	3.434E-02	5.828E-02	5.588E-03	0.371
PR-144		696.51	*	1.608E+00	2.570E+00	4.361E+00	4.180E-01	0.369
		1489.16		-1.451E+00	1.231E+01	2.032E+01	1.709E+00	-0.071
PM-146		453.88	*	1.727E-02	3.963E-02	6.814E-02	8.466E-03	0.253
		633.25		-3.154E-01	1.309E+00	2.084E+00	8.017E-01	-0.151
		735.93		7.042E-02	1.435E-01	2.391E-01	6.785E-02	0.295
		747.24		1.226E-03	9.695E-02	1.563E-01	2.385E-02	0.008
ND-147	+	91.11		9.526E-01	3.359E-01	4.310E-01	4.273E-02	2.210
		319.41		-3.114E+00	3.419E+00	5.097E+00	7.266E-01	-0.611
		531.02	*	1.784E-02	5.306E-01	8.808E-01	1.425E-01	0.020
PM-149		285.90	*	1.716E+01	1.107E+02	1.800E+02	3.608E+01	0.095
EU-152		121.78		-2.569E-02	6.076E-02	1.014E-01	9.895E-03	-0.253
		244.70		-7.958E-02	3.084E-01	4.397E-01	5.977E-02	-0.181
		344.28	*	1.071E-01	1.037E-01	1.583E-01	2.146E-02	0.677
		778.90		-9.282E-02	2.297E-01	3.527E-01	3.451E-02	-0.263
	+	964.08		6.355E-01	4.251E-01	5.575E-01	5.342E-02	1.140
		1085.87		1.529E-01	4.193E-01	7.125E-01	6.280E-02	0.215
		1112.07		2.867E-01	3.212E-01	5.660E-01	4.868E-02	0.507
		1408.01		2.879E-01	2.050E-01	3.780E-01	3.158E-02	0.762
GD-153		69.67		-1.207E+00	1.476E+00	2.251E+00	1.734E-01	-0.536
		97.43	*	-9.077E-02	8.704E-02	1.151E-01	1.023E-02	-0.788
		103.18		-1.061E-01	8.975E-02	1.461E-01	1.267E-02	-0.726
EU-154		123.07		-3.328E-03	4.367E-02	7.392E-02	8.306E-03	-0.045
		723.31		-7.489E-02	1.945E-01	2.618E-01	2.736E-02	-0.286
		873.19		-1.321E-01	2.545E-01	4.062E-01	5.207E-02	-0.325
		996.26		-3.459E-01	3.653E-01	5.465E-01	9.769E-02	-0.633

----- Non-Identified Nuclides -----

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EU-155	+	1004.73		-2.850E-01	2.377E-01	3.483E-01	4.249E-02	-0.818
		1274.44	*	-6.893E-02	1.297E-01	1.993E-01	2.205E-02	-0.346
		86.55		4.649E-01	1.225E-01	1.666E-01	1.565E-02	2.791
		105.31	*	1.086E-01	8.703E-02	1.547E-01	1.349E-02	0.702
TB-160	+	86.79		1.243E+00	3.272E-01	4.471E-01	4.175E-02	2.780
		197.04		-3.375E-01	5.325E-01	8.483E-01	9.454E-02	-0.398
		215.65		-3.799E-02	6.664E-01	1.092E+00	1.318E-01	-0.035
		298.57		2.599E-01	1.571E-01	1.805E-01	2.701E-02	1.440
	+	879.36	*	-8.515E-02	1.363E-01	2.137E-01	2.106E-02	-0.398
		962.29		7.504E-02	5.515E-01	8.120E-01	7.788E-02	0.092
		966.15		4.474E-01	2.993E-01	4.335E-01	4.150E-02	1.032
		1177.93		-8.740E-02	4.067E-01	6.544E-01	5.264E-02	-0.134
HO-166M	+	1271.85		5.283E-01	7.471E-01	1.295E+00	1.061E-01	0.408
		80.57		4.130E-03	2.582E-01	3.258E-01	2.818E-02	0.013
		184.41		1.777E-01	5.902E-02	5.751E-02	6.064E-03	3.090
		280.46		-7.100E-02	8.114E-02	1.231E-01	1.902E-02	-0.577
	+	410.95		9.673E-02	2.236E-01	3.864E-01	4.146E-02	0.250
		711.68	*	-2.027E-02	6.661E-02	1.052E-01	1.013E-02	-0.193
		752.31		-1.268E-01	2.806E-01	4.315E-01	4.200E-02	-0.294
		810.29		1.868E-02	5.283E-02	8.752E-02	8.601E-03	0.213
TA-182	+	67.75		-1.230E-02	9.489E-02	1.493E-01	1.130E-02	-0.082
		100.11		1.082E-01	1.462E-01	2.567E-01	2.253E-02	0.421
		152.43		4.275E-01	3.164E-01	5.542E-01	5.121E-02	0.771
		222.11		9.671E-02	3.259E-01	5.418E-01	6.720E-02	0.178
	+	1121.30		6.246E-01	2.524E-01	3.653E-01	3.113E-02	1.710
		1189.05		5.282E-02	3.400E-01	5.632E-01	4.543E-02	0.094
		1221.41	*	6.459E-02	2.141E-01	3.578E-01	2.906E-02	0.181
		1231.02		-3.417E-01	5.621E-01	8.746E-01	7.119E-02	-0.391
IR-192	+	295.96		1.320E+00	2.665E-01	3.064E-01	4.619E-02	4.309
		308.46		3.510E-03	9.000E-02	1.447E-01	2.122E-02	0.024
		316.51	*	1.595E-02	3.388E-02	5.568E-02	8.004E-03	0.286
		468.07		3.743E-03	7.103E-02	1.051E-01	1.187E-02	0.036
HG-203	+	70.83		3.057E-01	1.226E+00	1.801E+00	2.814E-01	0.170
		72.87		5.783E-01	7.427E-01	1.107E+00	1.679E-01	0.523
		279.20	*	-2.831E-02	3.794E-02	5.793E-02	9.041E-03	-0.489
		72.81		1.234E-01	1.686E-01	2.520E-01	2.001E-02	0.490
BI-207	+	74.97		7.508E-01	1.339E-01	1.994E-01	1.619E-02	3.765
		569.70		4.547E-03	2.927E-02	4.791E-02	4.972E-03	0.095
		1063.66	*	-1.592E-02	5.584E-02	9.000E-02	8.084E-03	-0.177
		1770.23		9.062E-02	4.592E-01	6.877E-01	5.660E-02	0.132
PB-210		46.54	*	3.695E-01	2.220E+00	3.593E+00	3.315E-01	0.103
PB-211	+	404.85	*	2.476E-02	6.595E-01	1.116E+00	5.448E-01	0.022
		427.09		4.371E-01	1.459E+00	2.476E+00	1.157E+00	0.177
		832.01		1.442E-01	9.980E-01	1.609E+00	8.378E-01	0.090
		727.33	*	2.071E+00	8.465E-01	1.216E+00	1.607E-01	1.703
BI-212	+	785.37		2.091E+00	3.155E+00	5.335E+00	5.226E-01	0.392
		1620.50		2.204E+00	2.408E+00	4.473E+00	3.756E-01	0.493
		271.23		5.984E-01	4.120E-01	4.396E-01	7.047E-02	1.361
		401.81	*	7.494E-02	3.736E-01	6.385E-01	1.032E-01	0.117

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Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
RA-223		81.07		-1.550E-02	2.051E-01	2.571E-01	2.236E-02	-0.060
		83.79		1.919E-01	1.078E-01	1.764E-01	1.586E-02	1.088
		94.87		4.275E-01	4.107E-01	6.175E-01	5.564E-02	0.692
		144.24		2.394E-01	6.182E-01	1.041E+00	1.036E-01	0.230
		154.21		1.749E-01	3.540E-01	6.042E-01	6.083E-02	0.289
	+	269.46		4.650E-01	3.192E-01	3.377E-01	5.079E-02	1.377
		323.87	*	-6.585E-01	7.357E-01	9.491E-01	1.956E-01	-0.694
	+	338.28		7.436E+00	2.116E+00	2.453E+00	3.904E-01	3.032
		79.69		5.072E-02	1.188E+00	1.502E+00	2.585E-01	0.034
		235.96		7.621E-02	1.601E-01	2.398E-01	3.432E-02	0.318
AC-227		256.23	*	-2.149E-01	2.439E-01	3.730E-01	6.162E-02	-0.576
	+	299.98		2.015E+00	1.232E+00	1.562E+00	2.749E-01	1.290
		304.50		-8.457E-02	1.668E+00	2.374E+00	4.848E-01	-0.036
		334.37		-2.291E-01	1.802E+00	2.525E+00	4.758E-01	-0.091
		79.80		1.632E-02	1.564E+00	1.974E+00	4.296E-01	0.008
		235.96		7.621E-02	1.601E-01	2.398E-01	3.332E-02	0.318
TH-227		256.23	*	-2.149E-01	2.443E-01	3.730E-01	6.597E-02	-0.576
	+	299.98		2.015E+00	1.232E+00	1.562E+00	2.749E-01	1.290
		304.50		-8.457E-02	1.668E+00	2.374E+00	4.848E-01	-0.036
		334.37		-2.291E-01	1.802E+00	2.525E+00	4.758E-01	-0.091
		85.43		3.349E-01	1.762E-01	2.896E-01	2.658E-02	1.156
	+	88.47		5.910E-01	1.556E-01	1.983E-01	1.873E-02	2.981
TH-229		193.51	*	8.615E-02	4.800E-01	8.004E-01	8.784E-02	0.108
		210.85		1.889E+00	8.826E-01	1.423E+00	1.683E-01	1.327
		283.69	*	-6.612E-01	1.320E+00	2.053E+00	3.974E-01	-0.322
	+	301.36		1.294E+00	7.898E-01	9.924E-01	1.704E-01	1.304
PA-231		81.07		-1.550E-02	2.051E-01	2.571E-01	2.236E-02	-0.060
		83.79		1.919E-01	1.078E-01	1.764E-01	1.586E-02	1.088
		94.87		4.275E-01	4.107E-01	6.175E-01	5.564E-02	0.692
		144.24		2.394E-01	6.182E-01	1.041E+00	1.036E-01	0.230
TH-231		154.21		1.749E-01	3.540E-01	6.042E-01	6.083E-02	0.289
	+	269.46		4.650E-01	3.192E-01	3.377E-01	5.079E-02	1.377
		323.87	*	-6.585E-01	7.357E-01	9.491E-01	1.956E-01	-0.694
	+	338.28		7.436E+00	2.116E+00	2.453E+00	3.904E-01	3.032
	+	300.13		9.116E-01	5.617E-01	7.080E-01	1.358E-01	1.288
		311.90	*	-8.641E-03	6.090E-02	9.666E-02	1.419E-02	-0.089
PA-233		340.48		1.061E+00	7.568E-01	1.107E+00	2.896E-01	0.958
		94.67		2.344E-01	1.539E-01	2.337E-01	2.964E-02	1.003
		98.44		6.979E-02	8.555E-02	1.331E-01	7.428E-02	0.524
		111.00		9.081E-02	1.559E-01	2.711E-01	3.256E-02	0.335
PA-234		131.20		5.827E-02	9.765E-02	1.531E-01	1.321E-02	0.380
		569.50		3.257E-02	2.592E-01	4.234E-01	4.394E-02	0.077
		733.00		2.499E-01	3.969E-01	6.243E-01	1.413E-01	0.400
		880.51		-1.949E-01	2.863E-01	4.483E-01	4.417E-02	-0.435
		883.24		2.329E-01	3.197E-01	4.994E-01	3.365E-01	0.466
		926.50		3.759E-02	1.645E-01	2.802E-01	7.197E-02	0.134
		946.00	*	-1.693E-01	3.215E-01	5.109E-01	9.843E-02	-0.331
		949.00		1.952E-01	4.852E-01	8.341E-01	8.050E-02	0.234
		766.42		8.272E+00	1.392E+01	1.992E+01	1.015E+01	0.415



---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NP-239	1001.03	*		2.755E+00	4.745E+00	8.240E+00	8.765E-01	0.334
	99.53			2.190E-01	1.389E-01	2.456E-01	2.161E-02	0.892
	103.37			-1.003E-01	8.131E-02	1.320E-01	1.144E-02	-0.760
	106.12			6.277E-02	6.895E-02	1.215E-01	1.045E-02	0.517
	117.23	*		-4.052E-01	3.427E-01	5.538E-01	4.685E-02	-0.732
	228.18			1.477E-01	2.011E-01	3.394E-01	4.317E-02	0.435
	277.60			1.935E-01	1.708E-01	2.868E-01	4.415E-02	0.675
AM-241	59.54	*		1.867E-03	1.254E-01	1.840E-01	1.446E-02	0.010
CM-247	278.00			6.164E-01	7.314E-01	1.218E+00	1.877E-01	0.506
	287.50			1.007E+00	1.161E+00	1.949E+00	2.977E-01	0.517
CF-249	402.40	*		1.789E-02	3.430E-02	5.963E-02	6.382E-03	0.300
	252.80			4.575E-01	8.917E-01	1.486E+00	2.085E-01	0.308
	333.37			-3.081E-03	1.796E-01	2.719E-01	3.725E-02	-0.011
	388.16	*		-9.880E-03	3.619E-02	6.029E-02	6.557E-03	-0.164
CF-251	177.52	*		2.735E-02	1.177E-01	1.977E-01	2.022E-02	0.138
	227.38			-4.696E-02	3.341E-01	5.433E-01	6.887E-02	-0.086
	285.41			-5.278E-01	2.036E+00	3.230E+00	4.951E-01	-0.163

# VAX/VMS Nuclide Identification Report Generated

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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797003      *
* Acquisition date   : 5-MAR-2010 10:29:11 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 02:00:02.04 Half life ratio : 8.000              *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date       : 17-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID         : G247797003 Analyst initials: MXR1                  *
* Batch Number      : 957136 Sample Quantity : 1.2987E+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 :                               *
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## Combined Activity-MDA Report

### ---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM )	Act error	MDA (pCi/GRAM )	
K-40	4.093E+01	3.965E+00	5.393E-01	0.000E+00
CD-109	3.926E+00	1.013E+00	1.035E+00	0.000E+00
SN-126	3.833E-01	9.888E-02	1.014E-01	0.000E+00
TL-208	6.044E-01	9.607E-02	5.759E-02	0.000E+00
BI-211	4.990E+00	8.024E-01	3.028E-01	0.000E+00
PB-212	2.109E+00	3.125E-01	9.212E-02	0.000E+00
BI-214	1.437E+00	2.190E-01	9.625E-02	0.000E+00
PB-214	1.811E+00	3.072E-01	1.101E-01	0.000E+00
RA-224	4.376E+00	1.203E+00	9.875E-01	0.000E+00
RA-226	1.437E+00	2.190E-01	9.625E-02	0.000E+00
AC-228	1.930E+00	3.856E-01	2.453E-01	0.000E+00
RA-228	1.930E+00	3.856E-01	2.453E-01	0.000E+00
TH-228	2.109E+00	3.125E-01	9.212E-02	0.000E+00
TH-232	1.930E+00	3.856E-01	2.453E-01	0.000E+00
TH-234	1.450E+00	1.448E+00	1.677E+00	0.000E+00
U-235	1.010E-01	1.820E-01	3.257E-01	0.000E+00
NP-237	1.144E+00	3.772E-01	3.050E-01	0.000E+00
U-238	1.450E+00	1.448E+00	1.677E+00	0.000E+00
ANH-511	1.455E-01	7.338E-02	4.584E-02	0.000E+00

### ---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	-1.197E-01	2.815E-01	4.732E-01	0.000E+00 NOT IDENT.
NA-22	-2.434E-02	4.484E-02	7.056E-02	0.000E+00 NOT IDENT.
NA-24	0.000E+00	1.702E+06	0.000E+00	0.000E+00 SHORT HLIF
SC-46	-2.123E-02	3.654E-02	5.981E-02	0.000E+00 FAIL ABUN
V-48	2.715E-02	6.648E-02	1.178E-01	0.000E+00 NOT IDENT.
CR-51	-2.980E-01	3.527E-01	5.536E-01	0.000E+00 NOT IDENT.
MN-54	-6.066E-03	3.446E-02	5.907E-02	0.000E+00 NOT IDENT.
CO-56	-1.173E-02	3.759E-02	6.358E-02	0.000E+00 NOT IDENT.

CO-57	-6.461E-03	2.081E-02	3.708E-02	0.000E+00	NOT IDENT.
CO-58	1.093E-02	3.413E-02	5.810E-02	0.000E+00	NOT IDENT.
FE-59	-5.794E-02	9.515E-02	1.521E-01	0.000E+00	NOT IDENT.
CO-60	-8.043E-03	3.828E-02	6.298E-02	0.000E+00	NOT IDENT.
ZN-65	-4.913E-02	1.077E-01	1.488E-01	0.000E+00	NOT IDENT.
SE-75	1.791E-03	4.490E-02	6.835E-02	0.000E+00	NOT IDENT.
SR-85	0.000E+00	3.977E-02	6.872E-02	0.000E+00	NOT IDENT.
Y-88	-6.023E-03	2.962E-02	4.752E-02	0.000E+00	NOT IDENT.
Y-91	7.442E+00	2.265E+01	3.891E+01	0.000E+00	NOT IDENT.
NB-94	2.243E-02	3.191E-02	5.623E-02	0.000E+00	NOT IDENT.
NB-95	-3.415E-03	4.926E-02	7.101E-02	0.000E+00	NOT IDENT.
NB-95M	-1.567E-02	1.344E-01	2.049E-01	0.000E+00	NOT IDENT.
ZR-95	1.188E-02	7.261E-02	1.222E-01	0.000E+00	NOT IDENT.
MO-99	-8.208E-01	1.478E+01	2.448E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	3.202E+17	0.000E+00	0.000E+00	SHORT HLIF
RU-103	-2.538E-02	3.658E-02	5.977E-02	0.000E+00	FAIL ABUN
RH-106	1.209E-01	3.183E-01	5.555E-01	0.000E+00	NOT IDENT.
RU-106	1.209E-01	3.181E-01	5.555E-01	0.000E+00	NOT IDENT.
AG-108M	-9.122E-04	2.723E-02	4.757E-02	0.000E+00	NOT IDENT.
AG-110M	2.515E-02	3.266E-02	5.820E-02	0.000E+00	NOT IDENT.
SN-113	1.701E-03	3.937E-02	6.972E-02	0.000E+00	NOT IDENT.
CD-115	-6.850E+00	1.327E+01	2.190E+01	0.000E+00	NOT IDENT.
SN-117M	2.696E-03	5.100E-02	8.969E-02	0.000E+00	NOT IDENT.
TE-123M	3.712E-04	2.538E-02	4.454E-02	0.000E+00	NOT IDENT.
SB-124	-1.258E-02	6.704E-02	1.093E-01	0.000E+00	NOT IDENT.
SB-125	2.160E-02	8.378E-02	1.491E-01	0.000E+00	FAIL ABUN
TE-125M	2.925E+00	7.994E+00	1.471E+01	0.000E+00	NOT IDENT.
I-126	2.750E-01	2.217E-01	4.053E-01	0.000E+00	NOT IDENT.
SB-126	3.984E-02	1.593E-01	2.515E-01	0.000E+00	NOT IDENT.
SB-127	5.248E-01	1.475E+00	2.542E+00	0.000E+00	NOT IDENT.
I-131	-1.801E-02	1.159E-01	1.895E-01	0.000E+00	NOT IDENT.
TE-132	3.802E-01	8.045E-01	1.412E+00	0.000E+00	NOT IDENT.
BA-133	-1.891E-02	4.388E-02	6.186E-02	0.000E+00	NOT IDENT.
I-133	0.000E+00	9.982E+03	0.000E+00	0.000E+00	SHORT HLIF
CS-134	0.000E+00	8.985E-02	9.630E-02	0.000E+00	FAIL ABUN
CS-135	7.861E-02	1.614E-01	2.524E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	5.830E+16	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-1.908E-02	1.079E-01	1.804E-01	0.000E+00	NOT IDENT.
BA-137M	-4.908E-02	3.408E-02	4.985E-02	0.000E+00	NOT IDENT.
CS-137	-5.185E-02	3.600E-02	5.266E-02	0.000E+00	NOT IDENT.
CE-139	-7.059E-03	2.636E-02	4.603E-02	0.000E+00	NOT IDENT.
BA-140	8.964E-02	2.479E-01	4.340E-01	0.000E+00	NOT IDENT.
LA-140	-6.934E-02	9.600E-02	1.326E-01	0.000E+00	FAIL ABUN
CE-141	-1.331E-02	5.541E-02	9.787E-02	0.000E+00	NOT IDENT.
CE-143	0.000E+00	2.539E+02	0.000E+00	0.000E+00	SHORT HLIF
CE-144	-1.322E-01	1.925E-01	2.981E-01	0.000E+00	NOT IDENT.
PM-144	2.163E-02	3.365E-02	5.903E-02	0.000E+00	NOT IDENT.
PR-144	1.608E+00	2.519E+00	4.417E+00	0.000E+00	NOT IDENT.
PM-146	1.727E-02	3.883E-02	6.950E-02	0.000E+00	NOT IDENT.
ND-147	1.784E-02	5.199E-01	8.961E-01	0.000E+00	FAIL ABUN
PM-149	1.716E+01	1.085E+02	1.849E+02	0.000E+00	NOT IDENT.
EU-152	1.071E-01	1.016E-01	1.622E-01	0.000E+00	FAIL ABUN
GD-153	-9.077E-02	8.530E-02	1.203E-01	0.000E+00	NOT IDENT.
EU-154	-6.893E-02	1.271E-01	1.998E-01	0.000E+00	NOT IDENT.
EU-155	1.086E-01	8.529E-02	1.614E-01	0.000E+00	FAIL ABUN
TB-160	-8.515E-02	1.336E-01	2.157E-01	0.000E+00	FAIL ABUN
HO-166M	-2.027E-02	6.528E-02	1.065E-01	0.000E+00	FAIL ABUN
TA-182	6.459E-02	2.099E-01	3.591E-01	0.000E+00	FAIL ABUN
IR-192	1.595E-02	3.321E-02	5.712E-02	0.000E+00	FAIL ABUN
HG-203	-2.831E-02	3.719E-02	5.954E-02	0.000E+00	NOT IDENT.
BI-207	-1.592E-02	5.473E-02	9.053E-02	0.000E+00	FAIL ABUN
PB-210	3.695E-01	2.176E+00	3.797E+00	0.000E+00	NOT IDENT.
PB-211	2.476E-02	6.463E-01	1.141E+00	0.000E+00	NOT IDENT.
BI-212	0.000E+00	8.296E-01	1.231E+00	0.000E+00	FAIL ABUN
RN-219	7.494E-02	3.661E-01	6.525E-01	0.000E+00	FAIL ABUN
RA-223	-6.585E-01	7.210E-01	9.733E-01	0.000E+00	FAIL ABUN
AC-227	-2.149E-01	2.390E-01	3.839E-01	0.000E+00	FAIL ABUN
TH-227	-2.149E-01	2.394E-01	3.839E-01	0.000E+00	FAIL ABUN
TH-229	8.615E-02	4.704E-01	8.274E-01	0.000E+00	FAIL ABUN
PA-231	-6.612E-01	1.293E+00	2.110E+00	0.000E+00	FAIL ABUN
TH-231	-6.585E-01	7.210E-01	9.733E-01	0.000E+00	FAIL ABUN
PA-233	-8.641E-03	5.968E-02	9.918E-02	0.000E+00	FAIL ABUN
PA-234	-1.693E-01	3.151E-01	5.149E-01	0.000E+00	NOT IDENT.
PA-234M	2.755E+00	4.650E+00	8.297E+00	0.000E+00	NOT IDENT.
NP-239	-4.052E-01	3.359E-01	5.769E-01	0.000E+00	NOT IDENT.
AM-241	1.867E-03	1.229E-01	1.937E-01	0.000E+00	NOT IDENT.
CM-247	1.789E-02	3.361E-02	6.094E-02	0.000E+00	NOT IDENT.
CF-249	-9.880E-03	3.546E-02	6.165E-02	0.000E+00	NOT IDENT.

CF-251	2.735E-02	1.153E-01	2.046E-01	0.000E+00 NOT IDENT.
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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797003.CNF;1
Sample date        : 17-FEB-2010 12:00:00 Acquisition date : 5-MAR-2010 10:29:11.
Sample ID          : G247797003          Sample quantity  : 1.29870E+02 GRAM
Detector name      : GAM11              Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00      Elapsed real time: 0 02:00:02.04  0.0%
Energy tolerance   : 1.50000 keV        Analyst Initials  : MXR1
Abundance limit    : 75.00000           Sensitivity       : 5.00000
Batch ID           : 957136             Detector SN#      :
Matrix Spike ID    :                    LCS ID            : 1032-A
*****

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## Nuclide Line Activity Report

## Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	1849	10.66*	1.225E+00	4.093E+01	4.093E+01	9.89
CD-109	88.03	333	3.70*	6.794E+00	3.833E+00	3.926E+00	26.32
SN-126	64.28	80	9.60	4.298E+00	5.590E-01	5.590E-01	101.34
	86.94	333	8.90	6.794E+00	1.594E+00	1.594E+00	48.26
	87.57	333	37.00*	6.794E+00	3.833E-01	3.833E-01	26.32
TL-208	277.37	-----	6.60	4.676E+00	-----	Line Not Found	-----
	583.19	473	85.00*	2.661E+00	6.044E-01	6.044E-01	16.22
	860.56	-----	12.50	1.927E+00	-----	Line Not Found	-----
BI-211	72.87	-----	1.23	5.576E+00	-----	Line Not Found	-----
	351.06	875	12.92*	3.921E+00	4.990E+00	4.990E+00	16.41
PB-212	74.82	536	10.28	5.790E+00	2.605E+00	2.605E+00	20.32
	77.11	951	17.10	6.020E+00	2.670E+00	2.670E+00	12.41
	238.63	1657	43.60*	5.210E+00	2.109E+00	2.109E+00	15.12
	300.09	92	3.30	4.415E+00	1.831E+00	1.831E+00	60.72
BI-214	609.32	581	45.49*	2.569E+00	1.437E+00	1.437E+00	15.56
	1120.29	105	14.92	1.530E+00	1.326E+00	1.326E+00	40.97
	1764.49	108	15.30	1.071E+00	1.901E+00	1.901E+00	26.50
PB-214	74.82	536	5.80	5.790E+00	4.617E+00	4.617E+00	19.52
	77.11	951	9.70	6.020E+00	4.707E+00	4.707E+00	14.90
	242.00	321	7.25	5.164E+00	2.475E+00	2.475E+00	28.64
	295.22	504	18.42	4.466E+00	1.772E+00	1.772E+00	21.19
	351.93	875	35.60*	3.921E+00	1.811E+00	1.811E+00	17.31
RA-224	240.99	321	4.10*	5.164E+00	4.376E+00	4.376E+00	28.04
RA-226	609.32	581	45.49*	2.569E+00	1.437E+00	1.437E+00	15.56
	1120.29	105	14.92	1.530E+00	1.326E+00	1.326E+00	40.97
	1764.49	108	15.30	1.071E+00	1.901E+00	1.901E+00	26.50
AC-228	338.32	295	11.27	4.037E+00	1.874E+00	1.874E+00	49.03
	911.20	316	25.80*	1.833E+00	1.930E+00	1.930E+00	20.39
	968.97	201	15.80	1.738E+00	2.116E+00	2.116E+00	30.82
RA-228	338.32	295	11.27	4.037E+00	1.874E+00	1.874E+00	49.03
	911.20	316	25.80*	1.833E+00	1.930E+00	1.930E+00	20.39
	968.97	201	15.80	1.738E+00	2.116E+00	2.116E+00	30.82

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	74.82	536	10.28	5.790E+00	2.605E+00	2.605E+00	17.88
	77.11	951	17.10	6.020E+00	2.670E+00	2.670E+00	12.41
	238.63	1657	43.60*	5.210E+00	2.109E+00	2.109E+00	15.12
	300.09	92	3.30	4.415E+00	1.831E+00	1.831E+00	85.58
TH-232	338.32	295	11.27	4.037E+00	1.874E+00	1.874E+00	27.17
	911.20	316	25.80*	1.833E+00	1.930E+00	1.930E+00	20.39
	968.97	201	15.80	1.738E+00	2.116E+00	2.116E+00	30.82
	63.29	80	3.70*	4.298E+00	1.450E+00	1.450E+00	101.86
TH-234	92.59	295	4.23	7.061E+00	2.855E+00	2.855E+00	36.20
	89.96	232	3.47	6.932E+00	2.793E+00	2.793E+00	41.98
	93.35	295	5.60	7.061E+00	2.156E+00	2.156E+00	36.83
	143.76	-----	10.96*	7.034E+00	-----	Line Not Found	-----
U-235	163.33	-----	5.08	6.630E+00	-----	Line Not Found	-----
	185.72	273	57.20	6.158E+00	2.237E-01	2.237E-01	33.21
	205.31	-----	5.01	5.777E+00	-----	Line Not Found	-----
	86.48	333	12.40*	6.794E+00	1.144E+00	1.144E+00	33.65
NP-237	95.86	-----	2.68	7.169E+00	-----	Line Not Found	-----
	63.29	80	3.70*	4.298E+00	1.450E+00	1.450E+00	101.86
U-238	92.59	295	4.23	7.061E+00	2.855E+00	2.855E+00	29.95
	511.00	149	100.00*	2.953E+00	1.455E-01	1.455E-01	51.46

Flag: "\*" = Keyline

Total number of lines in spectrum 34  
Number of unidentified lines 7  
Number of lines tentatively identified by NID 27 79.41%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	4.093E+01	4.093E+01	0.405E+01	9.89	
CD-109	461.40D	1.02	3.833E+00	3.926E+00	1.034E+00	26.32	
SN-126	2.30E+05Y	1.00	3.833E-01	3.833E-01	1.009E-01	26.32	
TL-208	1.41E+10Y	1.00	6.044E-01	6.044E-01	0.980E-01	16.22	
BI-211	7.04E+08Y	1.00	4.990E+00	4.990E+00	0.819E+00	16.41	
PB-212	1.41E+10Y	1.00	2.109E+00	2.109E+00	0.319E+00	15.12	
BI-214	1600.00Y	1.00	1.437E+00	1.437E+00	0.223E+00	15.56	
PB-214	1600.00Y	1.00	1.811E+00	1.811E+00	0.314E+00	17.31	
RA-224	1.41E+10Y	1.00	4.376E+00	4.376E+00	1.227E+00	28.04	
RA-226	1600.00Y	1.00	1.437E+00	1.437E+00	0.223E+00	15.56	
AC-228	1.41E+10Y	1.00	1.930E+00	1.930E+00	0.393E+00	20.39	
RA-228	1.41E+10Y	1.00	1.930E+00	1.930E+00	0.393E+00	20.39	
TH-228	1.41E+10Y	1.00	2.109E+00	2.109E+00	0.319E+00	15.12	
TH-232	1.41E+10Y	1.00	1.930E+00	1.930E+00	0.393E+00	20.39	
TH-234	4.47E+09Y	1.00	1.450E+00	1.450E+00	1.477E+00	101.86	
U-235	7.04E+08Y	1.00	2.237E-01	2.237E-01	0.743E-01	33.21	K
NP-237	2.14E+06Y	1.00	1.144E+00	1.144E+00	0.385E+00	33.65	
U-238	4.47E+09Y	1.00	1.450E+00	1.450E+00	1.477E+00	101.86	
ANH-511	1.00E+09Y	1.00	1.455E-01	1.455E-01	0.749E-01	51.46	
Total Activity :			7.422E+01	7.431E+01			

Grand Total Activity : 7.422E+01 7.431E+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	129.65	126	428	0.87	258.28	254	9	1.76E-02	61.7	7.28E+00	
0	209.28	134	287	0.88	417.66	414	8	1.87E-02	46.9	5.70E+00	
0	270.42	107	310	1.38	540.03	533	11	1.48E-02	67.0	4.76E+00	T
0	328.44	56	197	1.01	656.14	652	8	7.78E-03	90.9	4.13E+00	T
0	463.20	114	126	1.48	925.83	920	12	1.58E-02	43.7	3.19E+00	T
0	727.60	106	75	1.55	1454.93	1448	11	1.48E-02	38.7	2.22E+00	T
0	768.37	58	59	1.47	1536.53	1532	9	8.02E-03	56.0	2.12E+00	
0	794.62	53	119	1.40	1589.04	1583	15	7.37E-03	92.9	2.06E+00	T
0	863.18	75	119	1.91	1726.23	1716	20	1.04E-02	75.3	1.92E+00	
0	965.49	56	72	1.90	1930.94	1924	12	7.78E-03	66.2	1.74E+00	T
0	1378.82	52	37	1.72	2757.89	2749	17	7.17E-03	61.4	1.28E+00	
0	1588.81	29	12	0.70	3177.96	3172	12	3.99E-03	61.1	1.15E+00	
0	1730.11	33	2	0.79	3460.61	3454	11	4.55E-03	39.8	1.08E+00	

Flags: "T" = Tentatively associated



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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797003.CNF;1
* Acquisition date   : 5-MAR-2010 10:29:11.  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 02:00:02.04        Half life ratio    : 8.00000
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 17-FEB-2010 12:00:00  Nuclide Library   : SOLID
* Sample ID          : G247797003           Analyst initials: MXR1
* Batch Number       : 957136              Sample Quantity  : 1.29870E+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       :
*****

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## Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	4.093E+01	4.046E+00	5.389E-01	4.660E-02	75.942
CD-109	3.926E+00	1.034E+00	9.890E-01	9.378E-02	3.970
SN-126	3.833E-01	1.009E-01	9.686E-02	9.137E-03	3.957
TL-208	6.044E-01	9.803E-02	5.670E-02	6.117E-03	10.660
BI-211	4.990E+00	8.188E-01	2.957E-01	3.901E-02	16.876
PB-212	2.109E+00	3.189E-01	8.940E-02	1.255E-02	23.588
BI-214	1.437E+00	2.235E-01	9.481E-02	1.076E-02	15.151
PB-214	1.811E+00	3.135E-01	1.075E-01	1.534E-02	16.839
RA-224	4.376E+00	1.227E+00	9.586E-01	1.284E-01	4.565
RA-226	1.437E+00	2.235E-01	9.481E-02	1.076E-02	15.151
AC-228	1.930E+00	3.934E-01	2.432E-01	3.040E-02	7.933
RA-228	1.930E+00	3.934E-01	2.432E-01	3.040E-02	7.933
TH-228	2.109E+00	3.189E-01	8.940E-02	1.255E-02	23.588
TH-232	1.930E+00	3.934E-01	2.432E-01	3.040E-02	7.933
TH-234	1.450E+00	1.477E+00	1.594E+00	2.836E-01	0.910
U-235	2.237E-01	7.429E-02	3.136E-01	5.372E-02	0.713
NP-237	1.144E+00	3.849E-01	2.914E-01	6.683E-02	3.926
U-238	1.450E+00	1.477E+00	1.594E+00	2.836E-01	0.910

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
ANH-511	1.455E-01	7.488E-02	4.503E-02	4.815E-03	3.231

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	-1.197E-01		2.872E-01	4.643E-01	5.254E-02	-0.258
NA-22	-2.434E-02		4.575E-02	7.036E-02	5.778E-03	-0.346
NA-24	-1.159E+00		8.682E-01	Half-Life too short		
SC-46	-2.123E-02		3.729E-02	5.928E-02	5.839E-03	-0.358
V-48	2.715E-02		6.784E-02	1.170E-01	1.110E-02	0.232
CR-51	-2.980E-01		3.599E-01	5.397E-01	7.830E-02	-0.552
MN-54	-6.066E-03		3.516E-02	5.849E-02	5.759E-03	-0.104
CO-56	-1.173E-02		3.836E-02	6.297E-02	6.205E-03	-0.186
CO-57	-6.461E-03		2.123E-02	3.562E-02	3.013E-03	-0.181
CO-58	1.093E-02		3.483E-02	5.750E-02	5.662E-03	0.190
FE-59	-5.794E-02		9.709E-02	1.513E-01	1.422E-02	-0.383
CO-60	-8.043E-03		3.907E-02	6.285E-02	5.193E-03	-0.128
ZN-65	-4.913E-02		1.099E-01	1.481E-01	1.270E-02	-0.332
SE-75	1.791E-03		4.582E-02	6.644E-02	9.767E-03	0.027
SR-85	7.440E-02		4.059E-02	6.751E-02	7.211E-03	1.102
Y-88	-6.023E-03		3.023E-02	4.768E-02	3.870E-03	-0.126
Y-91	7.442E+00		2.312E+01	3.876E+01	3.138E+00	0.192
NB-94	2.243E-02		3.256E-02	5.552E-02	5.332E-03	0.404
NB-95	-3.415E-03		5.027E-02	7.021E-02	6.854E-03	-0.049
NB-95M	-1.567E-02		1.372E-01	1.988E-01	2.779E-02	-0.079
ZR-95	1.188E-02		7.409E-02	1.208E-01	1.274E-02	0.098
MO-99	-8.208E-01		1.508E+01	2.419E+01	3.961E+00	-0.034
TC-99M	-5.237E+10		1.634E+11	Half-Life too short		
RU-103	-2.538E-02		3.733E-02	5.869E-02	9.016E-03	-0.432
RH-106	1.209E-01		3.248E-01	5.474E-01	7.737E-02	0.221
RU-106	1.209E-01		3.246E-01	5.474E-01	5.430E-02	0.221
AG-108M	-9.122E-04		2.779E-02	4.661E-02	5.129E-03	-0.020
AG-110M	2.515E-02		3.333E-02	5.740E-02	5.594E-03	0.438
SN-113	1.701E-03		4.018E-02	6.820E-02	7.417E-03	0.025
CD-115	-6.850E+00		1.354E+01	2.153E+01	2.287E+00	-0.318
SN-117M	2.696E-03		5.204E-02	8.649E-02	8.174E-03	0.031
TE-123M	3.712E-04		2.589E-02	4.295E-02	4.087E-03	0.009
SB-124	-1.258E-02		6.841E-02	1.095E-01	9.535E-03	-0.115
SB-125	2.160E-02		8.549E-02	1.460E-01	1.592E-02	0.148
TE-125M	2.925E+00		8.157E+00	1.411E+01	1.469E+00	0.207
I-126	2.750E-01		2.263E-01	3.998E-01	3.790E-02	0.688
SB-126	3.984E-02		1.625E-01	2.484E-01	2.399E-02	0.160
SB-127	5.248E-01		1.505E+00	2.509E+00	3.091E-01	0.209
I-131	-1.801E-02		1.183E-01	1.851E-01	2.324E-02	-0.097
TE-132	3.802E-01		8.209E-01	1.369E+00	2.535E-01	0.278
BA-133	-1.891E-02		4.477E-02	6.042E-02	9.622E-03	-0.313
I-133	6.019E-03		5.093E-03	Half-Life too short		

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
CS-134	9.815E-02	+	9.168E-02	9.528E-02	9.400E-03	1.030
CS-135	7.861E-02		1.647E-01	2.454E-01	3.850E-02	0.320
I-135	-1.445E+10		2.974E+10	Half-Life too short		
CS-136	-1.908E-02		1.101E-01	1.793E-01	1.692E-02	-0.106
BA-137M	-4.908E-02		3.477E-02	4.917E-02	4.653E-03	-0.998
CS-137	-5.185E-02		3.673E-02	5.195E-02	4.923E-03	-0.998
CE-139	-7.059E-03		2.690E-02	4.442E-02	4.317E-03	-0.159
BA-140	8.964E-02		2.529E-01	4.266E-01	1.470E-01	0.210
LA-140	-6.934E-02		9.796E-02	1.327E-01	1.116E-02	-0.523
CE-141	-1.331E-02		5.655E-02	9.425E-02	8.639E-03	-0.141
CE-143	5.103E-04		1.296E-04	Half-Life too short		
CE-144	-1.322E-01		1.965E-01	2.867E-01	4.392E-02	-0.461
PM-144	2.163E-02		3.434E-02	5.828E-02	5.588E-03	0.371
PR-144	1.608E+00		2.570E+00	4.361E+00	4.180E-01	0.369
PM-146	1.727E-02		3.963E-02	6.814E-02	8.466E-03	0.253
ND-147	1.784E-02		5.306E-01	8.808E-01	1.425E-01	0.020
PM-149	1.716E+01		1.107E+02	1.800E+02	3.608E+01	0.095
EU-152	1.071E-01		1.037E-01	1.583E-01	2.146E-02	0.677
GD-153	-9.077E-02		8.704E-02	1.151E-01	1.023E-02	-0.788
EU-154	-6.893E-02		1.297E-01	1.993E-01	2.205E-02	-0.346
EU-155	1.086E-01		8.703E-02	1.547E-01	1.349E-02	0.702
TB-160	-8.515E-02		1.363E-01	2.137E-01	2.106E-02	-0.398
HO-166M	-2.027E-02		6.661E-02	1.052E-01	1.013E-02	-0.193
TA-182	6.459E-02		2.141E-01	3.578E-01	2.906E-02	0.181
IR-192	1.595E-02		3.388E-02	5.568E-02	8.004E-03	0.286
HG-203	-2.831E-02		3.794E-02	5.793E-02	9.041E-03	-0.489
BI-207	-1.592E-02		5.584E-02	9.000E-02	8.084E-03	-0.177
PB-210	3.695E-01		2.220E+00	3.593E+00	3.315E-01	0.103
PB-211	2.476E-02		6.595E-01	1.116E+00	5.448E-01	0.022
BI-212	2.071E+00	+	8.465E-01	1.216E+00	1.607E-01	1.703
RN-219	7.494E-02		3.736E-01	6.385E-01	1.032E-01	0.117
RA-223	-6.585E-01		7.357E-01	9.491E-01	1.956E-01	-0.694
AC-227	-2.149E-01		2.439E-01	3.730E-01	6.162E-02	-0.576
TH-227	-2.149E-01		2.443E-01	3.730E-01	6.597E-02	-0.576
TH-229	8.615E-02		4.800E-01	8.004E-01	8.784E-02	0.108
PA-231	-6.612E-01		1.320E+00	2.053E+00	3.974E-01	-0.322
TH-231	-6.585E-01		7.357E-01	9.491E-01	1.956E-01	-0.694
PA-233	-8.641E-03		6.090E-02	9.666E-02	1.419E-02	-0.089
PA-234	-1.693E-01		3.215E-01	5.109E-01	9.843E-02	-0.331
PA-234M	2.755E+00		4.745E+00	8.240E+00	8.765E-01	0.334
NP-239	-4.052E-01		3.427E-01	5.538E-01	4.685E-02	-0.732
AM-241	1.867E-03		1.254E-01	1.840E-01	1.446E-02	0.010
CM-247	1.789E-02		3.430E-02	5.963E-02	6.382E-03	0.300
CF-249	-9.880E-03		3.619E-02	6.029E-02	6.557E-03	-0.164
CF-251	2.735E-02		1.177E-01	1.977E-01	2.022E-02	0.138

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : SYS$SYSROOT:[ALPHA.ARCHIVE.GAMMA]G247797003          *
* Acquisition date   : 5-MAR-2010 10:29:11 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 02:00:02.04 Half life ratio : 8.000              *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 17-FEB-2010 12:00:00 Nuclide Library : SOLID         *
* Sample ID          : G247797003 Analyst initials: MXR1                 *
* Batch Number       : 957136 Sample Quantity : 1.2987E+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 :                               *
*****

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## Combined Activity-MDA Report

### ---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM )	Act Error	DLC (pCi/GRAM )	TPU
K-40	4.093E+01	3.965E+00	2.698E-01	2.023E+00
CD-109	3.926E+00	1.013E+00	5.178E-01	5.168E-01
SN-126	3.833E-01	9.888E-02	5.071E-02	5.045E-02
TL-208	6.044E-01	9.607E-02	2.881E-02	4.901E-02
BI-211	4.990E+00	8.024E-01	1.515E-01	4.094E-01
PB-212	2.109E+00	3.125E-01	4.608E-02	1.594E-01
BI-214	1.437E+00	2.190E-01	4.815E-02	1.117E-01
PB-214	1.811E+00	3.072E-01	5.510E-02	1.568E-01
RA-224	4.376E+00	1.203E+00	4.941E-01	6.136E-01
RA-226	1.437E+00	2.190E-01	4.815E-02	1.117E-01
AC-228	1.930E+00	3.856E-01	1.227E-01	1.967E-01
RA-228	1.930E+00	3.856E-01	1.227E-01	1.967E-01
TH-228	2.109E+00	3.125E-01	4.608E-02	1.594E-01
TH-232	1.930E+00	3.856E-01	1.227E-01	1.967E-01
TH-234	1.450E+00	1.448E+00	8.389E-01	7.387E-01
U-235	1.010E-01	1.820E-01	1.629E-01	9.286E-02
NP-237	1.144E+00	3.772E-01	1.526E-01	1.925E-01
U-238	1.450E+00	1.448E+00	8.389E-01	7.387E-01
ANH-511	1.455E-01	7.338E-02	2.294E-02	3.744E-02

### ---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	-1.197E-01	2.815E-01	2.367E-01	1.436E-01 NOT IDENT.
NA-22	-2.434E-02	4.484E-02	3.530E-02	2.288E-02 NOT IDENT.
NA-24	-1.159E+06	1.702E+06	0.000E+00	8.682E+05 SHORT HLIF
SC-46	-2.123E-02	3.654E-02	2.992E-02	1.864E-02 FAIL ABUN
V-48	2.715E-02	6.648E-02	5.895E-02	3.392E-02 NOT IDENT.
CR-51	-2.980E-01	3.527E-01	2.769E-01	1.800E-01 NOT IDENT.
MN-54	-6.066E-03	3.446E-02	2.955E-02	1.758E-02 NOT IDENT.
CO-56	-1.173E-02	3.759E-02	3.181E-02	1.918E-02 NOT IDENT.

CO-57	-6.461E-03	2.081E-02	1.855E-02	1.062E-02	NOT IDENT.
CO-58	1.093E-02	3.413E-02	2.907E-02	1.742E-02	NOT IDENT.
FE-59	-5.794E-02	9.515E-02	7.610E-02	4.855E-02	NOT IDENT.
CO-60	-8.043E-03	3.828E-02	3.151E-02	1.953E-02	NOT IDENT.
ZN-65	-4.913E-02	1.077E-01	7.446E-02	5.494E-02	NOT IDENT.
SE-75	1.791E-03	4.490E-02	3.420E-02	2.291E-02	NOT IDENT.
SR-85	7.440E-02	3.977E-02	3.438E-02	2.029E-02	NOT IDENT.
Y-88	-6.023E-03	2.962E-02	2.378E-02	1.511E-02	NOT IDENT.
Y-91	7.442E+00	2.265E+01	1.947E+01	1.156E+01	NOT IDENT.
NB-94	2.243E-02	3.191E-02	2.813E-02	1.628E-02	NOT IDENT.
NB-95	-3.415E-03	4.926E-02	3.552E-02	2.513E-02	NOT IDENT.
NB-95M	-1.567E-02	1.344E-01	1.025E-01	6.859E-02	NOT IDENT.
ZR-95	1.188E-02	7.261E-02	6.113E-02	3.705E-02	NOT IDENT.
MO-99	-8.208E-01	1.478E+01	1.225E+01	7.540E+00	NOT IDENT.
TC-99M	-5.237E+16	3.202E+17	0.000E+00	0.000E+00	SHORT HLIF
RU-103	-2.538E-02	3.658E-02	2.990E-02	1.867E-02	FAIL ABUN
RH-106	1.209E-01	3.183E-01	2.779E-01	1.624E-01	NOT IDENT.
RU-106	1.209E-01	3.181E-01	2.779E-01	1.623E-01	NOT IDENT.
AG-108M	-9.122E-04	2.723E-02	2.380E-02	1.389E-02	NOT IDENT.
AG-110M	2.515E-02	3.266E-02	2.912E-02	1.666E-02	NOT IDENT.
SN-113	1.701E-03	3.937E-02	3.488E-02	2.009E-02	NOT IDENT.
CD-115	-6.850E+00	1.327E+01	1.096E+01	6.771E+00	NOT IDENT.
SN-117M	2.696E-03	5.100E-02	4.487E-02	2.602E-02	NOT IDENT.
TE-123M	3.712E-04	2.538E-02	2.228E-02	1.295E-02	NOT IDENT.
SB-124	-1.258E-02	6.704E-02	5.466E-02	3.420E-02	NOT IDENT.
SB-125	2.160E-02	8.378E-02	7.458E-02	4.275E-02	FAIL ABUN
TE-125M	2.925E+00	7.994E+00	7.360E+00	4.079E+00	NOT IDENT.
I-126	2.750E-01	2.217E-01	2.028E-01	1.131E-01	NOT IDENT.
SB-126	3.984E-02	1.593E-01	1.258E-01	8.126E-02	NOT IDENT.
SB-127	5.248E-01	1.475E+00	1.272E+00	7.524E-01	NOT IDENT.
I-131	-1.801E-02	1.159E-01	9.479E-02	5.913E-02	NOT IDENT.
TE-132	3.802E-01	8.045E-01	7.062E-01	4.104E-01	NOT IDENT.
BA-133	-1.891E-02	4.388E-02	3.095E-02	2.239E-02	NOT IDENT.
I-133	6.019E+03	9.982E+03	0.000E+00	5.093E+03	SHORT HLIF
CS-134	9.815E-02	8.985E-02	4.818E-02	4.584E-02	FAIL ABUN
CS-135	7.861E-02	1.614E-01	1.263E-01	8.236E-02	NOT IDENT.
I-135	-1.445E+16	5.830E+16	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-1.908E-02	1.079E-01	9.025E-02	5.506E-02	NOT IDENT.
BA-137M	-4.908E-02	3.408E-02	2.494E-02	1.739E-02	NOT IDENT.
CS-137	-5.185E-02	3.600E-02	2.635E-02	1.837E-02	NOT IDENT.
CE-139	-7.059E-03	2.636E-02	2.303E-02	1.345E-02	NOT IDENT.
BA-140	8.964E-02	2.479E-01	2.171E-01	1.265E-01	NOT IDENT.
LA-140	-6.934E-02	9.600E-02	6.632E-02	4.898E-02	FAIL ABUN
CE-141	-1.331E-02	5.541E-02	4.897E-02	2.827E-02	NOT IDENT.
CE-143	5.103E+02	2.539E+02	0.000E+00	1.296E+02	SHORT HLIF
CE-144	-1.322E-01	1.925E-01	1.491E-01	9.823E-02	NOT IDENT.
PM-144	2.163E-02	3.365E-02	2.953E-02	1.717E-02	NOT IDENT.
PR-144	1.608E+00	2.519E+00	2.210E+00	1.285E+00	NOT IDENT.
PM-146	1.727E-02	3.883E-02	3.477E-02	1.981E-02	NOT IDENT.
ND-147	1.784E-02	5.199E-01	4.483E-01	2.653E-01	FAIL ABUN
PM-149	1.716E+01	1.085E+02	9.251E+01	5.533E+01	NOT IDENT.
EU-152	1.071E-01	1.016E-01	8.113E-02	5.186E-02	FAIL ABUN
GD-153	-9.077E-02	8.530E-02	6.018E-02	4.352E-02	NOT IDENT.
EU-154	-6.893E-02	1.271E-01	9.998E-02	6.484E-02	NOT IDENT.
EU-155	1.086E-01	8.529E-02	8.077E-02	4.352E-02	FAIL ABUN
TE-160	-8.515E-02	1.336E-01	1.079E-01	6.814E-02	FAIL ABUN
HO-166M	-2.027E-02	6.528E-02	5.327E-02	3.330E-02	FAIL ABUN
TA-182	6.459E-02	2.099E-01	1.796E-01	1.071E-01	FAIL ABUN
IR-192	1.595E-02	3.321E-02	2.858E-02	1.694E-02	FAIL ABUN
HG-203	-2.831E-02	3.719E-02	2.979E-02	1.897E-02	NOT IDENT.
BI-207	-1.592E-02	5.473E-02	4.529E-02	2.792E-02	FAIL ABUN
PB-210	3.695E-01	2.176E+00	1.899E+00	1.110E+00	NOT IDENT.
PB-211	2.476E-02	6.463E-01	5.706E-01	3.297E-01	NOT IDENT.
BI-212	2.071E+00	8.296E-01	6.160E-01	4.233E-01	FAIL ABUN
RN-219	7.494E-02	3.661E-01	3.264E-01	1.868E-01	FAIL ABUN
RA-223	-6.585E-01	7.210E-01	4.869E-01	3.678E-01	FAIL ABUN
AC-227	-2.149E-01	2.390E-01	1.920E-01	1.220E-01	FAIL ABUN
TH-227	-2.149E-01	2.394E-01	1.920E-01	1.221E-01	FAIL ABUN
TH-229	8.615E-02	4.704E-01	4.140E-01	2.400E-01	FAIL ABUN
PA-231	-6.612E-01	1.293E+00	1.055E+00	6.598E-01	FAIL ABUN
TH-231	-6.585E-01	7.210E-01	4.869E-01	3.678E-01	FAIL ABUN
PA-233	-8.641E-03	5.968E-02	4.962E-02	3.045E-02	FAIL ABUN
PA-234	-1.693E-01	3.151E-01	2.576E-01	1.608E-01	NOT IDENT.
PA-234M	2.755E+00	4.650E+00	4.151E+00	2.373E+00	NOT IDENT.
NP-239	-4.052E-01	3.359E-01	2.886E-01	1.714E-01	NOT IDENT.
AM-241	1.867E-03	1.229E-01	9.690E-02	6.268E-02	NOT IDENT.
CM-247	1.789E-02	3.361E-02	3.049E-02	1.715E-02	NOT IDENT.
CF-249	-9.880E-03	3.546E-02	3.084E-02	1.809E-02	NOT IDENT.

CF-251

2.735E-02

1.153E-01

1.024E-01

5.885E-02 NOT IDENT.

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 \* GEL Laboratories LLC \*  
 \* 2040 SAVAGE ROAD \*  
 \* CHARLESTON ,SC 29417 \*  
 \* GAMMA SPECTROSCOPY BACKGROUND REPORT \*  
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ENERGY	MDA COUNTS
46.54	251.2437
49.72	266.1332
57.36	0.0000
59.54	326.8202
63.29	353.4027
63.29	353.4027
64.28	400.4375
67.75	427.5945
69.67	453.2074
70.83	415.5627
72.81	447.5883
72.87	447.6579
72.87	447.6579
74.82	409.6739
74.82	409.6739
74.82	409.6739
74.97	409.8323
77.11	412.0708
77.11	412.0708
77.11	412.0708
79.69	338.0183
79.80	338.1087
80.12	335.9756
80.19	336.0333
80.57	336.3452
81.00	339.1048
81.07	339.1629
81.07	339.1629
83.79	326.8625
83.79	326.8625
85.43	328.1314
86.48	328.9389
86.55	328.9925
86.79	329.1737
86.94	329.2891
87.57	329.7691
88.03	330.1193
88.47	330.4530
89.96	331.5756
91.11	332.4367
92.59	333.5367
92.59	333.5367
93.35	334.0970
94.67	287.9096
94.87	288.0353
94.87	288.0353
95.86	282.0190
97.43	351.2202
98.44	282.7500
99.53	264.1740
100.11	282.0743
103.18	312.5180
103.37	312.6406
105.31	258.0418
106.12	265.2432
109.28	282.2679
111.00	283.2224
111.76	310.2063
116.30	269.6913
117.23	311.7270
121.12	264.2681
121.78	271.5729
122.06	270.8385
123.07	271.3351
131.20	254.3976
133.52	304.8929
136.00	281.1096

136.47	285.8098
140.51	283.2273
140.51	0.0000
143.76	278.3843
144.24	279.5072
144.24	279.5072
145.44	295.5032
152.43	252.8107
153.25	281.6673
154.21	282.0813
154.21	282.0813
156.02	308.7489
158.56	263.5401
159.00	260.9277
162.66	260.4868
163.33	262.6114
165.86	269.2143
176.60	261.9275
177.52	248.9090
181.07	255.8750
184.41	244.0386
185.72	228.5571
193.51	240.6557
197.04	266.2227
205.31	212.1434
210.85	179.2365
215.65	211.3241
222.11	212.9447
227.38	225.4168
228.16	209.3591
228.18	198.1837
235.69	269.0609
235.96	244.5363
235.96	244.5363
238.63	228.2939
238.63	228.2939
240.99	228.8901
242.00	229.1430
244.70	172.3637
252.40	182.6655
252.80	171.2554
256.23	205.4128
256.23	205.4128
260.90	177.9774
264.66	163.3390
268.22	175.0708
269.46	179.5419
269.46	179.5419
271.23	180.3938
273.65	201.6315
276.40	160.4645
277.37	156.3340
277.60	153.1565
278.00	163.9321
279.20	186.6521
279.54	207.1004
280.46	189.0303
283.69	160.5345
284.31	173.5683
285.41	164.0389
285.90	155.4785
287.50	142.7422
293.27	0.0000
295.22	168.3023
295.96	168.4186
298.57	121.2956
299.98	157.5615
299.98	157.5615
300.09	157.5791
300.09	157.5791
300.13	157.5850
301.36	146.2601
302.85	144.8154
304.50	146.6838
304.50	146.6838
304.85	156.9516
308.46	140.0457
311.90	146.0132



316.51	139.9530
319.41	161.4700
320.08	154.8790
323.87	176.0788
323.87	176.0788
328.76	146.5151
333.37	146.0821
334.37	143.8370
334.37	143.8370
338.28	144.8802
338.28	144.8802
338.32	144.8854
338.32	144.8854
338.32	144.8854
340.48	151.3880
340.55	151.3961
344.28	116.0345
351.06	124.6940
351.93	124.7827
356.01	132.6657
364.49	121.4297
366.42	127.4068
383.85	125.0387
388.16	124.5648
388.63	129.0287
391.69	116.0402
400.66	115.0343
401.81	117.8102
402.40	112.5033
404.85	121.6500
410.95	113.2070
414.70	100.9019
423.72	115.1519
427.09	111.7916
427.87	110.0329
433.94	111.4132
453.88	99.9761
463.37	103.4019
468.07	101.6646
473.00	84.3668
476.78	103.3667
477.60	94.0186
487.02	87.9637
492.35	78.7687
497.08	99.9419
511.00	97.9199
514.00	81.5567
527.90	90.1902
529.87	0.0000
531.02	79.6677
537.26	76.0600
546.56	0.0000
563.25	80.1694
569.33	81.4344
569.50	81.4420
569.70	81.4520
583.19	91.0639
600.60	83.8435
602.73	90.6117
604.72	74.5097
609.32	67.9937
609.32	67.9937
610.33	69.8561
614.28	79.7686
618.01	83.5941
621.93	81.7212
621.93	81.7212
633.25	73.9797
635.95	61.7340
636.99	78.2382
645.85	81.6906
657.76	67.6125
661.66	99.0096
661.66	99.0096
664.57	0.0000
666.33	66.8535
666.50	66.8594
677.62	79.8246

685.70	72.7545
695.00	84.7266
696.49	76.3066
696.51	76.3088
697.00	84.8071
702.65	71.2141
706.68	97.9718
711.68	100.3340
720.70	75.7411
721.93	0.0000
722.78	84.1111
722.91	84.1159
723.31	87.5641
724.19	84.1637
727.33	70.5248
733.00	64.6692
735.93	64.7552
739.50	73.5076
747.24	72.6781
752.31	79.3648
753.82	62.0098
756.73	74.0720
763.94	55.9484
765.81	83.9906
766.42	77.0129
777.92	71.4607
778.90	59.3921
783.70	70.5352
785.37	66.1743
795.86	60.9300
801.95	67.5279
810.29	49.0394
810.76	47.9341
815.77	49.1509
818.51	46.9693
832.01	66.3462
834.85	72.9534
836.80	0.0000
846.77	69.6835
856.80	57.5458
860.56	64.6072
871.09	57.8705
873.19	59.4426
875.33	0.0000
879.36	63.2522
880.51	70.6169
883.24	52.3298
884.68	56.9519
889.28	64.4150
898.04	60.0139
911.20	73.3055
911.20	73.3055
911.20	73.3055
926.50	53.1954
937.49	82.4592
944.13	63.8745
946.00	78.0172
949.00	70.5743
962.29	63.0355
964.08	61.4993
966.15	28.4048
968.97	66.3462
968.97	66.3462
968.97	66.3462
983.53	47.6355
996.26	73.6876
1001.03	54.6385
1004.73	85.4213
1037.84	58.2451
1038.76	0.0000
1048.07	59.4184
1050.41	63.3655
1050.41	63.3655
1063.66	70.4988
1085.87	64.1082
1099.45	73.3063
1112.07	57.6885
1115.54	79.6563

1120.29	70.8024
1120.29	70.8024
1120.55	70.8059
1121.30	69.8257
1131.51	0.0000
1173.23	71.9742
1177.93	83.2412
1189.05	76.3916
1204.77	71.6338
1221.41	78.1561
1231.02	108.2864
1235.36	110.4848
1238.28	100.2444
1260.41	0.0000
1271.85	47.9990
1274.44	61.6101
1274.54	61.6101
1291.59	33.5766
1298.22	0.0000
1312.11	37.9898
1332.49	37.1414
1365.19	28.9050
1368.63	0.0000
1384.29	16.1404
1408.01	29.2333
1457.56	0.0000
1460.82	27.4353
1489.16	25.7874
1505.03	34.2102
1596.21	31.4982
1620.50	18.0553
1678.03	0.0000
1690.97	14.4824
1764.49	20.1814
1764.49	20.1814
1770.23	11.7871
1771.35	10.1053
1791.20	0.0000
1836.06	12.9466

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G247797003

Total Uranium Activity	4.3618E+00	ug/g
Total Uranium Counting Unc.	4.3084E+00	ug/g
Total Uranium Tpu	2.1982E-06	ug/g
Total Uranium Mda	2.4970E+00	ug/g

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*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON ,SC 29417               *
*               GROSS GAMMA REPORT                 *
*
*****
*
*  BATCH ID      : 957136          SAMPLE ID   : G247797003
*  ANALYST       : MXR1            DETECTOR    : GAM11
*  SAMPLE DATE   : 17-FEB-2010 12:00:00.00  COUNT TIME : 0 02:00:00.00
*  ANALYSIS DATE: 5-MAR-2010 10:29:11.12  SAMPLE ALQT: 129.870 GRAM
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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.170E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.522E+00
GROSS GAMMA MDA     (pCi/GRAM ) : 3.410E+00
GROSS GAMMA DLC     (pCi/GRAM ) : 1.654E+00

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VAX/VMS Nuclide Identification Report Generated 5-MAR-2010 12:33:12.11

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*****
*                               GEL Laboratories LLC                      *
*                               2040 Savage Road                        *
*                               Charleston, SC 29414                    *
*****
Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797004.CNF;1
Sample date   : 17-FEB-2010 12:00:00 Acquisition date : 5-MAR-2010 10:29:54.
Sample ID    : G247797004 Sample quantity : 1.38460E+02 GRAM
Detector name : GAM04 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:01.49 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity : 5.00000
Batch ID : 957136 Detector SN# :
Matrix Spike ID : LCS ID : 1032-A
*****

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Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	74.84	398	385	0.96	149.71	143	17	5.53E-02	9.2	1.06E+00
2	3	77.07*	552	369	1.02	154.18	143	17	7.66E-02	7.2	
3	6	87.24	247	284	1.10	174.51	172	19	3.44E-02	12.0	1.65E+00
4	6	90.02	164	329	1.08	180.08	172	19	2.27E-02	19.2	
5	6	92.94*	273	474	1.55	185.93	172	19	3.79E-02	16.4	
6	0	129.30	90	368	1.49	258.65	255	8	1.24E-02	38.6	
7	0	186.05*	239	433	1.49	372.17	368	11	3.32E-02	18.3	
8	0	209.62	110	337	1.38	419.30	415	9	1.52E-02	31.8	
9	6	238.80*	1550	217	1.15	477.68	470	24	2.15E-01	3.0	9.14E-01
10	6	241.63	331	321	1.88	483.32	470	24	4.60E-02	15.0	
11	0	270.25	156	336	1.27	540.58	534	13	2.16E-02	25.6	
12	2	295.40	430	149	1.15	590.89	586	22	5.97E-02	6.7	3.22E+00
13	2	300.22*	144	168	1.48	600.51	586	22	2.00E-02	18.7	
14	0	328.62	138	180	1.31	657.32	652	12	1.91E-02	21.4	
15	0	338.51*	228	227	1.16	677.11	673	10	3.16E-02	14.2	
16	0	352.22*	796	181	1.32	704.52	698	14	1.11E-01	5.1	
17	0	463.20	95	157	1.80	926.49	918	13	1.32E-02	28.9	
18	0	511.12*	104	168	1.42	1022.34	1016	14	1.44E-02	31.3	
19	0	583.55*	421	181	1.45	1167.20	1161	14	5.84E-02	8.4	
20	0	609.99*	525	185	1.36	1220.08	1213	15	7.30E-02	7.3	
21	0	727.84	91	82	0.93	1455.77	1450	11	1.27E-02	22.0	
22	0	770.45*	73	76	4.12	1540.98	1534	15	1.01E-02	29.9	
23	0	786.22	65	58	3.56	1572.51	1566	14	8.97E-03	28.2	
24	0	796.76	53	121	2.47	1593.60	1583	20	7.42E-03	52.1	
25	0	861.53	64	69	1.11	1723.14	1717	13	8.95E-03	29.2	
26	0	912.11*	310	84	1.62	1824.28	1817	14	4.30E-02	8.5	
27	0	970.36*	126	149	1.56	1940.78	1933	17	1.75E-02	24.9	
28	0	1121.49	115	86	2.08	2242.99	2235	15	1.60E-02	19.9	
29	0	1442.37	13	15	1.07	2884.64	2880	9	1.76E-03	62.9	
30	0	1462.08*	1650	18	2.08	2924.05	2915	17	2.29E-01	2.5	
31	0	1731.74	18	12	0.73	3463.22	3456	12	2.50E-03	45.1	
32	0	1766.26	86	13	1.82	3532.24	3523	15	1.20E-02	13.8	

Flag: "\*" = Peak area was modified by background subtraction

## VMS Nuclide Identification Report V3.1 Generated 5-MAR-2010 12:33:15

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Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797004.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 17-FEB-2010 12:00:00 Acquisition date : 5-MAR-2010 10:29:54
Sample ID         : G247797004 Sample quantity : 138.46 GRAM
Sample type       : SOLID Sample geometry :
Detector name     : GAMMA4 Detector geometry: CAN
Elapsed live time : 0 02:00:00.00 Elapsed real time: 0 02:00:01.49 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

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## 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	+	1460.82	*	3.907E+01	3.413E+00	5.096E-01	3.622E-02	76.679
CD-109	+	88.03	*	3.703E+00	9.906E-01	1.281E+00	1.540E-01	2.889
SN-126		64.28		8.934E-01	6.548E-01	1.118E+00	1.925E-01	0.799
	+	86.94		1.503E+00	7.288E-01	5.948E-01	2.509E-01	2.526
	+	87.57	*	3.615E-01	9.671E-02	1.261E-01	1.512E-02	2.868
TL-208		277.37		5.517E-01	3.850E-01	6.819E-01	7.681E-02	0.809
	+	583.19	*	5.469E-01	9.773E-02	5.616E-02	3.524E-03	9.739
	+	860.56		8.028E-01	4.738E-01	4.318E-01	3.601E-02	1.859
BI-211		72.87		2.276E+00	3.432E+00	5.884E+00	6.746E-01	0.387
	+	351.06	*	4.608E+00	5.633E-01	2.999E-01	2.027E-02	15.364
BI-212		727.33	*	1.823E+00	8.234E-01	8.428E-01	8.980E-02	2.162
	+	785.37		8.400E+00	4.765E+00	4.852E+00	3.158E-01	1.731
		1620.50		1.762E+00	2.565E+00	4.603E+00	3.006E-01	0.383
PB-212		74.82		2.885E+00	6.861E-01	6.250E-01	9.391E-02	4.617
	+	77.11		2.229E+00	4.091E-01	3.490E-01	4.004E-02	6.388
	+	238.63	*	1.998E+00	2.016E-01	8.828E-02	7.141E-03	22.632
	+	300.09		2.897E+00	1.114E+00	1.191E+00	1.064E-01	2.433
BI-214		609.32	*	1.324E+00	2.160E-01	1.109E-01	8.221E-03	11.941
	+	1120.29		1.543E+00	6.304E-01	4.945E-01	4.635E-02	3.120
		1764.49		1.431E+00	4.111E-01	8.259E-01	5.035E-02	1.733
PB-214		74.82		5.114E+00	1.182E+00	1.108E+00	1.543E-01	4.617
	+	77.11		3.930E+00	7.907E-01	6.152E-01	8.693E-02	6.388
	+	242.00		2.589E+00	8.081E-01	5.371E-01	4.744E-02	4.821
	+	295.22		1.533E+00	2.497E-01	2.104E-01	1.949E-02	7.287
	+	351.93	*	1.673E+00	2.243E-01	1.091E-01	9.509E-03	15.331
RA-224		240.99	*	4.579E+00	1.404E+00	9.465E-01	6.310E-02	4.838
RA-226		609.32	*	1.324E+00	2.160E-01	1.109E-01	8.221E-03	11.941
	+	1120.29		1.543E+00	6.304E-01	4.945E-01	4.635E-02	3.120
		1764.49		1.431E+00	4.111E-01	8.259E-01	5.035E-02	1.733
AC-228		338.32		1.467E+00	7.361E-01	3.793E-01	1.566E-01	3.869
	+	911.20	*	1.972E+00	4.034E-01	2.234E-01	2.515E-02	8.827
	+	968.97		1.385E+00	7.666E-01	4.934E-01	1.189E-01	2.807
RA-228		338.32		1.467E+00	7.361E-01	3.793E-01	1.566E-01	3.869
	+	911.20	*	1.972E+00	4.034E-01	2.234E-01	2.515E-02	8.827

---- Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TH-228	+	968.97		1.385E+00	7.666E-01	4.934E-01	1.189E-01	2.807
	+	74.82		2.885E+00	6.270E-01	6.250E-01	7.194E-02	4.617
	+	77.11		2.229E+00	4.091E-01	3.490E-01	4.004E-02	6.388
	+	238.63	*	1.998E+00	2.016E-01	8.828E-02	7.141E-03	22.632
TH-232	+	300.09		2.897E+00	2.072E+00	1.191E+00	7.260E-01	2.433
	+	338.32		1.467E+00	4.281E-01	3.793E-01	2.384E-02	3.869
	+	911.20	*	1.972E+00	4.034E-01	2.234E-01	2.515E-02	8.827
	+	968.97		1.385E+00	7.666E-01	4.934E-01	1.189E-01	2.807
U-235	+	89.96		2.432E+00	1.125E+00	1.295E+00	3.334E-01	1.878
	+	93.35		2.408E+00	9.765E-01	7.671E-01	1.835E-01	3.139
		143.76	*	1.608E-01	2.034E-01	3.391E-01	5.422E-02	0.474
		163.33		-4.607E-02	4.079E-01	6.570E-01	1.116E-01	-0.070
NP-237	+	185.72		1.991E-01	7.382E-02	6.164E-02	3.975E-03	3.230
		205.31		-3.048E-01	5.621E-01	7.692E-01	1.327E-01	-0.396
	+	86.48	*	1.079E+00	3.666E-01	4.366E-01	1.053E-01	2.470
		95.86		-9.081E-01	9.988E-01	1.377E+00	3.384E-01	-0.659
ANH-511	+	511.00	*	1.033E-01	6.488E-02	4.692E-02	2.624E-03	2.202

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7		477.60	*	-2.090E-01	3.060E-01	4.721E-01	3.126E-02	-0.443
NA-22		1274.54	*	-2.483E-02	4.568E-02	7.243E-02	4.736E-03	-0.343
NA-24		1368.63	*	4.934E-01	4.568E-02	Half-Life too short		
SC-46		889.28	*	2.974E-02	4.070E-02	7.116E-02	5.755E-03	0.418
V-48	+	1120.55		2.628E-01	1.059E-01	1.422E-01	9.314E-03	1.848
		944.13		1.566E-01	8.777E-01	1.464E+00	1.170E-01	0.107
		983.53	*	1.494E-02	7.414E-02	1.234E-01	9.564E-03	0.121
		1312.11		-1.678E-02	8.331E-02	1.361E-01	9.168E-03	-0.123
CR-51		320.08	*	4.374E-02	3.501E-01	5.901E-01	4.150E-02	0.074
MN-54		834.85	*	3.266E-02	4.102E-02	7.168E-02	5.187E-03	0.456
CO-56		846.77	*	-5.049E-04	4.024E-02	6.645E-02	4.930E-03	-0.008
		1037.84		2.579E-02	3.445E-01	5.641E-01	4.434E-02	0.046
		1238.28		1.334E-01	1.059E-01	1.912E-01	1.273E-02	0.698
		1771.35		4.672E-02	2.000E-01	3.022E-01	1.835E-02	0.155
CO-57		122.06	*	-3.388E-04	2.488E-02	4.086E-02	2.837E-03	-0.008
		136.47		2.394E-01	2.001E-01	3.418E-01	2.539E-02	0.700
CO-58		810.76	*	-4.627E-02	3.852E-02	5.659E-02	3.907E-03	-0.818
FE-59		1099.45	*	7.132E-02	1.034E-01	1.775E-01	1.356E-02	0.402
		1291.59		3.584E-02	1.205E-01	2.076E-01	1.677E-02	0.173
CO-60		1173.23		8.402E-03	5.358E-02	8.739E-02	5.197E-03	0.096
		1332.49	*	-4.249E-04	4.029E-02	6.710E-02	4.598E-03	-0.006
ZN-65		1115.54	*	-3.394E-02	1.163E-01	1.560E-01	1.032E-02	-0.218
SE-75		121.12		-3.865E-02	1.296E-01	2.103E-01	2.079E-02	-0.184
		136.00		2.730E-02	3.882E-02	6.522E-02	4.372E-03	0.419
		264.66	*	5.953E-03	4.589E-02	6.921E-02	4.657E-03	0.086
		279.54		-1.109E-01	1.093E-01	1.752E-01	1.238E-02	-0.633
		400.66		-3.492E-02	2.351E-01	3.840E-01	3.445E-02	-0.091



---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
SR-85	514.00	*		7.566E-02	4.336E-02	7.080E-02	3.955E-03	1.069
Y-88	898.04			-8.134E-04	4.312E-02	7.011E-02	5.800E-03	-0.012
	1836.06	*		1.695E-02	2.926E-02	5.345E-02	3.119E-03	0.317
Y-91	1204.77	*		-8.231E+00	2.580E+01	4.030E+01	2.469E+00	-0.204
NB-94	702.65	*		2.692E-02	3.437E-02	6.062E-02	3.266E-03	0.444
	871.09			1.125E-02	3.681E-02	6.225E-02	4.854E-03	0.181
NB-95	765.81	*		1.579E-02	4.955E-02	7.408E-02	4.617E-03	0.213
NB-95M	235.69	*		3.738E-02	1.351E-01	1.938E-01	1.595E-02	0.193
ZR-95	724.19			-5.692E-03	1.031E-01	1.491E-01	1.002E-02	-0.038
	756.73	*		-1.719E-02	7.138E-02	1.167E-01	8.545E-03	-0.147
MO-99	140.51			-1.741E+00	2.657E+01	4.324E+01	9.980E+00	-0.040
	181.07			5.948E+00	2.190E+01	3.400E+01	6.081E+00	0.175
	366.42			-1.129E+01	1.140E+02	1.881E+02	1.124E+01	-0.060
	739.50	*		-6.356E+00	1.375E+01	2.197E+01	3.173E+00	-0.289
	777.92			-7.542E+00	4.925E+01	6.984E+01	4.472E+00	-0.108
TC-99M	140.51	*		-2.352E+10	4.925E+01	Half-Life	too short	
RU-103	497.08	*		-5.724E-03	4.038E-02	6.496E-02	8.018E-03	-0.088
	610.33			1.386E+01	2.879E+00	3.137E+00	4.653E-01	4.419
RH-106	621.93	*		-1.654E-01	3.158E-01	4.809E-01	5.437E-02	-0.344
	1050.41			-9.002E-02	2.784E+00	4.509E+00	3.260E-01	-0.020
RU-106	621.93	*		-1.654E-01	3.153E-01	4.809E-01	2.471E-02	-0.344
	1050.41			-9.002E-02	2.784E+00	4.509E+00	3.259E-01	-0.020
AG-108M	433.94	*		-8.499E-05	2.870E-02	4.709E-02	2.866E-03	-0.002
	614.28			8.623E-03	3.956E-02	5.617E-02	3.168E-03	0.154
	722.91			7.326E-03	4.001E-02	5.941E-02	3.603E-03	0.123
AG-110M	657.76	*		-8.495E-03	3.477E-02	5.752E-02	3.074E-03	-0.148
	677.62			-1.294E-01	2.919E-01	4.732E-01	2.595E-02	-0.273
	706.68			-1.871E-01	2.284E-01	3.605E-01	2.099E-02	-0.519
	763.94			1.519E-01	1.800E-01	2.840E-01	1.855E-02	0.535
	884.68			-3.578E-02	5.009E-02	7.682E-02	6.385E-03	-0.466
	937.49			4.830E-02	1.163E-01	1.975E-01	1.652E-02	0.245
	1384.29			-2.528E-01	1.668E-01	2.210E-01	1.578E-02	-1.144
	1505.03			-3.146E-01	2.774E-01	3.761E-01	2.538E-02	-0.836
SN-113	391.69	*		5.906E-02	4.155E-02	7.449E-02	4.488E-03	0.793
CD-115	260.90			6.159E+01	1.682E+02	2.896E+02	1.934E+01	0.213
	492.35			7.598E+00	4.612E+01	7.599E+01	4.278E+00	0.100
	527.90	*		-7.912E+00	1.411E+01	2.177E+01	1.208E+00	-0.363
SN-117M	156.02			-2.170E+00	2.376E+00	3.702E+00	2.375E-01	-0.586
	158.56	*		7.526E-03	5.502E-02	8.977E-02	5.742E-03	0.084
TE-123M	159.00	*		-1.178E-03	2.765E-02	4.476E-02	2.893E-03	-0.026
SB-124	602.73			-9.101E-03	4.330E-02	6.274E-02	3.292E-03	-0.145
	645.85			-3.065E-01	4.996E-01	8.048E-01	4.669E-02	-0.381
	722.78			9.634E-02	4.074E-01	6.083E-01	3.617E-02	0.158
	1690.97	*		-2.126E-02	7.462E-02	1.150E-01	7.844E-03	-0.185
SB-125	427.87	*		6.577E-02	9.286E-02	1.591E-01	9.408E-03	0.413
	463.37			8.401E-01	4.885E-01	5.793E-01	3.830E-02	1.450
	600.60			3.891E-02	1.815E-01	2.957E-01	1.847E-02	0.132
	635.95			-1.022E-01	2.644E-01	4.070E-01	2.511E-02	-0.251
TE-125M	109.28	*		3.144E+00	9.576E+00	1.583E+01	1.597E+00	0.199

---- 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			-1.762E-01	1.665E-01	2.559E-01	1.451E-02	-0.689
	666.33	*		7.432E-02	2.282E-01	3.927E-01	1.937E-02	0.189
	753.82			1.423E+00	1.822E+00	3.222E+00	1.955E-01	0.442
SB-126	414.70			7.297E-03	7.436E-02	1.232E-01	6.972E-03	0.059
	666.50			3.552E-02	7.806E-02	1.355E-01	6.685E-03	0.262
	695.00			3.629E-02	8.333E-02	1.370E-01	7.246E-03	0.265
	697.00			1.057E-01	2.751E-01	4.740E-01	2.519E-02	0.223
	720.70	*		-5.456E-03	1.586E-01	2.498E-01	1.404E-02	-0.022
	856.80			-5.272E-01	5.635E-01	7.037E-01	5.330E-02	-0.749
SB-127	252.40			-4.734E-01	4.653E+00	7.852E+00	3.238E+00	-0.060
	473.00			6.832E-02	1.839E+00	3.008E+00	3.380E-01	0.023
	685.70	*		8.707E-01	1.489E+00	2.604E+00	2.433E-01	0.334
	783.70			4.328E+00	4.404E+00	7.042E+00	7.903E-01	0.615
I-131	80.19			-2.444E+00	5.524E+00	8.114E+00	9.415E-01	-0.301
	284.31			2.669E-01	1.512E+00	2.570E+00	1.851E-01	0.104
	364.49	*		3.005E-02	1.154E-01	1.947E-01	1.297E-02	0.154
	636.99			-3.532E-01	1.650E+00	2.583E+00	1.513E-01	-0.137
TE-132	49.72			-3.065E+01	4.648E+01	7.672E+01	1.096E+01	-0.400
	111.76			-3.865E+00	3.937E+01	6.472E+01	6.905E+00	-0.060
	116.30			-2.371E+00	3.368E+01	5.532E+01	5.725E+00	-0.043
	228.16	*		4.053E-01	8.964E-01	1.453E+00	2.180E-01	0.279
BA-133	81.00			-1.455E-01	1.125E-01	1.542E-01	2.675E-02	-0.943
	276.40			4.692E-01	3.785E-01	6.261E-01	8.142E-02	0.749
	302.85			1.249E-02	1.453E-01	2.165E-01	2.555E-02	0.058
	356.01	*		8.033E-03	4.253E-02	6.319E-02	7.224E-03	0.127
	383.85			1.943E-01	2.852E-01	4.900E-01	5.210E-02	0.397
I-133	529.87	*		4.057E-03	2.852E-01	Half-Life	too short	
	875.33			-1.115E-01	2.852E-01	Half-Life	too short	
	1298.22			-5.865E-01	2.852E-01	Half-Life	too short	
CS-134	563.25			2.498E-01	3.565E-01	6.051E-01	3.363E-02	0.413
	569.33			2.161E-01	2.157E-01	3.637E-01	2.033E-02	0.594
	604.72			-2.910E-02	4.189E-02	5.429E-02	2.861E-03	-0.536
	795.86	*		1.020E-01	1.065E-01	9.391E-02	6.329E-03	1.086
	801.95			-2.240E-01	4.620E-01	6.399E-01	4.358E-02	-0.350
	1365.19			-1.005E+00	1.102E+00	1.581E+00	1.161E-01	-0.636
CS-135	268.22	*		2.245E-01	1.744E-01	2.791E-01	2.327E-02	0.804
I-135	546.56			3.462E+10	1.744E-01	Half-Life	too short	
	836.80			1.398E+11	1.744E-01	Half-Life	too short	
	1038.76			1.203E+10	1.744E-01	Half-Life	too short	
	1131.51			-3.727E+10	1.744E-01	Half-Life	too short	
	1260.41	*		-8.712E+09	1.744E-01	Half-Life	too short	
	1457.56			8.910E+11	1.744E-01	Half-Life	too short	
	1678.03			-8.310E+10	1.744E-01	Half-Life	too short	
	1791.20			-4.385E+10	1.744E-01	Half-Life	too short	
CS-136	153.25			9.703E-01	9.207E-01	1.552E+00	1.321E-01	0.625
	176.60			-6.956E-02	5.230E-01	8.383E-01	6.335E-02	-0.083
	273.65			-8.068E-01	6.077E-01	8.243E-01	6.251E-02	-0.979
	340.55			3.567E-01	1.841E-01	3.006E-01	2.017E-02	1.187
	818.51			2.846E-03	8.337E-02	1.385E-01	9.700E-03	0.021

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
		1048.07	*	-6.650E-02	1.206E-01	1.853E-01	1.423E-02	-0.359
		1235.36		-8.948E-01	7.139E-01	1.084E+00	1.105E-01	-0.825
BA-137M		661.66	*	-3.845E-02	3.572E-02	5.636E-02	2.749E-03	-0.682
CS-137		661.66	*	-4.062E-02	3.774E-02	5.954E-02	2.921E-03	-0.682
CE-139		165.86	*	1.387E-02	2.829E-02	4.676E-02	2.971E-03	0.297
BA-140		162.66		-8.643E-02	7.921E-01	1.277E+00	9.110E-02	-0.068
		304.85		-5.658E-02	1.448E+00	2.136E+00	6.135E-01	-0.026
		423.72		-5.265E-01	2.168E+00	3.500E+00	1.129E+00	-0.150
		537.26	*	-2.203E-03	2.701E-01	4.363E-01	1.451E-01	-0.005
LA-140	+	328.76		1.147E+00	4.979E-01	5.904E-01	4.147E-02	1.944
		487.02		4.462E-02	1.355E-01	2.260E-01	1.452E-02	0.197
		815.77		-4.561E-02	3.532E-01	5.792E-01	4.733E-02	-0.079
		1596.21	*	-2.028E-02	9.818E-02	1.566E-01	1.031E-02	-0.130
CE-141		145.44	*	2.664E-02	6.416E-02	1.062E-01	7.131E-03	0.251
CE-143		57.36		4.307E-04	6.416E-02	Half-Life	too short	
		293.27	*	4.533E-04	6.416E-02	Half-Life	too short	
		664.57		8.988E-04	6.416E-02	Half-Life	too short	
		721.93		-2.524E-04	6.416E-02	Half-Life	too short	
CE-144		80.12		-1.152E+00	2.793E+00	4.109E+00	4.748E-01	-0.280
		133.52	*	-1.722E-01	2.167E-01	3.006E-01	4.291E-02	-0.573
PM-144		476.78		-1.747E-02	6.132E-02	9.782E-02	6.587E-03	-0.179
		618.01		3.902E-02	3.170E-02	5.569E-02	3.093E-03	0.701
		696.49	*	7.130E-03	3.542E-02	5.728E-02	3.044E-03	0.124
PR-144		696.51	*	3.506E-01	2.665E+00	4.288E+00	2.277E-01	0.082
		1489.16		5.315E-02	1.094E+01	1.808E+01	1.224E+00	0.003
PM-146		453.88	*	4.730E-03	4.360E-02	7.184E-02	6.012E-03	0.066
		633.25		2.089E-01	1.329E+00	2.150E+00	8.074E-01	0.097
		735.93		2.204E-02	1.426E-01	2.408E-01	6.573E-02	0.092
		747.24		-4.727E-02	9.265E-02	1.476E-01	1.948E-02	-0.320
ND-147	+	91.11		8.293E-01	3.341E-01	5.289E-01	6.204E-02	1.568
		319.41		4.943E-03	3.335E+00	5.582E+00	3.599E-01	0.001
		531.02	*	4.151E-01	5.339E-01	9.150E-01	1.227E-01	0.454
PM-149		285.90	*	-9.231E+01	1.160E+02	1.865E+02	2.710E+01	-0.495
EU-152		121.78		-7.514E-03	7.120E-02	1.165E-01	9.899E-03	-0.064
		244.70		-1.119E-01	3.222E-01	4.997E-01	3.334E-02	-0.224
		344.28	*	1.328E-02	9.990E-02	1.558E-01	1.078E-02	0.085
		778.90		-1.107E-01	2.984E-01	4.089E-01	2.624E-02	-0.271
		964.08		1.841E-01	3.603E-01	5.378E-01	4.235E-02	0.342
		1085.87		-1.527E-01	3.856E-01	5.983E-01	4.130E-02	-0.255
		1112.07		1.446E-01	3.329E-01	5.594E-01	3.714E-02	0.258
		1408.01		1.249E-03	1.815E-01	3.087E-01	2.111E-02	0.004
GD-153		69.67		-1.285E+00	2.274E+00	3.320E+00	3.834E-01	-0.387
		97.43	*	-1.254E-01	9.529E-02	1.307E-01	1.283E-02	-0.960
		103.18		-9.759E-02	1.093E-01	1.739E-01	1.547E-02	-0.561
EU-154		123.07		6.166E-03	5.117E-02	8.446E-02	8.538E-03	0.073
		723.31		-5.328E-02	1.921E-01	2.709E-01	1.874E-02	-0.197
		873.19		1.897E-01	2.970E-01	5.148E-01	5.836E-02	0.369
		996.26		-1.802E-01	3.917E-01	6.103E-01	1.038E-01	-0.295
		1004.73		4.351E-02	2.412E-01	3.994E-01	4.353E-02	0.109

----- Non-Identified Nuclides -----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
EU-155	+	1274.44	*	-5.998E-02	1.293E-01	2.066E-01	2.043E-02	-0.290
		86.55		4.384E-01	1.174E-01	1.964E-01	2.353E-02	2.232
		105.31	*	1.651E-01	1.019E-01	1.776E-01	1.548E-02	0.929
TB-160	+	86.79		1.172E+00	3.136E-01	5.309E-01	6.335E-02	2.208
		197.04		-2.052E-01	5.836E-01	9.059E-01	5.895E-02	-0.227
		215.65		7.051E-01	7.773E-01	1.289E+00	8.501E-02	0.547
HO-166M		298.57		1.649E-01	1.096E-01	1.961E-01	1.289E-02	0.841
		879.36	*	-1.921E-02	1.440E-01	2.345E-01	1.859E-02	-0.082
		962.29		-9.718E-01	6.589E-01	8.150E-01	6.426E-02	-1.192
		966.15		3.339E-01	2.612E-01	4.161E-01	3.271E-02	0.802
		1177.93		-1.528E-01	4.395E-01	6.860E-01	4.098E-02	-0.223
		1271.85		-5.329E-02	7.772E-01	1.293E+00	8.417E-02	-0.041
		80.57		-2.418E-01	3.065E-01	4.411E-01	5.104E-02	-0.548
		184.41		7.533E-02	3.799E-02	5.982E-02	3.853E-03	1.259
		280.46		-8.390E-02	8.407E-02	1.348E-01	8.957E-03	-0.622
		410.95		1.810E-01	2.323E-01	4.010E-01	2.268E-02	0.451
		711.68	*	3.513E-02	6.571E-02	1.139E-01	6.271E-03	0.308
TA-182		752.31		1.067E-01	2.702E-01	4.645E-01	2.808E-02	0.230
		810.29		-5.558E-02	5.648E-02	8.490E-02	5.833E-03	-0.655
		67.75		-8.842E-02	1.373E-01	2.229E-01	2.593E-02	-0.397
		100.11		2.786E-01	1.752E-01	3.052E-01	2.857E-02	0.913
		152.43		2.630E-01	3.561E-01	5.952E-01	3.834E-02	0.442
		222.11		1.427E-01	3.618E-01	5.865E-01	3.882E-02	0.243
		1121.30		7.267E-01	2.929E-01	3.939E-01	2.577E-02	1.845
		1189.05		-2.462E-01	3.722E-01	5.635E-01	3.403E-02	-0.437
		1221.41	*	1.693E-01	2.248E-01	3.970E-01	2.471E-02	0.426
		1231.02		6.374E-01	5.430E-01	9.820E-01	6.165E-02	0.649
		295.96		1.142E+00	1.710E-01	2.972E-01	1.982E-02	3.844
IR-192	+	308.46		5.701E-02	8.886E-02	1.541E-01	1.014E-02	0.370
		316.51	*	-6.600E-03	3.274E-02	5.422E-02	3.520E-03	-0.122
		468.07		3.541E-02	7.139E-02	1.071E-01	7.047E-03	0.330
HG-203		70.83		-8.020E-02	1.699E+00	2.563E+00	4.557E-01	-0.031
		72.87		5.737E-01	8.683E-01	1.483E+00	2.562E-01	0.387
		279.20	*	-2.258E-03	3.861E-02	6.497E-02	4.503E-03	-0.035
BI-207	+	72.81		1.129E-01	1.971E-01	3.371E-01	3.865E-02	0.335
		74.97		8.317E-01	1.805E-01	2.696E-01	3.087E-02	3.085
		569.70		3.554E-02	3.427E-02	5.786E-02	3.125E-03	0.614
		1063.66	*	-1.245E-02	5.735E-02	8.999E-02	6.400E-03	-0.138
PB-210		1770.23		7.181E-01	4.356E-01	8.818E-01	5.357E-02	0.814
		46.54	*	5.194E+00	8.458E+00	1.478E+01	1.290E+00	0.352
		404.85	*	-2.332E-01	6.771E-01	1.076E+00	5.159E-01	-0.217
PB-211		427.09		5.340E-01	1.621E+00	2.685E+00	1.230E+00	0.199
		832.01		-4.017E-01	1.114E+00	1.760E+00	9.089E-01	-0.228
		271.23		8.868E-01	4.606E-01	4.737E-01	4.110E-02	1.872
RN-219	+	401.81	*	-2.188E-01	3.827E-01	5.981E-01	7.997E-02	-0.366
		81.07		-3.281E-01	2.510E-01	3.492E-01	4.048E-02	-0.940
		83.79		2.460E-01	1.441E-01	2.283E-01	2.678E-02	1.078
RA-223		94.87		8.199E-01	4.774E-01	7.610E-01	7.846E-02	1.077
		144.24		7.138E-01	6.819E-01	1.153E+00	8.989E-02	0.619

## ---- 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		1.260E-01	3.912E-01	6.436E-01	4.825E-02	0.196
	+	269.46		6.891E-01	3.560E-01	3.767E-01	2.595E-02	1.829
		323.87	*	8.401E-02	6.804E-01	1.011E+00	1.653E-01	0.083
	+	338.28		5.822E+00	1.769E+00	2.409E+00	2.537E-01	2.417
		79.69		4.687E-01	1.366E+00	2.085E+00	3.933E-01	0.225
		235.96		3.085E-02	1.619E-01	2.308E-01	2.025E-02	0.134
		256.23	*	-9.311E-02	2.504E-01	4.173E-01	4.485E-02	-0.223
TH-227	+	299.98		3.187E+00	1.246E+00	1.684E+00	1.921E-01	1.893
		304.50		-5.766E-03	1.672E+00	2.473E+00	3.844E-01	-0.002
		334.37		1.950E+00	2.367E+00	2.798E+00	4.042E-01	0.697
		79.80		6.312E-01	1.801E+00	2.746E+00	6.340E-01	0.230
		235.96		3.085E-02	1.619E-01	2.308E-01	1.864E-02	0.134
		256.23	*	-9.311E-02	2.505E-01	4.173E-01	5.202E-02	-0.223
	+	299.98		3.187E+00	1.246E+00	1.684E+00	1.921E-01	1.893
TH-229		304.50		-5.766E-03	1.672E+00	2.473E+00	3.844E-01	-0.002
		334.37		1.950E+00	2.367E+00	2.798E+00	4.042E-01	0.697
		85.43		2.428E-01	2.398E-01	3.727E-01	4.411E-02	0.651
	+	88.47		5.573E-01	1.491E-01	2.388E-01	2.838E-02	2.334
		193.51	*	-5.961E-02	5.293E-01	8.446E-01	5.481E-02	-0.071
	+	210.85		2.008E+00	1.284E+00	1.558E+00	1.024E-01	1.289
		283.69	*	1.038E+00	1.369E+00	2.380E+00	3.215E-01	0.436
PA-231	+	301.36		2.047E+00	7.966E-01	1.092E+00	1.178E-01	1.876
TH-231		81.07		-3.281E-01	2.510E-01	3.492E-01	4.048E-02	-0.940
		83.79		2.460E-01	1.441E-01	2.283E-01	2.678E-02	1.078
		94.87		8.199E-01	4.774E-01	7.610E-01	7.846E-02	1.077
		144.24		7.138E-01	6.819E-01	1.153E+00	8.989E-02	0.619
		154.21		1.260E-01	3.912E-01	6.436E-01	4.825E-02	0.196
	+	269.46		6.891E-01	3.560E-01	3.767E-01	2.595E-02	1.829
		323.87	*	8.401E-02	6.804E-01	1.011E+00	1.653E-01	0.083
PA-233	+	338.28		5.822E+00	1.769E+00	2.409E+00	2.537E-01	2.417
	+	300.13		1.442E+00	5.744E-01	7.591E-01	1.043E-01	1.900
		311.90	*	-9.669E-03	5.930E-02	9.849E-02	6.718E-03	-0.098
		340.48		1.696E+00	8.536E-01	1.262E+00	2.945E-01	1.344
	PA-234	94.67		4.183E-01	1.826E-01	2.885E-01	3.942E-02	1.450
		98.44		6.682E-02	9.669E-02	1.523E-01	8.524E-02	0.439
		111.00		-7.169E-02	1.806E-01	2.931E-01	3.405E-02	-0.245
PA-234M		131.20		3.508E-02	1.101E-01	1.640E-01	1.100E-02	0.214
		569.50		2.428E-01	3.051E-01	5.074E-01	2.741E-02	0.478
		733.00		2.159E-01	4.231E-01	6.456E-01	1.372E-01	0.334
		880.51		-3.028E-02	2.842E-01	4.638E-01	3.686E-02	-0.065
		883.24		-5.555E-02	2.935E-01	4.713E-01	3.164E-01	-0.118
		926.50		-6.200E-02	1.887E-01	2.995E-01	7.518E-02	-0.207
		946.00	*	-1.240E-01	3.029E-01	4.752E-01	8.782E-02	-0.261
TH-234		949.00		8.507E-02	4.510E-01	7.517E-01	5.988E-02	0.113
	PA-234M	766.42		9.211E+00	1.402E+01	2.049E+01	1.032E+01	0.450
		1001.03	*	-2.359E+00	5.094E+00	7.962E+00	7.259E-01	-0.296
	+	63.29	*	-1.887E-01	1.783E+00	2.971E+00	5.980E-01	-0.064
		92.59		3.187E+00	1.275E+00	1.333E+00	3.069E-01	2.392
	U-238	63.29	*	-1.887E-01	1.783E+00	2.971E+00	5.980E-01	-0.064

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Activity Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NP-239	+	92.59		3.187E+00	1.098E+00	1.333E+00	1.441E-01	2.392
		99.53		2.136E-01	1.629E-01	2.818E-01	2.664E-02	0.758
		103.37		-4.874E-02	9.748E-02	1.580E-01	1.402E-02	-0.308
		106.12		4.325E-03	8.095E-02	1.342E-01	1.142E-02	0.032
		117.23	*	-1.735E-01	3.937E-01	6.363E-01	4.669E-02	-0.273
		228.18		1.040E-01	2.220E-01	3.607E-01	2.394E-02	0.288
AM-241		277.60		2.518E-01	1.738E-01	3.106E-01	2.066E-02	0.811
		59.54	*	9.625E-02	2.149E-01	3.698E-01	4.668E-02	0.260
CM-247		278.00		8.258E-01	7.429E-01	1.311E+00	8.721E-02	0.630
		287.50		-4.453E-01	1.177E+00	1.945E+00	1.288E-01	-0.229
CF-249		402.40	*	-2.000E-02	3.520E-02	5.517E-02	3.114E-03	-0.362
		252.80		5.965E-02	8.953E-01	1.524E+00	1.018E-01	0.039
		333.37		1.535E-01	2.454E-01	2.850E-01	1.804E-02	0.539
CF-251		388.16	*	-2.751E-02	3.767E-02	5.928E-02	3.366E-03	-0.464
		177.52	*	-9.285E-02	1.310E-01	2.043E-01	1.308E-02	-0.455
		227.38		-1.295E-01	3.725E-01	5.815E-01	3.858E-02	-0.223
		285.41		-1.404E+00	2.122E+00	3.456E+00	2.291E-01	-0.406

# VAX/VMS Nuclide Identification Report Generated

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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*                                     *                                       *
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797004      *
* Acquisition date   : 5-MAR-2010 10:29:54 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 02:00:01.49 Half life ratio : 8.000              *
*****
*                                     SAMPLE DATA                            *
*                                     *                                       *
* Sample date       : 17-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID        : G247797004 Analyst initials: MXR1                   *
* Batch Number     : 957136 Sample Quantity : 1.3846E+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 :                               *
*****

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## Combined Activity-MDA Report

### ---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM )	Act error	MDA (pCi/GRAM )	
K-40	3.907E+01	3.344E+00	5.113E-01	0.000E+00
CD-109	3.703E+00	9.708E-01	1.358E+00	0.000E+00
SN-126	3.615E-01	9.478E-02	1.336E-01	0.000E+00
TL-208	5.469E-01	9.578E-02	5.740E-02	0.000E+00
BI-211	4.608E+00	5.520E-01	3.096E-01	0.000E+00
BI-212	1.823E+00	8.069E-01	8.577E-01	0.000E+00
PB-212	1.998E+00	1.976E-01	9.182E-02	0.000E+00
BI-214	1.324E+00	2.117E-01	1.132E-01	0.000E+00
PB-214	1.673E+00	2.198E-01	1.126E-01	0.000E+00
RA-224	4.579E+00	1.376E+00	9.842E-01	0.000E+00
RA-226	1.324E+00	2.117E-01	1.132E-01	0.000E+00
AC-228	1.972E+00	3.954E-01	2.263E-01	0.000E+00
RA-228	1.972E+00	3.954E-01	2.263E-01	0.000E+00
TH-228	1.998E+00	1.976E-01	9.182E-02	0.000E+00
TH-232	1.972E+00	3.954E-01	2.263E-01	0.000E+00
U-235	1.608E-01	1.993E-01	3.561E-01	0.000E+00
NP-237	1.079E+00	3.593E-01	4.629E-01	0.000E+00
ANH-511	1.033E-01	6.358E-02	4.808E-02	0.000E+00

### ---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	-2.090E-01	2.999E-01	4.845E-01	0.000E+00 NOT IDENT.
NA-22	-2.483E-02	4.477E-02	7.287E-02	0.000E+00 NOT IDENT.
NA-24	0.000E+00	1.500E+06	0.000E+00	0.000E+00 SHORT HLIF
SC-46	2.974E-02	3.989E-02	7.212E-02	0.000E+00 FAIL ABUN
V-48	1.494E-02	7.265E-02	1.249E-01	0.000E+00 NOT IDENT.
CR-51	4.374E-02	3.431E-01	6.102E-01	0.000E+00 NOT IDENT.
MN-54	3.266E-02	4.020E-02	7.274E-02	0.000E+00 NOT IDENT.
CO-56	-5.049E-04	3.944E-02	6.741E-02	0.000E+00 NOT IDENT.
CO-57	-3.388E-04	2.438E-02	4.305E-02	0.000E+00 NOT IDENT.

CO-58	-4.627E-02	3.775E-02	5.746E-02	0.000E+00	NOT IDENT.
FE-59	7.132E-02	1.014E-01	1.791E-01	0.000E+00	NOT IDENT.
CO-60	-4.249E-04	3.948E-02	6.744E-02	0.000E+00	NOT IDENT.
ZN-65	-3.394E-02	1.140E-01	1.574E-01	0.000E+00	NOT IDENT.
SE-75	5.953E-03	4.498E-02	7.184E-02	0.000E+00	NOT IDENT.
SR-85	0.000E+00	4.250E-02	7.255E-02	0.000E+00	NOT IDENT.
Y-88	1.695E-02	2.867E-02	5.338E-02	0.000E+00	NOT IDENT.
Y-91	-8.231E+00	2.528E+01	4.059E+01	0.000E+00	NOT IDENT.
NB-94	2.692E-02	3.368E-02	6.173E-02	0.000E+00	NOT IDENT.
NB-95	1.579E-02	4.856E-02	7.530E-02	0.000E+00	NOT IDENT.
NB-95M	3.738E-02	1.324E-01	2.016E-01	0.000E+00	NOT IDENT.
ZR-95	-1.719E-02	6.995E-02	1.186E-01	0.000E+00	NOT IDENT.
MO-99	-6.356E+00	1.347E+01	2.235E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	3.518E+17	0.000E+00	0.000E+00	SHORT HLIF
RU-103	-5.724E-03	3.957E-02	6.660E-02	0.000E+00	FAIL ABUN
RH-106	-1.654E-01	3.095E-01	4.909E-01	0.000E+00	NOT IDENT.
RU-106	-1.654E-01	3.090E-01	4.909E-01	0.000E+00	NOT IDENT.
AG-108M	-8.499E-05	2.812E-02	4.841E-02	0.000E+00	NOT IDENT.
AG-110M	-8.495E-03	3.407E-02	5.865E-02	0.000E+00	NOT IDENT.
SN-113	5.906E-02	4.072E-02	7.673E-02	0.000E+00	NOT IDENT.
CD-115	-7.912E+00	1.383E+01	2.230E+01	0.000E+00	NOT IDENT.
SN-117M	7.526E-03	5.392E-02	9.409E-02	0.000E+00	NOT IDENT.
TE-123M	-1.178E-03	2.710E-02	4.692E-02	0.000E+00	NOT IDENT.
SB-124	-2.126E-02	7.313E-02	1.150E-01	0.000E+00	NOT IDENT.
SB-125	6.577E-02	9.101E-02	1.637E-01	0.000E+00	FAIL ABUN
TE-125M	3.144E+00	9.385E+00	1.671E+01	0.000E+00	NOT IDENT.
I-126	7.432E-02	2.237E-01	4.003E-01	0.000E+00	NOT IDENT.
SB-126	-5.456E-03	1.554E-01	2.543E-01	0.000E+00	NOT IDENT.
SB-127	8.707E-01	1.459E+00	2.653E+00	0.000E+00	NOT IDENT.
I-131	3.005E-02	1.131E-01	2.009E-01	0.000E+00	NOT IDENT.
TE-132	4.053E-01	8.784E-01	1.512E+00	0.000E+00	NOT IDENT.
BA-133	8.033E-03	4.168E-02	6.521E-02	0.000E+00	NOT IDENT.
I-133	0.000E+00	1.025E+04	0.000E+00	0.000E+00	SHORT HLIF
CS-134	0.000E+00	1.044E-01	9.539E-02	0.000E+00	FAIL ABUN
CS-135	2.245E-01	1.709E-01	2.897E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	5.612E+16	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-6.650E-02	1.182E-01	1.872E-01	0.000E+00	NOT IDENT.
BA-137M	-3.845E-02	3.501E-02	5.746E-02	0.000E+00	NOT IDENT.
CS-137	-4.062E-02	3.698E-02	6.070E-02	0.000E+00	NOT IDENT.
CE-139	1.387E-02	2.772E-02	4.897E-02	0.000E+00	NOT IDENT.
BA-140	-2.203E-03	2.647E-01	4.467E-01	0.000E+00	NOT IDENT.
LA-140	-2.028E-02	9.622E-02	1.568E-01	0.000E+00	FAIL ABUN
CE-141	2.664E-02	6.288E-02	1.115E-01	0.000E+00	NOT IDENT.
CE-143	0.000E+00	2.435E+02	0.000E+00	0.000E+00	SHORT HLIF
CE-144	-1.722E-01	2.124E-01	3.161E-01	0.000E+00	NOT IDENT.
PM-144	7.130E-03	3.471E-02	5.834E-02	0.000E+00	NOT IDENT.
PR-144	3.506E-01	2.612E+00	4.368E+00	0.000E+00	NOT IDENT.
PM-146	4.730E-03	4.273E-02	7.380E-02	0.000E+00	NOT IDENT.
ND-147	4.151E-01	5.232E-01	9.370E-01	0.000E+00	FAIL ABUN
PM-149	-9.231E+01	1.137E+02	1.933E+02	0.000E+00	NOT IDENT.
EU-152	1.328E-02	9.791E-02	1.609E-01	0.000E+00	NOT IDENT.
GD-153	-1.254E-01	9.339E-02	1.382E-01	0.000E+00	NOT IDENT.
EU-154	-5.998E-02	1.267E-01	2.079E-01	0.000E+00	NOT IDENT.
EU-155	1.651E-01	9.982E-02	1.876E-01	0.000E+00	FAIL ABUN
TB-160	-1.921E-02	1.411E-01	2.377E-01	0.000E+00	FAIL ABUN
HO-166M	3.513E-02	6.440E-02	1.160E-01	0.000E+00	NOT IDENT.
TA-182	1.693E-01	2.203E-01	3.998E-01	0.000E+00	FAIL ABUN
IR-192	-6.600E-03	3.209E-02	5.609E-02	0.000E+00	FAIL ABUN
HG-203	-2.258E-03	3.784E-02	6.737E-02	0.000E+00	NOT IDENT.
BI-207	-1.245E-02	5.620E-02	9.088E-02	0.000E+00	FAIL ABUN
PB-210	5.194E+00	8.289E+00	1.584E+01	0.000E+00	NOT IDENT.
PB-211	-2.332E-01	6.636E-01	1.108E+00	0.000E+00	NOT IDENT.
RN-219	-2.188E-01	3.751E-01	6.159E-01	0.000E+00	FAIL ABUN
RA-223	8.401E-02	6.668E-01	1.046E+00	0.000E+00	FAIL ABUN
AC-227	-9.311E-02	2.454E-01	4.334E-01	0.000E+00	FAIL ABUN
TH-227	-9.311E-02	2.455E-01	4.334E-01	0.000E+00	FAIL ABUN
TH-229	-5.961E-02	5.187E-01	8.820E-01	0.000E+00	FAIL ABUN
PA-231	1.038E+00	1.341E+00	2.467E+00	0.000E+00	FAIL ABUN
TH-231	8.401E-02	6.668E-01	1.046E+00	0.000E+00	FAIL ABUN
PA-233	-9.669E-03	5.811E-02	1.019E-01	0.000E+00	FAIL ABUN
PA-234	-1.240E-01	2.968E-01	4.810E-01	0.000E+00	NOT IDENT.
PA-234M	-2.359E+00	4.992E+00	8.050E+00	0.000E+00	NOT IDENT.
TH-234	-1.887E-01	1.748E+00	3.168E+00	0.000E+00	FAIL ABUN
U-238	-1.887E-01	1.748E+00	3.168E+00	0.000E+00	FAIL ABUN
NP-239	-1.735E-01	3.858E-01	6.708E-01	0.000E+00	NOT IDENT.
AM-241	9.625E-02	2.106E-01	3.947E-01	0.000E+00	NOT IDENT.
CM-247	-2.000E-02	3.449E-02	5.681E-02	0.000E+00	NOT IDENT.
CF-249	-2.751E-02	3.691E-02	6.108E-02	0.000E+00	NOT IDENT.



CF-251	-9.285E-02	1.284E-01	2.137E-01	0.000E+00 NOT IDENT.
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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797004.CNF;1
Sample date        : 17-FEB-2010 12:00:00 Acquisition date : 5-MAR-2010 10:29:54.
Sample ID          : G247797004 Sample quantity : 1.38460E+02 GRAM
Detector name      : GAM04 Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00 Elapsed real time: 0 02:00:01.49 0.0%
Energy tolerance   : 1.50000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 957136 Detector SN# :
Matrix Spike ID    : LCS ID : 1032-A
*****

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## Nuclide Line Activity Report

## Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	1650	10.66*	1.074E+00	3.907E+01	3.907E+01	8.73
CD-109	88.03	247	3.70*	5.016E+00	3.615E+00	3.703E+00	26.76
SN-126	64.28	-----	9.60	2.203E+00	-----	Line Not Found	-----
	86.94	247	8.90	5.016E+00	1.503E+00	1.503E+00	48.50
	87.57	247	37.00*	5.016E+00	3.615E-01	3.615E-01	26.76
TL-208	277.37	-----	6.60	4.326E+00	-----	Line Not Found	-----
	583.19	421	85.00*	2.453E+00	5.469E-01	5.469E-01	17.87
	860.56	64	12.50	1.742E+00	8.028E-01	8.028E-01	59.03
BI-211	72.87	-----	1.23	3.384E+00	-----	Line Not Found	-----
	351.06	796	12.92*	3.624E+00	4.608E+00	4.608E+00	12.22
BI-212	727.33	91	6.67*	2.032E+00	1.823E+00	1.823E+00	45.18
	785.37	65	1.10	1.895E+00	8.400E+00	8.400E+00	56.73
	1620.50	-----	1.47	9.986E-01	-----	Line Not Found	-----
PB-212	74.82	398	10.28	3.642E+00	2.885E+00	2.885E+00	23.78
	77.11	552	17.10	3.923E+00	2.229E+00	2.229E+00	18.35
	238.63	1550	43.60*	4.823E+00	1.998E+00	1.998E+00	10.09
	300.09	144	3.30	4.081E+00	2.897E+00	2.897E+00	38.44
BI-214	609.32	525	45.49*	2.365E+00	1.324E+00	1.324E+00	16.32
	1120.29	115	14.92	1.356E+00	1.543E+00	1.543E+00	40.86
	1764.49	-----	15.30	9.529E-01	-----	Line Not Found	-----
PB-214	74.82	398	5.80	3.642E+00	5.114E+00	5.114E+00	23.10
	77.11	552	9.70	3.923E+00	3.930E+00	3.930E+00	20.12
	242.00	331	7.25	4.783E+00	2.589E+00	2.589E+00	31.21
	295.22	430	18.42	4.130E+00	1.533E+00	1.533E+00	16.29
	351.93	796	35.60*	3.624E+00	1.672E+00	1.673E+00	13.41
RA-224	240.99	331	4.10*	4.783E+00	4.579E+00	4.579E+00	30.67
RA-226	609.32	525	45.49*	2.365E+00	1.324E+00	1.324E+00	16.32
	1120.29	115	14.92	1.356E+00	1.543E+00	1.543E+00	40.86
	1764.49	-----	15.30	9.529E-01	-----	Line Not Found	-----
AC-228	338.32	228	11.27	3.733E+00	1.467E+00	1.467E+00	50.17
	911.20	310	25.80*	1.651E+00	1.972E+00	1.972E+00	20.46
	968.97	126	15.80	1.557E+00	1.385E+00	1.385E+00	55.35

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
RA-228	338.32	228	11.27	3.733E+00	1.467E+00	1.467E+00	50.17
	911.20	310	25.80*	1.651E+00	1.972E+00	1.972E+00	20.46
	968.97	126	15.80	1.557E+00	1.385E+00	1.385E+00	55.35
TH-228	74.82	398	10.28	3.642E+00	2.885E+00	2.885E+00	21.73
	77.11	552	17.10	3.923E+00	2.229E+00	2.229E+00	18.35
	238.63	1550	43.60*	4.823E+00	1.998E+00	1.998E+00	10.09
TH-232	300.09	144	3.30	4.081E+00	2.897E+00	2.897E+00	71.51
	338.32	228	11.27	3.733E+00	1.467E+00	1.467E+00	29.18
	911.20	310	25.80*	1.651E+00	1.972E+00	1.972E+00	20.46
U-235	968.97	126	15.80	1.557E+00	1.385E+00	1.385E+00	55.35
	89.96	164	3.47	5.256E+00	2.432E+00	2.432E+00	46.28
	93.35	273	5.60	5.481E+00	2.408E+00	2.408E+00	40.56
	143.76	-----	10.96*	6.399E+00	-----	Line Not Found	-----
	163.33	-----	5.08	6.104E+00	-----	Line Not Found	-----
	205.31	239	57.20	5.694E+00	1.991E-01	1.991E-01	37.07
NP-237	185.72	-----	5.01	5.352E+00	-----	Line Not Found	-----
	86.48	247	12.40*	5.016E+00	1.079E+00	1.079E+00	33.99
	95.86	-----	2.68	5.677E+00	-----	Line Not Found	-----
ANH-511	511.00	104	100.00*	2.729E+00	1.033E-01	1.033E-01	62.80

Flag: "\*" = Keyline

Summary of Nuclide Activity  
Sample ID : G247797004

Page : 3  
Acquisition date : 5-MAR-2010 10:29:54

Total number of lines in spectrum 32  
Number of unidentified lines 5  
Number of lines tentatively identified by NID 27 84.38%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	3.907E+01	3.907E+01	0.341E+01	8.73	
CD-109	461.40D	1.02	3.615E+00	3.703E+00	0.991E+00	26.76	
SN-126	2.30E+05Y	1.00	3.615E-01	3.615E-01	0.967E-01	26.76	
TL-208	1.41E+10Y	1.00	5.469E-01	5.469E-01	0.977E-01	17.87	
BI-211	7.04E+08Y	1.00	4.608E+00	4.608E+00	0.563E+00	12.22	
BI-212	1.41E+10Y	1.00	1.823E+00	1.823E+00	0.823E+00	45.18	
PB-212	1.41E+10Y	1.00	1.998E+00	1.998E+00	0.202E+00	10.09	
BI-214	1600.00Y	1.00	1.324E+00	1.324E+00	0.216E+00	16.32	
PB-214	1600.00Y	1.00	1.672E+00	1.673E+00	0.224E+00	13.41	
RA-224	1.41E+10Y	1.00	4.579E+00	4.579E+00	1.404E+00	30.67	
RA-226	1600.00Y	1.00	1.324E+00	1.324E+00	0.216E+00	16.32	
AC-228	1.41E+10Y	1.00	1.972E+00	1.972E+00	0.403E+00	20.46	
RA-228	1.41E+10Y	1.00	1.972E+00	1.972E+00	0.403E+00	20.46	
TH-228	1.41E+10Y	1.00	1.998E+00	1.998E+00	0.202E+00	10.09	
TH-232	1.41E+10Y	1.00	1.972E+00	1.972E+00	0.403E+00	20.46	
U-235	7.04E+08Y	1.00	1.991E-01	1.991E-01	0.738E-01	37.07	K
NP-237	2.14E+06Y	1.00	1.079E+00	1.079E+00	0.367E+00	33.99	
ANH-511	1.00E+09Y	1.00	1.033E-01	1.033E-01	0.649E-01	62.80	

Total Activity : 7.022E+01 7.031E+01

Grand Total Activity : 7.022E+01 7.031E+01

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

Unidentified Energy Lines  
Sample ID : G247797004

Page : 4  
Acquisition date : 5-MAR-2010 10:29:54

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	129.30	90	368	1.49	258.65	255	8	1.24E-02	77.2	6.50E+00	
0	209.62	110	337	1.38	419.30	415	9	1.52E-02	63.6	5.28E+00	T
0	270.25	156	336	1.27	540.58	534	13	2.16E-02	51.2	4.41E+00	T
0	328.62	138	180	1.31	657.32	652	12	1.91E-02	42.8	3.82E+00	T
0	463.20	95	157	1.80	926.49	918	13	1.32E-02	57.8	2.95E+00	T
0	770.45	73	76	4.12	1540.98	1534	15	1.01E-02	59.8	1.93E+00	
0	796.76	53	121	2.47	1593.60	1583	20	7.42E-03	****	1.87E+00	T
0	1442.37	13	15	1.07	2884.64	2880	9	1.76E-03	****	1.09E+00	
0	1731.74	18	12	0.73	3463.22	3456	12	2.50E-03	90.3	9.62E-01	
0	1766.26	86	13	1.82	3532.24	3523	15	1.20E-02	27.5	9.52E-01	

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797004.CNF;1
* Acquisition date   : 5-MAR-2010 10:29:54.  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 02:00:01.49          Half life ratio    : 8.00000
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 17-FEB-2010 12:00:00  Nuclide Library   : SOLID
* Sample ID          : G247797004           Analyst initials: MXR1
* Batch Number       : 957136               Sample Quantity   : 1.38460E+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        :
*****

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## Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	3.907E+01	3.413E+00	5.096E-01	3.622E-02	76.679
CD-109	3.703E+00	9.906E-01	1.281E+00	1.540E-01	2.889
SN-126	3.615E-01	9.671E-02	1.261E-01	1.512E-02	2.868
TL-208	5.469E-01	9.773E-02	5.616E-02	3.524E-03	9.739
BI-211	4.608E+00	5.633E-01	2.999E-01	2.027E-02	15.364
BI-212	1.823E+00	8.234E-01	8.428E-01	8.980E-02	2.162
PB-212	1.998E+00	2.016E-01	8.828E-02	7.141E-03	22.632
BI-214	1.324E+00	2.160E-01	1.109E-01	8.221E-03	11.941
PB-214	1.673E+00	2.243E-01	1.091E-01	9.509E-03	15.331
RA-224	4.579E+00	1.404E+00	9.465E-01	6.310E-02	4.838
RA-226	1.324E+00	2.160E-01	1.109E-01	8.221E-03	11.941
AC-228	1.972E+00	4.034E-01	2.234E-01	2.515E-02	8.827
RA-228	1.972E+00	4.034E-01	2.234E-01	2.515E-02	8.827
TH-228	1.998E+00	2.016E-01	8.828E-02	7.141E-03	22.632
TH-232	1.972E+00	4.034E-01	2.234E-01	2.515E-02	8.827
U-235	1.991E-01	7.382E-02	3.391E-01	5.422E-02	0.587
NP-237	1.079E+00	3.666E-01	4.366E-01	1.053E-01	2.470
ANH-511	1.033E-01	6.488E-02	4.692E-02	2.624E-03	2.202

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	-2.090E-01		3.060E-01	4.721E-01	3.126E-02	-0.443
NA-22	-2.483E-02		4.568E-02	7.243E-02	4.736E-03	-0.343
NA-24	4.934E-01		7.653E-01	Half-Life too short		
SC-46	2.974E-02		4.070E-02	7.116E-02	5.755E-03	0.418
V-48	1.494E-02		7.414E-02	1.234E-01	9.564E-03	0.121
CR-51	4.374E-02		3.501E-01	5.901E-01	4.150E-02	0.074
MN-54	3.266E-02		4.102E-02	7.168E-02	5.187E-03	0.456
CO-56	-5.049E-04		4.024E-02	6.645E-02	4.930E-03	-0.008
CO-57	-3.388E-04		2.488E-02	4.086E-02	2.837E-03	-0.008
CO-58	-4.627E-02		3.852E-02	5.659E-02	3.907E-03	-0.818
FE-59	7.132E-02		1.034E-01	1.775E-01	1.356E-02	0.402
CO-60	-4.249E-04		4.029E-02	6.710E-02	4.598E-03	-0.006
ZN-65	-3.394E-02		1.163E-01	1.560E-01	1.032E-02	-0.218
SE-75	5.953E-03		4.589E-02	6.921E-02	4.657E-03	0.086
SR-85	7.566E-02		4.336E-02	7.080E-02	3.955E-03	1.069
Y-88	1.695E-02		2.926E-02	5.345E-02	3.119E-03	0.317
Y-91	-8.231E+00		2.580E+01	4.030E+01	2.469E+00	-0.204
NB-94	2.692E-02		3.437E-02	6.062E-02	3.266E-03	0.444
NB-95	1.579E-02		4.955E-02	7.408E-02	4.617E-03	0.213
NB-95M	3.738E-02		1.351E-01	1.938E-01	1.595E-02	0.193
ZR-95	-1.719E-02		7.138E-02	1.167E-01	8.545E-03	-0.147
MO-99	-6.356E+00		1.375E+01	2.197E+01	3.173E+00	-0.289
TC-99M	-2.352E+10		1.795E+11	Half-Life too short		
RU-103	-5.724E-03		4.038E-02	6.496E-02	8.018E-03	-0.088
RH-106	-1.654E-01		3.158E-01	4.809E-01	5.437E-02	-0.344
RU-106	-1.654E-01		3.153E-01	4.809E-01	2.471E-02	-0.344
AG-108M	-8.499E-05		2.870E-02	4.709E-02	2.866E-03	-0.002
AG-110M	-8.495E-03		3.477E-02	5.752E-02	3.074E-03	-0.148
SN-113	5.906E-02		4.155E-02	7.449E-02	4.488E-03	0.793
CD-115	-7.912E+00		1.411E+01	2.177E+01	1.208E+00	-0.363
SN-117M	7.526E-03		5.502E-02	8.977E-02	5.742E-03	0.084
TE-123M	-1.178E-03		2.765E-02	4.476E-02	2.893E-03	-0.026
SB-124	-2.126E-02		7.462E-02	1.150E-01	7.844E-03	-0.185
SB-125	6.577E-02		9.286E-02	1.591E-01	9.408E-03	0.413
TE-125M	3.144E+00		9.576E+00	1.583E+01	1.597E+00	0.199
I-126	7.432E-02		2.282E-01	3.927E-01	1.937E-02	0.189
SB-126	-5.456E-03		1.586E-01	2.498E-01	1.404E-02	-0.022
SB-127	8.707E-01		1.489E+00	2.604E+00	2.433E-01	0.334
I-131	3.005E-02		1.154E-01	1.947E-01	1.297E-02	0.154
TE-132	4.053E-01		8.964E-01	1.453E+00	2.180E-01	0.279
BA-133	8.033E-03		4.253E-02	6.319E-02	7.224E-03	0.127
I-133	4.057E-03		5.230E-03	Half-Life too short		
CS-134	1.020E-01	+	1.065E-01	9.391E-02	6.329E-03	1.086
CS-135	2.245E-01		1.744E-01	2.791E-01	2.327E-02	0.804
I-135	-8.712E+09		2.863E+10	Half-Life too short		
CS-136	-6.650E-02		1.206E-01	1.853E-01	1.423E-02	-0.359
BA-137M	-3.845E-02		3.572E-02	5.636E-02	2.749E-03	-0.682
CS-137	-4.062E-02		3.774E-02	5.954E-02	2.921E-03	-0.682

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
CE-139	1.387E-02		2.829E-02	4.676E-02	2.971E-03	0.297
BA-140	-2.203E-03		2.701E-01	4.363E-01	1.451E-01	-0.005
LA-140	-2.028E-02		9.818E-02	1.566E-01	1.031E-02	-0.130
CE-141	2.664E-02		6.416E-02	1.062E-01	7.131E-03	0.251
CE-143	4.533E-04		1.242E-04	Half-Life too short		
CE-144	-1.722E-01		2.167E-01	3.006E-01	4.291E-02	-0.573
PM-144	7.130E-03		3.542E-02	5.728E-02	3.044E-03	0.124
PR-144	3.506E-01		2.665E+00	4.288E+00	2.277E-01	0.082
PM-146	4.730E-03		4.360E-02	7.184E-02	6.012E-03	0.066
ND-147	4.151E-01		5.339E-01	9.150E-01	1.227E-01	0.454
PM-149	-9.231E+01		1.160E+02	1.865E+02	2.710E+01	-0.495
EU-152	1.328E-02		9.990E-02	1.558E-01	1.078E-02	0.085
GD-153	-1.254E-01		9.529E-02	1.307E-01	1.283E-02	-0.960
EU-154	-5.998E-02		1.293E-01	2.066E-01	2.043E-02	-0.290
EU-155	1.651E-01		1.019E-01	1.776E-01	1.548E-02	0.929
TB-160	-1.921E-02		1.440E-01	2.345E-01	1.859E-02	-0.082
HO-166M	3.513E-02		6.571E-02	1.139E-01	6.271E-03	0.308
TA-182	1.693E-01		2.248E-01	3.970E-01	2.471E-02	0.426
IR-192	-6.600E-03		3.274E-02	5.422E-02	3.520E-03	-0.122
HG-203	-2.258E-03		3.861E-02	6.497E-02	4.503E-03	-0.035
BI-207	-1.245E-02		5.735E-02	8.999E-02	6.400E-03	-0.138
PB-210	5.194E+00		8.458E+00	1.478E+01	1.290E+00	0.352
PB-211	-2.332E-01		6.771E-01	1.076E+00	5.159E-01	-0.217
RN-219	-2.188E-01		3.827E-01	5.981E-01	7.997E-02	-0.366
RA-223	8.401E-02		6.804E-01	1.011E+00	1.653E-01	0.083
AC-227	-9.311E-02		2.504E-01	4.173E-01	4.485E-02	-0.223
TH-227	-9.311E-02		2.505E-01	4.173E-01	5.202E-02	-0.223
TH-229	-5.961E-02		5.293E-01	8.446E-01	5.481E-02	-0.071
PA-231	1.038E+00		1.369E+00	2.380E+00	3.215E-01	0.436
TH-231	8.401E-02		6.804E-01	1.011E+00	1.653E-01	0.083
PA-233	-9.669E-03		5.930E-02	9.849E-02	6.718E-03	-0.098
PA-234	-1.240E-01		3.029E-01	4.752E-01	8.782E-02	-0.261
PA-234M	-2.359E+00		5.094E+00	7.962E+00	7.259E-01	-0.296
TH-234	-1.887E-01		1.783E+00	2.971E+00	5.980E-01	-0.064
U-238	-1.887E-01		1.783E+00	2.971E+00	5.980E-01	-0.064
NP-239	-1.735E-01		3.937E-01	6.363E-01	4.669E-02	-0.273
AM-241	9.625E-02		2.149E-01	3.698E-01	4.668E-02	0.260
CM-247	-2.000E-02		3.520E-02	5.517E-02	3.114E-03	-0.362
CF-249	-2.751E-02		3.767E-02	5.928E-02	3.366E-03	-0.464
CF-251	-9.285E-02		1.310E-01	2.043E-01	1.308E-02	-0.455



# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : SYSSYSROOT:[ALPHA.ARCHIVE.GAMMA]G247797004           *
* Acquisition date   : 5-MAR-2010 10:29:54 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 02:00:01.49             Half life ratio : 8.000        *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 17-FEB-2010 12:00:00 Nuclide Library : SOLID           *
* Sample ID          : G247797004              Analyst initials: MXR1         *
* Batch Number       : 957136                  Sample Quantity : 1.3846E+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  :              *
*****

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## Combined Activity-MDA Report

### ---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM )	Act Error	DLC (pCi/GRAM )	TPU
K-40	3.907E+01	3.344E+00	2.558E-01	1.706E+00
CD-109	3.703E+00	9.708E-01	6.794E-01	4.953E-01
SN-126	3.615E-01	9.478E-02	6.684E-02	4.836E-02
TL-208	5.469E-01	9.578E-02	2.872E-02	4.887E-02
BI-211	4.608E+00	5.520E-01	1.549E-01	2.816E-01
BI-212	1.823E+00	8.069E-01	4.291E-01	4.117E-01
PB-212	1.998E+00	1.976E-01	4.593E-02	1.008E-01
BI-214	1.324E+00	2.117E-01	5.665E-02	1.080E-01
PB-214	1.673E+00	2.198E-01	5.634E-02	1.121E-01
RA-224	4.579E+00	1.376E+00	4.924E-01	7.021E-01
RA-226	1.324E+00	2.117E-01	5.665E-02	1.080E-01
AC-228	1.972E+00	3.954E-01	1.132E-01	2.017E-01
RA-228	1.972E+00	3.954E-01	1.132E-01	2.017E-01
TH-228	1.998E+00	1.976E-01	4.593E-02	1.008E-01
TH-232	1.972E+00	3.954E-01	1.132E-01	2.017E-01
U-235	1.608E-01	1.993E-01	1.782E-01	1.017E-01
NP-237	1.079E+00	3.593E-01	2.316E-01	1.833E-01
ANH-511	1.033E-01	6.358E-02	2.405E-02	3.244E-02

### ---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	-2.090E-01	2.999E-01	2.424E-01	1.530E-01 NOT IDENT.
NA-22	-2.483E-02	4.477E-02	3.646E-02	2.284E-02 NOT IDENT.
NA-24	4.934E+05	1.500E+06	0.000E+00	7.653E+05 SHORT HLIF
SC-46	2.974E-02	3.989E-02	3.608E-02	2.035E-02 FAIL ABUN
V-48	1.494E-02	7.265E-02	6.247E-02	3.707E-02 NOT IDENT.
CR-51	4.374E-02	3.431E-01	3.053E-01	1.751E-01 NOT IDENT.
MN-54	3.266E-02	4.020E-02	3.639E-02	2.051E-02 NOT IDENT.
CO-56	-5.049E-04	3.944E-02	3.373E-02	2.012E-02 NOT IDENT.
CO-57	-3.388E-04	2.438E-02	2.154E-02	1.244E-02 NOT IDENT.

CO-58	-4.627E-02	3.775E-02	2.875E-02	1.926E-02	NOT IDENT.
FE-59	7.132E-02	1.014E-01	8.960E-02	5.172E-02	NOT IDENT.
CO-60	-4.249E-04	3.948E-02	3.374E-02	2.014E-02	NOT IDENT.
ZN-65	-3.394E-02	1.140E-01	7.875E-02	5.814E-02	NOT IDENT.
SE-75	5.953E-03	4.498E-02	3.594E-02	2.295E-02	NOT IDENT.
SR-85	7.566E-02	4.250E-02	3.629E-02	2.168E-02	NOT IDENT.
Y-88	1.695E-02	2.867E-02	2.670E-02	1.463E-02	NOT IDENT.
Y-91	-8.231E+00	2.528E+01	2.031E+01	1.290E+01	NOT IDENT.
NB-94	2.692E-02	3.368E-02	3.088E-02	1.718E-02	NOT IDENT.
NB-95	1.579E-02	4.856E-02	3.767E-02	2.477E-02	NOT IDENT.
NB-95M	3.738E-02	1.324E-01	1.009E-01	6.757E-02	NOT IDENT.
ZR-95	-1.719E-02	6.995E-02	5.934E-02	3.569E-02	NOT IDENT.
MO-99	-6.356E+00	1.347E+01	1.118E+01	6.874E+00	NOT IDENT.
TC-99M	-2.352E+16	3.518E+17	0.000E+00	0.000E+00	SHORT HLIF
RU-103	-5.724E-03	3.957E-02	3.332E-02	2.019E-02	FAIL ABUN
RH-106	-1.654E-01	3.095E-01	2.456E-01	1.579E-01	NOT IDENT.
RU-106	-1.654E-01	3.090E-01	2.456E-01	1.577E-01	NOT IDENT.
AG-108M	-8.499E-05	2.812E-02	2.422E-02	1.435E-02	NOT IDENT.
AG-110M	-8.495E-03	3.407E-02	2.934E-02	1.738E-02	NOT IDENT.
SN-113	5.906E-02	4.072E-02	3.839E-02	2.078E-02	NOT IDENT.
CD-115	-7.912E+00	1.383E+01	1.116E+01	7.055E+00	NOT IDENT.
SN-117M	7.526E-03	5.392E-02	4.708E-02	2.751E-02	NOT IDENT.
TE-123M	-1.178E-03	2.710E-02	2.347E-02	1.383E-02	NOT IDENT.
SB-124	-2.126E-02	7.313E-02	5.754E-02	3.731E-02	NOT IDENT.
SB-125	6.577E-02	9.101E-02	8.188E-02	4.643E-02	FAIL ABUN
TE-125M	3.144E+00	9.385E+00	8.362E+00	4.788E+00	NOT IDENT.
I-126	7.432E-02	2.237E-01	2.003E-01	1.141E-01	NOT IDENT.
SB-126	-5.456E-03	1.554E-01	1.272E-01	7.928E-02	NOT IDENT.
SB-127	8.707E-01	1.459E+00	1.327E+00	7.444E-01	NOT IDENT.
I-131	3.005E-02	1.131E-01	1.005E-01	5.772E-02	NOT IDENT.
TE-132	4.053E-01	8.784E-01	7.565E-01	4.482E-01	NOT IDENT.
BA-133	8.033E-03	4.168E-02	3.263E-02	2.126E-02	NOT IDENT.
I-133	4.057E+03	1.025E+04	0.000E+00	5.230E+03	SHORT HLIF
CS-134	1.020E-01	1.044E-01	4.772E-02	5.326E-02	FAIL ABUN
CS-135	2.245E-01	1.709E-01	1.449E-01	8.719E-02	NOT IDENT.
I-135	-8.712E+15	5.612E+16	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-6.650E-02	1.182E-01	9.364E-02	6.029E-02	NOT IDENT.
BA-137M	-3.845E-02	3.501E-02	2.875E-02	1.786E-02	NOT IDENT.
CS-137	-4.062E-02	3.698E-02	3.037E-02	1.887E-02	NOT IDENT.
CE-139	1.387E-02	2.772E-02	2.450E-02	1.414E-02	NOT IDENT.
BA-140	-2.203E-03	2.647E-01	2.235E-01	1.350E-01	NOT IDENT.
LA-140	-2.028E-02	9.622E-02	7.844E-02	4.909E-02	FAIL ABUN
CE-141	2.664E-02	6.288E-02	5.579E-02	3.208E-02	NOT IDENT.
CE-143	4.533E+02	2.435E+02	0.000E+00	1.242E+02	SHORT HLIF
CE-144	-1.722E-01	2.124E-01	1.581E-01	1.084E-01	NOT IDENT.
PM-144	7.130E-03	3.471E-02	2.918E-02	1.771E-02	NOT IDENT.
PR-144	3.506E-01	2.612E+00	2.185E+00	1.332E+00	NOT IDENT.
PM-146	4.730E-03	4.273E-02	3.692E-02	2.180E-02	NOT IDENT.
ND-147	4.151E-01	5.232E-01	4.688E-01	2.669E-01	FAIL ABUN
PM-149	-9.231E+01	1.137E+02	9.669E+01	5.801E+01	NOT IDENT.
EU-152	1.328E-02	9.791E-02	8.052E-02	4.995E-02	NOT IDENT.
GD-153	-1.254E-01	9.339E-02	6.914E-02	4.765E-02	NOT IDENT.
EU-154	-5.998E-02	1.267E-01	1.040E-01	6.465E-02	NOT IDENT.
EU-155	1.651E-01	9.982E-02	9.387E-02	5.093E-02	FAIL ABUN
TB-160	-1.921E-02	1.411E-01	1.189E-01	7.201E-02	FAIL ABUN
HO-166M	3.513E-02	6.440E-02	5.803E-02	3.286E-02	NOT IDENT.
TA-182	1.693E-01	2.203E-01	2.000E-01	1.124E-01	FAIL ABUN
IR-192	-6.600E-03	3.209E-02	2.806E-02	1.637E-02	FAIL ABUN
HG-203	-2.258E-03	3.784E-02	3.370E-02	1.930E-02	NOT IDENT.
BI-207	-1.245E-02	5.620E-02	4.547E-02	2.868E-02	FAIL ABUN
PB-210	5.194E+00	8.289E+00	7.927E+00	4.229E+00	NOT IDENT.
PB-211	-2.332E-01	6.636E-01	5.541E-01	3.386E-01	NOT IDENT.
RN-219	-2.188E-01	3.751E-01	3.081E-01	1.914E-01	FAIL ABUN
RA-223	8.401E-02	6.668E-01	5.232E-01	3.402E-01	FAIL ABUN
AC-227	-9.311E-02	2.454E-01	2.168E-01	1.252E-01	FAIL ABUN
TH-227	-9.311E-02	2.455E-01	2.168E-01	1.253E-01	FAIL ABUN
TH-229	-5.961E-02	5.187E-01	4.413E-01	2.647E-01	FAIL ABUN
PA-231	1.038E+00	1.341E+00	1.234E+00	6.843E-01	FAIL ABUN
TH-231	8.401E-02	6.668E-01	5.232E-01	3.402E-01	FAIL ABUN
PA-233	-9.669E-03	5.811E-02	5.099E-02	2.965E-02	FAIL ABUN
PA-234	-1.240E-01	2.968E-01	2.406E-01	1.514E-01	NOT IDENT.
PA-234M	-2.359E+00	4.992E+00	4.027E+00	2.547E+00	NOT IDENT.
TH-234	-1.887E-01	1.748E+00	1.585E+00	8.916E-01	FAIL ABUN
U-238	-1.887E-01	1.748E+00	1.585E+00	8.916E-01	FAIL ABUN
NP-239	-1.735E-01	3.858E-01	3.356E-01	1.968E-01	NOT IDENT.
AM-241	9.625E-02	2.106E-01	1.975E-01	1.075E-01	NOT IDENT.
CM-247	-2.000E-02	3.449E-02	2.842E-02	1.760E-02	NOT IDENT.
CF-249	-2.751E-02	3.691E-02	3.056E-02	1.883E-02	NOT IDENT.

CF-251

-9.285E-02

1.284E-01

1.069E-01

6.552E-02 NOT IDENT.

\*\*\*\*\*  
 \* GEL Laboratories LLC \*  
 \* 2040 SAVAGE ROAD \*  
 \* CHARLESTON, SC 29417 \*  
 \* GAMMA SPECTROSCOPY BACKGROUND REPORT \*  
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ENERGY	MDA COUNTS
46.54	227.0500
49.72	261.9172
57.36	0.0000
59.54	253.0437
63.29	315.2704
63.29	315.2704
64.28	266.7931
67.75	338.5239
69.67	345.4828
70.83	340.9443
72.81	342.4740
72.87	342.5198
72.87	342.5198
74.82	344.0037
74.82	344.0037
74.82	344.0037
74.97	344.1162
77.11	345.7222
77.11	345.7222
77.11	345.7222
79.69	322.6002
79.80	322.6746
80.12	357.6857
80.19	357.7377
80.57	376.1341
81.00	412.7248
81.07	412.7835
81.07	412.7835
83.79	333.7669
83.79	333.7669
85.43	379.9017
86.48	451.2036
86.55	451.2671
86.79	438.7816
86.94	438.9145
87.57	348.5574
88.03	348.8736
88.47	349.1766
89.96	350.1947
91.11	350.9738
92.59	351.9713
92.59	351.9713
93.35	352.4794
94.67	269.3163
94.87	275.1504
94.87	275.1504
95.86	327.3447
97.43	348.4566
98.44	283.7061
99.53	274.6340
100.11	258.5236
103.18	327.8432
103.37	309.5180
105.31	251.1868
106.12	296.3895
109.28	280.3588
111.00	320.5033
111.76	320.9112
116.30	304.4860
117.23	313.8865
121.12	301.8571
121.78	299.1703
122.06	299.3026
123.07	303.7891
131.20	280.1918
133.52	316.3086
136.00	282.1908

136.47	264.9913
140.51	316.9702
140.51	0.0000
143.76	314.2979
144.24	310.3729
144.24	310.3729
145.44	319.1853
152.43	309.7064
153.25	310.0496
154.21	314.6423
154.21	314.6423
156.02	338.5350
158.56	277.4336
159.00	283.9271
162.66	266.1921
163.33	266.4219
165.86	252.3766
176.60	289.2265
177.52	303.5934
181.07	261.7097
184.41	267.9789
185.72	254.2085
193.51	275.2228
197.04	276.3240
205.31	297.8300
210.85	235.6561
215.65	241.3704
222.11	239.5944
227.38	261.4384
228.16	230.7967
228.18	230.8008
235.69	229.6612
235.96	233.1766
235.96	233.1766
238.63	217.0480
238.63	217.0480
240.99	217.5471
242.00	217.7613
244.70	218.3293
252.40	194.7784
252.80	193.0959
256.23	222.7725
256.23	222.7725
260.90	181.2862
264.66	168.9533
268.22	188.0130
269.46	198.7387
269.46	198.7387
271.23	199.0517
273.65	249.0375
276.40	182.9264
277.37	180.3896
277.60	178.6312
278.00	188.5693
279.20	205.8470
279.54	225.6878
280.46	220.4723
283.69	158.8232
284.31	171.5468
285.41	197.0136
285.90	198.0009
287.50	182.8806
293.27	0.0000
295.22	161.2948
295.96	161.3947
298.57	161.7431
299.98	161.9322
299.98	161.9322
300.09	161.9484
300.09	161.9484
300.13	161.9538
301.36	162.1159
302.85	158.4642
304.50	152.8008
304.50	152.8008
304.85	152.8439
308.46	134.5002
311.90	147.8076

316.51	151.1337
319.41	150.5500
320.08	142.2609
323.87	147.7193
323.87	147.7193
328.76	156.3306
333.37	124.0058
334.37	124.1005
334.37	124.1005
338.28	160.2985
338.28	160.2985
338.32	160.3036
338.32	160.3036
338.32	160.3036
340.48	170.7663
340.55	170.7746
344.28	141.4469
351.06	124.7055
351.93	124.7834
356.01	117.7032
364.49	117.2697
366.42	126.0947
383.85	116.9202
388.16	131.9225
388.63	139.7837
391.69	93.0561
400.66	114.3096
401.81	116.3705
402.40	117.4021
404.85	121.5436
410.95	108.1401
414.70	110.3936
423.72	142.0412
427.09	127.3101
427.87	113.3311
433.94	109.7368
453.88	118.2196
463.37	96.7537
468.07	88.8007
473.00	99.9839
476.78	98.1369
477.60	102.3188
487.02	85.2081
492.35	84.4249
497.08	101.3707
511.00	103.2113
514.00	91.1441
527.90	91.4065
529.87	0.0000
531.02	64.9428
537.26	86.5223
546.56	0.0000
563.25	80.1177
569.33	81.4522
569.50	90.1480
569.70	85.8108
583.19	86.3918
600.60	91.5437
602.73	100.1019
604.72	122.0067
609.32	89.7135
609.32	89.7135
610.33	89.7580
614.28	79.9343
618.01	64.5066
621.93	86.9097
621.93	86.9097
633.25	66.0887
635.95	77.3871
636.99	76.3008
645.85	94.6384
657.76	89.7139
661.66	86.2399
661.66	86.2399
664.57	0.0000
666.33	82.7820
666.50	80.0594
677.62	77.7119

685.70	69.7304
695.00	67.2470
696.49	71.8996
696.51	73.7441
697.00	78.3698
702.65	80.4070
706.68	109.2451
711.68	88.1394
720.70	80.3245
721.93	0.0000
722.78	71.4632
722.91	71.4670
723.31	85.4631
724.19	82.3855
727.33	82.1820
733.00	68.6462
735.93	70.2905
739.50	66.6405
747.24	73.4411
752.31	67.9324
753.82	60.4203
756.73	74.6700
763.94	66.3547
765.81	82.2148
766.42	80.6525
777.92	68.3125
778.90	71.5173
783.70	55.7286
785.37	64.5287
795.86	57.5933
801.95	70.5565
810.29	71.4255
810.76	76.2651
815.77	70.6083
818.51	73.5860
832.01	87.5830
834.85	75.9853
836.80	0.0000
846.77	65.5589
856.80	73.6560
860.56	55.7273
871.09	65.1524
873.19	58.2870
875.33	0.0000
879.36	63.3656
880.51	61.4112
883.24	62.4617
884.68	67.4538
889.28	53.6533
898.04	57.8060
911.20	57.0696
911.20	57.0696
911.20	57.0696
926.50	68.4433
937.49	58.5961
944.13	49.6149
946.00	60.7910
949.00	55.7815
962.29	104.7807
964.08	79.8461
966.15	74.7996
968.97	92.9062
968.97	92.9062
968.97	92.9062
983.53	52.3173
996.26	70.0453
1001.03	75.3098
1004.73	68.1688
1037.84	62.6221
1038.76	0.0000
1048.07	65.9624
1050.41	61.8204
1050.41	61.8204
1063.66	58.9148
1085.87	54.0157
1099.45	57.4251
1112.07	58.7087
1115.54	74.7954

1120.29	63.1283
1120.29	63.1283
1120.55	63.1340
1121.30	63.1484
1131.51	0.0000
1173.23	76.0464
1177.93	84.8479
1189.05	88.3841
1204.77	84.3879
1221.41	74.3126
1231.02	70.8277
1235.36	119.7168
1238.28	82.9468
1260.41	0.0000
1271.85	56.7234
1274.44	56.7631
1274.54	57.6936
1291.59	38.3224
1298.22	0.0000
1312.11	42.2845
1332.49	37.7824
1365.19	30.4740
1368.63	0.0000
1384.29	46.8846
1408.01	27.9085
1457.56	0.0000
1460.82	21.4396
1489.16	16.6763
1505.03	32.4897
1596.21	28.1322
1620.50	19.1902
1678.03	0.0000
1690.97	15.3766
1764.49	14.2706
1764.49	14.2706
1770.23	3.5717
1771.35	7.1448
1791.20	0.0000
1836.06	7.3868



TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G247797004

Total Uranium Activity	-4.8694E-01	ug/g
Total Uranium Counting Unc.	5.1997E+00	ug/g
Total Uranium Tpu	2.6529E-06	ug/g
Total Uranium Mda	4.7159E+00	ug/g

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*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON ,SC 29417                *
*               GROSS GAMMA REPORT                  *
*
*****
*
*  BATCH ID      : 957136                          SAMPLE ID   : G247797004
*  ANALYST       : MXR1                             DETECTOR    : GAM04
*  SAMPLE DATE   : 17-FEB-2010 12:00:00.00          COUNT TIME   : 0 02:00:00.00
*  ANALYSIS DATE : 5-MAR-2010 10:29:54.47          SAMPLE ALQT  : 138.460 GRAM
*
*****

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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.083E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.480E+00
GROSS GAMMA MDA     (pCi/GRAM ) : 3.304E+00
GROSS GAMMA DLC     (pCi/GRAM ) : 1.603E+00

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VAX/VMS Nuclide Identification Report Generated 5-MAR-2010 12:34:20.77

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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797005.CNF;1
Sample date        : 17-FEB-2010 12:00:00 Acquisition date : 5-MAR-2010 10:30:38.
Sample ID          : G247797005      Sample quantity   : 1.34330E+02 GRAM
Detector name      : GAM06           Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00   Elapsed real time: 0 02:00:01.54 0.0%
Energy tolerance   : 1.50000 keV     Analyst Initials : MXR1
Abundance limit    : 75.00000        Sensitivity      : 5.00000
Batch ID          : 957136           Detector SN#     :
Matrix Spike ID    :                 LCS ID            : 1032-A
*****

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Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	2	74.77	415	550	1.18	149.11	144	15	5.76E-02	10.6	3.64E-01
2	2	77.10*	725	445	0.98	153.77	144	15	1.01E-01	6.0	
3	0	87.21	234	557	1.14	173.98	171	7	3.24E-02	17.9	
4	4	89.98	160	303	1.04	179.52	177	12	2.22E-02	16.8	1.86E+00
5	4	92.89*	209	549	1.29	185.33	177	12	2.90E-02	21.5	
6	0	128.45	72	374	0.64	256.41	255	8	9.97E-03	48.0	
7	0	186.02*	194	384	1.47	371.49	367	10	2.70E-02	20.9	
8	0	209.62	190	341	0.85	418.68	414	10	2.64E-02	19.7	
9	3	238.72*	1459	217	1.22	476.86	469	21	2.03E-01	3.2	1.23E+00
10	3	241.79	320	267	1.68	482.98	469	21	4.45E-02	12.9	
11	0	270.32	169	261	1.23	540.03	534	12	2.35E-02	20.6	
12	0	277.28	44	165	0.99	553.94	552	7	6.17E-03	49.9	
13	0	295.35*	418	283	1.20	590.07	583	13	5.81E-02	9.7	
14	0	300.71	87	274	1.45	600.79	596	13	1.21E-02	40.5	
15	0	328.23	89	162	0.85	655.80	652	8	1.23E-02	27.3	
16	0	338.46*	298	237	1.36	676.26	669	14	4.14E-02	12.5	
17	0	352.07*	749	207	1.27	703.47	698	12	1.04E-01	5.4	
18	0	463.27	62	141	0.98	925.81	921	10	8.68E-03	37.8	
19	0	510.99*	161	153	1.41	1021.22	1014	15	2.23E-02	20.4	
20	0	583.41*	445	118	1.24	1166.03	1160	13	6.19E-02	7.0	
21	0	609.46*	540	142	1.47	1218.13	1212	13	7.50E-02	6.4	
22	0	727.60	99	86	1.50	1454.39	1446	15	1.38E-02	22.7	
23	0	768.49	62	68	1.06	1536.15	1533	9	8.56E-03	27.2	
24	0	795.32	50	88	1.49	1589.82	1583	13	6.94E-03	41.2	
25	0	860.96*	68	73	1.25	1721.09	1714	14	9.41E-03	30.2	
26	0	911.35	307	57	1.72	1821.88	1816	12	4.26E-02	7.5	
27	1	964.95	60	50	1.97	1929.10	1925	22	8.28E-03	22.1	1.84E+00
28	1	969.22*	200	45	2.04	1937.64	1925	22	2.78E-02	10.4	
29	0	1120.45*	114	75	1.82	2240.16	2234	13	1.58E-02	18.4	
30	0	1238.65	75	83	2.11	2476.61	2467	16	1.04E-02	29.8	
31	0	1460.96*	1354	31	2.11	2921.41	2911	20	1.88E-01	2.9	
32	0	1764.64*	123	3	1.76	3529.16	3520	16	1.70E-02	9.9	
33	0	1848.27	31	8	2.16	3696.53	3688	15	4.24E-03	26.7	

Flag: "\*" = Peak area was modified by background subtraction

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797005.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 17-FEB-2010 12:00:00 Acquisition date : 5-MAR-2010 10:30:38
Sample ID         : G247797005 Sample quantity : 134.33 GRAM
Sample type       : SOLID Sample geometry :
Detector name     : GAMMA6 Detector geometry: CAN
Elapsed live time : 0 02:00:00.00 Elapsed real time: 0 02:00:01.54 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

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## 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	+	1460.82	*	3.801E+01	4.209E+00	6.993E-01	6.592E-02	54.351
CD-109	+	88.03	*	3.492E+00	1.311E+00	1.468E+00	1.633E-01	2.379
SN-126		64.28		9.038E-02	6.378E-01	1.057E+00	1.636E-01	0.086
	+	86.94		1.417E+00	7.821E-01	6.641E-01	2.784E-01	2.134
	+	87.57	*	3.410E-01	1.279E-01	1.440E-01	1.595E-02	2.367
TL-208	+	277.37		5.007E-01	5.039E-01	7.530E-01	9.799E-02	0.665
	+	583.19	*	6.889E-01	1.150E-01	6.623E-02	6.047E-03	10.403
	+	860.56		1.003E+00	6.129E-01	5.135E-01	4.992E-02	1.953
BI-211		72.87		8.039E+00	4.176E+00	6.528E+00	6.274E-01	1.231
	+	351.06	*	5.155E+00	7.371E-01	4.049E-01	3.800E-02	12.730
PB-212	+	74.82		2.734E+00	6.926E-01	6.586E-01	9.073E-02	4.152
	+	77.11		2.717E+00	4.248E-01	3.756E-01	3.735E-02	7.234
	+	238.63	*	2.231E+00	2.688E-01	1.040E-01	1.067E-02	21.462
	+	300.09		2.090E+00	1.708E+00	1.452E+00	1.610E-01	1.439
BI-214	+	609.32	*	1.618E+00	2.614E-01	1.376E-01	1.365E-02	11.763
	+	1120.29		1.811E+00	6.940E-01	6.005E-01	6.486E-02	3.016
	+	1764.49		2.716E+00	5.877E-01	3.293E-01	2.838E-02	8.247
PB-214	+	74.82		4.847E+00	1.197E+00	1.167E+00	1.468E-01	4.152
	+	77.11		4.790E+00	8.468E-01	6.622E-01	8.555E-02	7.234
	+	242.00		2.971E+00	8.338E-01	6.327E-01	6.879E-02	4.696
	+	295.22		1.771E+00	3.981E-01	2.553E-01	2.899E-02	6.938
	+	351.93	*	1.871E+00	2.867E-01	1.384E-01	1.505E-02	13.519
RA-224	+	240.99	*	5.254E+00	1.443E+00	1.115E+00	1.025E-01	4.713
RA-226	+	609.32	*	1.618E+00	2.614E-01	1.376E-01	1.365E-02	11.763
	+	1120.29		1.811E+00	6.940E-01	6.005E-01	6.486E-02	3.016
	+	1764.49		2.716E+00	5.877E-01	3.293E-01	2.838E-02	8.247
AC-228	+	338.32		2.282E+00	1.112E+00	4.827E-01	2.018E-01	4.727
	+	911.20	*	2.318E+00	4.480E-01	2.648E-01	3.197E-02	8.755
	+	968.97		2.623E+00	8.448E-01	4.865E-01	1.194E-01	5.391
RA-228	+	338.32		2.282E+00	1.112E+00	4.827E-01	2.018E-01	4.727
	+	911.20	*	2.318E+00	4.480E-01	2.648E-01	3.197E-02	8.755
	+	968.97		2.623E+00	8.448E-01	4.865E-01	1.194E-01	5.391
TH-228	+	74.82		2.734E+00	6.403E-01	6.586E-01	6.470E-02	4.152
	+	77.11		2.717E+00	4.248E-01	3.756E-01	3.735E-02	7.234

---- Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TH-232	+	238.63	*	2.231E+00	2.688E-01	1.040E-01	1.067E-02	21.462
	+	300.09		2.090E+00	2.123E+00	1.452E+00	8.904E-01	1.439
	+	338.32		2.282E+00	6.082E-01	4.827E-01	4.381E-02	4.727
	+	911.20	*	2.318E+00	4.480E-01	2.648E-01	3.197E-02	8.755
U-235	+	968.97		2.623E+00	8.448E-01	4.865E-01	1.194E-01	5.391
	+	89.96		2.412E+00	1.019E+00	1.499E+00	3.817E-01	1.609
	+	93.35		1.899E+00	9.344E-01	8.252E-01	1.963E-01	2.301
		143.76	*	7.862E-02	2.406E-01	3.814E-01	6.411E-02	0.206
NP-237		163.33		-4.509E-02	5.405E-01	8.530E-01	1.524E-01	-0.053
	+	185.72		1.907E-01	8.144E-02	7.866E-02	6.833E-03	2.424
		205.31		-2.180E-01	6.673E-01	9.711E-01	1.775E-01	-0.224
	+	86.48	*	1.017E+00	4.373E-01	4.650E-01	1.100E-01	2.188
ANH-511		95.86		-6.295E-01	1.176E+00	1.649E+00	4.045E-01	-0.382
	+	511.00	*	1.899E-01	7.934E-02	5.184E-02	4.499E-03	3.662

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7		477.60	*	-4.545E-02	3.773E-01	6.314E-01	5.896E-02	-0.072
NA-22		1274.54	*	2.051E-03	5.694E-02	9.359E-02	8.223E-03	0.022
NA-24		1368.63	*	1.291E+00	5.694E-02	Half-Life too short		
SC-46		889.28	*	7.574E-03	5.044E-02	8.239E-02	7.614E-03	0.092
	+	1120.55		3.085E-01	1.164E-01	1.714E-01	1.452E-02	1.799
V-48		944.13		-8.800E-01	1.016E+00	1.556E+00	1.432E-01	-0.565
		983.53	*	-1.039E-02	8.319E-02	1.375E-01	1.251E-02	-0.076
		1312.11		-8.405E-02	1.202E-01	1.824E-01	1.645E-02	-0.461
CR-51		320.08	*	2.142E-02	4.805E-01	7.592E-01	7.308E-02	0.028
MN-54		834.85	*	3.999E-03	4.774E-02	7.783E-02	7.014E-03	0.051
CO-56		846.77	*	1.378E-02	4.878E-02	8.090E-02	7.333E-03	0.170
		1037.84		-2.822E-01	3.899E-01	6.055E-01	5.654E-02	-0.466
	+	1238.28		3.345E-01	2.016E-01	2.442E-01	2.147E-02	1.370
		1771.35		1.196E-01	2.441E-01	4.002E-01	3.440E-02	0.299
CO-57		122.06	*	2.211E-02	2.991E-02	4.949E-02	4.168E-03	0.447
		136.47		-1.061E-01	2.464E-01	3.866E-01	3.471E-02	-0.274
CO-58		810.76	*	-3.878E-02	4.860E-02	7.283E-02	6.497E-03	-0.532
FE-59		1099.45	*	-2.523E-03	1.190E-01	1.970E-01	1.831E-02	-0.013
		1291.59		-1.334E-01	1.564E-01	2.309E-01	2.314E-02	-0.578
CO-60		1173.23		2.125E-02	6.066E-02	1.015E-01	8.233E-03	0.209
		1332.49	*	-1.842E-02	5.032E-02	7.856E-02	7.185E-03	-0.234
ZN-65		1115.54	*	1.464E-02	1.295E-01	1.870E-01	1.591E-02	0.078
		121.12		-6.020E-02	1.599E-01	2.532E-01	2.773E-02	-0.238
SE-75		136.00		-2.929E-02	4.770E-02	7.423E-02	6.225E-03	-0.395
		264.66	*	-1.041E-02	5.963E-02	8.583E-02	8.010E-03	-0.121
		279.54		3.598E-02	1.501E-01	2.214E-01	2.129E-02	0.163
SR-85		400.66		1.306E-01	3.253E-01	5.377E-01	5.909E-02	0.243
		514.00	*	7.045E-02	5.120E-02	8.287E-02	7.190E-03	0.850
Y-88		898.04		3.108E-02	5.049E-02	8.591E-02	8.002E-03	0.362
		1836.06	*	1.596E-02	3.765E-02	6.718E-02	5.616E-03	0.238

## ---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
Y-91	1204.77	*		-1.294E+01	3.019E+01	4.797E+01	3.990E+00	-0.270
NB-94	702.65	*		-3.446E-04	4.362E-02	7.154E-02	5.962E-03	-0.005
	871.09			2.592E-02	4.275E-02	7.272E-02	6.667E-03	0.356
NB-95	765.81	*		7.363E-02	6.093E-02	9.634E-02	8.360E-03	0.764
NB-95M	235.69	*		2.911E-02	1.691E-01	2.509E-01	2.600E-02	0.116
ZR-95	724.19			2.918E-02	1.289E-01	1.872E-01	1.721E-02	0.156
	756.73	*		7.340E-02	8.955E-02	1.553E-01	1.480E-02	0.473
MO-99	140.51			-7.048E+00	3.232E+01	5.108E+01	1.207E+01	-0.138
	181.07			1.446E+01	2.788E+01	4.264E+01	8.013E+00	0.339
	366.42			-1.750E+01	1.421E+02	2.291E+02	2.015E+01	-0.076
	739.50	*		1.682E+01	1.868E+01	3.243E+01	5.096E+00	0.519
	777.92			-4.563E+01	5.570E+01	8.404E+01	7.346E+00	-0.543
TC-99M	140.51	*		-9.532E+10	5.570E+01	Half-Life too short		
RU-103	497.08	*		3.706E-02	4.597E-02	8.091E-02	1.133E-02	0.458
	610.33		+	1.695E+01	3.497E+00	3.747E+00	6.081E-01	4.523
RH-106	621.93	*		3.988E-01	3.738E-01	6.610E-01	8.643E-02	0.603
	1050.41			8.371E-01	3.289E+00	5.590E+00	4.945E-01	0.150
RU-106	621.93	*		3.988E-01	3.717E-01	6.610E-01	5.512E-02	0.603
	1050.41			8.371E-01	3.289E+00	5.590E+00	4.945E-01	0.150
AG-108M	433.94	*		3.233E-02	3.738E-02	6.327E-02	5.622E-03	0.511
	614.28			-1.054E-03	4.560E-02	6.543E-02	5.673E-03	-0.016
	722.91			2.012E-03	5.157E-02	7.339E-02	6.407E-03	0.027
AG-110M	657.76	*		-3.060E-03	3.963E-02	6.496E-02	5.451E-03	-0.047
	677.62			3.194E-01	3.614E-01	6.345E-01	5.360E-02	0.503
	706.68			-5.367E-02	2.754E-01	4.452E-01	3.834E-02	-0.121
	763.94			4.847E-02	2.235E-01	3.228E-01	2.874E-02	0.150
	884.68			6.160E-02	6.625E-02	1.149E-01	1.089E-02	0.536
	937.49			1.168E-02	1.368E-01	2.320E-01	2.205E-02	0.050
	1384.29			-1.226E-01	2.058E-01	3.089E-01	2.905E-02	-0.397
	1505.03			-3.671E-01	3.925E-01	5.494E-01	5.041E-02	-0.668
SN-113	391.69	*		-9.565E-03	5.450E-02	8.714E-02	7.601E-03	-0.110
CD-115	260.90			8.486E+01	2.201E+02	3.716E+02	3.450E+01	0.228
	492.35			-1.800E+01	5.673E+01	9.342E+01	8.113E+00	-0.193
	527.90	*		-5.732E+00	1.832E+01	3.005E+01	2.603E+00	-0.191
SN-117M	156.02			-1.158E+00	2.895E+00	4.515E+00	3.788E-01	-0.257
	158.56	*		-7.362E-03	6.872E-02	1.085E-01	9.120E-03	-0.068
TE-123M	159.00	*		-2.815E-03	3.471E-02	5.486E-02	4.642E-03	-0.051
SB-124	602.73			-5.463E-02	5.482E-02	7.522E-02	6.345E-03	-0.726
	645.85			1.549E-02	5.872E-01	9.717E-01	8.471E-02	0.016
	722.78			2.040E-02	5.230E-01	7.443E-01	6.437E-02	0.027
	1690.97	*		-4.812E-02	8.873E-02	1.320E-01	1.214E-02	-0.365
SB-125	427.87	*		2.095E-03	1.068E-01	1.719E-01	1.505E-02	0.012
	463.37		+	6.548E-01	4.994E-01	6.698E-01	6.237E-02	0.978
	600.60			1.129E-01	2.177E-01	3.735E-01	3.397E-02	0.302
	635.95			5.835E-02	3.382E-01	5.661E-01	5.088E-02	0.103
TE-125M	109.28	*		-1.128E+01	1.172E+01	1.796E+01	1.934E+00	-0.628
I-126	388.63			7.920E-02	2.220E-01	3.668E-01	3.117E-02	0.216
	666.33	*		3.787E-01	2.947E-01	5.255E-01	4.267E-02	0.721
	753.82			1.197E+00	2.253E+00	3.836E+00	3.305E-01	0.312

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
SB-126	414.70			-7.160E-02	1.013E-01	1.528E-01	1.306E-02	-0.468
	666.50			1.388E-01	1.021E-01	1.826E-01	1.483E-02	0.760
	695.00			8.272E-02	1.023E-01	1.774E-01	1.471E-02	0.466
	697.00			2.257E-01	3.593E-01	6.155E-01	5.109E-02	0.367
	720.70	*		1.119E-02	2.215E-01	3.156E-01	2.662E-02	0.035
SB-127	856.80			1.613E-01	6.695E-01	9.629E-01	8.770E-02	0.167
	252.40			-2.055E+00	6.065E+00	9.826E+00	4.101E+00	-0.209
	473.00			3.296E-01	2.326E+00	3.704E+00	4.823E-01	0.089
	685.70	*		1.455E-01	1.851E+00	3.062E+00	3.470E-01	0.048
	783.70			1.819E+00	5.054E+00	8.456E+00	1.072E+00	0.215
I-131	80.19			1.338E+00	5.926E+00	8.781E+00	9.031E-01	0.152
	284.31			-1.550E+00	1.874E+00	2.949E+00	2.868E-01	-0.526
	364.49	*		-3.650E-02	1.508E-01	2.413E-01	2.239E-02	-0.151
TE-132	636.99			-7.463E-01	2.050E+00	3.294E+00	2.890E-01	-0.227
	49.72			1.264E+01	3.177E+01	5.379E+01	6.411E+00	0.235
	111.76			3.207E+01	4.615E+01	7.639E+01	8.711E+00	0.420
	116.30			2.507E+01	4.128E+01	6.802E+01	7.648E+00	0.369
BA-133	228.16	*		4.555E-02	1.061E+00	1.777E+00	2.888E-01	0.026
	81.00			-1.592E-01	1.228E-01	1.653E-01	2.730E-02	-0.963
	276.40	+		4.629E-01	4.668E-01	7.478E-01	1.088E-01	0.619
	302.85			7.807E-02	1.913E-01	2.836E-01	3.832E-02	0.275
	356.01	*		-2.945E-03	5.644E-02	8.003E-02	1.052E-02	-0.037
I-133	383.85			-1.734E-01	3.802E-01	5.979E-01	7.407E-02	-0.290
	529.87	*		-2.238E-03	3.802E-01	Half-Life	too short	
	875.33			-3.462E-02	3.802E-01	Half-Life	too short	
CS-134	1298.22			3.833E-01	3.802E-01	Half-Life	too short	
	563.25			1.633E-01	4.121E-01	7.061E-01	6.119E-02	0.231
	569.33			7.802E-02	2.401E-01	4.086E-01	3.548E-02	0.191
	604.72			-2.793E-02	4.763E-02	6.459E-02	5.457E-03	-0.432
	795.86	+	*	1.134E-01	9.389E-02	1.169E-01	1.039E-02	0.970
CS-135	801.95			-4.789E-01	6.162E-01	8.319E-01	7.409E-02	-0.576
	1365.19			-3.100E+00	1.724E+00	2.097E+00	2.003E-01	-1.478
	268.22	*		1.966E-01	2.115E-01	3.250E-01	3.432E-02	0.605
I-135	546.56			1.376E+11	2.115E-01	Half-Life	too short	
	836.80			7.431E+10	2.115E-01	Half-Life	too short	
	1038.76			-8.007E+10	2.115E-01	Half-Life	too short	
	1131.51			3.136E+10	2.115E-01	Half-Life	too short	
	1260.41	*		1.827E+10	2.115E-01	Half-Life	too short	
	1457.56			6.843E+12	2.115E-01	Half-Life	too short	
	1678.03			-5.110E+10	2.115E-01	Half-Life	too short	
	1791.20			9.604E+10	2.115E-01	Half-Life	too short	
CS-136	153.25			-1.931E-02	1.117E+00	1.775E+00	1.786E-01	-0.011
	176.60			-2.132E-01	6.023E-01	1.007E+00	9.543E-02	-0.212
	273.65			7.399E-01	8.905E-01	1.032E+00	1.031E-01	0.717
	340.55			5.408E-01	2.325E-01	3.740E-01	3.505E-02	1.446
	818.51			3.565E-02	8.980E-02	1.510E-01	1.351E-02	0.236
	1048.07	*		8.591E-02	1.444E-01	2.518E-01	2.319E-02	0.341
BA-137M	1235.36			7.267E-01	1.039E+00	1.558E+00	1.822E-01	0.466
	661.66	*		-2.275E-02	4.308E-02	6.809E-02	5.510E-03	-0.334

---- Non-Identified Nuclides ----

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CS-137		661.66	*	-2.403E-02	4.551E-02	7.193E-02	5.833E-03	-0.334
CE-139		165.86	*	-2.676E-03	3.661E-02	5.774E-02	4.883E-03	-0.046
BA-140		162.66		6.313E-01	1.031E+00	1.675E+00	1.512E-01	0.377
		304.85		5.694E-01	1.880E+00	2.762E+00	8.140E-01	0.206
		423.72		-2.099E+00	2.501E+00	3.622E+00	1.191E+00	-0.580
		537.26	*	-2.307E-01	3.258E-01	5.011E-01	1.700E-01	-0.460
LA-140	+	328.76		8.776E-01	4.859E-01	7.294E-01	7.013E-02	1.203
		487.02		4.012E-02	1.642E-01	2.809E-01	2.588E-02	0.143
		815.77		-7.408E-02	4.043E-01	6.444E-01	6.382E-02	-0.115
		1596.21	*	-5.377E-02	1.041E-01	1.601E-01	1.451E-02	-0.336
CE-141		145.44	*	-1.123E-03	7.757E-02	1.213E-01	1.031E-02	-0.009
CE-143		57.36		2.747E-04	7.757E-02	Half-Life	too short	
		293.27	*	1.131E-03	7.757E-02	Half-Life	too short	
		664.57		5.506E-04	7.757E-02	Half-Life	too short	
		721.93		-7.083E-04	7.757E-02	Half-Life	too short	
CE-144		80.12		7.079E-01	2.993E+00	4.437E+00	4.537E-01	0.160
		133.52	*	1.457E-01	2.630E-01	3.851E-01	5.824E-02	0.378
PM-144		476.78		-3.670E-02	7.519E-02	1.227E-01	1.156E-02	-0.299
		618.01		-2.163E-02	3.770E-02	5.965E-02	5.134E-03	-0.363
		696.49	*	2.063E-02	4.393E-02	7.450E-02	6.185E-03	0.277
PR-144		696.51	*	1.530E+00	3.288E+00	5.575E+00	4.626E-01	0.275
		1489.16		-1.553E+01	1.423E+01	1.810E+01	1.662E+00	-0.858
PM-146		453.88	*	-4.982E-03	5.119E-02	8.136E-02	8.637E-03	-0.061
		633.25		9.374E-01	1.831E+00	3.079E+00	1.174E+00	0.304
		735.93		4.155E-03	1.651E-01	2.706E-01	7.576E-02	0.015
		747.24		1.986E-02	1.168E-01	1.935E-01	2.818E-02	0.103
ND-147	+	91.11		8.228E-01	2.926E-01	6.058E-01	6.801E-02	1.358
		319.41		1.175E+00	4.409E+00	7.044E+00	6.487E-01	0.167
		531.02	*	1.355E-01	7.221E-01	1.223E+00	1.832E-01	0.111
PM-149		285.90	*	-1.345E+02	1.391E+02	2.149E+02	3.426E+01	-0.626
EU-152		121.78		6.675E-02	8.610E-02	1.425E-01	1.387E-02	0.468
		244.70		1.738E-01	4.048E-01	6.097E-01	5.619E-02	0.285
		344.28	*	6.720E-02	1.349E-01	2.000E-01	1.903E-02	0.336
		778.90		-1.927E-01	3.206E-01	4.940E-01	4.320E-02	-0.390
	+	964.08		8.399E-01	3.783E-01	7.427E-01	6.798E-02	1.131
		1085.87		1.615E-01	4.667E-01	7.988E-01	6.926E-02	0.202
		1112.07		-3.260E-01	4.366E-01	6.394E-01	5.448E-02	-0.510
		1408.01		2.115E-01	2.305E-01	4.142E-01	3.810E-02	0.511
GD-153		69.67		-1.675E+00	2.318E+00	3.306E+00	3.110E-01	-0.507
		97.43	*	-7.389E-03	1.026E-01	1.585E-01	1.564E-02	-0.047
		103.18		-1.698E-01	1.269E-01	1.929E-01	1.806E-02	-0.880
EU-154		123.07		-7.153E-03	6.190E-02	9.907E-02	1.108E-02	-0.072
		723.31		-6.968E-02	2.430E-01	3.331E-01	3.111E-02	-0.209
		873.19		3.352E-01	3.466E-01	6.052E-01	7.446E-02	0.554
		996.26		-4.932E-01	4.491E-01	6.616E-01	1.170E-01	-0.746
		1004.73		6.040E-02	2.700E-01	4.591E-01	5.484E-02	0.132
		1274.44	*	-2.134E-03	1.620E-01	2.650E-01	3.047E-02	-0.008
EU-155	+	86.55		4.136E-01	1.553E-01	2.233E-01	2.460E-02	1.852
		105.31	*	2.333E-01	1.217E-01	2.087E-01	1.942E-02	1.118



---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TB-160	+	86.79		1.106E+00	4.149E-01	5.961E-01	6.543E-02	1.855
		197.04		3.618E-01	6.932E-01	1.163E+00	1.025E-01	0.311
		215.65		6.606E-01	9.276E-01	1.549E+00	1.395E-01	0.426
		298.57		2.249E-01	2.016E-01	2.383E-01	2.214E-02	0.944
		879.36	*	-1.913E-01	1.817E-01	2.597E-01	2.390E-02	-0.736
	+	962.29		1.463E+00	7.537E-01	1.291E+00	1.182E-01	1.134
		966.15		5.913E-01	2.663E-01	6.574E-01	6.013E-02	0.900
		1177.93		1.394E-02	4.988E-01	8.243E-01	6.709E-02	0.017
		1271.85		4.975E-01	9.191E-01	1.582E+00	1.386E-01	0.314
		80.57		-1.622E-01	3.338E-01	4.780E-01	4.909E-02	-0.339
HO-166M		184.41		4.457E-02	4.732E-02	7.378E-02	6.398E-03	0.604
		280.46		5.131E-02	1.110E-01	1.663E-01	1.548E-02	0.309
		410.95		3.097E-01	3.088E-01	5.263E-01	4.491E-02	0.588
		711.68	*	-3.176E-02	7.552E-02	1.197E-01	1.003E-02	-0.265
		752.31		-1.892E-01	3.300E-01	5.114E-01	4.402E-02	-0.370
		810.29		-7.523E-02	7.405E-02	1.085E-01	9.651E-03	-0.694
		67.75		3.812E-02	1.362E-01	2.270E-01	2.111E-02	0.168
TA-182		100.11		2.283E-01	2.030E-01	3.421E-01	3.289E-02	0.667
		152.43		-6.938E-02	4.344E-01	6.860E-01	5.741E-02	-0.101
		222.11		-2.059E-01	3.966E-01	6.485E-01	5.876E-02	-0.317
	+	1121.30		8.530E-01	3.218E-01	4.765E-01	4.033E-02	1.790
		1189.05		3.668E-02	4.064E-01	6.746E-01	5.541E-02	0.054
		1221.41	*	1.613E-01	2.794E-01	4.783E-01	4.031E-02	0.337
IR-192		1231.02		4.447E-02	7.940E-01	1.126E+00	9.564E-02	0.039
	+	295.96		1.320E+00	2.843E-01	3.589E-01	3.358E-02	3.678
		308.46		5.521E-02	1.217E-01	1.981E-01	1.843E-02	0.279
		316.51	*	-3.972E-03	4.262E-02	6.955E-02	6.427E-03	-0.057
HG-203		468.07		2.804E-02	9.749E-02	1.394E-01	1.296E-02	0.201
		70.83		-1.817E-01	1.764E+00	2.592E+00	4.285E-01	-0.070
		72.87		2.026E+00	1.085E+00	1.645E+00	2.650E-01	1.231
BI-207		279.20	*	2.514E-02	5.370E-02	8.031E-02	7.644E-03	0.313
		72.81		4.286E-01	2.391E-01	3.729E-01	3.582E-02	1.150
	+	74.97		7.881E-01	1.843E-01	2.675E-01	2.612E-02	2.947
		569.70		1.855E-02	3.807E-02	6.539E-02	5.599E-03	0.284
		1063.66	*	4.438E-02	6.575E-02	1.154E-01	1.014E-02	0.384
PB-210		1770.23		3.297E-02	5.678E-01	8.164E-01	7.021E-02	0.040
PB-211		46.54	*	2.194E+00	5.377E+00	8.992E+00	8.650E-01	0.244
		404.85	*	1.885E-01	9.059E-01	1.473E+00	7.126E-01	0.128
		427.09		1.163E+00	1.809E+00	2.912E+00	1.347E+00	0.399
BI-212		832.01		2.631E-02	1.271E+00	2.061E+00	1.070E+00	0.013
	+	727.33	*	2.364E+00	1.112E+00	1.385E+00	1.712E-01	1.706
		785.37		2.898E+00	3.934E+00	6.763E+00	5.936E-01	0.429
RN-219		1620.50		2.184E+00	2.823E+00	5.204E+00	4.691E-01	0.420
	+	271.23		1.144E+00	4.871E-01	5.625E-01	6.097E-02	2.034
RA-223		401.81	*	-1.770E-01	5.197E-01	8.202E-01	1.214E-01	-0.216
		81.07		-3.594E-01	2.742E-01	3.743E-01	3.864E-02	-0.960
		83.79		1.716E-01	1.537E-01	2.345E-01	2.490E-02	0.732
		94.87		8.596E-01	5.712E-01	8.794E-01	8.923E-02	0.978
		144.24		6.273E-01	8.064E-01	1.301E+00	1.219E-01	0.482

---- 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		5.872E-01	4.794E-01	7.955E-01	7.338E-02	0.738
	+	269.46		8.889E-01	3.756E-01	4.413E-01	4.176E-02	2.014
		323.87	*	1.389E-01	8.800E-01	1.278E+00	2.251E-01	0.109
	+	338.28		9.055E+00	2.532E+00	2.928E+00	3.632E-01	3.092
		79.69		1.020E+00	1.496E+00	2.247E+00	4.060E-01	0.454
		235.96		3.242E-01	2.076E-01	3.260E-01	3.521E-02	0.994
		256.23	*	-9.165E-02	3.174E-01	5.202E-01	6.514E-02	-0.176
TH-227	+	299.98		2.299E+00	1.886E+00	1.897E+00	2.498E-01	1.212
		304.50		1.154E-01	2.193E+00	3.174E+00	5.358E-01	0.036
		334.37		1.281E+00	2.401E+00	3.561E+00	5.649E-01	0.360
		79.80		1.217E+00	1.971E+00	2.946E+00	6.614E-01	0.413
		235.96		3.242E-01	2.073E-01	3.260E-01	3.339E-02	0.994
		256.23	*	-9.165E-02	3.174E-01	5.202E-01	7.295E-02	-0.176
	+	299.98		2.299E+00	1.886E+00	1.897E+00	2.498E-01	1.212
TH-229		304.50		1.154E-01	2.193E+00	3.174E+00	5.358E-01	0.036
		334.37		1.281E+00	2.401E+00	3.561E+00	5.649E-01	0.360
		85.43		3.709E-01	2.644E-01	4.052E-01	4.381E-02	0.915
	+	88.47		5.256E-01	1.973E-01	2.850E-01	3.149E-02	1.844
		193.51	*	-4.339E-01	6.170E-01	1.011E+00	8.873E-02	-0.429
	+	210.85		4.122E+00	1.662E+00	2.039E+00	1.827E-01	2.022
		283.69	*	-9.158E-02	1.690E+00	2.783E+00	4.175E-01	-0.033
PA-231	+	301.36		1.477E+00	1.211E+00	1.244E+00	1.571E-01	1.188
TH-231		81.07		-3.594E-01	2.742E-01	3.743E-01	3.864E-02	-0.960
		83.79		1.716E-01	1.537E-01	2.345E-01	2.490E-02	0.732
		94.87		8.596E-01	5.712E-01	8.794E-01	8.923E-02	0.978
		144.24		6.273E-01	8.064E-01	1.301E+00	1.219E-01	0.482
		154.21		5.872E-01	4.794E-01	7.955E-01	7.338E-02	0.738
	+	269.46		8.889E-01	3.756E-01	4.413E-01	4.176E-02	2.014
		323.87	*	1.389E-01	8.800E-01	1.278E+00	2.251E-01	0.109
PA-233	+	338.28		9.055E+00	2.532E+00	2.928E+00	3.632E-01	3.092
	+	300.13		1.040E+00	8.572E-01	8.617E-01	1.312E-01	1.207
		311.90	*	-6.532E-02	8.055E-02	1.261E-01	1.194E-02	-0.518
		340.48		2.706E+00	1.129E+00	1.561E+00	3.782E-01	1.734
		94.67		4.140E-01	2.154E-01	3.300E-01	4.464E-02	1.255
		98.44		6.892E-02	1.123E-01	1.758E-01	9.839E-02	0.392
		111.00		9.787E-02	2.153E-01	3.506E-01	4.302E-02	0.279
PA-234		131.20		-5.029E-02	1.391E-01	1.944E-01	1.620E-02	-0.259
		569.50		1.274E-01	3.322E-01	5.673E-01	4.858E-02	0.225
		733.00		-6.723E-01	5.138E-01	5.638E-01	1.249E-01	-1.192
		880.51		1.259E-01	3.482E-01	5.802E-01	5.341E-02	0.217
		883.24		3.727E-01	4.530E-01	6.601E-01	4.443E-01	0.565
		926.50		-1.060E-01	2.127E-01	3.209E-01	8.182E-02	-0.330
		946.00	*	1.119E-01	3.438E-01	5.924E-01	1.128E-01	0.189
PA-234M		949.00		6.137E-01	5.314E-01	9.714E-01	8.927E-02	0.632
		766.42		3.227E+01	2.320E+01	2.766E+01	1.404E+01	1.167
		1001.03	*	2.225E-01	5.767E+00	9.772E+00	1.010E+00	0.023
	TH-234	63.29	*	1.696E+00	1.740E+00	2.913E+00	5.414E-01	0.582
	+	92.59		2.513E+00	1.225E+00	1.466E+00	3.350E-01	1.714
	U-238	63.29	*	1.696E+00	1.740E+00	2.913E+00	5.414E-01	0.582

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Activity Key (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NP-239	+	92.59	2.513E+00	1.114E+00	1.466E+00	1.529E-01	1.714
		99.53	3.179E-01	1.873E-01	3.200E-01	3.093E-02	0.994
		103.37	-1.409E-01	1.155E-01	1.768E-01	1.653E-02	-0.797
		106.12	9.289E-02	9.798E-02	1.639E-01	1.501E-02	0.567
		117.23 *	1.564E-01	4.833E-01	7.888E-01	6.773E-02	0.198
AM-241		228.18	-1.483E-02	2.642E-01	4.409E-01	4.016E-02	-0.034
	+	277.60	2.288E-01	2.294E-01	3.607E-01	3.359E-02	0.634
		59.54 *	-1.616E-01	2.028E-01	3.265E-01	3.100E-02	-0.495
CM-247	+	278.00	9.719E-01	9.741E-01	1.545E+00	1.438E-01	0.629
		287.50	-3.496E-01	1.404E+00	2.285E+00	2.128E-01	-0.153
CF-249		402.40 *	-4.051E-02	4.812E-02	7.337E-02	6.236E-03	-0.552
		252.80	-5.151E-01	1.156E+00	1.882E+00	1.741E-01	-0.274
		333.37	7.978E-02	2.944E-01	3.647E-01	3.325E-02	0.219
CF-251		388.16 *	3.229E-02	5.057E-02	8.484E-02	7.215E-03	0.381
		177.52 *	-4.632E-02	1.487E-01	2.491E-01	2.140E-02	-0.186
		227.38	3.970E-01	4.253E-01	7.360E-01	6.700E-02	0.539
		285.41	-3.140E+00	2.547E+00	3.896E+00	3.628E-01	-0.806

# VAX/VMS Nuclide Identification Report Generated

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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797005      *
* Acquisition date   : 5-MAR-2010 10:30:38 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 02:00:01.54           Half life ratio : 8.000        *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 17-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G247797005           Analyst initials: MXR1          *
* Batch Number       : 957136              Sample Quantity  : 1.3433E+02 GRAM  *
* Recovery           : 1.00000             Carrier Weight   : 0.00000        *
*****
*                                     QC DATA                                *
*
* Standard Weight    : 0.00000                                                    *
* CALIB. DATE/TIME   : 16-FEB-2010 15:10:04 MS Isotope      :              *
* MSD DPM             : 0.000              MSD Isotope       :              *
* LCS DPM             : 0.000              LCS Isotope        :              *
* LCSD DPM            : 0.000              LCSD Isotope       :              *
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## Combined Activity-MDA Report

### ---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM )	Act error	MDA (pCi/GRAM )	
K-40	3.801E+01	4.125E+00	7.007E-01	0.000E+00
CD-109	3.492E+00	1.284E+00	1.546E+00	0.000E+00
SN-126	3.410E-01	1.254E-01	1.517E-01	0.000E+00
TL-208	6.889E-01	1.127E-01	6.749E-02	0.000E+00
BI-211	5.155E+00	7.224E-01	4.164E-01	0.000E+00
PB-212	2.231E+00	2.634E-01	1.077E-01	0.000E+00
BI-214	1.618E+00	2.562E-01	1.401E-01	0.000E+00
PB-214	1.871E+00	2.810E-01	1.423E-01	0.000E+00
RA-224	5.254E+00	1.414E+00	1.154E+00	0.000E+00
RA-226	1.618E+00	2.562E-01	1.401E-01	0.000E+00
AC-228	2.318E+00	4.390E-01	2.676E-01	0.000E+00
RA-228	2.318E+00	4.390E-01	2.676E-01	0.000E+00
TH-228	2.231E+00	2.634E-01	1.077E-01	0.000E+00
TH-232	2.318E+00	4.390E-01	2.676E-01	0.000E+00
U-235	7.862E-02	2.358E-01	3.984E-01	0.000E+00
NP-237	1.017E+00	4.286E-01	4.900E-01	0.000E+00
ANH-511	1.899E-01	7.776E-02	5.296E-02	0.000E+00

### ---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	-4.545E-02	3.697E-01	6.457E-01	0.000E+00 NOT IDENT.
NA-22	2.051E-03	5.580E-02	9.402E-02	0.000E+00 NOT IDENT.
NA-24	0.000E+00	2.223E+06	0.000E+00	0.000E+00 SHORT HLIF
SC-46	7.574E-03	4.943E-02	8.331E-02	0.000E+00 FAIL ABUN
V-48	-1.039E-02	8.152E-02	1.388E-01	0.000E+00 NOT IDENT.
CR-51	2.142E-02	4.709E-01	7.820E-01	0.000E+00 NOT IDENT.
MN-54	3.999E-03	4.678E-02	7.880E-02	0.000E+00 NOT IDENT.
CO-56	1.378E-02	4.781E-02	8.189E-02	0.000E+00 FAIL ABUN
CO-57	2.211E-02	2.931E-02	5.185E-02	0.000E+00 NOT IDENT.
CO-58	-3.878E-02	4.762E-02	7.378E-02	0.000E+00 NOT IDENT.

FE-59	-2.523E-03	1.167E-01	1.985E-01	0.000E+00	NOT IDENT.
CO-60	-1.842E-02	4.931E-02	7.885E-02	0.000E+00	NOT IDENT.
ZN-65	1.464E-02	1.269E-01	1.884E-01	0.000E+00	NOT IDENT.
SE-75	-1.041E-02	5.844E-02	8.871E-02	0.000E+00	NOT IDENT.
SR-85	7.045E-02	5.017E-02	8.465E-02	0.000E+00	NOT IDENT.
Y-88	1.596E-02	3.690E-02	6.703E-02	0.000E+00	NOT IDENT.
Y-91	-1.294E+01	2.958E+01	4.823E+01	0.000E+00	NOT IDENT.
NB-94	-3.446E-04	4.274E-02	7.266E-02	0.000E+00	NOT IDENT.
NB-95	7.363E-02	5.971E-02	9.770E-02	0.000E+00	NOT IDENT.
NB-95M	2.911E-02	1.657E-01	2.598E-01	0.000E+00	NOT IDENT.
ZR-95	7.340E-02	8.776E-02	1.575E-01	0.000E+00	NOT IDENT.
MO-99	1.682E+01	1.831E+01	3.291E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	4.287E+17	0.000E+00	0.000E+00	SHORT HLIF
RU-103	3.706E-02	4.505E-02	8.270E-02	0.000E+00	FAIL ABUN
RH-106	3.988E-01	3.664E-01	6.728E-01	0.000E+00	NOT IDENT.
RU-106	3.988E-01	3.642E-01	6.728E-01	0.000E+00	NOT IDENT.
AG-108M	3.233E-02	3.663E-02	6.482E-02	0.000E+00	NOT IDENT.
AG-110M	-3.060E-03	3.884E-02	6.606E-02	0.000E+00	NOT IDENT.
SN-113	-9.565E-03	5.341E-02	8.945E-02	0.000E+00	NOT IDENT.
CD-115	-5.732E+00	1.795E+01	3.068E+01	0.000E+00	NOT IDENT.
SN-117M	-7.362E-03	6.735E-02	1.132E-01	0.000E+00	NOT IDENT.
TE-123M	-2.815E-03	3.401E-02	5.721E-02	0.000E+00	NOT IDENT.
SB-124	-4.812E-02	8.696E-02	1.319E-01	0.000E+00	NOT IDENT.
SB-125	2.095E-03	1.047E-01	1.762E-01	0.000E+00	FAIL ABUN
TE-125M	-1.128E+01	1.148E+01	1.885E+01	0.000E+00	NOT IDENT.
I-126	3.787E-01	2.888E-01	5.342E-01	0.000E+00	NOT IDENT.
SB-126	1.119E-02	2.171E-01	3.204E-01	0.000E+00	NOT IDENT.
SB-127	1.455E-01	1.814E+00	3.112E+00	0.000E+00	NOT IDENT.
I-131	-3.650E-02	1.478E-01	2.480E-01	0.000E+00	NOT IDENT.
TE-132	4.555E-02	1.040E+00	1.842E+00	0.000E+00	NOT IDENT.
BA-133	-2.945E-03	5.531E-02	8.228E-02	0.000E+00	FAIL ABUN
I-133	0.000E+00	1.398E+04	0.000E+00	0.000E+00	SHORT HLIF
CS-134	1.134E-01	9.202E-02	1.184E-01	0.000E+00	FAIL ABUN
CS-135	1.966E-01	2.072E-01	3.358E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	6.614E+16	0.000E+00	0.000E+00	SHORT HLIF
CS-136	8.591E-02	1.415E-01	2.539E-01	0.000E+00	NOT IDENT.
BA-137M	-2.275E-02	4.222E-02	6.923E-02	0.000E+00	NOT IDENT.
CS-137	-2.403E-02	4.460E-02	7.314E-02	0.000E+00	NOT IDENT.
CE-139	-2.676E-03	3.587E-02	6.017E-02	0.000E+00	NOT IDENT.
BA-140	-2.307E-01	3.193E-01	5.115E-01	0.000E+00	NOT IDENT.
LA-140	-5.377E-02	1.020E-01	1.602E-01	0.000E+00	FAIL ABUN
CE-141	-1.123E-03	7.602E-02	1.267E-01	0.000E+00	NOT IDENT.
CE-143	0.000E+00	3.770E+02	0.000E+00	0.000E+00	SHORT HLIF
CE-144	1.457E-01	2.578E-01	4.028E-01	0.000E+00	NOT IDENT.
PM-144	2.063E-02	4.305E-02	7.568E-02	0.000E+00	NOT IDENT.
PR-144	1.530E+00	3.222E+00	5.663E+00	0.000E+00	NOT IDENT.
PM-146	-4.982E-03	5.017E-02	8.329E-02	0.000E+00	NOT IDENT.
ND-147	1.355E-01	7.076E-01	1.249E+00	0.000E+00	FAIL ABUN
PM-149	-1.345E+02	1.364E+02	2.218E+02	0.000E+00	NOT IDENT.
EU-152	6.720E-02	1.322E-01	2.058E-01	0.000E+00	FAIL ABUN
GD-153	-7.389E-03	1.005E-01	1.666E-01	0.000E+00	NOT IDENT.
EU-154	-2.134E-03	1.587E-01	2.662E-01	0.000E+00	NOT IDENT.
EU-155	0.000E+00	1.193E-01	2.192E-01	0.000E+00	FAIL ABUN
TB-160	-1.913E-01	1.781E-01	2.627E-01	0.000E+00	FAIL ABUN
HO-166M	-3.176E-02	7.401E-02	1.215E-01	0.000E+00	NOT IDENT.
TA-182	1.613E-01	2.738E-01	4.808E-01	0.000E+00	FAIL ABUN
IR-192	-3.972E-03	4.177E-02	7.166E-02	0.000E+00	FAIL ABUN
HG-203	2.514E-02	5.262E-02	8.293E-02	0.000E+00	NOT IDENT.
BI-207	4.438E-02	6.444E-02	1.164E-01	0.000E+00	FAIL ABUN
PB-210	2.194E+00	5.270E+00	9.574E+00	0.000E+00	NOT IDENT.
PB-211	1.885E-01	8.877E-01	1.511E+00	0.000E+00	NOT IDENT.
BI-212	0.000E+00	1.090E+00	1.406E+00	0.000E+00	FAIL ABUN
RN-219	-1.770E-01	5.093E-01	8.414E-01	0.000E+00	FAIL ABUN
RA-223	1.389E-01	8.624E-01	1.316E+00	0.000E+00	FAIL ABUN
AC-227	-9.165E-02	3.110E-01	5.379E-01	0.000E+00	FAIL ABUN
TH-227	-9.165E-02	3.111E-01	5.379E-01	0.000E+00	FAIL ABUN
TH-229	-4.339E-01	6.047E-01	1.051E+00	0.000E+00	FAIL ABUN
PA-231	-9.158E-02	1.656E+00	2.873E+00	0.000E+00	FAIL ABUN
TH-231	1.389E-01	8.624E-01	1.316E+00	0.000E+00	FAIL ABUN
PA-233	-6.532E-02	7.894E-02	1.299E-01	0.000E+00	FAIL ABUN
PA-234	1.119E-01	3.369E-01	5.984E-01	0.000E+00	NOT IDENT.
PA-234M	2.225E-01	5.651E+00	9.861E+00	0.000E+00	NOT IDENT.
TH-234	1.696E+00	1.705E+00	3.085E+00	0.000E+00	FAIL ABUN
U-238	1.696E+00	1.705E+00	3.085E+00	0.000E+00	FAIL ABUN
NP-239	1.564E-01	4.736E-01	8.268E-01	0.000E+00	FAIL ABUN
AM-241	-1.616E-01	1.987E-01	3.462E-01	0.000E+00	NOT IDENT.
CM-247	-4.051E-02	4.715E-02	7.528E-02	0.000E+00	FAIL ABUN
CF-249	3.229E-02	4.955E-02	8.710E-02	0.000E+00	NOT IDENT.

CF-251	-4.632E-02	1.458E-01	2.592E-01	0.000E+00 NOT IDENT.
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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797005.CNF;1
Sample date        : 17-FEB-2010 12:00:00 Acquisition date : 5-MAR-2010 10:30:38.
Sample ID          : G247797005          Sample quantity  : 1.34330E+02 GRAM
Detector name      : GAM06              Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00      Elapsed real time: 0 02:00:01.54  0.0%
Energy tolerance   : 1.50000 keV        Analyst Initials : MXR1
Abundance limit    : 75.00000           Sensitivity       : 5.00000
Batch ID           : 957136             Detector SN#      :
Matrix Spike ID    :                    LCS ID           : 1032-A
*****

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## Nuclide Line Activity Report

## Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	1354	10.66*	9.337E-01	3.801E+01	3.801E+01	11.07
CD-109	88.03	234	3.70*	5.175E+00	3.410E+00	3.492E+00	37.53
SN-126	64.28	-----	9.60	2.842E+00	-----	Line Not Found	-----
	86.94	234	8.90	5.175E+00	1.417E+00	1.417E+00	55.18
	87.57	234	37.00*	5.175E+00	3.410E-01	3.410E-01	37.53
TL-208	277.37	44	6.60	3.754E+00	5.007E-01	5.007E-01	100.64
	583.19	445	85.00*	2.125E+00	6.889E-01	6.889E-01	16.69
	860.56	68	12.50	1.511E+00	1.003E+00	1.003E+00	61.13
BI-211	72.87	-----	1.23	3.914E+00	-----	Line Not Found	-----
	351.06	749	12.92*	3.143E+00	5.155E+00	5.155E+00	14.30
PB-212	74.82	415	10.28	4.122E+00	2.734E+00	2.734E+00	25.33
	77.11	725	17.10	4.360E+00	2.717E+00	2.717E+00	15.64
	238.63	1459	43.60*	4.191E+00	2.231E+00	2.231E+00	12.05
	300.09	87	3.30	3.535E+00	2.090E+00	2.090E+00	81.74
BI-214	609.32	540	45.49*	2.050E+00	1.618E+00	1.618E+00	16.15
	1120.29	114	14.92	1.179E+00	1.811E+00	1.811E+00	38.32
	1764.49	123	15.30	8.244E-01	2.715E+00	2.716E+00	21.64
PB-214	74.82	415	5.80	4.122E+00	4.846E+00	4.847E+00	24.70
	77.11	725	9.70	4.360E+00	4.790E+00	4.790E+00	17.68
	242.00	320	7.25	4.152E+00	2.971E+00	2.971E+00	28.06
	295.22	418	18.42	3.583E+00	1.771E+00	1.771E+00	22.48
	351.93	749	35.60*	3.143E+00	1.871E+00	1.871E+00	15.33
RA-224	240.99	320	4.10*	4.152E+00	5.254E+00	5.254E+00	27.45
RA-226	609.32	540	45.49*	2.050E+00	1.618E+00	1.618E+00	16.15
	1120.29	114	14.92	1.179E+00	1.811E+00	1.811E+00	38.32
	1764.49	123	15.30	8.244E-01	2.715E+00	2.716E+00	21.64
AC-228	338.32	298	11.27	3.237E+00	2.282E+00	2.282E+00	48.75
	911.20	307	25.80*	1.433E+00	2.318E+00	2.318E+00	19.32
	968.97	200	15.80	1.352E+00	2.623E+00	2.623E+00	32.21
RA-228	338.32	298	11.27	3.237E+00	2.282E+00	2.282E+00	48.75
	911.20	307	25.80*	1.433E+00	2.318E+00	2.318E+00	19.32
	968.97	200	15.80	1.352E+00	2.623E+00	2.623E+00	32.21

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	74.82	415	10.28	4.122E+00	2.734E+00	2.734E+00	23.42
	77.11	725	17.10	4.360E+00	2.717E+00	2.717E+00	15.64
	238.63	1459	43.60*	4.191E+00	2.231E+00	2.231E+00	12.05
	300.09	87	3.30	3.535E+00	2.090E+00	2.090E+00	101.58
TH-232	338.32	298	11.27	3.237E+00	2.282E+00	2.282E+00	26.66
	911.20	307	25.80*	1.433E+00	2.318E+00	2.318E+00	19.32
	968.97	200	15.80	1.352E+00	2.623E+00	2.623E+00	32.21
	89.96	160	3.47	5.339E+00	2.412E+00	2.412E+00	42.23
U-235	93.35	209	5.60	5.486E+00	1.899E+00	1.899E+00	49.22
	143.76	-----	10.96*	5.718E+00	-----	Line Not Found	-----
	163.33	-----	5.08	5.383E+00	-----	Line Not Found	-----
	185.72	194	57.20	4.982E+00	1.907E-01	1.907E-01	42.71
NP-237	205.31	-----	5.01	4.664E+00	-----	Line Not Found	-----
	86.48	234	12.40*	5.175E+00	1.017E+00	1.017E+00	42.99
	95.86	-----	2.68	5.611E+00	-----	Line Not Found	-----
ANH-511	511.00	161	100.00*	2.365E+00	1.899E-01	1.899E-01	41.79

Flag: "\*" = Keyline



Summary of Nuclide Activity  
Sample ID : G247797005

Page : 3  
Acquisition date : 5-MAR-2010 10:30:38

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 pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	3.801E+01	3.801E+01	0.421E+01	11.07	
CD-109	461.40D	1.02	3.410E+00	3.492E+00	1.311E+00	37.53	
SN-126	2.30E+05Y	1.00	3.410E-01	3.410E-01	1.279E-01	37.53	
TL-208	1.41E+10Y	1.00	6.889E-01	6.889E-01	1.150E-01	16.69	
BI-211	7.04E+08Y	1.00	5.155E+00	5.155E+00	0.737E+00	14.30	
PB-212	1.41E+10Y	1.00	2.231E+00	2.231E+00	0.269E+00	12.05	
BI-214	1600.00Y	1.00	1.618E+00	1.618E+00	0.261E+00	16.15	
PB-214	1600.00Y	1.00	1.871E+00	1.871E+00	0.287E+00	15.33	
RA-224	1.41E+10Y	1.00	5.254E+00	5.254E+00	1.443E+00	27.45	
RA-226	1600.00Y	1.00	1.618E+00	1.618E+00	0.261E+00	16.15	
AC-228	1.41E+10Y	1.00	2.318E+00	2.318E+00	0.448E+00	19.32	
RA-228	1.41E+10Y	1.00	2.318E+00	2.318E+00	0.448E+00	19.32	
TH-228	1.41E+10Y	1.00	2.231E+00	2.231E+00	0.269E+00	12.05	
TH-232	1.41E+10Y	1.00	2.318E+00	2.318E+00	0.448E+00	19.32	
U-235	7.04E+08Y	1.00	1.907E-01	1.907E-01	0.814E-01	42.71	K
NP-237	2.14E+06Y	1.00	1.017E+00	1.017E+00	0.437E+00	42.99	
ANH-511	1.00E+09Y	1.00	1.899E-01	1.899E-01	0.793E-01	41.79	

Total Activity : 7.078E+01 7.086E+01

Grand Total Activity : 7.078E+01 7.086E+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	128.45	72	374	0.64	256.41	255	8	9.97E-03	96.0	5.91E+00	
0	209.62	190	341	0.85	418.68	414	10	2.64E-02	39.3	4.60E+00	T
0	270.32	169	261	1.23	540.03	534	12	2.35E-02	41.2	3.83E+00	T
0	328.23	89	162	0.85	655.80	652	8	1.23E-02	54.5	3.31E+00	T
0	463.27	62	141	0.98	925.81	921	10	8.68E-03	75.7	2.55E+00	T
0	727.60	99	86	1.50	1454.39	1446	15	1.38E-02	45.4	1.76E+00	T
0	768.49	62	68	1.06	1536.15	1533	9	8.56E-03	54.5	1.68E+00	
0	795.32	50	88	1.49	1589.82	1583	13	6.94E-03	82.3	1.62E+00	T
1	964.95	60	50	1.97	1929.10	1925	22	8.28E-03	44.1	1.36E+00	T
0	1238.65	75	83	2.11	2476.61	2467	16	1.04E-02	59.6	1.07E+00	T
0	1848.27	31	8	2.16	3696.53	3688	15	4.24E-03	53.3	8.07E-01	

Flags: "T" = Tentatively associated

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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247797005.CNF;1
* Acquisition date   : 5-MAR-2010 10:30:38.  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 02:00:01.54        Half life ratio    : 8.00000
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 17-FEB-2010 12:00:00  Nuclide Library   : SOLID
* Sample ID          : G247797005           Analyst initials  : MXR1
* Batch Number       : 957136               Sample Quantity   : 1.34330E+02 GRAM
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 16-FEB-2010 15:10:04.7MS Isotope       :
* MSD ID              :                      MSD Isotope       :
* LCS ID              : 1032-A               LCS Isotope       :
*****

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## Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	3.801E+01	4.209E+00	6.993E-01	6.592E-02	54.351
CD-109	3.492E+00	1.311E+00	1.468E+00	1.633E-01	2.379
SN-126	3.410E-01	1.279E-01	1.440E-01	1.595E-02	2.367
TL-208	6.889E-01	1.150E-01	6.623E-02	6.047E-03	10.403
BI-211	5.155E+00	7.371E-01	4.049E-01	3.800E-02	12.730
PB-212	2.231E+00	2.688E-01	1.040E-01	1.067E-02	21.462
BI-214	1.618E+00	2.614E-01	1.376E-01	1.365E-02	11.763
PB-214	1.871E+00	2.867E-01	1.384E-01	1.505E-02	13.519
RA-224	5.254E+00	1.443E+00	1.115E+00	1.025E-01	4.713
RA-226	1.618E+00	2.614E-01	1.376E-01	1.365E-02	11.763
AC-228	2.318E+00	4.480E-01	2.648E-01	3.197E-02	8.755
RA-228	2.318E+00	4.480E-01	2.648E-01	3.197E-02	8.755
TH-228	2.231E+00	2.688E-01	1.040E-01	1.067E-02	21.462
TH-232	2.318E+00	4.480E-01	2.648E-01	3.197E-02	8.755
U-235	1.907E-01	8.144E-02	3.814E-01	6.411E-02	0.500
NP-237	1.017E+00	4.373E-01	4.650E-01	1.100E-01	2.188
ANH-511	1.899E-01	7.934E-02	5.184E-02	4.499E-03	3.662

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (pCi/GRAM) Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	-4.545E-02	3.773E-01	6.314E-01	5.896E-02	-0.072

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NA-22	2.051E-03		5.694E-02	9.359E-02	8.223E-03	0.022
NA-24	1.291E+00		1.134E+00	Half-Life too short		
SC-46	7.574E-03		5.044E-02	8.239E-02	7.614E-03	0.092
V-48	-1.039E-02		8.319E-02	1.375E-01	1.251E-02	-0.076
CR-51	2.142E-02		4.805E-01	7.592E-01	7.308E-02	0.028
MN-54	3.999E-03		4.774E-02	7.783E-02	7.014E-03	0.051
CO-56	1.378E-02		4.878E-02	8.090E-02	7.333E-03	0.170
CO-57	2.211E-02		2.991E-02	4.949E-02	4.168E-03	0.447
CO-58	-3.878E-02		4.860E-02	7.283E-02	6.497E-03	-0.532
FE-59	-2.523E-03		1.190E-01	1.970E-01	1.831E-02	-0.013
CO-60	-1.842E-02		5.032E-02	7.856E-02	7.185E-03	-0.234
ZN-65	1.464E-02		1.295E-01	1.870E-01	1.591E-02	0.078
SE-75	-1.041E-02		5.963E-02	8.583E-02	8.010E-03	-0.121
SR-85	7.045E-02		5.120E-02	8.287E-02	7.190E-03	0.850
Y-88	1.596E-02		3.765E-02	6.718E-02	5.616E-03	0.238
Y-91	-1.294E+01		3.019E+01	4.797E+01	3.990E+00	-0.270
NB-94	-3.446E-04		4.362E-02	7.154E-02	5.962E-03	-0.005
NB-95	7.363E-02		6.093E-02	9.634E-02	8.360E-03	0.764
NB-95M	2.911E-02		1.691E-01	2.509E-01	2.600E-02	0.116
ZR-95	7.340E-02		8.955E-02	1.553E-01	1.480E-02	0.473
MO-99	1.682E+01		1.868E+01	3.243E+01	5.096E+00	0.519
TC-99M	-9.532E+10		2.187E+11	Half-Life too short		
RU-103	3.706E-02		4.597E-02	8.091E-02	1.133E-02	0.458
RH-106	3.988E-01		3.738E-01	6.610E-01	8.643E-02	0.603
RU-106	3.988E-01		3.717E-01	6.610E-01	5.512E-02	0.603
AG-108M	3.233E-02		3.738E-02	6.327E-02	5.622E-03	0.511
AG-110M	-3.060E-03		3.963E-02	6.496E-02	5.451E-03	-0.047
SN-113	-9.565E-03		5.450E-02	8.714E-02	7.601E-03	-0.110
CD-115	-5.732E+00		1.832E+01	3.005E+01	2.603E+00	-0.191
SN-117M	-7.362E-03		6.872E-02	1.085E-01	9.120E-03	-0.068
TE-123M	-2.815E-03		3.471E-02	5.486E-02	4.642E-03	-0.051
SB-124	-4.812E-02		8.873E-02	1.320E-01	1.214E-02	-0.365
SB-125	2.095E-03		1.068E-01	1.719E-01	1.505E-02	0.012
TE-125M	-1.128E+01		1.172E+01	1.796E+01	1.934E+00	-0.628
I-126	3.787E-01		2.947E-01	5.255E-01	4.267E-02	0.721
SB-126	1.119E-02		2.215E-01	3.156E-01	2.662E-02	0.035
SB-127	1.455E-01		1.851E+00	3.062E+00	3.470E-01	0.048
I-131	-3.650E-02		1.508E-01	2.413E-01	2.239E-02	-0.151
TE-132	4.555E-02		1.061E+00	1.777E+00	2.888E-01	0.026
BA-133	-2.945E-03		5.644E-02	8.003E-02	1.052E-02	-0.037
I-133	-2.238E-03		7.132E-03	Half-Life too short		
CS-134	1.134E-01	+	9.389E-02	1.169E-01	1.039E-02	0.970
CS-135	1.966E-01		2.115E-01	3.250E-01	3.432E-02	0.605
I-135	1.827E+10		3.374E+10	Half-Life too short		
CS-136	8.591E-02		1.444E-01	2.518E-01	2.319E-02	0.341
BA-137M	-2.275E-02		4.308E-02	6.809E-02	5.510E-03	-0.334
CS-137	-2.403E-02		4.551E-02	7.193E-02	5.833E-03	-0.334
CE-139	-2.676E-03		3.661E-02	5.774E-02	4.883E-03	-0.046

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BA-140	-2.307E-01		3.258E-01	5.011E-01	1.700E-01	-0.460
LA-140	-5.377E-02		1.041E-01	1.601E-01	1.451E-02	-0.336
CE-141	-1.123E-03		7.757E-02	1.213E-01	1.031E-02	-0.009
CE-143	1.131E-03		1.923E-04	Half-Life too short		
CE-144	1.457E-01		2.630E-01	3.851E-01	5.824E-02	0.378
PM-144	2.063E-02		4.393E-02	7.450E-02	6.185E-03	0.277
PR-144	1.530E+00		3.288E+00	5.575E+00	4.626E-01	0.275
PM-146	-4.982E-03		5.119E-02	8.136E-02	8.637E-03	-0.061
ND-147	1.355E-01		7.221E-01	1.223E+00	1.832E-01	0.111
PM-149	-1.345E+02		1.391E+02	2.149E+02	3.426E+01	-0.626
EU-152	6.720E-02		1.349E-01	2.000E-01	1.903E-02	0.336
GD-153	-7.389E-03		1.026E-01	1.585E-01	1.564E-02	-0.047
EU-154	-2.134E-03		1.620E-01	2.650E-01	3.047E-02	-0.008
EU-155	2.333E-01		1.217E-01	2.087E-01	1.942E-02	1.118
TB-160	-1.913E-01		1.817E-01	2.597E-01	2.390E-02	-0.736
HO-166M	-3.176E-02		7.552E-02	1.197E-01	1.003E-02	-0.265
TA-182	1.613E-01		2.794E-01	4.783E-01	4.031E-02	0.337
IR-192	-3.972E-03		4.262E-02	6.955E-02	6.427E-03	-0.057
HG-203	2.514E-02		5.370E-02	8.031E-02	7.644E-03	0.313
BI-207	4.438E-02		6.575E-02	1.154E-01	1.014E-02	0.384
PB-210	2.194E+00		5.377E+00	8.992E+00	8.650E-01	0.244
PB-211	1.885E-01		9.059E-01	1.473E+00	7.126E-01	0.128
BI-212	2.364E+00	+	1.112E+00	1.385E+00	1.712E-01	1.706
RN-219	-1.770E-01		5.197E-01	8.202E-01	1.214E-01	-0.216
RA-223	1.389E-01		8.800E-01	1.278E+00	2.251E-01	0.109
AC-227	-9.165E-02		3.174E-01	5.202E-01	6.514E-02	-0.176
TH-227	-9.165E-02		3.174E-01	5.202E-01	7.295E-02	-0.176
TH-229	-4.339E-01		6.170E-01	1.011E+00	8.873E-02	-0.429
PA-231	-9.158E-02		1.690E+00	2.783E+00	4.175E-01	-0.033
TH-231	1.389E-01		8.800E-01	1.278E+00	2.251E-01	0.109
PA-233	-6.532E-02		8.055E-02	1.261E-01	1.194E-02	-0.518
PA-234	1.119E-01		3.438E-01	5.924E-01	1.128E-01	0.189
PA-234M	2.225E-01		5.767E+00	9.772E+00	1.010E+00	0.023
TH-234	1.696E+00		1.740E+00	2.913E+00	5.414E-01	0.582
U-238	1.696E+00		1.740E+00	2.913E+00	5.414E-01	0.582
NP-239	1.564E-01		4.833E-01	7.888E-01	6.773E-02	0.198
AM-241	-1.616E-01		2.028E-01	3.265E-01	3.100E-02	-0.495
CM-247	-4.051E-02		4.812E-02	7.337E-02	6.236E-03	-0.552
CF-249	3.229E-02		5.057E-02	8.484E-02	7.215E-03	0.381
CF-251	-4.632E-02		1.487E-01	2.491E-01	2.140E-02	-0.186

# VAX/VMS Nuclide Identification Report Generated

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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : SYSSYSROOT:[ALPHA.ARCHIVE.GAMMA]G247797005          *
* Acquisition date   : 5-MAR-2010 10:30:38 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 02:00:01.54 Half life ratio : 8.000              *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 17-FEB-2010 12:00:00 Nuclide Library : SOLID         *
* Sample ID          : G247797005 Analyst initials: MXR1                 *
* Batch Number       : 957136 Sample Quantity : 1.3433E+02 GRAM          *
* Recovery           : 1.00000 Carrier Weight : 0.00000                  *
*****
*                                     QC DATA                                *
*
* CALIB. DATE/TIME   : 16-FEB-2010 15:10:04 MS Isotope :                  *
* MSD DPM             : 0.000 MSD Isotope :                               *
* LCS DPM             : 0.000 LCS Isotope :                               *
* LCSD DPM            : 0.000 LCSD Isotope :                             *
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## Combined Activity-MDA Report

### ---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM )	Act Error	DLC (pCi/GRAM )	TPU
K-40	3.801E+01	4.125E+00	3.506E-01	2.104E+00
CD-109	3.492E+00	1.284E+00	7.737E-01	6.553E-01
SN-126	3.410E-01	1.254E-01	7.592E-02	6.397E-02
TL-208	6.889E-01	1.127E-01	3.377E-02	5.748E-02
BI-211	5.155E+00	7.224E-01	2.083E-01	3.686E-01
PB-212	2.231E+00	2.634E-01	5.386E-02	1.344E-01
BI-214	1.618E+00	2.562E-01	7.009E-02	1.307E-01
PB-214	1.871E+00	2.810E-01	7.119E-02	1.434E-01
RA-224	5.254E+00	1.414E+00	5.774E-01	7.213E-01
RA-226	1.618E+00	2.562E-01	7.009E-02	1.307E-01
AC-228	2.318E+00	4.390E-01	1.339E-01	2.240E-01
RA-228	2.318E+00	4.390E-01	1.339E-01	2.240E-01
TH-228	2.231E+00	2.634E-01	5.386E-02	1.344E-01
TH-232	2.318E+00	4.390E-01	1.339E-01	2.240E-01
U-235	7.862E-02	2.358E-01	1.993E-01	1.203E-01
NP-237	1.017E+00	4.286E-01	2.451E-01	2.187E-01
ANH-511	1.899E-01	7.776E-02	2.649E-02	3.967E-02

### ---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	-4.545E-02	3.697E-01	3.231E-01	1.886E-01 NOT IDENT.
NA-22	2.051E-03	5.580E-02	4.704E-02	2.847E-02 NOT IDENT.
NA-24	1.291E+06	2.223E+06	0.000E+00	1.134E+06 SHORT HLIF
SC-46	7.574E-03	4.943E-02	4.168E-02	2.522E-02 FAIL ABUN
V-48	-1.039E-02	8.152E-02	6.944E-02	4.159E-02 NOT IDENT.
CR-51	2.142E-02	4.709E-01	3.912E-01	2.403E-01 NOT IDENT.
MN-54	3.999E-03	4.678E-02	3.942E-02	2.387E-02 NOT IDENT.
CO-56	1.378E-02	4.781E-02	4.097E-02	2.439E-02 FAIL ABUN
CO-57	2.211E-02	2.931E-02	2.594E-02	1.496E-02 NOT IDENT.
CO-58	-3.878E-02	4.762E-02	3.691E-02	2.430E-02 NOT IDENT.

FE-59	-2.523E-03	1.167E-01	9.929E-02	5.952E-02	NOT IDENT.
CO-60	-1.842E-02	4.931E-02	3.945E-02	2.516E-02	NOT IDENT.
ZN-65	1.464E-02	1.269E-01	9.423E-02	6.474E-02	NOT IDENT.
SE-75	-1.041E-02	5.844E-02	4.438E-02	2.981E-02	NOT IDENT.
SR-85	7.045E-02	5.017E-02	4.235E-02	2.560E-02	NOT IDENT.
Y-88	1.596E-02	3.690E-02	3.354E-02	1.882E-02	NOT IDENT.
Y-91	-1.294E+01	2.958E+01	2.413E+01	1.509E+01	NOT IDENT.
NB-94	-3.446E-04	4.274E-02	3.635E-02	2.181E-02	NOT IDENT.
NB-95	7.363E-02	5.971E-02	4.888E-02	3.046E-02	NOT IDENT.
NB-95M	2.911E-02	1.657E-01	1.300E-01	8.456E-02	NOT IDENT.
ZR-95	7.340E-02	8.776E-02	7.881E-02	4.478E-02	NOT IDENT.
MO-99	1.682E+01	1.831E+01	1.646E+01	9.342E+00	NOT IDENT.
TC-99M	-9.532E+16	4.287E+17	0.000E+00	0.000E+00	SHORT HLIF
RU-103	3.706E-02	4.505E-02	4.137E-02	2.299E-02	FAIL ABUN
RH-106	3.988E-01	3.664E-01	3.366E-01	1.869E-01	NOT IDENT.
RU-106	3.988E-01	3.642E-01	3.366E-01	1.858E-01	NOT IDENT.
AG-108M	3.233E-02	3.663E-02	3.243E-02	1.869E-02	NOT IDENT.
AG-110M	-3.060E-03	3.884E-02	3.305E-02	1.982E-02	NOT IDENT.
SN-113	-9.565E-03	5.341E-02	4.475E-02	2.725E-02	NOT IDENT.
CD-115	-5.732E+00	1.795E+01	1.535E+01	9.160E+00	NOT IDENT.
SN-117M	-7.362E-03	6.735E-02	5.662E-02	3.436E-02	NOT IDENT.
TE-123M	-2.815E-03	3.401E-02	2.862E-02	1.735E-02	NOT IDENT.
SB-124	-4.812E-02	8.696E-02	6.598E-02	4.437E-02	NOT IDENT.
SB-125	2.095E-03	1.047E-01	8.815E-02	5.340E-02	FAIL ABUN
TE-125M	-1.128E+01	1.148E+01	9.431E+00	5.858E+00	NOT IDENT.
I-126	3.787E-01	2.888E-01	2.673E-01	1.474E-01	NOT IDENT.
SB-126	1.119E-02	2.171E-01	1.603E-01	1.107E-01	NOT IDENT.
SB-127	1.455E-01	1.814E+00	1.557E+00	9.256E-01	NOT IDENT.
I-131	-3.650E-02	1.478E-01	1.241E-01	7.540E-02	NOT IDENT.
TE-132	4.555E-02	1.040E+00	9.214E-01	5.304E-01	NOT IDENT.
BA-133	-2.945E-03	5.531E-02	4.117E-02	2.822E-02	FAIL ABUN
I-133	-2.238E+03	1.398E+04	0.000E+00	7.132E+03	SHORT HLIF
CS-134	1.134E-01	9.202E-02	5.924E-02	4.695E-02	FAIL ABUN
CS-135	1.966E-01	2.072E-01	1.680E-01	1.057E-01	NOT IDENT.
I-135	1.827E+16	6.614E+16	0.000E+00	0.000E+00	SHORT HLIF
CS-136	8.591E-02	1.415E-01	1.270E-01	7.218E-02	NOT IDENT.
BA-137M	-2.275E-02	4.222E-02	3.464E-02	2.154E-02	NOT IDENT.
CS-137	-2.403E-02	4.460E-02	3.659E-02	2.275E-02	NOT IDENT.
CE-139	-2.676E-03	3.587E-02	3.010E-02	1.830E-02	NOT IDENT.
BA-140	-2.307E-01	3.193E-01	2.559E-01	1.629E-01	NOT IDENT.
LA-140	-5.377E-02	1.020E-01	8.014E-02	5.205E-02	FAIL ABUN
CE-141	-1.123E-03	7.602E-02	6.339E-02	3.879E-02	NOT IDENT.
CE-143	1.131E+03	3.770E+02	0.000E+00	1.923E+02	SHORT HLIF
CE-144	1.457E-01	2.578E-01	2.015E-01	1.315E-01	NOT IDENT.
PM-144	2.063E-02	4.305E-02	3.786E-02	2.197E-02	NOT IDENT.
PR-144	1.530E+00	3.222E+00	2.833E+00	1.644E+00	NOT IDENT.
PM-146	-4.982E-03	5.017E-02	4.167E-02	2.560E-02	NOT IDENT.
ND-147	1.355E-01	7.076E-01	6.248E-01	3.610E-01	FAIL ABUN
PM-149	-1.345E+02	1.364E+02	1.110E+02	6.957E+01	NOT IDENT.
EU-152	6.720E-02	1.322E-01	1.030E-01	6.744E-02	FAIL ABUN
GD-153	-7.389E-03	1.005E-01	8.336E-02	5.130E-02	NOT IDENT.
EU-154	-2.134E-03	1.587E-01	1.332E-01	8.099E-02	NOT IDENT.
EU-155	2.333E-01	1.193E-01	1.096E-01	6.085E-02	FAIL ABUN
TB-160	-1.913E-01	1.781E-01	1.314E-01	9.087E-02	FAIL ABUN
HO-166M	-3.176E-02	7.401E-02	6.079E-02	3.776E-02	NOT IDENT.
TA-182	1.613E-01	2.738E-01	2.406E-01	1.397E-01	FAIL ABUN
IR-192	-3.972E-03	4.177E-02	3.585E-02	2.131E-02	FAIL ABUN
HG-203	2.514E-02	5.262E-02	4.149E-02	2.685E-02	NOT IDENT.
BI-207	4.438E-02	6.444E-02	5.822E-02	3.288E-02	FAIL ABUN
PB-210	2.194E+00	5.270E+00	4.790E+00	2.689E+00	NOT IDENT.
PB-211	1.885E-01	8.877E-01	7.560E-01	4.529E-01	NOT IDENT.
BI-212	2.364E+00	1.090E+00	7.035E-01	5.562E-01	FAIL ABUN
RN-219	-1.770E-01	5.093E-01	4.210E-01	2.598E-01	FAIL ABUN
RA-223	1.389E-01	8.624E-01	6.584E-01	4.400E-01	FAIL ABUN
AC-227	-9.165E-02	3.110E-01	2.691E-01	1.587E-01	FAIL ABUN
TH-227	-9.165E-02	3.111E-01	2.691E-01	1.587E-01	FAIL ABUN
TH-229	-4.339E-01	6.047E-01	5.257E-01	3.085E-01	FAIL ABUN
PA-231	-9.158E-02	1.656E+00	1.437E+00	8.449E-01	FAIL ABUN
TH-231	1.389E-01	8.624E-01	6.584E-01	4.400E-01	FAIL ABUN
PA-233	-6.532E-02	7.894E-02	6.499E-02	4.027E-02	FAIL ABUN
PA-234	1.119E-01	3.369E-01	2.994E-01	1.719E-01	NOT IDENT.
PA-234M	2.225E-01	5.651E+00	4.933E+00	2.883E+00	NOT IDENT.
TH-234	1.696E+00	1.705E+00	1.544E+00	8.699E-01	FAIL ABUN
U-238	1.696E+00	1.705E+00	1.544E+00	8.699E-01	FAIL ABUN
NP-239	1.564E-01	4.736E-01	4.137E-01	2.416E-01	FAIL ABUN
AM-241	-1.616E-01	1.987E-01	1.732E-01	1.014E-01	NOT IDENT.
CM-247	-4.051E-02	4.715E-02	3.766E-02	2.406E-02	FAIL ABUN
CF-249	3.229E-02	4.955E-02	4.358E-02	2.528E-02	NOT IDENT.

CF-251	-4.632E-02	1.458E-01	1.297E-01	7.436E-02 NOT IDENT.
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*                                     GEL Laboratories LLC                      *
*                                     2040 SAVAGE ROAD                        *
*                                     CHARLESTON ,SC 29417                     *
*                                     GAMMA SPECTROSCOPY BACKGROUND REPORT      *
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ENERGY	MDA COUNTS
46.54	323.4651
49.72	324.6480
57.36	0.0000
59.54	438.2037
63.29	422.9677
63.29	422.9677
64.28	462.8978
67.75	447.1656
69.67	481.6927
70.83	462.2395
72.81	446.4684
72.87	446.5302
72.87	446.5302
74.82	462.4306
74.82	462.4306
74.82	462.4306
74.97	462.5840
77.11	464.7576
77.11	464.7576
77.11	464.7576
79.69	397.3392
79.80	397.4315
80.12	414.3364
80.19	414.3970
80.57	457.1105
81.00	507.5197
81.07	507.5938
81.07	507.5938
83.79	409.8970
83.79	409.8970
85.43	438.7900
86.48	517.8591
86.55	520.9985
86.79	521.2476
86.94	550.5432
87.57	454.5011
88.03	454.9166
88.47	455.3141
89.96	456.6510
91.11	420.5674
92.59	421.7689
92.59	421.7689
93.35	383.5612
94.67	362.7293
94.87	362.8661
94.87	362.8661
95.86	397.8694
97.43	370.5547
98.44	348.0437
99.53	299.5183
100.11	315.5610
103.18	375.2913
103.37	375.4180
105.31	287.8227
106.12	329.5596
109.28	379.3147
111.00	326.9973
111.76	327.4176
116.30	336.3702
117.23	345.5208
121.12	352.0432
121.78	308.9060
122.06	309.0433
123.07	343.3264
131.20	344.3508
133.52	310.6661
136.00	345.7116

136.47	338.1654
140.51	342.3948
140.51	0.0000
143.76	315.8849
144.24	302.6004
144.24	302.6004
145.44	329.0287
152.43	351.5636
153.25	355.3704
154.21	307.9330
154.21	307.9330
156.02	341.8346
158.56	310.8737
159.00	315.6441
162.66	297.5540
163.33	326.6689
165.86	310.3630
176.60	312.5101
177.52	304.0465
181.07	284.6461
184.41	312.7991
185.72	298.1523
193.51	310.7459
197.04	280.4367
205.31	323.2577
210.85	303.2378
215.65	258.7303
222.11	246.4567
227.38	237.5489
228.16	265.7068
228.18	270.3727
235.69	281.0638
235.96	258.5879
235.96	258.5879
238.63	213.8603
238.63	213.8603
240.99	214.3556
242.00	214.5669
244.70	195.6069
252.40	226.2631
252.80	230.1702
256.23	241.4507
256.23	241.4507
260.90	211.7050
264.66	197.7594
268.22	193.7469
269.46	197.8429
269.46	197.8429
271.23	216.0303
273.65	159.6483
276.40	189.9616
277.37	206.0772
277.60	213.9340
278.00	214.9881
279.20	198.7786
279.54	198.8375
280.46	175.4949
283.69	182.6652
284.31	197.5036
285.41	201.6248
285.90	194.8217
287.50	174.3991
293.27	0.0000
295.22	168.2051
295.96	168.3112
298.57	163.1091
299.98	163.2993
299.98	163.2993
300.09	170.4842
300.09	170.4842
300.13	170.4895
301.36	170.6645
302.85	178.8582
304.50	175.9033
304.50	175.9033
304.85	166.3568
308.46	165.0134
311.90	196.0712

316.51	171.5668
319.41	154.7650
320.08	164.9674
323.87	165.6653
323.87	165.6653
328.76	176.0801
333.37	166.3427
334.37	167.0175
334.37	167.0175
338.28	183.7334
338.28	183.7334
338.32	183.7388
338.32	183.7388
338.32	183.7388
340.48	157.9242
340.55	171.0922
344.28	150.1256
351.06	160.8339
351.93	142.0631
356.01	143.1136
364.49	144.4119
366.42	133.0849
383.85	162.3010
388.16	136.1836
388.63	142.6122
391.69	137.5782
400.66	138.4089
401.81	152.4741
402.40	163.2766
404.85	139.8706
410.95	126.3906
414.70	140.7771
423.72	128.5259
427.09	94.9651
427.87	111.3929
433.94	111.8193
453.88	113.2014
463.37	119.4297
468.07	114.6156
473.00	102.1514
476.78	114.3031
477.60	108.9547
487.02	95.9680
492.35	103.5254
497.08	84.6820
511.00	89.0134
514.00	99.5769
527.90	112.0638
529.87	0.0000
531.02	101.1204
537.26	99.5941
546.56	0.0000
563.25	84.9133
569.33	97.4803
569.50	97.4904
569.70	99.3911
583.19	84.8194
600.60	95.1618
602.73	127.8393
604.72	117.1844
609.32	97.4936
609.32	97.4936
610.33	88.5268
614.28	85.4694
618.01	93.0539
621.93	69.9205
621.93	69.9205
633.25	86.8902
635.95	87.9763
636.99	90.9520
645.85	80.5226
657.76	77.0117
661.66	94.9500
661.66	94.9500
664.57	0.0000
666.33	79.2910
666.50	79.2988
677.62	63.7531

685.70	79.9746
695.00	81.3026
696.49	89.3900
696.51	89.3911
697.00	87.4014
702.65	99.6985
706.68	98.8613
711.68	90.9844
720.70	87.9489
721.93	0.0000
722.78	81.2559
722.91	81.2598
723.31	91.4326
724.19	82.9965
727.33	72.2515
733.00	81.6016
735.93	65.3609
739.50	64.4350
747.24	70.7958
752.31	80.1957
753.82	65.8406
756.73	65.9188
763.94	75.7521
765.81	72.3635
766.42	68.9339
777.92	86.2158
778.90	81.0545
783.70	73.9190
785.37	69.8004
795.86	73.2249
801.95	101.8577
810.29	82.0485
810.76	76.8033
815.77	63.2461
818.51	53.8152
832.01	75.3023
834.85	78.5672
836.80	0.0000
846.77	61.8530
856.80	58.8699
860.56	55.7350
871.09	55.9482
873.19	49.5297
875.33	0.0000
879.36	74.4597
880.51	57.2170
883.24	57.2726
884.68	59.4647
889.28	62.8116
898.04	52.1426
911.20	56.7480
911.20	56.7480
911.20	56.7480
926.50	60.3402
937.49	57.8141
944.13	59.7843
946.00	50.6181
949.00	46.0632
962.29	53.9361
964.08	49.2062
966.15	63.9323
968.97	63.9912
968.97	63.9912
968.97	63.9912
983.53	52.1844
996.26	73.9227
1001.03	61.8535
1004.73	62.8643
1037.84	68.2676
1038.76	0.0000
1048.07	57.0728
1050.41	60.9219
1050.41	60.9219
1063.66	52.5673
1085.87	50.9987
1099.45	64.7318
1112.07	82.6242
1115.54	64.9039

1120.29	66.1047
1120.29	66.1047
1120.55	66.1102
1121.30	55.0107
1131.51	0.0000
1173.23	67.1201
1177.93	77.0923
1189.05	70.3933
1204.77	87.6276
1221.41	81.0297
1231.02	92.8464
1235.36	99.8412
1238.28	74.3643
1260.41	0.0000
1271.85	47.6579
1274.44	55.8079
1274.54	54.7932
1291.59	55.0393
1298.22	0.0000
1312.11	64.5535
1332.49	43.2612
1365.19	55.0423
1368.63	0.0000
1384.29	40.6948
1408.01	26.2370
1457.56	0.0000
1460.82	28.6963
1489.16	25.6768
1505.03	40.8033
1596.21	25.3615
1620.50	16.0525
1678.03	0.0000
1690.97	17.2517
1764.49	10.2155
1764.49	10.2155
1770.23	11.9317
1771.35	6.8198
1791.20	0.0000
1836.06	9.8671

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G247797005

Total Uranium Activity	5.0829E+00	ug/g
Total Uranium Counting Unc.	5.0735E+00	ug/g
Total Uranium Tpu	2.5885E-06	ug/g
Total Uranium Mda	4.5931E+00	ug/g

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*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON , SC 29417              *
*               GROSS GAMMA REPORT                 *
*
*****
*
*  BATCH ID      : 957136          SAMPLE ID   : G247797005
*  ANALYST       : MXR1            DETECTOR    : GAM06
*  SAMPLE DATE   : 17-FEB-2010 12:00:00.00  COUNT TIME : 0 02:00:00.00
*  ANALYSIS DATE: 5-MAR-2010 10:30:38.71  SAMPLE ALQT: 134.330 GRAM
*
*****

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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.228E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.703E+00
GROSS GAMMA MDA     (pCi/GRAM ) : 4.446E+00
GROSS GAMMA DLC     (pCi/GRAM ) : 2.165E+00

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VAX/VMS Nuclide Identification Report Generated 5-MAR-2010 12:35:11.46

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*****
*                               GEL Laboratories LLC                      *
*                               2040 Savage Road                        *
*                               Charleston, SC 29414                   *
*****
Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247809001.CNF;1
Sample date   : 19-FEB-2010 12:00:00 Acquisition date : 5-MAR-2010 10:31:36.
Sample ID     : G247809001 Sample quantity : 1.32540E+02 GRAM
Detector name : GAM15 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:01.36 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity : 5.00000
Batch ID       : 957136 Detector SN# :
Matrix Spike ID : LCS ID : 1032-A
*****

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Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	2	74.82*	286	495	1.60	148.56	142	20	3.97E-02	17.3	1.62E+00
2	2	77.26*	556	510	1.61	153.44	142	20	7.72E-02	9.1	
3	0	87.25	160	409	1.17	173.43	171	7	2.22E-02	22.3	
4	0	186.10*	194	315	1.47	371.10	367	10	2.69E-02	19.5	
5	0	209.88	204	365	2.20	418.66	413	14	2.83E-02	21.3	
6	2	238.74*	1201	219	1.32	476.38	469	19	1.67E-01	3.7	1.70E+00
7	2	241.77*	301	251	1.85	482.44	469	19	4.18E-02	14.9	
8	0	270.36	89	242	1.82	539.63	536	12	1.24E-02	36.4	
9	0	277.09	70	274	1.22	553.08	547	13	9.71E-03	50.2	
10	1	295.40*	394	155	1.74	589.70	583	21	5.48E-02	8.1	1.33E+00
11	1	300.12	82	178	1.74	599.14	583	21	1.13E-02	32.2	
12	0	328.39	69	172	1.65	655.68	651	10	9.62E-03	37.4	
13	0	338.32	189	202	0.99	675.54	671	10	2.63E-02	15.8	
14	0	352.06*	557	203	1.48	703.01	697	13	7.73E-02	6.9	
15	0	409.55	44	65	1.64	818.01	815	6	6.10E-03	32.9	
16	0	510.70*	106	199	2.27	1020.30	1014	19	1.47E-02	36.1	
17	0	583.34*	358	144	1.71	1165.59	1160	14	4.97E-02	9.2	
18	0	609.42*	401	140	1.58	1217.76	1210	14	5.58E-02	8.2	
19	0	661.47	78	78	1.06	1321.86	1314	13	1.08E-02	25.9	
20	0	726.85*	88	83	1.95	1452.64	1444	15	1.23E-02	25.3	
21	0	768.46	41	54	1.77	1535.87	1532	7	5.68E-03	33.7	
22	0	860.37*	65	47	1.51	1719.70	1714	13	9.05E-03	25.8	
23	0	911.21*	274	44	1.67	1821.40	1816	11	3.80E-02	7.8	
24	3	964.53	50	46	2.66	1928.07	1922	22	6.99E-03	32.7	3.38E+00
25	3	968.86*	150	58	2.04	1936.73	1922	22	2.08E-02	13.3	
26	0	1120.31*	92	83	1.77	2239.69	2233	14	1.28E-02	23.9	
27	0	1460.59*	1271	47	2.00	2920.44	2910	21	1.77E-01	3.1	
28	0	1730.02	19	15	1.80	3459.50	3454	14	2.59E-03	48.9	
29	0	1764.50	79	7	1.58	3528.48	3521	14	1.10E-02	13.3	

Flag: "\*" = Peak area was modified by background subtraction



## VMS Nuclide Identification Report V3.1 Generated 5-MAR-2010 12:35:16

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Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247809001.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 19-FEB-2010 12:00:00 Acquisition date : 5-MAR-2010 10:31:36
Sample ID         : G247809001 Sample quantity : 132.54 GRAM
Sample type       : SOLID Sample geometry :
Detector name     : GAMMA15 Detector geometry: CAN
Elapsed live time : 0 02:00:00.00 Elapsed real time: 0 02:00:01.36 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	+	1460.82	*	3.495E+01	4.069E+00	6.595E-01	6.481E-02	52.988
CD-109	+	88.03	*	2.810E+00	1.300E+00	1.894E+00	2.351E-01	1.484
SN-126		64.28		-9.010E-02	8.950E-01	1.461E+00	2.473E-01	-0.062
	+	86.94		1.144E+00	7.032E-01	8.102E-01	3.426E-01	1.412
	+	87.57	*	2.752E-01	1.273E-01	1.926E-01	2.384E-02	1.429
BA-137M	+	661.66	*	1.241E-01	6.518E-02	8.098E-02	6.658E-03	1.532
CS-137	+	661.66	*	1.311E-01	6.886E-02	8.555E-02	7.048E-03	1.532
TL-208	+	277.37		8.095E-01	8.203E-01	7.829E-01	1.107E-01	1.034
	+	583.19	*	5.444E-01	1.120E-01	7.147E-02	6.537E-03	7.616
	+	860.56		9.366E-01	4.919E-01	5.196E-01	5.080E-02	1.803
BI-211		72.87		7.436E+00	5.574E+00	8.428E+00	9.653E-01	0.882
	+	351.06	*	3.887E+00	6.642E-01	4.336E-01	4.318E-02	8.966
PB-212	+	74.82		2.437E+00	9.189E-01	8.246E-01	1.242E-01	2.956
	+	77.11		2.631E+00	5.665E-01	4.599E-01	5.331E-02	5.720
	+	238.63	*	1.896E+00	2.672E-01	1.168E-01	1.395E-02	16.235
	+	300.09		1.997E+00	1.309E+00	1.608E+00	1.958E-01	1.242
BI-214	+	609.32	*	1.181E+00	2.256E-01	1.445E-01	1.440E-02	8.169
	+	1120.29		1.423E+00	6.983E-01	5.816E-01	6.299E-02	2.446
	+	1764.49		1.707E+00	4.790E-01	3.626E-01	3.180E-02	4.708
PB-214	+	74.82		4.320E+00	1.610E+00	1.462E+00	2.042E-01	2.956
	+	77.11		4.638E+00	1.069E+00	8.108E-01	1.154E-01	5.720
	+	242.00		2.883E+00	9.286E-01	7.099E-01	8.844E-02	4.061
	+	295.22		1.710E+00	3.495E-01	2.769E-01	3.452E-02	6.174
	+	351.93	*	1.411E+00	2.533E-01	1.536E-01	1.746E-02	9.186
RA-224	+	240.99	*	5.098E+00	1.615E+00	1.251E+00	1.380E-01	4.074
RA-226	+	609.32	*	1.181E+00	2.256E-01	1.445E-01	1.440E-02	8.169
	+	1120.29		1.423E+00	6.983E-01	5.816E-01	6.299E-02	2.446
	+	1764.49		1.707E+00	4.790E-01	3.626E-01	3.180E-02	4.708
AC-228	+	338.32		1.475E+00	7.745E-01	4.943E-01	2.075E-01	2.985
	+	911.20	*	2.011E+00	3.978E-01	2.998E-01	3.631E-02	6.710
	+	968.97		1.905E+00	6.886E-01	4.733E-01	1.163E-01	4.025
RA-228	+	338.32		1.475E+00	7.745E-01	4.943E-01	2.075E-01	2.985
	+	911.20	*	2.011E+00	3.978E-01	2.998E-01	3.631E-02	6.710
	+	968.97		1.905E+00	6.886E-01	4.733E-01	1.163E-01	4.025

---- Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TH-228	+	74.82		2.437E+00	8.883E-01	8.246E-01	9.535E-02	2.956
	+	77.11		2.631E+00	5.665E-01	4.599E-01	5.331E-02	5.720
	+	238.63	*	1.896E+00	2.672E-01	1.168E-01	1.395E-02	16.235
	+	300.09		1.997E+00	1.779E+00	1.608E+00	9.894E-01	1.242
TH-232	+	338.32		1.475E+00	4.871E-01	4.943E-01	4.873E-02	2.985
	+	911.20	*	2.011E+00	3.978E-01	2.998E-01	3.631E-02	6.710
	+	968.97		1.905E+00	6.886E-01	4.733E-01	1.163E-01	4.025
NP-237	+	86.48	*	8.212E-01	4.172E-01	5.235E-01	1.272E-01	1.569
		95.86		-4.572E+00	1.785E+00	1.993E+00	4.990E-01	-2.294
ANH-511	+	511.00	*	1.237E-01	9.001E-02	5.256E-02	4.542E-03	2.353

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7		477.60	*	9.059E-02	3.797E-01	6.291E-01	5.847E-02	0.144
NA-22		1274.54	*	1.033E-02	5.591E-02	9.199E-02	8.357E-03	0.112
NA-24		1368.63	*	-6.588E-02	5.591E-02	Half-Life too short		
SC-46		889.28	*	-1.965E-02	4.897E-02	7.808E-02	7.256E-03	-0.252
	+	1120.55		2.383E-01	1.159E-01	1.585E-01	1.348E-02	1.503
V-48		944.13		-2.597E-01	1.047E+00	1.686E+00	1.559E-01	-0.154
		983.53	*	-6.341E-03	8.699E-02	1.419E-01	1.297E-02	-0.045
		1312.11		-4.466E-02	9.595E-02	1.463E-01	1.379E-02	-0.305
CR-51		320.08	*	-8.742E-02	4.723E-01	7.767E-01	8.243E-02	-0.113
MN-54		834.85	*	1.562E-04	4.616E-02	7.653E-02	6.945E-03	0.002
CO-56		846.77	*	5.700E-03	4.496E-02	7.528E-02	6.869E-03	0.076
		1037.84		-9.418E-02	3.758E-01	6.005E-01	5.631E-02	-0.157
		1238.28		1.768E-01	1.246E-01	2.195E-01	1.972E-02	0.805
		1771.35		-1.337E+00	4.315E-01	3.391E-01	2.962E-02	-3.943
CO-57		122.06	*	9.354E-03	3.263E-02	5.360E-02	5.399E-03	0.175
		136.47		1.429E-01	2.690E-01	4.439E-01	4.716E-02	0.322
CO-58		810.76	*	-1.811E-02	4.417E-02	7.067E-02	6.353E-03	-0.256
FE-59		1099.45	*	7.989E-02	1.137E-01	1.966E-01	1.834E-02	0.406
		1291.59		3.559E-02	1.488E-01	2.465E-01	2.546E-02	0.144
CO-60		1173.23		-1.756E-02	5.406E-02	8.506E-02	6.924E-03	-0.206
		1332.49	*	4.831E-03	4.617E-02	7.538E-02	7.246E-03	0.064
ZN-65		1115.54	*	-2.355E-02	1.344E-01	1.834E-01	1.567E-02	-0.128
SE-75		121.12		5.815E-02	1.675E-01	2.758E-01	3.377E-02	0.211
		136.00		1.224E-02	5.157E-02	8.426E-02	8.531E-03	0.145
		264.66	*	5.459E-02	6.136E-02	9.779E-02	1.072E-02	0.558
		279.54		1.944E-01	1.583E-01	2.457E-01	2.721E-02	0.791
		400.66		1.689E-01	3.126E-01	5.293E-01	5.799E-02	0.319
SR-85		514.00	*	1.406E-01	4.994E-02	9.169E-02	7.921E-03	1.533
Y-88		898.04		-3.678E-02	5.097E-02	7.865E-02	7.365E-03	-0.468
		1836.06	*	-1.949E-02	3.734E-02	5.436E-02	4.578E-03	-0.358
Y-91		1204.77	*	6.673E+00	3.028E+01	4.993E+01	4.209E+00	0.134
NB-94		702.65	*	1.012E-02	4.211E-02	7.156E-02	6.041E-03	0.141
		871.09		1.116E-02	4.238E-02	7.158E-02	6.602E-03	0.156
NB-95		765.81	*	9.507E-02	5.986E-02	9.814E-02	8.599E-03	0.969

----- Non-Identified Nuclides -----

Nuclide	Line Ided	Energy (keV)	Activity Key	(pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NB-95M		235.69	*	5.120E-01	1.941E-01	3.064E-01	3.692E-02	1.671
ZR-95		724.19		1.090E-01	1.261E-01	1.965E-01	1.825E-02	0.555
		756.73	*	5.760E-02	8.079E-02	1.418E-01	1.363E-02	0.406
MO-99		140.51		-2.737E+01	2.319E+01	3.396E+01	8.263E+00	-0.806
		181.07		9.957E+00	1.951E+01	2.797E+01	5.560E+00	0.356
		366.42		4.920E+00	9.011E+01	1.492E+02	1.367E+01	0.033
		739.50	*	-3.223E+00	1.053E+01	1.711E+01	2.698E+00	-0.188
		777.92		-1.164E+01	3.121E+01	5.033E+01	4.439E+00	-0.231
TC-99M		140.51	*	-2.444E+09	3.121E+01	Half-Life too short		
RU-103		497.08	*	2.677E-02	4.599E-02	7.772E-02	1.086E-02	0.344
	+	610.33		1.194E+01	2.748E+00	3.194E+00	5.193E-01	3.736
RH-106		621.93	*	-4.607E-02	3.759E-01	5.984E-01	7.849E-02	-0.077
		1050.41		-1.562E-01	3.027E+00	4.927E+00	4.378E-01	-0.032
RU-106		621.93	*	-4.607E-02	3.758E-01	5.984E-01	5.029E-02	-0.077
		1050.41		-1.562E-01	3.027E+00	4.927E+00	4.378E-01	-0.032
AG-108M		433.94	*	-8.606E-03	3.523E-02	5.675E-02	5.015E-03	-0.152
		614.28		-5.394E-03	4.892E-02	6.701E-02	5.845E-03	-0.081
		722.91		6.622E-03	4.951E-02	7.234E-02	6.386E-03	0.092
AG-110M		657.76	*	1.488E-03	4.859E-02	7.063E-02	6.010E-03	0.021
		677.62		3.521E-02	3.815E-01	6.435E-01	5.512E-02	0.055
		706.68		-1.023E-01	2.631E-01	4.244E-01	3.699E-02	-0.241
		763.94		1.790E-02	2.244E-01	3.247E-01	2.918E-02	0.055
		884.68		1.117E-02	5.795E-02	9.736E-02	9.281E-03	0.115
		937.49		-1.178E-01	1.347E-01	2.034E-01	1.942E-02	-0.579
		1384.29		-1.704E-01	2.026E-01	3.048E-01	3.000E-02	-0.559
		1505.03		-2.226E-01	3.492E-01	5.306E-01	5.071E-02	-0.420
SN-113		391.69	*	-6.518E-03	5.348E-02	8.735E-02	7.586E-03	-0.075
CD-115		260.90		-1.443E+02	1.246E+02	1.959E+02	2.147E+01	-0.737
		492.35		-3.970E+01	3.269E+01	4.817E+01	4.162E+00	-0.824
		527.90	*	-2.542E+00	9.412E+00	1.495E+01	1.290E+00	-0.170
SN-117M		156.02		-1.064E+00	2.763E+00	4.382E+00	4.567E-01	-0.243
		158.56	*	-9.668E-03	6.685E-02	1.071E-01	1.122E-02	-0.090
TE-123M		159.00	*	1.737E-02	3.653E-02	5.992E-02	6.314E-03	0.290
SB-124		602.73		-1.854E-02	5.984E-02	8.055E-02	6.826E-03	-0.230
		645.85		1.545E-01	5.795E-01	9.506E-01	8.378E-02	0.163
		722.78		4.815E-02	4.895E-01	7.125E-01	6.232E-02	0.068
		1690.97	*	-9.086E-03	1.013E-01	1.647E-01	1.551E-02	-0.055
SB-125		427.87	*	5.566E-02	1.103E-01	1.863E-01	1.622E-02	0.299
		463.37		7.074E-01	3.754E-01	6.672E-01	6.181E-02	1.060
		600.60		6.059E-02	2.450E-01	3.789E-01	3.459E-02	0.160
		635.95		-2.755E-02	3.394E-01	5.417E-01	4.912E-02	-0.051
TE-125M		109.28	*	-1.653E+01	1.277E+01	1.956E+01	2.322E+00	-0.845
I-126		388.63		-9.348E-02	1.933E-01	3.088E-01	2.627E-02	-0.303
		666.33	*	1.593E-01	2.850E-01	4.352E-01	3.589E-02	0.366
		753.82		-1.582E+00	2.021E+00	3.153E+00	2.744E-01	-0.502
SB-126		414.70		7.040E-02	9.113E-02	1.440E-01	1.224E-02	0.489
		666.50		5.664E-02	9.767E-02	1.494E-01	1.232E-02	0.379
		695.00		3.904E-02	9.190E-02	1.580E-01	1.328E-02	0.247
		697.00		7.247E-02	3.090E-01	5.252E-01	4.419E-02	0.138

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
SB-127	720.70	*		-5.375E-02	1.844E-01	2.570E-01	2.194E-02	-0.209
	856.80			4.943E-01	5.421E-01	8.603E-01	7.885E-02	0.575
	252.40			-2.641E+00	4.581E+00	7.253E+00	3.046E+00	-0.364
	473.00			-3.396E-01	1.666E+00	2.680E+00	3.343E-01	-0.127
	685.70	*		-2.013E-01	1.309E+00	2.169E+00	2.349E-01	-0.093
I-131	783.70			3.450E+00	3.329E+00	5.925E+00	7.234E-01	0.582
	80.19			-1.648E+00	6.602E+00	9.407E+00	1.109E+00	-0.175
	284.31			-9.377E-01	1.837E+00	2.806E+00	3.118E-01	-0.334
	364.49	*		-8.311E-02	1.262E-01	1.997E-01	1.926E-02	-0.416
TE-132	636.99			-1.993E-01	1.716E+00	2.729E+00	2.413E-01	-0.073
	49.72			8.084E-02	4.363E+01	7.253E+01	1.087E+01	0.001
	111.76			2.392E-01	3.358E+01	5.473E+01	6.562E+00	0.004
	116.30			2.283E+01	2.905E+01	4.848E+01	5.775E+00	0.471
BA-133	228.16	*		3.250E-01	7.203E-01	1.229E+00	2.096E-01	0.264
	81.00			-2.629E-01	1.583E-01	2.005E-01	3.508E-02	-1.311
	276.40			7.481E-01	7.596E-01	8.068E-01	1.256E-01	0.927
	302.85			7.718E-02	2.075E-01	3.070E-01	4.418E-02	0.251
I-133	356.01	*		4.479E-02	5.905E-02	8.926E-02	1.206E-02	0.502
	383.85			2.149E-01	3.721E-01	6.313E-01	7.861E-02	0.340
	529.87	*		-2.229E-03	3.721E-01	Half-Life	too short	
	875.33			-6.639E-03	3.721E-01	Half-Life	too short	
CS-134	1298.22			-6.299E-02	3.721E-01	Half-Life	too short	
	563.25			1.941E-01	4.517E-01	7.523E-01	6.517E-02	0.258
	569.33			1.149E-01	2.581E-01	4.131E-01	3.588E-02	0.278
	604.72			-7.871E-03	5.040E-02	6.887E-02	5.847E-03	-0.114
CS-135	795.86	*		9.552E-02	6.039E-02	1.100E-01	9.859E-03	0.868
	801.95			-1.458E-01	5.242E-01	8.517E-01	7.646E-02	-0.171
	1365.19			3.203E-01	1.247E+00	2.157E+00	2.155E-01	0.148
	268.22	*		4.362E-02	2.351E-01	3.457E-01	4.148E-02	0.126
I-135	546.56			1.763E+08	2.351E-01	Half-Life	too short	
	836.80			1.297E+09	2.351E-01	Half-Life	too short	
	1038.76			3.835E+07	2.351E-01	Half-Life	too short	
	1131.51			-1.167E+08	2.351E-01	Half-Life	too short	
CS-136	1260.41	*		-4.684E+08	2.351E-01	Half-Life	too short	
	1457.56			5.896E+10	2.351E-01	Half-Life	too short	
	1678.03			1.334E+06	2.351E-01	Half-Life	too short	
	1791.20			-6.160E+08	2.351E-01	Half-Life	too short	
CE-139	153.25			9.300E-01	1.034E+00	1.717E+00	2.020E-01	0.542
	176.60			-2.021E-01	6.155E-01	9.736E-01	1.117E-01	-0.208
	273.65			6.161E-01	9.048E-01	9.644E-01	1.104E-01	0.639
	340.55			6.848E-01	2.272E-01	3.695E-01	3.731E-02	1.853
BA-140	818.51			-2.782E-02	7.786E-02	1.249E-01	1.126E-02	-0.223
	1048.07	*		4.403E-02	1.224E-01	2.068E-01	1.912E-02	0.213
	1235.36			9.607E-02	7.736E-01	1.264E+00	1.495E-01	0.076
	165.86	*		2.637E-03	3.812E-02	6.150E-02	6.565E-03	0.043
BA-140	162.66			-3.947E-01	1.026E+00	1.596E+00	1.766E-01	-0.247
	304.85			8.025E-01	1.793E+00	2.650E+00	7.918E-01	0.303
	423.72			8.141E-01	2.232E+00	3.717E+00	1.222E+00	0.219
	537.26	*		1.003E-02	3.070E-01	4.988E-01	1.692E-01	0.020

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
LA-140	+	328.76		6.271E-01	4.741E-01	6.462E-01	6.776E-02	0.971
		487.02		1.362E-01	1.641E-01	2.811E-01	2.577E-02	0.485
		815.77		1.366E-01	3.339E-01	5.739E-01	5.719E-02	0.238
		1596.21	*	6.204E-03	8.997E-02	1.505E-01	1.411E-02	0.041
CE-141		145.44	*	5.974E-02	8.064E-02	1.336E-01	1.381E-02	0.447
CE-143		57.36		-7.642E-04	8.064E-02	Half-Life	too short	
		293.27	*	5.112E-04	8.064E-02	Half-Life	too short	
		664.57		1.210E-03	8.064E-02	Half-Life	too short	
		721.93		-2.693E-04	8.064E-02	Half-Life	too short	
CE-144		80.12		-4.301E-01	3.958E+00	5.679E+00	6.675E-01	-0.076
		133.52	*	-2.903E-01	2.698E-01	4.126E-01	6.657E-02	-0.704
PM-144		476.78		-4.695E-02	8.040E-02	1.256E-01	1.178E-02	-0.374
		618.01		1.528E-03	3.881E-02	6.264E-02	5.428E-03	0.024
		696.49	*	2.815E-02	4.316E-02	7.519E-02	6.325E-03	0.374
PR-144		696.51	*	1.456E+00	3.267E+00	5.622E+00	4.728E-01	0.259
		1489.16		-6.149E+00	1.345E+01	2.068E+01	1.981E+00	-0.297
PM-146		453.88	*	-4.183E-02	5.148E-02	7.916E-02	8.371E-03	-0.528
		633.25		9.216E-01	1.771E+00	2.908E+00	1.109E+00	0.317
		735.93		-3.731E-02	1.701E-01	2.786E-01	7.806E-02	-0.134
		747.24		1.425E-01	1.136E-01	2.042E-01	2.984E-02	0.698
ND-147		91.11		2.242E-01	4.279E-01	6.258E-01	7.749E-02	0.358
		319.41		-1.330E+00	4.104E+00	6.701E+00	6.864E-01	-0.198
		531.02	*	1.261E-01	6.059E-01	9.979E-01	1.492E-01	0.126
PM-149		285.90	*	1.024E+01	8.143E+01	1.366E+02	2.296E+01	0.075
EU-152		121.78		2.799E-02	9.382E-02	1.542E-01	1.725E-02	0.182
		244.70		2.942E-01	4.686E-01	7.082E-01	7.806E-02	0.415
		344.28	*	2.171E-03	1.468E-01	2.110E-01	2.148E-02	0.010
		778.90		-1.926E-01	2.961E-01	4.648E-01	4.102E-02	-0.414
	+	964.08		6.885E-01	4.549E-01	6.577E-01	6.049E-02	1.047
		1085.87		-3.115E-02	4.713E-01	7.644E-01	6.656E-02	-0.041
		1112.07		7.286E-03	4.175E-01	6.305E-01	5.395E-02	0.012
		1408.01		1.003E-01	2.105E-01	3.706E-01	3.571E-02	0.271
GD-153		69.67		9.479E-01	3.057E+00	4.491E+00	5.126E-01	0.211
		97.43	*	-2.281E-01	1.207E-01	1.798E-01	1.984E-02	-1.268
		103.18		-1.672E-01	1.448E-01	2.242E-01	2.370E-02	-0.746
EU-154		123.07		3.306E-02	6.614E-02	1.093E-01	1.364E-02	0.302
		723.31		8.452E-02	2.216E-01	3.322E-01	3.133E-02	0.254
		873.19		2.144E-01	3.454E-01	5.988E-01	7.393E-02	0.358
		996.26		-2.614E-01	4.648E-01	7.212E-01	1.277E-01	-0.362
		1004.73		-2.136E-01	2.847E-01	4.349E-01	5.208E-02	-0.491
		1274.44	*	2.019E-02	1.592E-01	2.605E-01	3.055E-02	0.078
EU-155	+	86.55		3.335E-01	1.544E-01	2.485E-01	3.066E-02	1.342
		105.31	*	2.436E-01	1.374E-01	2.350E-01	2.476E-02	1.036
TB-160	+	86.79		8.754E-01	4.051E-01	6.493E-01	7.983E-02	1.348
		197.04		-1.368E-01	7.013E-01	1.111E+00	1.212E-01	-0.123
		215.65		8.546E-01	1.019E+00	1.563E+00	1.719E-01	0.547
		298.57		4.018E-01	1.558E-01	2.768E-01	2.929E-02	1.451
		879.36	*	-6.698E-02	1.618E-01	2.571E-01	2.379E-02	-0.261
		962.29		1.184E+00	6.833E-01	1.147E+00	1.056E-01	1.032

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
HO-166M		966.15		1.301E+00	3.309E-01	6.248E-01	5.743E-02	2.082
		1177.93		1.115E-01	4.360E-01	7.245E-01	5.928E-02	0.154
		1271.85		-6.134E-01	9.266E-01	1.394E+00	1.262E-01	-0.440
		80.57		-4.964E-01	4.340E-01	5.864E-01	6.910E-02	-0.846
		184.41		1.418E-01	5.582E-02	8.489E-02	9.179E-03	1.670
		280.46		1.890E-02	1.236E-01	1.812E-01	1.956E-02	0.104
	+	410.95		3.924E-01	2.600E-01	5.313E-01	4.510E-02	0.739
TA-182		711.68	*	-1.462E-02	7.282E-02	1.200E-01	1.018E-02	-0.122
		752.31		-1.213E-01	3.195E-01	5.163E-01	4.490E-02	-0.235
		810.29		-1.855E-02	6.707E-02	1.086E-01	9.743E-03	-0.171
		67.75		-1.335E-01	1.949E-01	3.000E-01	3.424E-02	-0.445
		100.11		1.427E-01	2.226E-01	3.719E-01	4.014E-02	0.384
		152.43		3.540E-01	4.457E-01	7.392E-01	7.645E-02	0.479
		222.11		5.997E-02	4.378E-01	7.409E-01	8.165E-02	0.081
IR-192	+	1121.30		6.619E-01	3.219E-01	4.404E-01	3.743E-02	1.503
		1189.05		7.942E-02	3.837E-01	6.342E-01	5.254E-02	0.125
		1221.41	*	1.910E-01	2.442E-01	4.211E-01	3.614E-02	0.454
		1231.02		-3.112E-01	6.519E-01	1.015E+00	8.799E-02	-0.307
	+	295.96		1.250E+00	2.426E-01	3.560E-01	3.797E-02	3.512
		308.46		2.452E-02	1.223E-01	2.054E-01	2.150E-02	0.119
		316.51	*	3.970E-02	4.481E-02	7.731E-02	7.971E-03	0.514
HG-203		468.07		-1.563E-01	9.439E-02	1.367E-01	1.264E-02	-1.144
		70.83		1.185E+00	2.292E+00	3.384E+00	5.997E-01	0.350
		72.87		1.819E+00	1.384E+00	2.062E+00	3.561E-01	0.882
BI-207		279.20	*	6.626E-02	5.650E-02	8.732E-02	9.596E-03	0.759
		72.81		3.649E-01	3.185E-01	4.796E-01	5.493E-02	0.761
	+	74.97		7.024E-01	2.559E-01	3.418E-01	3.934E-02	2.055
		569.70		1.621E-02	3.845E-02	6.397E-02	5.479E-03	0.253
PB-210		1063.66	*	-1.547E-02	6.513E-02	1.015E-01	8.956E-03	-0.152
		1770.23		2.343E-01	4.247E-01	7.138E-01	6.240E-02	0.328
		46.54	*	-7.398E+00	1.325E+01	2.122E+01	2.612E+00	-0.349
PB-211		404.85	*	4.368E-01	1.019E+00	1.472E+00	7.121E-01	0.297
		427.09		1.304E+00	1.963E+00	3.195E+00	1.478E+00	0.408
		832.01		-2.575E-01	1.238E+00	2.007E+00	1.042E+00	-0.128
BI-212	+	727.33	*	2.048E+00	1.067E+00	1.310E+00	1.627E-01	1.564
		785.37		5.399E+00	3.778E+00	6.887E+00	6.098E-01	0.784
		1620.50		1.814E+00	2.952E+00	5.284E+00	4.919E-01	0.343
RN-219	+	271.23		6.198E-01	4.571E-01	5.427E-01	6.631E-02	1.142
		401.81	*	-1.797E-01	5.072E-01	8.150E-01	1.204E-01	-0.221
RA-223		81.07		-5.931E-01	3.501E-01	4.542E-01	5.367E-02	-1.306
		83.79		2.127E-01	2.528E-01	2.799E-01	3.365E-02	0.760
		94.87		4.535E-01	6.640E-01	1.106E+00	1.252E-01	0.410
		144.24		8.749E-01	9.069E-01	1.497E+00	1.653E-01	0.585
		154.21		1.774E-01	5.037E-01	8.230E-01	9.115E-02	0.216
AC-227	+	269.46		4.815E-01	3.542E-01	4.167E-01	4.598E-02	1.156
		323.87	*	5.543E-02	9.428E-01	1.364E+00	2.475E-01	0.041
	+	338.28		5.855E+00	1.995E+00	2.817E+00	3.658E-01	2.078
		79.69		3.392E+00	2.086E+00	3.078E+00	5.843E-01	1.102
		235.96		1.103E+00	2.768E-01	4.242E-01	5.272E-02	2.600

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Activity Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TH-227		256.23	*	2.995E-01	3.264E-01	5.637E-01	7.801E-02	0.531
	+	299.98		2.197E+00	1.448E+00	2.058E+00	2.901E-01	1.067
		304.50		-2.197E-02	2.342E+00	3.382E+00	5.945E-01	-0.006
		334.37		1.429E-01	3.018E+00	3.431E+00	5.612E-01	0.042
		79.80		1.396E+00	2.690E+00	3.941E+00	9.139E-01	0.354
		235.96		1.103E+00	2.742E-01	4.242E-01	5.067E-02	2.600
		256.23	*	2.995E-01	3.270E-01	5.637E-01	8.575E-02	0.531
TH-229	+	299.98		2.197E+00	1.448E+00	2.058E+00	2.901E-01	1.067
		304.50		-2.197E-02	2.342E+00	3.382E+00	5.945E-01	-0.006
		334.37		1.429E-01	3.018E+00	3.431E+00	5.612E-01	0.042
		85.43		7.852E-01	3.279E-01	5.008E-01	6.093E-02	1.568
	+	88.47		4.243E-01	1.963E-01	3.219E-01	3.967E-02	1.318
		193.51	*	-2.886E-01	6.856E-01	1.075E+00	1.170E-01	-0.268
	+	210.85		4.582E+00	2.016E+00	2.141E+00	2.351E-01	2.140
PA-231		283.69	*	-5.420E-01	2.057E+00	3.070E+00	4.896E-01	-0.177
	+	301.36		1.411E+00	9.287E-01	1.318E+00	1.790E-01	1.071
TH-231		81.07		-5.931E-01	3.501E-01	4.542E-01	5.367E-02	-1.306
		83.79		2.127E-01	2.528E-01	2.799E-01	3.365E-02	0.760
PA-233		94.87		4.535E-01	6.640E-01	1.106E+00	1.252E-01	0.410
		144.24		8.749E-01	9.069E-01	1.497E+00	1.653E-01	0.585
		154.21		1.774E-01	5.037E-01	8.230E-01	9.115E-02	0.216
	+	269.46		4.815E-01	3.542E-01	4.167E-01	4.598E-02	1.156
		323.87	*	5.543E-02	9.428E-01	1.364E+00	2.475E-01	0.041
	+	338.28		5.855E+00	1.995E+00	2.817E+00	3.658E-01	2.078
	+	300.13		9.941E-01	6.596E-01	9.301E-01	1.491E-01	1.069
		311.90	*	-2.722E-02	8.497E-02	1.389E-01	1.470E-02	-0.196
		340.48		3.220E+00	1.264E+00	1.692E+00	4.149E-01	1.903
	PA-234	94.67		4.340E-01	2.469E-01	4.125E-01	5.952E-02	1.052
		98.44		6.237E-02	1.221E-01	1.952E-01	1.097E-01	0.320
		111.00		5.149E-02	2.363E-01	3.882E-01	5.153E-02	0.133
		131.20		1.023E-01	1.400E-01	2.326E-01	2.335E-02	0.440
		569.50		1.791E-01	3.387E-01	5.675E-01	4.861E-02	0.316
PA-234M		733.00		1.780E-01	4.908E-01	7.331E-01	1.627E-01	0.243
		880.51		-2.603E-01	3.351E-01	5.131E-01	4.751E-02	-0.507
		883.24		8.924E-02	3.419E-01	5.691E-01	3.830E-01	0.157
		926.50		2.435E-02	2.080E-01	3.462E-01	8.832E-02	0.070
		946.00	*	-4.772E-02	4.063E-01	6.623E-01	1.262E-01	-0.072
		949.00		8.606E-01	5.708E-01	1.044E+00	9.638E-02	0.825
		766.42		2.741E+01	2.163E+01	2.739E+01	1.390E+01	1.001
		1001.03	*	3.182E+00	6.308E+00	1.061E+01	1.100E+00	0.300
	TH-234	63.29	*	2.318E-01	2.456E+00	4.035E+00	8.002E-01	0.057
		92.59		2.051E+00	1.160E+00	1.725E+00	4.041E-01	1.189
	U-235	89.96		-4.085E+00	1.873E+00	1.989E+00	5.173E-01	-2.054
		93.35		9.020E-01	7.751E-01	1.260E+00	3.065E-01	0.716
		143.76	*	1.968E-01	2.723E-01	4.444E-01	7.908E-02	0.443
		163.33		-1.677E-01	5.859E-01	9.145E-01	1.736E-01	-0.183
U-238	+	185.72		1.978E-01	8.012E-02	1.106E-01	1.197E-02	1.789
		205.31		4.174E-01	7.062E-01	1.012E+00	1.960E-01	0.412
		63.29	*	2.318E-01	2.456E+00	4.035E+00	8.002E-01	0.057

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Activity Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NP-239		92.59		2.051E+00	1.082E+00	1.725E+00	2.006E-01	1.189
		99.53		2.575E-01	2.093E-01	3.550E-01	3.848E-02	0.725
		103.37		-8.724E-02	1.297E-01	2.058E-01	2.174E-02	-0.424
		106.12		1.736E-01	1.093E-01	1.864E-01	1.940E-02	0.931
		117.23	*	2.669E-02	5.273E-01	8.596E-01	8.676E-02	0.031
		228.18		1.219E-01	2.748E-01	4.698E-01	5.182E-02	0.259
AM-241	+	277.60		3.700E-01	3.734E-01	3.967E-01	4.295E-02	0.933
CM-247		59.54	*	-8.072E-02	3.117E-01	5.111E-01	6.000E-02	-0.158
	+	278.00		1.571E+00	1.586E+00	1.689E+00	1.828E-01	0.930
CF-249		287.50		1.572E+00	1.622E+00	2.679E+00	2.872E-01	0.587
		402.40	*	-1.927E-02	4.668E-02	7.479E-02	6.325E-03	-0.258
		252.80		-4.557E-02	1.220E+00	2.040E+00	2.244E-01	-0.022
		333.37		-6.395E-02	3.882E-01	3.641E-01	3.629E-02	-0.176
CF-251		388.16	*	-2.292E-02	4.997E-02	7.998E-02	6.818E-03	-0.287
		177.52	*	-1.321E-01	1.737E-01	2.689E-01	2.894E-02	-0.491
		227.38		2.539E-01	4.458E-01	7.653E-01	8.441E-02	0.332
		285.41		-1.478E+00	2.804E+00	4.552E+00	4.892E-01	-0.325



# VAX/VMS Nuclide Identification Report Generated

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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247809001      *
* Acquisition date   : 5-MAR-2010 10:31:36 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 02:00:01.36 Half life ratio : 8.000             *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date       : 19-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID         : G247809001 Analyst initials: MXR1                  *
* Batch Number      : 957136 Sample Quantity : 1.3254E+02 GRAM           *
* Recovery          : 1.00000 Carrier Weight : 0.00000                   *
*****
*
*                                     QC DATA                               *
*
* Standard Weight   : 0.00000                                              *
* CALIB. DATE/TIME  : 3-FEB-2010 11:04:32 MS Isotope :                   *
* MSD DPM           : 0.000 MSD Isotope :                               *
* LCS DPM           : 0.000 LCS Isotope :                               *
* LCSD DPM          : 0.000 LCSD Isotope :                               *
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## Combined Activity-MDA Report

### ---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM )	Act error	MDA (pCi/GRAM )	
K-40	3.495E+01	3.988E+00	6.605E-01	0.000E+00
CD-109	2.810E+00	1.274E+00	1.990E+00	0.000E+00
SN-126	2.752E-01	1.248E-01	2.024E-01	0.000E+00
BA-137M	1.241E-01	6.388E-02	8.224E-02	0.000E+00
CS-137	1.311E-01	6.749E-02	8.688E-02	0.000E+00
TL-208	5.444E-01	1.098E-01	7.274E-02	0.000E+00
BI-211	3.887E+00	6.509E-01	4.451E-01	0.000E+00
PB-212	1.896E+00	2.619E-01	1.207E-01	0.000E+00
BI-214	1.181E+00	2.211E-01	1.470E-01	0.000E+00
PB-214	1.411E+00	2.482E-01	1.577E-01	0.000E+00
RA-224	5.098E+00	1.583E+00	1.293E+00	0.000E+00
RA-226	1.181E+00	2.211E-01	1.470E-01	0.000E+00
AC-228	2.011E+00	3.898E-01	3.027E-01	0.000E+00
RA-228	2.011E+00	3.898E-01	3.027E-01	0.000E+00
TH-228	1.896E+00	2.619E-01	1.207E-01	0.000E+00
TH-232	2.011E+00	3.898E-01	3.027E-01	0.000E+00
NP-237	8.212E-01	4.088E-01	5.501E-01	0.000E+00
ANH-511	1.237E-01	8.821E-02	5.362E-02	0.000E+00

### ---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	9.059E-02	3.721E-01	6.425E-01	0.000E+00 NOT IDENT.
NA-22	1.033E-02	5.479E-02	9.235E-02	0.000E+00 NOT IDENT.
NA-24	0.000E+00	2.119E+05	0.000E+00	0.000E+00 SHORT HLIF
SC-46	-1.965E-02	4.799E-02	7.888E-02	0.000E+00 FAIL ABUN
V-48	-6.341E-03	8.525E-02	1.431E-01	0.000E+00 NOT IDENT.
CR-51	-8.742E-02	4.629E-01	7.987E-01	0.000E+00 NOT IDENT.
MN-54	1.562E-04	4.524E-02	7.741E-02	0.000E+00 NOT IDENT.
CO-56	5.700E-03	4.406E-02	7.612E-02	0.000E+00 NOT IDENT.
CO-57	9.354E-03	3.198E-02	5.601E-02	0.000E+00 NOT IDENT.

CO-58	-1.811E-02	4.329E-02	7.151E-02	0.000E+00	NOT IDENT.
FE-59	7.989E-02	1.114E-01	1.978E-01	0.000E+00	NOT IDENT.
CO-60	4.831E-03	4.525E-02	7.561E-02	0.000E+00	NOT IDENT.
ZN-65	-2.355E-02	1.317E-01	1.846E-01	0.000E+00	NOT IDENT.
SE-75	5.459E-02	6.013E-02	1.009E-01	0.000E+00	NOT IDENT.
SR-85	0.000E+00	4.894E-02	9.352E-02	0.000E+00	NOT IDENT.
Y-88	-1.949E-02	3.659E-02	5.422E-02	0.000E+00	NOT IDENT.
Y-91	6.673E+00	2.967E+01	5.018E+01	0.000E+00	NOT IDENT.
NB-94	1.012E-02	4.127E-02	7.259E-02	0.000E+00	NOT IDENT.
NB-95	9.507E-02	5.866E-02	9.941E-02	0.000E+00	NOT IDENT.
NB-95M	0.000E+00	1.902E-01	3.167E-01	0.000E+00	NOT IDENT.
ZR-95	5.760E-02	7.917E-02	1.437E-01	0.000E+00	NOT IDENT.
MO-99	-3.223E+00	1.032E+01	1.734E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	2.053E+15	0.000E+00	0.000E+00	SHORT HLIF
RU-103	2.677E-02	4.507E-02	7.932E-02	0.000E+00	FAIL ABUN
RH-106	-4.607E-02	3.683E-01	6.084E-01	0.000E+00	NOT IDENT.
RU-106	-4.607E-02	3.683E-01	6.084E-01	0.000E+00	NOT IDENT.
AG-108M	-8.606E-03	3.453E-02	5.805E-02	0.000E+00	NOT IDENT.
AG-110M	1.488E-03	4.762E-02	7.173E-02	0.000E+00	NOT IDENT.
SN-113	-6.518E-03	5.241E-02	8.951E-02	0.000E+00	NOT IDENT.
CD-115	-2.542E+00	9.224E+00	1.524E+01	0.000E+00	NOT IDENT.
SN-117M	-9.668E-03	6.551E-02	1.114E-01	0.000E+00	NOT IDENT.
TE-123M	1.737E-02	3.580E-02	6.234E-02	0.000E+00	NOT IDENT.
SB-124	-9.086E-03	9.929E-02	1.645E-01	0.000E+00	NOT IDENT.
SB-125	5.566E-02	1.081E-01	1.906E-01	0.000E+00	NOT IDENT.
TE-125M	-1.653E+01	1.252E+01	2.047E+01	0.000E+00	NOT IDENT.
I-126	1.593E-01	2.793E-01	4.419E-01	0.000E+00	NOT IDENT.
SB-126	-5.375E-02	1.807E-01	2.606E-01	0.000E+00	NOT IDENT.
SB-127	-2.013E-01	1.283E+00	2.202E+00	0.000E+00	NOT IDENT.
I-131	-8.311E-02	1.237E-01	2.049E-01	0.000E+00	NOT IDENT.
TE-132	3.250E-01	7.059E-01	1.271E+00	0.000E+00	NOT IDENT.
BA-133	4.479E-02	5.786E-02	9.162E-02	0.000E+00	FAIL ABUN
I-133	0.000E+00	2.815E+03	0.000E+00	0.000E+00	SHORT HLIF
CS-134	9.552E-02	5.919E-02	1.113E-01	0.000E+00	NOT IDENT.
CS-135	4.362E-02	2.304E-01	3.565E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	4.444E+14	0.000E+00	0.000E+00	SHORT HLIF
CS-136	4.403E-02	1.199E-01	2.083E-01	0.000E+00	NOT IDENT.
CE-139	2.637E-03	3.736E-02	6.395E-02	0.000E+00	NOT IDENT.
BA-140	1.003E-02	3.009E-01	5.084E-01	0.000E+00	NOT IDENT.
LA-140	6.204E-03	8.817E-02	1.505E-01	0.000E+00	FAIL ABUN
CE-141	5.974E-02	7.902E-02	1.392E-01	0.000E+00	NOT IDENT.
CE-143	0.000E+00	1.615E+02	0.000E+00	0.000E+00	SHORT HLIF
CE-144	-2.903E-01	2.644E-01	4.305E-01	0.000E+00	NOT IDENT.
PM-144	2.815E-02	4.229E-02	7.629E-02	0.000E+00	NOT IDENT.
PR-144	1.456E+00	3.202E+00	5.704E+00	0.000E+00	NOT IDENT.
PM-146	-4.183E-02	5.045E-02	8.092E-02	0.000E+00	NOT IDENT.
ND-147	1.261E-01	5.938E-01	1.017E+00	0.000E+00	NOT IDENT.
PM-149	1.024E+01	7.981E+01	1.407E+02	0.000E+00	NOT IDENT.
EU-152	2.171E-03	1.439E-01	2.167E-01	0.000E+00	FAIL ABUN
GD-153	-2.281E-01	1.183E-01	1.886E-01	0.000E+00	NOT IDENT.
EU-154	2.019E-02	1.560E-01	2.615E-01	0.000E+00	NOT IDENT.
EU-155	2.436E-01	1.347E-01	2.462E-01	0.000E+00	FAIL ABUN
TB-160	-6.698E-02	1.585E-01	2.598E-01	0.000E+00	FAIL ABUN
HO-166M	-1.462E-02	7.137E-02	1.217E-01	0.000E+00	FAIL ABUN
TA-182	1.910E-01	2.393E-01	4.230E-01	0.000E+00	FAIL ABUN
IR-192	3.970E-02	4.391E-02	7.952E-02	0.000E+00	FAIL ABUN
HG-203	6.626E-02	5.537E-02	9.000E-02	0.000E+00	NOT IDENT.
BI-207	-1.547E-02	6.383E-02	1.022E-01	0.000E+00	FAIL ABUN
PB-210	-7.398E+00	1.299E+01	2.252E+01	0.000E+00	NOT IDENT.
PB-211	4.368E-01	9.987E-01	1.508E+00	0.000E+00	NOT IDENT.
BI-212	0.000E+00	1.045E+00	1.328E+00	0.000E+00	FAIL ABUN
RN-219	-1.797E-01	4.971E-01	8.348E-01	0.000E+00	FAIL ABUN
RA-223	5.543E-02	9.240E-01	1.402E+00	0.000E+00	FAIL ABUN
AC-227	2.995E-01	3.199E-01	5.818E-01	0.000E+00	FAIL ABUN
TH-227	2.995E-01	3.204E-01	5.818E-01	0.000E+00	FAIL ABUN
TH-229	-2.886E-01	6.719E-01	1.115E+00	0.000E+00	FAIL ABUN
PA-231	-5.420E-01	2.016E+00	3.164E+00	0.000E+00	FAIL ABUN
TH-231	5.543E-02	9.240E-01	1.402E+00	0.000E+00	FAIL ABUN
PA-233	-2.722E-02	8.327E-02	1.429E-01	0.000E+00	FAIL ABUN
PA-234	-4.772E-02	3.982E-01	6.684E-01	0.000E+00	NOT IDENT.
PA-234M	3.182E+00	6.182E+00	1.070E+01	0.000E+00	NOT IDENT.
TH-234	2.318E-01	2.407E+00	4.262E+00	0.000E+00	NOT IDENT.
U-235	1.968E-01	2.669E-01	4.632E-01	0.000E+00	FAIL ABUN
U-238	2.318E-01	2.407E+00	4.262E+00	0.000E+00	NOT IDENT.
NP-239	2.669E-02	5.168E-01	8.989E-01	0.000E+00	FAIL ABUN
AM-241	-8.072E-02	3.055E-01	5.404E-01	0.000E+00	NOT IDENT.
CM-247	-1.927E-02	4.575E-02	7.661E-02	0.000E+00	FAIL ABUN
CF-249	-2.292E-02	4.897E-02	8.197E-02	0.000E+00	NOT IDENT.

CF-251	-1.321E-01	1.703E-01	2.793E-01	0.000E+00 NOT IDENT.
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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                           *
*****
Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247809001.CNF;1
Sample date   : 19-FEB-2010 12:00:00 Acquisition date : 5-MAR-2010 10:31:36.
Sample ID    : G247809001 Sample quantity : 1.32540E+02 GRAM
Detector name : GAM15 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:01.36 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity : 5.00000
Batch ID       : 957136 Detector SN# :
Matrix Spike ID : LCS ID : 1032-A
*****

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## Nuclide Line Activity Report

## Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	1271	10.66*	9.662E-01	3.495E+01	3.495E+01	11.64
CD-109	88.03	160	3.70*	4.440E+00	2.752E+00	2.810E+00	46.27
SN-126	64.28	-----	9.60	1.941E+00	-----	Line Not Found	-----
	86.94	160	8.90	4.440E+00	1.144E+00	1.144E+00	61.46
	87.57	160	37.00*	4.440E+00	2.752E-01	2.752E-01	46.27
BA-137M	661.66	78	89.90*	1.982E+00	1.240E-01	1.241E-01	52.53
CS-137	661.66	78	85.10*	1.982E+00	1.310E-01	1.311E-01	52.54
TL-208	277.37	70	6.60	3.708E+00	8.095E-01	8.095E-01	101.33
	583.19	358	85.00*	2.190E+00	5.444E-01	5.444E-01	20.57
	860.56	65	12.50	1.576E+00	9.366E-01	9.366E-01	52.52
BI-211	72.87	-----	1.23	3.001E+00	-----	Line Not Found	-----
	351.06	557	12.92*	3.140E+00	3.887E+00	3.887E+00	17.09
PB-212	74.82	286	10.28	3.228E+00	2.437E+00	2.437E+00	37.70
	77.11	556	17.10	3.501E+00	2.631E+00	2.631E+00	21.54
	238.63	1201	43.60*	4.114E+00	1.896E+00	1.896E+00	14.09
	300.09	82	3.30	3.507E+00	1.997E+00	1.997E+00	65.53
BI-214	609.32	401	45.49*	2.117E+00	1.181E+00	1.181E+00	19.11
	1120.29	92	14.92	1.226E+00	1.423E+00	1.423E+00	49.09
	1764.49	79	15.30	8.554E-01	1.707E+00	1.707E+00	28.05
PB-214	74.82	286	5.80	3.228E+00	4.320E+00	4.320E+00	37.28
	77.11	556	9.70	3.501E+00	4.638E+00	4.638E+00	23.06
	242.00	301	7.25	4.078E+00	2.883E+00	2.883E+00	32.21
	295.22	394	18.42	3.546E+00	1.710E+00	1.710E+00	20.44
	351.93	557	35.60*	3.140E+00	1.411E+00	1.411E+00	17.95
RA-224	240.99	301	4.10*	4.078E+00	5.098E+00	5.098E+00	31.68
RA-226	609.32	401	45.49*	2.117E+00	1.181E+00	1.181E+00	19.11
	1120.29	92	14.92	1.226E+00	1.423E+00	1.423E+00	49.09
	1764.49	79	15.30	8.554E-01	1.707E+00	1.707E+00	28.05
AC-228	338.32	189	11.27	3.228E+00	1.475E+00	1.475E+00	52.49
	911.20	274	25.80*	1.494E+00	2.011E+00	2.011E+00	19.78
	968.97	150	15.80	1.410E+00	1.905E+00	1.905E+00	36.14
RA-228	338.32	189	11.27	3.228E+00	1.475E+00	1.475E+00	52.49

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	911.20	274	25.80*	1.494E+00	2.011E+00	2.011E+00	19.78
	968.97	150	15.80	1.410E+00	1.905E+00	1.905E+00	36.14
	74.82	286	10.28	3.228E+00	2.437E+00	2.437E+00	36.44
	77.11	556	17.10	3.501E+00	2.631E+00	2.631E+00	21.54
	238.63	1201	43.60*	4.114E+00	1.896E+00	1.896E+00	14.09
TH-232	300.09	82	3.30	3.507E+00	1.997E+00	1.997E+00	89.05
	338.32	189	11.27	3.228E+00	1.475E+00	1.475E+00	33.01
	911.20	274	25.80*	1.494E+00	2.011E+00	2.011E+00	19.78
	968.97	150	15.80	1.410E+00	1.905E+00	1.905E+00	36.14
NP-237	86.48	160	12.40*	4.440E+00	8.212E-01	8.212E-01	50.80
	95.86	-----	2.68	5.004E+00	-----	Line Not Found	-----
ANH-511	511.00	106	100.00*	2.420E+00	1.237E-01	1.237E-01	72.78

Flag: "\*" = Keyline

Total number of lines in spectrum 29  
Number of unidentified lines 2  
Number of lines tentatively identified by NID 27 93.10%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	3.495E+01	3.495E+01	0.407E+01	11.64	
CD-109	461.40D	1.02	2.752E+00	2.810E+00	1.300E+00	46.27	
SN-126	2.30E+05Y	1.00	2.752E-01	2.752E-01	1.273E-01	46.27	
BA-137M	30.08Y	1.00	1.240E-01	1.241E-01	0.652E-01	52.53	
CS-137	30.08Y	1.00	1.310E-01	1.311E-01	0.689E-01	52.54	
TL-208	1.41E+10Y	1.00	5.444E-01	5.444E-01	1.120E-01	20.57	
BI-211	7.04E+08Y	1.00	3.887E+00	3.887E+00	0.664E+00	17.09	
PB-212	1.41E+10Y	1.00	1.896E+00	1.896E+00	0.267E+00	14.09	
BI-214	1600.00Y	1.00	1.181E+00	1.181E+00	0.226E+00	19.11	
PB-214	1600.00Y	1.00	1.411E+00	1.411E+00	0.253E+00	17.95	
RA-224	1.41E+10Y	1.00	5.098E+00	5.098E+00	1.615E+00	31.68	
RA-226	1600.00Y	1.00	1.181E+00	1.181E+00	0.226E+00	19.11	
AC-228	1.41E+10Y	1.00	2.011E+00	2.011E+00	0.398E+00	19.78	
RA-228	1.41E+10Y	1.00	2.011E+00	2.011E+00	0.398E+00	19.78	
TH-228	1.41E+10Y	1.00	1.896E+00	1.896E+00	0.267E+00	14.09	
TH-232	1.41E+10Y	1.00	2.011E+00	2.011E+00	0.398E+00	19.78	
NP-237	2.14E+06Y	1.00	8.212E-01	8.212E-01	4.172E-01	50.80	
ANH-511	1.00E+09Y	1.00	1.237E-01	1.237E-01	0.900E-01	72.78	

Total Activity : 6.230E+01 6.236E+01

Grand Total Activity : 6.230E+01 6.236E+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	186.10	194	315	1.47	371.10	367	10	2.69E-02	39.0	4.86E+00	T
0	209.88	204	365	2.20	418.66	413	14	2.83E-02	42.6	4.49E+00	T
0	270.36	89	242	1.82	539.63	536	12	1.24E-02	72.7	3.77E+00	T
0	328.39	69	172	1.65	655.68	651	10	9.62E-03	74.9	3.29E+00	T
0	409.55	44	65	1.64	818.01	815	6	6.10E-03	65.7	2.83E+00	T
0	726.85	88	83	1.95	1452.64	1444	15	1.23E-02	50.6	1.83E+00	T
0	768.46	41	54	1.77	1535.87	1532	7	5.68E-03	67.4	1.75E+00	
3	964.53	50	46	2.66	1928.07	1922	22	6.99E-03	65.4	1.42E+00	T
0	1730.02	19	15	1.80	3459.50	3454	14	2.59E-03	97.7	8.64E-01	

Flags: "T" = Tentatively associated

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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G247809001.CNF;1
* Acquisition date   : 5-MAR-2010 10:31:36.  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 02:00:01.36           Half life ratio  : 8.00000
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 19-FEB-2010 12:00:00  Nuclide Library : SOLID
* Sample ID          : G247809001           Analyst initials: MXR1
* Batch Number       : 957136               Sample Quantity : 1.32540E+02 GRAM
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 3-FEB-2010 11:04:32.11MS Isotope      :
* MSD ID              :                      MSD Isotope      :
* LCS ID              : 1032-A              LCS Isotope      :
*****

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## Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	3.495E+01	4.069E+00	6.595E-01	6.481E-02	52.988
CD-109	2.810E+00	1.300E+00	1.894E+00	2.351E-01	1.484
SN-126	2.752E-01	1.273E-01	1.926E-01	2.384E-02	1.429
BA-137M	1.241E-01	6.518E-02	8.098E-02	6.658E-03	1.532
CS-137	1.311E-01	6.886E-02	8.555E-02	7.048E-03	1.532
TL-208	5.444E-01	1.120E-01	7.147E-02	6.537E-03	7.616
BI-211	3.887E+00	6.642E-01	4.336E-01	4.318E-02	8.966
PB-212	1.896E+00	2.672E-01	1.168E-01	1.395E-02	16.235
BI-214	1.181E+00	2.256E-01	1.445E-01	1.440E-02	8.169
PB-214	1.411E+00	2.533E-01	1.536E-01	1.746E-02	9.186
RA-224	5.098E+00	1.615E+00	1.251E+00	1.380E-01	4.074
RA-226	1.181E+00	2.256E-01	1.445E-01	1.440E-02	8.169
AC-228	2.011E+00	3.978E-01	2.998E-01	3.631E-02	6.710
RA-228	2.011E+00	3.978E-01	2.998E-01	3.631E-02	6.710
TH-228	1.896E+00	2.672E-01	1.168E-01	1.395E-02	16.235
TH-232	2.011E+00	3.978E-01	2.998E-01	3.631E-02	6.710
NP-237	8.212E-01	4.172E-01	5.235E-01	1.272E-01	1.569
ANH-511	1.237E-01	9.001E-02	5.256E-02	4.542E-03	2.353



---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	9.059E-02		3.797E-01	6.291E-01	5.847E-02	0.144
NA-22	1.033E-02		5.591E-02	9.199E-02	8.357E-03	0.112
NA-24	-6.588E-02		1.081E-01	Half-Life	too short	
SC-46	-1.965E-02		4.897E-02	7.808E-02	7.256E-03	-0.252
V-48	-6.341E-03		8.699E-02	1.419E-01	1.297E-02	-0.045
CR-51	-8.742E-02		4.723E-01	7.767E-01	8.243E-02	-0.113
MN-54	1.562E-04		4.616E-02	7.653E-02	6.945E-03	0.002
CO-56	5.700E-03		4.496E-02	7.528E-02	6.869E-03	0.076
CO-57	9.354E-03		3.263E-02	5.360E-02	5.399E-03	0.175
CO-58	-1.811E-02		4.417E-02	7.067E-02	6.353E-03	-0.256
FE-59	7.989E-02		1.137E-01	1.966E-01	1.834E-02	0.406
CO-60	4.831E-03		4.617E-02	7.538E-02	7.246E-03	0.064
ZN-65	-2.355E-02		1.344E-01	1.834E-01	1.567E-02	-0.128
SE-75	5.459E-02		6.136E-02	9.779E-02	1.072E-02	0.558
SR-85	1.406E-01		4.994E-02	9.169E-02	7.921E-03	1.533
Y-88	-1.949E-02		3.734E-02	5.436E-02	4.578E-03	-0.358
Y-91	6.673E+00		3.028E+01	4.993E+01	4.209E+00	0.134
NB-94	1.012E-02		4.211E-02	7.156E-02	6.041E-03	0.141
NB-95	9.507E-02		5.986E-02	9.814E-02	8.599E-03	0.969
NB-95M	5.120E-01		1.941E-01	3.064E-01	3.692E-02	1.671
ZR-95	5.760E-02		8.079E-02	1.418E-01	1.363E-02	0.406
MO-99	-3.223E+00		1.053E+01	1.711E+01	2.698E+00	-0.188
TC-99M	-2.444E+09		1.047E+09	Half-Life	too short	
RU-103	2.677E-02		4.599E-02	7.772E-02	1.086E-02	0.344
RH-106	-4.607E-02		3.759E-01	5.984E-01	7.849E-02	-0.077
RU-106	-4.607E-02		3.758E-01	5.984E-01	5.029E-02	-0.077
AG-108M	-8.606E-03		3.523E-02	5.675E-02	5.015E-03	-0.152
AG-110M	1.488E-03		4.859E-02	7.063E-02	6.010E-03	0.021
SN-113	-6.518E-03		5.348E-02	8.735E-02	7.586E-03	-0.075
CD-115	-2.542E+00		9.412E+00	1.495E+01	1.290E+00	-0.170
SN-117M	-9.668E-03		6.685E-02	1.071E-01	1.122E-02	-0.090
TE-123M	1.737E-02		3.653E-02	5.992E-02	6.314E-03	0.290
SB-124	-9.086E-03		1.013E-01	1.647E-01	1.551E-02	-0.055
SB-125	5.566E-02		1.103E-01	1.863E-01	1.622E-02	0.299
TE-125M	-1.653E+01		1.277E+01	1.956E+01	2.322E+00	-0.845
I-126	1.593E-01		2.850E-01	4.352E-01	3.589E-02	0.366
SB-126	-5.375E-02		1.844E-01	2.570E-01	2.194E-02	-0.209
SB-127	-2.013E-01		1.309E+00	2.169E+00	2.349E-01	-0.093
I-131	-8.311E-02		1.262E-01	1.997E-01	1.926E-02	-0.416
TE-132	3.250E-01		7.203E-01	1.229E+00	2.096E-01	0.264
BA-133	4.479E-02		5.905E-02	8.926E-02	1.206E-02	0.502
I-133	-2.229E-03		1.436E-03	Half-Life	too short	
CS-134	9.552E-02		6.039E-02	1.100E-01	9.859E-03	0.868
CS-135	4.362E-02		2.351E-01	3.457E-01	4.148E-02	0.126
I-135	-4.684E+08		2.267E+08	Half-Life	too short	
CS-136	4.403E-02		1.224E-01	2.068E-01	1.912E-02	0.213
CE-139	2.637E-03		3.812E-02	6.150E-02	6.565E-03	0.043
BA-140	1.003E-02		3.070E-01	4.988E-01	1.692E-01	0.020

----- Non-Identified Nuclides -----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
LA-140	6.204E-03		8.997E-02	1.505E-01	1.411E-02	0.041
CE-141	5.974E-02		8.064E-02	1.336E-01	1.381E-02	0.447
CE-143	5.112E-04		8.241E-05	Half-Life	too short	
CE-144	-2.903E-01		2.698E-01	4.126E-01	6.657E-02	-0.704
PM-144	2.815E-02		4.316E-02	7.519E-02	6.325E-03	0.374
PR-144	1.456E+00		3.267E+00	5.622E+00	4.728E-01	0.259
PM-146	-4.183E-02		5.148E-02	7.916E-02	8.371E-03	-0.528
ND-147	1.261E-01		6.059E-01	9.979E-01	1.492E-01	0.126
PM-149	1.024E+01		8.143E+01	1.366E+02	2.296E+01	0.075
EU-152	2.171E-03		1.468E-01	2.110E-01	2.148E-02	0.010
GD-153	-2.281E-01		1.207E-01	1.798E-01	1.984E-02	-1.268
EU-154	2.019E-02		1.592E-01	2.605E-01	3.055E-02	0.078
EU-155	2.436E-01		1.374E-01	2.350E-01	2.476E-02	1.036
TB-160	-6.698E-02		1.618E-01	2.571E-01	2.379E-02	-0.261
HO-166M	-1.462E-02		7.282E-02	1.200E-01	1.018E-02	-0.122
TA-182	1.910E-01		2.442E-01	4.211E-01	3.614E-02	0.454
IR-192	3.970E-02		4.481E-02	7.731E-02	7.971E-03	0.514
HG-203	6.626E-02		5.650E-02	8.732E-02	9.596E-03	0.759
BI-207	-1.547E-02		6.513E-02	1.015E-01	8.956E-03	-0.152
PB-210	-7.398E+00		1.325E+01	2.122E+01	2.612E+00	-0.349
PB-211	4.368E-01		1.019E+00	1.472E+00	7.121E-01	0.297
BI-212	2.048E+00	+	1.067E+00	1.310E+00	1.627E-01	1.564
RN-219	-1.797E-01		5.072E-01	8.150E-01	1.204E-01	-0.221
RA-223	5.543E-02		9.428E-01	1.364E+00	2.475E-01	0.041
AC-227	2.995E-01		3.264E-01	5.637E-01	7.801E-02	0.531
TH-227	2.995E-01		3.270E-01	5.637E-01	8.575E-02	0.531
TH-229	-2.886E-01		6.856E-01	1.075E+00	1.170E-01	-0.268
PA-231	-5.420E-01		2.057E+00	3.070E+00	4.896E-01	-0.177
TH-231	5.543E-02		9.428E-01	1.364E+00	2.475E-01	0.041
PA-233	-2.722E-02		8.497E-02	1.389E-01	1.470E-02	-0.196
PA-234	-4.772E-02		4.063E-01	6.623E-01	1.262E-01	-0.072
PA-234M	3.182E+00		6.308E+00	1.061E+01	1.100E+00	0.300
TH-234	2.318E-01		2.456E+00	4.035E+00	8.002E-01	0.057
U-235	1.968E-01		2.723E-01	4.444E-01	7.908E-02	0.443
U-238	2.318E-01		2.456E+00	4.035E+00	8.002E-01	0.057
NP-239	2.669E-02		5.273E-01	8.596E-01	8.676E-02	0.031
AM-241	-8.072E-02		3.117E-01	5.111E-01	6.000E-02	-0.158
CM-247	-1.927E-02		4.668E-02	7.479E-02	6.325E-03	-0.258
CF-249	-2.292E-02		4.997E-02	7.998E-02	6.818E-03	-0.287
CF-251	-1.321E-01		1.737E-01	2.689E-01	2.894E-02	-0.491

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*
*                                     DETECTOR DATA                          *
*
* Configuration      : SYS$SYSROOT:[ALPHA.ARCHIVE.GAMMA]G247809001          *
* Acquisition date   : 5-MAR-2010 10:31:36 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 02:00:01.36 Half life ratio : 8.000              *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date        : 19-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G247809001 Analyst initials: MXR1                  *
* Batch Number       : 957136 Sample Quantity : 1.3254E+02 GRAM           *
* Recovery           : 1.00000 Carrier Weight : 0.00000                   *
*****
*
*                                     QC DATA                                *
*
* CALIB. DATE/TIME   : 3-FEB-2010 11:04:32 MS Isotope :                  *
* MSD DPM             : 0.000 MSD Isotope :                               *
* LCS DPM             : 0.000 LCS Isotope :                               *
* LCSD DPM            : 0.000 LCSD Isotope :                             *
*****

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## Combined Activity-MDA Report

### ---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM )	Act Error	DLC (pCi/GRAM )	TPU
K-40	3.495E+01	3.988E+00	3.304E-01	2.035E+00
CD-109	2.810E+00	1.274E+00	9.956E-01	6.502E-01
SN-126	2.752E-01	1.248E-01	1.013E-01	6.367E-02
BA-137M	1.241E-01	6.388E-02	4.115E-02	3.259E-02
CS-137	1.311E-01	6.749E-02	4.347E-02	3.443E-02
TL-208	5.444E-01	1.098E-01	3.639E-02	5.600E-02
BI-211	3.887E+00	6.509E-01	2.227E-01	3.321E-01
PB-212	1.896E+00	2.619E-01	6.038E-02	1.336E-01
BI-214	1.181E+00	2.211E-01	7.354E-02	1.128E-01
PB-214	1.411E+00	2.482E-01	7.889E-02	1.266E-01
RA-224	5.098E+00	1.583E+00	6.468E-01	8.076E-01
RA-226	1.181E+00	2.211E-01	7.354E-02	1.128E-01
AC-228	2.011E+00	3.898E-01	1.514E-01	1.989E-01
RA-228	2.011E+00	3.898E-01	1.514E-01	1.989E-01
TH-228	1.896E+00	2.619E-01	6.038E-02	1.336E-01
TH-232	2.011E+00	3.898E-01	1.514E-01	1.989E-01
NP-237	8.212E-01	4.088E-01	2.752E-01	2.086E-01
ANH-511	1.237E-01	8.821E-02	2.683E-02	4.500E-02

### ---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	9.059E-02	3.721E-01	3.214E-01	1.898E-01 NOT IDENT.
NA-22	1.033E-02	5.479E-02	4.620E-02	2.795E-02 NOT IDENT.
NA-24	-6.588E+04	2.119E+05	0.000E+00	1.081E+05 SHORT HLIF
SC-46	-1.965E-02	4.799E-02	3.947E-02	2.449E-02 FAIL ABUN
V-48	-6.341E-03	8.525E-02	7.161E-02	4.349E-02 NOT IDENT.
CR-51	-8.742E-02	4.629E-01	3.996E-01	2.361E-01 NOT IDENT.
MN-54	1.562E-04	4.524E-02	3.873E-02	2.308E-02 NOT IDENT.
CO-56	5.700E-03	4.406E-02	3.808E-02	2.248E-02 NOT IDENT.
CO-57	9.354E-03	3.198E-02	2.802E-02	1.632E-02 NOT IDENT.

CO-58	-1.811E-02	4.329E-02	3.578E-02	2.208E-02	NOT IDENT.
FE-59	7.989E-02	1.114E-01	9.898E-02	5.686E-02	NOT IDENT.
CO-60	4.831E-03	4.525E-02	3.783E-02	2.309E-02	NOT IDENT.
ZN-65	-2.355E-02	1.317E-01	9.235E-02	6.721E-02	NOT IDENT.
SE-75	5.459E-02	6.013E-02	5.047E-02	3.068E-02	NOT IDENT.
SR-85	1.406E-01	4.894E-02	4.679E-02	2.497E-02	NOT IDENT.
Y-88	-1.949E-02	3.659E-02	2.713E-02	1.867E-02	NOT IDENT.
Y-91	6.673E+00	2.967E+01	2.510E+01	1.514E+01	NOT IDENT.
NB-94	1.012E-02	4.127E-02	3.632E-02	2.106E-02	NOT IDENT.
NB-95	9.507E-02	5.866E-02	4.974E-02	2.993E-02	NOT IDENT.
NB-95M	5.120E-01	1.902E-01	1.585E-01	9.706E-02	NOT IDENT.
ZR-95	5.760E-02	7.917E-02	7.189E-02	4.039E-02	NOT IDENT.
MO-99	-3.223E+00	1.032E+01	8.678E+00	5.263E+00	NOT IDENT.
TC-99M	-2.444E+15	2.053E+15	0.000E+00	1.047E+15	SHORT HLIF
RU-103	2.677E-02	4.507E-02	3.968E-02	2.299E-02	FAIL ABUN
RH-106	-4.607E-02	3.683E-01	3.044E-01	1.879E-01	NOT IDENT.
RU-106	-4.607E-02	3.683E-01	3.044E-01	1.879E-01	NOT IDENT.
AG-108M	-8.606E-03	3.453E-02	2.904E-02	1.762E-02	NOT IDENT.
AG-110M	1.488E-03	4.762E-02	3.589E-02	2.429E-02	NOT IDENT.
SN-113	-6.518E-03	5.241E-02	4.478E-02	2.674E-02	NOT IDENT.
CD-115	-2.542E+00	9.224E+00	7.626E+00	4.706E+00	NOT IDENT.
SN-117M	-9.668E-03	6.551E-02	5.573E-02	3.342E-02	NOT IDENT.
TE-123M	1.737E-02	3.580E-02	3.119E-02	1.826E-02	NOT IDENT.
SB-124	-9.086E-03	9.929E-02	8.232E-02	5.066E-02	NOT IDENT.
SB-125	5.566E-02	1.081E-01	9.538E-02	5.513E-02	NOT IDENT.
TE-125M	-1.653E+01	1.252E+01	1.024E+01	6.387E+00	NOT IDENT.
I-126	1.593E-01	2.793E-01	2.211E-01	1.425E-01	NOT IDENT.
SB-126	-5.375E-02	1.807E-01	1.304E-01	9.220E-02	NOT IDENT.
SB-127	-2.013E-01	1.283E+00	1.101E+00	6.547E-01	NOT IDENT.
I-131	-8.311E-02	1.237E-01	1.025E-01	6.312E-02	NOT IDENT.
TE-132	3.250E-01	7.059E-01	6.361E-01	3.602E-01	NOT IDENT.
BA-133	4.479E-02	5.786E-02	4.584E-02	2.952E-02	FAIL ABUN
I-133	-2.229E+03	2.815E+03	0.000E+00	1.436E+03	SHORT HLIF
CS-134	9.552E-02	5.919E-02	5.571E-02	3.020E-02	NOT IDENT.
CS-135	4.362E-02	2.304E-01	1.784E-01	1.176E-01	NOT IDENT.
I-135	-4.684E+14	4.444E+14	0.000E+00	2.267E+14	SHORT HLIF
CS-136	4.403E-02	1.199E-01	1.042E-01	6.119E-02	NOT IDENT.
CE-139	2.637E-03	3.736E-02	3.199E-02	1.906E-02	NOT IDENT.
BA-140	1.003E-02	3.009E-01	2.543E-01	1.535E-01	NOT IDENT.
LA-140	6.204E-03	8.817E-02	7.528E-02	4.499E-02	FAIL ABUN
CE-141	5.974E-02	7.902E-02	6.963E-02	4.032E-02	NOT IDENT.
CE-143	5.112E+02	1.615E+02	0.000E+00	8.241E+01	SHORT HLIF
CE-144	-2.903E-01	2.644E-01	2.154E-01	1.349E-01	NOT IDENT.
PM-144	2.815E-02	4.229E-02	3.817E-02	2.158E-02	NOT IDENT.
PR-144	1.456E+00	3.202E+00	2.854E+00	1.634E+00	NOT IDENT.
PM-146	-4.183E-02	5.045E-02	4.048E-02	2.574E-02	NOT IDENT.
ND-147	1.261E-01	5.938E-01	5.089E-01	3.029E-01	NOT IDENT.
PM-149	1.024E+01	7.981E+01	7.039E+01	4.072E+01	NOT IDENT.
EU-152	2.171E-03	1.439E-01	1.084E-01	7.341E-02	FAIL ABUN
GD-153	-2.281E-01	1.183E-01	9.435E-02	6.037E-02	NOT IDENT.
EU-154	2.019E-02	1.560E-01	1.308E-01	7.959E-02	NOT IDENT.
EU-155	2.436E-01	1.347E-01	1.232E-01	6.871E-02	FAIL ABUN
TB-160	-6.698E-02	1.585E-01	1.300E-01	8.088E-02	FAIL ABUN
HO-166M	-1.462E-02	7.137E-02	6.087E-02	3.641E-02	FAIL ABUN
TA-182	1.910E-01	2.393E-01	2.116E-01	1.221E-01	FAIL ABUN
IR-192	3.970E-02	4.391E-02	3.978E-02	2.240E-02	FAIL ABUN
HG-203	6.626E-02	5.537E-02	4.503E-02	2.825E-02	NOT IDENT.
BI-207	-1.547E-02	6.383E-02	5.115E-02	3.256E-02	FAIL ABUN
PB-210	-7.398E+00	1.299E+01	1.127E+01	6.625E+00	NOT IDENT.
PB-211	4.368E-01	9.987E-01	7.544E-01	5.095E-01	NOT IDENT.
BI-212	2.048E+00	1.045E+00	6.643E-01	5.334E-01	FAIL ABUN
RN-219	-1.797E-01	4.971E-01	4.177E-01	2.536E-01	FAIL ABUN
RA-223	5.543E-02	9.240E-01	7.014E-01	4.714E-01	FAIL ABUN
AC-227	2.995E-01	3.199E-01	2.911E-01	1.632E-01	FAIL ABUN
TH-227	2.995E-01	3.204E-01	2.911E-01	1.635E-01	FAIL ABUN
TH-229	-2.886E-01	6.719E-01	5.579E-01	3.428E-01	FAIL ABUN
PA-231	-5.420E-01	2.016E+00	1.583E+00	1.029E+00	FAIL ABUN
TH-231	5.543E-02	9.240E-01	7.014E-01	4.714E-01	FAIL ABUN
PA-233	-2.722E-02	8.327E-02	7.150E-02	4.249E-02	FAIL ABUN
PA-234	-4.772E-02	3.982E-01	3.344E-01	2.032E-01	NOT IDENT.
PA-234M	3.182E+00	6.182E+00	5.351E+00	3.154E+00	NOT IDENT.
TH-234	2.318E-01	2.407E+00	2.132E+00	1.228E+00	NOT IDENT.
U-235	1.968E-01	2.669E-01	2.317E-01	1.362E-01	FAIL ABUN
U-238	2.318E-01	2.407E+00	2.132E+00	1.228E+00	NOT IDENT.
NP-239	2.669E-02	5.168E-01	4.497E-01	2.637E-01	FAIL ABUN
AM-241	-8.072E-02	3.055E-01	2.704E-01	1.559E-01	NOT IDENT.
CM-247	-1.927E-02	4.575E-02	3.833E-02	2.334E-02	FAIL ABUN
CF-249	-2.292E-02	4.897E-02	4.101E-02	2.499E-02	NOT IDENT.

CF-251	-1.321E-01	1.703E-01	1.397E-01	8.686E-02 NOT IDENT.
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*****
*                               GEL Laboratories LLC                               *
*                               2040 SAVAGE ROAD                               *
*                               CHARLESTON , SC 29417                          *
*                               GAMMA SPECTROSCOPY BACKGROUND REPORT            *
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ENERGY	MDA COUNTS
46.54	339.5922
49.72	321.3606
57.36	0.0000
59.54	378.8814
63.29	389.7873
63.29	389.7873
64.28	403.0655
67.75	452.8110
69.67	408.5067
70.83	415.4738
72.81	460.9395
72.87	460.9759
72.87	460.9759
74.82	431.7974
74.82	431.7974
74.82	431.7974
74.97	431.8837
77.11	433.0917
77.11	433.0917
77.11	433.0917
79.69	418.7443
79.80	471.5535
80.12	471.7443
80.19	471.7857
80.57	500.8134
81.00	528.3001
81.07	528.3464
81.07	528.3464
83.79	397.6043
83.79	397.6043
85.43	400.8180
86.48	465.7991
86.55	465.8396
86.79	566.3413
86.94	584.5888
87.57	584.0226
88.03	550.0312
88.47	623.6288
89.96	823.8040
91.11	627.1979
92.59	469.4510
92.59	469.4510
93.35	496.6071
94.67	470.9179
94.87	514.7710
94.87	514.7710
95.86	628.4035
97.43	487.6988
98.44	344.2274
99.53	316.0100
100.11	328.4928
103.18	400.4483
103.37	377.9376
105.31	309.7759
106.12	318.2844
109.28	418.5662
111.00	357.1960
111.76	375.0925
116.30	339.3599
117.23	367.8111
121.12	331.5788
121.78	340.1674
122.06	343.4025
123.07	332.2125
131.20	368.5998
133.52	415.9674
136.00	356.4489

136.47	347.0508
140.51	419.6891
140.51	0.0000
143.76	349.3311
144.24	338.7909
144.24	338.7909
145.44	356.2667
152.43	328.2906
153.25	324.2102
154.21	346.0341
154.21	346.0341
156.02	358.4390
158.56	340.8086
159.00	322.5317
162.66	344.1334
163.33	337.8049
165.86	322.1714
176.60	331.5106
177.52	351.5186
181.07	310.1828
184.41	337.4745
185.72	341.3452
193.51	312.4140
197.04	296.4981
205.31	274.4848
210.85	314.2704
215.65	245.4418
222.11	274.0414
227.38	256.7914
228.16	264.2126
228.18	264.2161
235.69	263.9859
235.96	264.0316
235.96	264.0316
238.63	253.1707
238.63	253.1707
240.99	253.5514
242.00	253.7148
244.70	240.9492
252.40	248.8923
252.80	235.9964
256.23	214.2354
256.23	214.2354
260.90	256.6948
264.66	198.4155
268.22	244.4309
269.46	233.7036
269.46	233.7036
271.23	224.5898
273.65	168.6819
276.40	215.8833
277.37	211.3083
277.60	211.3385
278.00	214.5168
279.20	205.2659
279.54	192.7681
280.46	213.2554
283.69	220.8297
284.31	223.9406
285.41	222.6645
285.90	207.6277
287.50	175.9349
293.27	0.0000
295.22	188.7925
295.96	188.8702
298.57	189.1447
299.98	199.7538
299.98	199.7538
300.09	199.7666
300.09	199.7666
300.13	199.7717
301.36	209.4243
302.85	203.2448
304.50	193.8914
304.50	193.8914
304.85	176.4433
308.46	187.3006
311.90	204.8804

316.51	172.7534
319.41	202.8171
320.08	198.0789
323.87	186.2698
323.87	186.2698
328.76	167.4258
333.37	183.9604
334.37	167.9103
334.37	167.9103
338.28	186.3633
338.28	186.3633
338.32	186.3680
338.32	186.3680
338.32	186.3680
340.48	174.9111
340.55	174.9166
344.28	183.3583
351.06	179.0947
351.93	170.0493
356.01	140.3606
364.49	150.4469
366.42	144.6816
383.85	139.9260
388.16	154.1277
388.63	150.1816
391.69	137.4458
400.66	131.0096
401.81	149.0873
402.40	151.1290
404.85	128.5855
410.95	135.6345
414.70	109.2633
423.72	120.2333
427.09	115.3498
427.87	115.3888
433.94	119.7501
453.88	129.9735
463.37	121.2366
468.07	185.2910
473.00	123.7749
476.78	124.9969
477.60	104.3695
487.02	103.7256
492.35	124.7329
497.08	90.5981
511.00	93.1811
514.00	93.2876
527.90	97.9929
529.87	0.0000
531.02	87.5593
537.26	100.4504
546.56	0.0000
563.25	99.2689
569.33	90.9268
569.50	96.2820
569.70	99.4982
583.19	102.1204
600.60	109.4963
602.73	129.8672
604.72	120.9304
609.32	111.7183
609.32	111.7183
610.33	101.2699
614.28	95.9719
618.01	89.2030
621.93	87.1406
621.93	87.1406
633.25	79.8152
635.95	90.8279
636.99	85.3868
645.85	77.9492
657.76	92.8913
661.66	119.8050
661.66	119.8050
664.57	0.0000
666.33	85.2508
666.50	85.2564
677.62	90.5730



685.70	92.6554
695.00	95.7096
696.49	92.0350
696.51	97.6129
697.00	93.9087
702.65	97.7966
706.68	93.2556
711.68	89.6602
720.70	86.6953
721.93	0.0000
722.78	80.3223
722.91	80.3258
723.31	75.5160
724.19	81.9643
727.33	85.2581
733.00	69.2886
735.93	79.0251
739.50	77.2253
747.24	57.5784
752.31	80.3516
753.82	88.8976
756.73	62.4712
763.94	86.1786
765.81	74.8366
766.42	81.3581
777.92	77.1356
778.90	77.1570
783.70	62.9546
785.37	61.0755
795.86	71.7850
801.95	85.3297
810.29	67.2685
810.76	69.1992
815.77	52.9333
818.51	63.5682
832.01	81.2024
834.85	83.1988
836.80	0.0000
846.77	62.1146
856.80	46.7109
860.56	60.3942
871.09	65.4460
873.19	59.6175
875.33	0.0000
879.36	65.5878
880.51	71.4821
883.24	57.8140
884.68	58.8159
889.28	74.5898
898.04	76.7241
911.20	76.9828
911.20	76.9828
911.20	76.9828
926.50	58.4550
937.49	74.5117
944.13	68.6631
946.00	78.6496
949.00	50.8122
962.29	47.9785
964.08	61.7143
966.15	64.0313
968.97	64.0755
968.97	64.0755
968.97	64.0755
983.53	68.3196
996.26	75.5814
1001.03	62.5512
1004.73	82.8008
1037.84	62.0723
1038.76	0.0000
1048.07	54.0589
1050.41	56.1302
1050.41	56.1302
1063.66	56.2980
1085.87	57.6087
1099.45	55.7183
1112.07	64.8417
1115.54	74.5547

1120.29	65.3020
1120.29	65.3020
1120.55	65.3071
1121.30	67.5391
1131.51	0.0000
1173.23	63.9487
1177.93	59.8157
1189.05	64.1622
1204.77	85.4758
1221.41	61.4150
1231.02	95.4858
1235.36	101.9414
1238.28	76.5000
1260.41	0.0000
1271.85	64.1797
1274.44	53.5095
1274.54	52.4413
1291.59	44.0263
1298.22	0.0000
1312.11	48.5156
1332.49	33.5531
1365.19	21.4703
1368.63	0.0000
1384.29	45.9033
1408.01	27.2866
1457.56	0.0000
1460.82	26.5986
1489.16	21.9588
1505.03	34.4657
1596.21	20.4199
1620.50	19.5257
1678.03	0.0000
1690.97	20.7371
1764.49	12.9864
1764.49	12.9864
1770.23	5.2491
1771.35	64.0000
1791.20	0.0000
1836.06	15.1481

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G247809001

Total Uranium Activity	7.8057E-01	ug/g
Total Uranium Counting Unc.	7.1626E+00	ug/g
Total Uranium Tpu	3.6544E-06	ug/g
Total Uranium Mda	6.3449E+00	ug/g

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*****
*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON , SC 29417              *
*               GROSS GAMMA REPORT                 *
*
*****
*
*  BATCH ID      : 957136          SAMPLE ID   : G247809001
*  ANALYST       : MXR1           DETECTOR    : GAM15
*  SAMPLE DATE   : 19-FEB-2010 12:00:00.00  COUNT TIME : 0 02:00:00.00
*  ANALYSIS DATE: 5-MAR-2010 10:31:36.54  SAMPLE ALQT: 132.540 GRAM
*
*****

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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.009E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.521E+00
GROSS GAMMA MDA     (pCi/GRAM ) : 3.960E+00
GROSS GAMMA DLC     (pCi/GRAM ) : 1.927E+00

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VAX/VMS Nuclide Identification Report Generated 5-MAR-2010 12:55:11.93

```
*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202052272.CNF;1
Sample date        : 26-FEB-2010 00:00:00 Acquisition date : 5-MAR-2010 10:54:48.
Sample ID          : G1202052272      Sample quantity   : 1.43980E+02 GRAM
Detector name      : GAM10             Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00     Elapsed real time: 0 02:00:00.38 0.0%
Energy tolerance   : 1.50000 keV       Analyst Initials : MXR1
Abundance limit    : 75.00000          Sensitivity       : 5.00000
Batch ID           : 957136             Detector SN#       :
Matrix Spike ID    :                    LCS ID           : 1032-A
*****
No peaks were found
```

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202052272.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 26-FEB-2010 00:00:00 Acquisition date : 5-MAR-2010 10:54:48
Sample ID        : G1202052272 Sample quantity : 143.98 GRAM
Sample type      : SOLID Sample geometry :
Detector name    : GAMMA10 Detector geometry: CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:00.38 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

## ---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	477.60	*	-1.847E-03	1.453E-01	2.343E-01	1.742E-02	-0.008	
NA-22	1274.54	*	-8.205E-03	1.978E-02	3.001E-02	2.324E-03	-0.273	
NA-24	1368.63	*	-3.503E-05	1.978E-02	Half-Life too short			
K-40	1460.82	*	-3.727E-02	2.587E-01	4.703E-01	4.051E-02	-0.079	
SC-46	889.28	*	5.776E-03	1.329E-02	2.387E-02	2.362E-03	0.242	
	1120.55		-2.023E-02	2.463E-02	3.492E-02	2.508E-03	-0.579	
V-48	944.13		4.979E-02	2.501E-01	4.249E-01	4.117E-02	0.117	
	983.53	*	-5.735E-03	2.066E-02	3.131E-02	2.895E-03	-0.183	
	1312.11		-2.451E-03	1.777E-02	2.813E-02	2.348E-03	-0.087	
CR-51	320.08	*	1.529E-03	1.400E-01	2.322E-01	1.675E-02	0.007	
MN-54	834.85	*	-8.030E-04	1.669E-02	2.720E-02	2.323E-03	-0.030	
CO-56	846.77	*	-9.967E-03	2.024E-02	3.066E-02	2.707E-03	-0.325	
	1037.84		-7.682E-02	1.235E-01	1.692E-01	1.519E-02	-0.454	
	1238.28		-4.464E-02	3.434E-02	4.374E-02	3.262E-03	-1.020	
	1771.35		-1.468E-01	1.491E-01	1.666E-01	1.104E-02	-0.881	
CO-57	122.06	*	1.049E-02	1.034E-02	1.825E-02	1.204E-03	0.575	
	136.47		3.799E-02	9.056E-02	1.512E-01	1.056E-02	0.251	
CO-58	810.76	*	-1.332E-02	1.701E-02	2.394E-02	1.916E-03	-0.556	
FE-59	1099.45	*	-3.483E-03	3.183E-02	4.977E-02	4.152E-03	-0.070	
	1291.59		-2.082E-02	5.830E-02	9.036E-02	8.362E-03	-0.230	
CO-60	1173.23		1.807E-03	1.905E-02	3.246E-02	2.002E-03	0.056	
	1332.49	*	7.949E-04	2.013E-02	3.365E-02	2.924E-03	0.024	
ZN-65	1115.54	*	3.467E-02	4.068E-02	7.552E-02	5.500E-03	0.459	
SE-75	121.12		1.622E-02	5.428E-02	9.033E-02	8.710E-03	0.180	
	136.00		9.427E-03	1.692E-02	2.857E-02	1.775E-03	0.330	
	264.66	*	1.665E-03	1.978E-02	3.336E-02	2.129E-03	0.050	
	279.54		-1.301E-02	5.217E-02	8.519E-02	5.843E-03	-0.153	
	400.66		-1.305E-02	1.147E-01	1.848E-01	1.799E-02	-0.071	
SR-85	514.00	*	-2.843E-02	2.716E-02	3.965E-02	2.533E-03	-0.717	
Y-88	898.04		5.135E-03	1.996E-02	3.400E-02	3.454E-03	0.151	
	1836.06	*	1.438E-02	1.289E-02	2.989E-02	1.834E-03	0.481	
Y-91	1204.77	*	2.643E+00	7.345E+00	1.317E+01	8.747E-01	0.201	
NB-94	702.65	*	-1.184E-03	1.676E-02	2.761E-02	1.572E-03	-0.043	
	871.09		3.932E-03	1.760E-02	2.985E-02	2.816E-03	0.132	

## ---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NB-95	765.81	*		2.702E-04	1.673E-02	2.772E-02	1.935E-03	0.010
NB-95M	235.69	*		-3.901E-02	5.162E-02	8.154E-02	6.345E-03	-0.478
ZR-95	724.19			2.513E-02	3.758E-02	6.831E-02	4.853E-03	0.368
	756.73	*		8.804E-03	3.007E-02	5.205E-02	4.112E-03	0.169
MO-99	140.51			-1.289E-01	1.376E+00	2.196E+00	5.035E-01	-0.059
	181.07			8.088E-01	1.207E+00	2.018E+00	3.552E-01	0.401
	366.42			-1.947E+00	6.677E+00	1.059E+01	7.172E-01	-0.184
	739.50	*		6.398E-01	8.723E-01	1.588E+00	2.330E-01	0.403
	777.92			1.012E+00	2.275E+00	4.033E+00	2.920E-01	0.251
TC-99M	140.51	*		-9.774E-01	2.275E+00	Half-Life too short		
RU-103	497.08	*		-1.294E-02	1.971E-02	2.900E-02	3.701E-03	-0.446
	610.33			1.329E-01	3.245E-01	5.692E-01	8.515E-02	0.234
RH-106	621.93	*		1.176E-05	1.306E-01	2.191E-01	2.506E-02	0.000
	1050.41			-1.043E+00	1.109E+00	1.367E+00	1.140E-01	-0.763
RU-106	621.93	*		1.176E-05	1.306E-01	2.191E-01	1.190E-02	0.000
	1050.41			-1.043E+00	1.109E+00	1.367E+00	1.140E-01	-0.763
AG-108M	433.94	*		7.544E-03	1.502E-02	2.583E-02	1.832E-03	0.292
	614.28			-4.394E-03	1.647E-02	2.668E-02	1.587E-03	-0.165
	722.91			-3.662E-03	1.798E-02	2.898E-02	1.877E-03	-0.126
CD-109	88.03	*		1.316E-02	3.124E-01	5.153E-01	5.842E-02	0.026
AG-110M	657.76	*		-2.367E-03	1.468E-02	2.392E-02	1.296E-03	-0.099
	677.62			1.388E-02	1.380E-01	2.336E-01	1.313E-02	0.059
	706.68			-4.426E-02	1.078E-01	1.693E-01	1.039E-02	-0.261
	763.94			2.847E-02	6.262E-02	1.115E-01	8.065E-03	0.255
	884.68			2.916E-04	2.123E-02	3.481E-02	3.489E-03	0.008
	937.49			-5.118E-02	4.986E-02	6.725E-02	6.748E-03	-0.761
	1384.29			-3.458E-02	8.156E-02	1.214E-01	1.070E-02	-0.285
	1505.03			-1.255E-01	1.419E-01	1.712E-01	1.403E-02	-0.733
SN-113	391.69	*		-1.137E-02	1.966E-02	2.979E-02	2.124E-03	-0.382
CD-115	260.90			-1.349E+00	6.072E+00	9.972E+00	6.278E-01	-0.135
	492.35			1.231E+00	1.823E+00	3.185E+00	2.074E-01	0.386
	527.90	*		-2.023E-01	4.940E-01	7.407E-01	4.663E-02	-0.273
SN-117M	156.02			3.784E-01	5.960E-01	1.015E+00	5.744E-02	0.373
	158.56	*		-1.266E-02	1.532E-02	2.238E-02	1.255E-03	-0.565
TE-123M	159.00	*		-5.519E-03	1.116E-02	1.694E-02	9.619E-04	-0.326
SB-124	602.73			-3.198E-03	1.790E-02	2.945E-02	1.662E-03	-0.109
	645.85			1.965E-01	2.000E-01	3.798E-01	2.254E-02	0.517
	722.78			-3.368E-02	1.654E-01	2.665E-01	1.696E-02	-0.126
	1690.97	*		1.826E-04	3.508E-02	5.712E-02	4.353E-03	0.003
SB-125	427.87	*		-1.506E-03	4.162E-02	6.739E-02	4.688E-03	-0.022
	463.37			2.840E-02	1.223E-01	2.041E-01	1.524E-02	0.139
	600.60			-5.020E-03	8.804E-02	1.470E-01	9.693E-03	-0.034
	635.95			3.166E-02	1.319E-01	2.279E-01	1.446E-02	0.139
TE-125M	109.28	*		1.827E-01	3.637E+00	5.950E+00	5.800E-01	0.031
I-126	388.63			3.020E-02	5.202E-02	9.075E-02	6.166E-03	0.333
	666.33	*		1.715E-02	7.084E-02	1.220E-01	6.121E-03	0.141
	753.82			4.381E-01	5.155E-01	9.672E-01	6.503E-02	0.453
SB-126	414.70			6.147E-03	2.346E-02	3.945E-02	2.673E-03	0.156
	666.50			-4.587E-04	2.429E-02	4.044E-02	2.030E-03	-0.011

----- Non-Identified Nuclides -----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	695.00			2.849E-03	2.591E-02	4.373E-02	2.426E-03	0.065
	697.00			-3.254E-02	8.812E-02	1.393E-01	7.780E-03	-0.234
	720.70	*		-9.161E-03	4.418E-02	7.107E-02	4.297E-03	-0.129
SN-126	856.80			2.893E-02	1.356E-01	2.307E-01	2.094E-02	0.125
	64.28			-1.334E-01	2.953E-01	4.572E-01	7.817E-02	-0.292
	86.94			-3.340E-02	1.383E-01	2.218E-01	9.312E-02	-0.151
	87.57	*		6.455E-04	3.128E-02	5.151E-02	5.829E-03	0.013
SB-127	252.40			-8.459E-02	5.274E-01	8.713E-01	3.540E-01	-0.097
	473.00			2.531E-02	2.138E-01	3.505E-01	3.405E-02	0.072
	685.70	*		1.362E-01	1.569E-01	2.920E-01	1.977E-02	0.466
	783.70			-1.083E-01	3.499E-01	5.429E-01	5.281E-02	-0.199
I-131	80.19			-1.593E-01	9.578E-01	1.557E+00	1.710E-01	-0.102
	284.31			2.305E-01	3.645E-01	6.421E-01	4.482E-02	0.359
	364.49	*		1.209E-02	2.769E-02	4.775E-02	3.487E-03	0.253
	636.99			3.885E-02	3.878E-01	6.581E-01	3.927E-02	0.059
TE-132	49.72			-1.121E+00	3.109E+00	5.051E+00	6.618E-01	-0.222
	111.76			-1.785E+00	2.627E+00	3.993E+00	3.277E-01	-0.447
	116.30			-7.528E-01	2.170E+00	3.402E+00	2.662E-01	-0.221
	228.16	*		7.415E-02	6.188E-02	1.131E-01	1.504E-02	0.656
BA-133	81.00			-1.206E-02	3.881E-02	6.221E-02	1.055E-02	-0.194
	276.40			1.044E-01	1.776E-01	3.100E-01	3.993E-02	0.337
	302.85			-5.939E-02	6.107E-02	8.998E-02	1.063E-02	-0.660
	356.01	*		-5.388E-03	1.861E-02	2.955E-02	3.485E-03	-0.182
	383.85			-4.682E-02	1.339E-01	2.096E-01	2.355E-02	-0.223
I-133	529.87	*		4.006E-06	1.339E-01	Half-Life	too short	
	875.33			-4.851E-05	1.339E-01	Half-Life	too short	
	1298.22			-2.289E-04	1.339E-01	Half-Life	too short	
CS-134	563.25			-9.580E-02	1.951E-01	2.902E-01	1.781E-02	-0.330
	569.33			-1.240E-01	1.169E-01	1.609E-01	9.875E-03	-0.770
	604.72			6.426E-03	1.800E-02	3.137E-02	1.774E-03	0.205
	795.86	*		1.875E-02	1.967E-02	3.732E-02	2.877E-03	0.502
	801.95			3.754E-02	1.938E-01	3.289E-01	2.575E-02	0.114
	1365.19			1.615E-01	5.866E-01	1.034E+00	9.334E-02	0.156
CS-135	268.22	*		-3.983E-03	7.137E-02	1.188E-01	9.600E-03	-0.034
I-135	546.56			-9.703E+00	7.137E-02	Half-Life	too short	
	836.80			2.041E+00	7.137E-02	Half-Life	too short	
	1038.76			-2.526E+01	7.137E-02	Half-Life	too short	
	1131.51			7.571E-01	7.137E-02	Half-Life	too short	
	1260.41	*		2.727E+00	7.137E-02	Half-Life	too short	
	1457.56			-2.331E+01	7.137E-02	Half-Life	too short	
	1678.03			-2.339E+01	7.137E-02	Half-Life	too short	
	1791.20			-1.979E+00	7.137E-02	Half-Life	too short	
CS-136	153.25			-5.257E-02	2.282E-01	3.572E-01	2.852E-02	-0.147
	176.60			-9.875E-02	1.503E-01	2.233E-01	1.528E-02	-0.442
	273.65			-1.639E-01	1.666E-01	2.536E-01	1.860E-02	-0.646
	340.55			-5.445E-04	4.595E-02	7.574E-02	5.392E-03	-0.007
	818.51			2.326E-02	2.531E-02	4.720E-02	3.852E-03	0.493
	1048.07	*		-8.612E-03	2.834E-02	4.221E-02	3.691E-03	-0.204
	1235.36			2.501E-02	1.346E-01	2.330E-01	2.495E-02	0.107



---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BA-137M	661.66	*		-4.439E-03	1.759E-02	2.838E-02	1.400E-03	-0.156
CS-137	661.66	*		-4.689E-03	1.858E-02	2.998E-02	1.488E-03	-0.156
CE-139	165.86	*		1.414E-03	1.289E-02	2.079E-02	1.135E-03	0.068
BA-140	162.66			-1.994E-01	2.678E-01	3.673E-01	2.348E-02	-0.543
	304.85			-1.689E-02	3.880E-01	6.414E-01	1.843E-01	-0.026
	423.72			6.262E-01	6.019E-01	1.051E+00	3.410E-01	0.596
	537.26	*		6.249E-02	8.207E-02	1.422E-01	4.747E-02	0.439
LA-140	328.76			6.910E-02	8.069E-02	1.457E-01	1.063E-02	0.474
	487.02			-3.779E-02	4.333E-02	6.054E-02	4.376E-03	-0.624
	815.77			4.575E-02	1.114E-01	1.945E-01	1.782E-02	0.235
	1596.21	*		-2.473E-02	2.808E-02	3.194E-02	2.479E-03	-0.774
CE-141	145.44	*		-1.212E-02	2.301E-02	3.515E-02	2.151E-03	-0.345
CE-143	57.36			-4.837E+00	1.550E+01	2.519E+01	3.413E+00	-0.192
	293.27	*		-1.629E+00	1.391E+00	1.911E+00	3.881E-01	-0.853
	664.57			4.708E+00	1.202E+01	2.097E+01	6.064E+00	0.225
	721.93			-5.722E+00	1.336E+01	2.065E+01	5.588E+00	-0.277
CE-144	80.12			-4.709E-01	1.011E+00	1.599E+00	1.754E-01	-0.295
	133.52	*		-3.320E-02	8.881E-02	1.384E-01	1.946E-02	-0.240
PM-144	476.78			1.672E-02	3.338E-02	5.716E-02	4.306E-03	0.293
	618.01			4.088E-03	1.320E-02	2.315E-02	1.353E-03	0.177
	696.49	*		-6.584E-03	1.736E-02	2.742E-02	1.529E-03	-0.240
PR-144	696.51	*		-4.978E-01	1.293E+00	2.041E+00	1.138E-01	-0.244
	1489.16			-6.115E+00	6.770E+00	8.089E+00	6.680E-01	-0.756
PM-146	453.88	*		-3.475E-04	2.019E-02	3.264E-02	2.964E-03	-0.011
	633.25			1.740E-01	7.172E-01	1.233E+00	4.635E-01	0.141
	735.93			-7.348E-02	7.450E-02	9.946E-02	2.727E-02	-0.739
	747.24			-4.094E-02	4.216E-02	5.656E-02	7.626E-03	-0.724
ND-147	91.11			-1.964E-01	8.607E-02	1.198E-01	1.336E-02	-1.640
	319.41			9.939E-02	9.548E-01	1.599E+00	1.061E-01	0.062
	531.02	*		1.322E-01	1.621E-01	2.890E-01	3.968E-02	0.458
PM-149	285.90	*		2.221E+00	3.948E+00	6.898E+00	9.960E-01	0.322
EU-152	121.78			2.901E-02	3.070E-02	5.381E-02	4.420E-03	0.539
	244.70			-1.091E-01	1.348E-01	2.088E-01	1.288E-02	-0.523
	344.28	*		-3.277E-02	4.742E-02	7.228E-02	5.323E-03	-0.453
	778.90			-1.769E-02	1.078E-01	1.726E-01	1.253E-02	-0.103
	964.08			-6.966E-02	1.271E-01	1.849E-01	1.752E-02	-0.377
	1085.87			5.154E-03	1.500E-01	2.435E-01	1.895E-02	0.021
	1112.07			-3.606E-02	1.394E-01	2.113E-01	1.549E-02	-0.171
	1408.01			2.005E-02	9.566E-02	1.651E-01	1.408E-02	0.121
GD-153	69.67			-3.954E-01	7.559E-01	1.192E+00	1.329E-01	-0.332
	97.43	*		6.652E-03	3.186E-02	5.318E-02	4.952E-03	0.125
	103.18			-1.408E-02	4.462E-02	7.067E-02	5.975E-03	-0.199
EU-154	123.07			-5.730E-03	2.171E-02	3.428E-02	3.383E-03	-0.167
	723.31			-1.917E-02	8.265E-02	1.327E-01	9.660E-03	-0.144
	873.19			-1.137E-02	1.288E-01	2.074E-01	2.600E-02	-0.055
	996.26			-1.011E-02	1.640E-01	2.624E-01	4.646E-02	-0.039
	1004.73			3.685E-03	8.722E-02	1.426E-01	1.698E-02	0.026
	1274.44	*		-3.473E-02	5.862E-02	8.535E-02	9.152E-03	-0.407
EU-155	86.55			1.403E-03	3.958E-02	6.528E-02	7.389E-03	0.021

## ---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TB-160	105.31	*		-1.587E-04	4.416E-02	7.201E-02	5.970E-03	-0.002
	86.79			-1.917E-02	9.961E-02	1.612E-01	1.816E-02	-0.119
	197.04			1.031E-03	2.588E-01	3.865E-01	2.217E-02	0.003
	215.65			2.008E-01	2.966E-01	5.289E-01	3.127E-02	0.380
	298.57			1.804E-02	4.836E-02	8.315E-02	5.435E-03	0.217
	879.36	*		5.939E-03	5.757E-02	9.605E-02	9.261E-03	0.062
	962.29			1.322E-01	2.019E-01	3.672E-01	3.486E-02	0.360
	966.15			-1.450E-02	8.021E-02	1.259E-01	1.189E-02	-0.115
HO-166M	1177.93			-4.194E-03	1.213E-01	2.015E-01	1.257E-02	-0.021
	1271.85			6.543E-02	2.907E-01	5.059E-01	3.891E-02	0.129
	80.57			-2.362E-02	1.099E-01	1.779E-01	1.954E-02	-0.133
	184.41			-1.211E-02	1.836E-02	2.828E-02	1.588E-03	-0.428
	280.46			-1.222E-02	4.218E-02	6.858E-02	4.410E-03	-0.178
	410.95			-1.136E-01	1.200E-01	1.726E-01	1.170E-02	-0.658
	711.68	*		-1.226E-02	3.054E-02	4.785E-02	2.808E-03	-0.256
	752.31			-1.578E-02	1.282E-01	2.080E-01	1.392E-02	-0.076
TA-182	810.29			-1.977E-02	2.993E-02	4.205E-02	3.351E-03	-0.470
	67.75			-2.535E-02	4.962E-02	7.843E-02	8.860E-03	-0.323
	100.11			-1.852E-02	6.940E-02	1.106E-01	9.825E-03	-0.168
	152.43			-6.691E-02	1.374E-01	2.096E-01	1.203E-02	-0.319
	222.11			1.172E-01	1.361E-01	2.467E-01	1.473E-02	0.475
	1121.30			-4.879E-02	6.662E-02	9.607E-02	6.886E-03	-0.508
	1189.05			3.887E-02	1.159E-01	2.066E-01	1.323E-02	0.188
	1221.41	*		1.724E-02	6.374E-02	1.128E-01	7.776E-03	0.153
IR-192	1231.02			-2.647E-04	1.581E-01	2.636E-01	1.857E-02	-0.001
	295.96			-8.439E-04	4.977E-02	7.951E-02	5.252E-03	-0.011
	308.46			2.850E-03	4.139E-02	6.919E-02	4.597E-03	0.041
	316.51	*		-6.671E-03	1.504E-02	2.374E-02	1.578E-03	-0.281
HG-203	468.07			1.900E-02	2.966E-02	5.187E-02	3.850E-03	0.366
	70.83			-6.647E-03	5.358E-01	8.870E-01	1.553E-01	-0.007
	72.87			-1.816E-01	3.515E-01	5.422E-01	9.201E-02	-0.335
BI-207	279.20	*		5.704E-03	1.671E-02	2.870E-02	1.927E-03	0.199
	72.81			-4.834E-02	9.088E-02	1.403E-01	1.543E-02	-0.345
	74.97			-1.235E-02	5.271E-02	8.628E-02	9.445E-03	-0.143
	569.70			-2.233E-02	1.796E-02	2.386E-02	1.423E-03	-0.936
TL-208	1063.66	*		1.422E-02	2.303E-02	4.183E-02	3.405E-03	0.340
	1770.23			-3.884E-01	3.362E-01	3.548E-01	2.354E-02	-1.095
	277.37			1.142E-01	1.915E-01	3.348E-01	3.724E-02	0.341
	583.19	*		7.217E-04	2.066E-02	3.503E-02	2.348E-03	0.021
PB-210	860.56			7.009E-02	1.170E-01	2.128E-01	2.078E-02	0.329
BI-211	46.54	*		2.584E+00	4.090E+00	6.797E+00	6.670E-01	0.380
	72.87			-8.176E-01	1.579E+00	2.441E+00	2.684E-01	-0.335
PB-211	351.06	*		2.437E-03	1.207E-01	1.954E-01	1.425E-02	0.012
	404.85	*		-1.647E-01	3.453E-01	5.153E-01	2.479E-01	-0.320
	427.09			1.727E-01	6.819E-01	1.139E+00	5.236E-01	0.152
BI-212	832.01			7.761E-02	4.147E-01	7.018E-01	3.638E-01	0.111
	727.33	*		5.427E-02	2.313E-01	3.970E-01	4.332E-02	0.137
	785.37			8.642E-01	1.268E+00	2.337E+00	1.730E-01	0.370
	1620.50			-5.768E-01	1.537E+00	2.277E+00	1.736E-01	-0.253

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
PB-212	74.82			-4.504E-02	1.838E-01	3.005E-01	4.401E-02	-0.150
	77.11			-7.230E-02	9.278E-02	1.432E-01	1.565E-02	-0.505
	238.63	*		1.694E-02	3.095E-02	5.053E-02	3.864E-03	0.335
	300.09			-1.679E-01	3.646E-01	5.785E-01	5.160E-02	-0.290
BI-214	609.32	*		-2.090E-02	4.334E-02	6.379E-02	4.895E-03	-0.328
	1120.29			-1.641E-01	1.632E-01	2.222E-01	2.184E-02	-0.739
	1764.49			-1.170E-02	1.708E-01	2.811E-01	1.877E-02	-0.042
PB-214	74.82			-7.984E-02	3.257E-01	5.326E-01	7.201E-02	-0.150
	77.11			-1.275E-01	1.639E-01	2.524E-01	3.457E-02	-0.505
	242.00			-9.690E-02	1.581E-01	2.520E-01	2.128E-02	-0.385
	295.22			-1.308E-02	7.271E-02	1.145E-01	1.055E-02	-0.114
RN-219	351.93	*		-1.681E-02	4.272E-02	6.636E-02	6.069E-03	-0.253
	271.23			1.158E-02	1.093E-01	1.845E-01	1.559E-02	0.063
	401.81	*		6.934E-02	1.772E-01	3.034E-01	4.215E-02	0.229
RA-223	81.07			-2.681E-02	8.794E-02	1.411E-01	1.552E-02	-0.190
	83.79			4.185E-03	5.660E-02	9.088E-02	1.009E-02	0.046
	94.87			-4.252E-01	2.079E-01	2.742E-01	2.679E-02	-1.550
	144.24			-2.655E-01	3.321E-01	4.648E-01	3.396E-02	-0.571
	154.21			-8.180E-03	1.537E-01	2.448E-01	1.685E-02	-0.033
	269.46			1.011E-01	8.255E-02	1.521E-01	1.002E-02	0.665
	323.87	*		-1.072E-01	2.865E-01	4.537E-01	7.461E-02	-0.236
	338.28			1.855E-01	4.498E-01	7.720E-01	8.328E-02	0.240
RA-224	240.99	*		-1.048E-01	2.899E-01	4.736E-01	2.907E-02	-0.221
RA-226	609.32	*		-2.090E-02	4.334E-02	6.379E-02	4.895E-03	-0.328
	1120.29			-1.641E-01	1.632E-01	2.222E-01	2.184E-02	-0.739
	1764.49			-1.170E-02	1.708E-01	2.811E-01	1.877E-02	-0.042
AC-227	79.69			-1.497E-01	5.061E-01	8.123E-01	1.504E-01	-0.184
	235.96			-4.790E-02	6.779E-02	1.076E-01	8.987E-03	-0.445
	256.23	*		-6.835E-02	1.231E-01	1.962E-01	2.059E-02	-0.348
	299.98			-1.627E-01	4.032E-01	6.436E-01	7.336E-02	-0.253
	304.50			2.208E-01	6.975E-01	1.196E+00	1.860E-01	0.185
	334.37			-3.276E-01	7.225E-01	1.128E+00	1.647E-01	-0.291
	79.80			-3.352E-01	6.821E-01	1.071E+00	2.442E-01	-0.313
	235.96			-4.790E-02	6.777E-02	1.076E-01	8.195E-03	-0.445
TH-227	256.23	*		-6.835E-02	1.232E-01	1.962E-01	2.403E-02	-0.348
	299.98			-1.627E-01	4.032E-01	6.436E-01	7.336E-02	-0.253
	304.50			2.208E-01	6.975E-01	1.196E+00	1.860E-01	0.185
	334.37			-3.276E-01	7.225E-01	1.128E+00	1.647E-01	-0.291
AC-228	338.32			4.861E-02	1.152E-01	1.952E-01	8.073E-02	0.249
	911.20	*		3.806E-02	7.722E-02	1.412E-01	1.787E-02	0.270
	968.97			5.260E-02	1.206E-01	2.092E-01	5.159E-02	0.251
RA-228	338.32			4.861E-02	1.152E-01	1.952E-01	8.073E-02	0.249
	911.20	*		3.806E-02	7.722E-02	1.412E-01	1.787E-02	0.270
	968.97			5.260E-02	1.206E-01	2.092E-01	5.159E-02	0.251
TH-228	74.82			-4.504E-02	1.837E-01	3.005E-01	3.309E-02	-0.150
	77.11			-7.230E-02	9.278E-02	1.432E-01	1.565E-02	-0.505
	238.63	*		1.694E-02	3.095E-02	5.053E-02	3.864E-03	0.335
	300.09			-1.679E-01	3.784E-01	5.785E-01	3.527E-01	-0.290
TH-229	85.43			-4.745E-02	9.297E-02	1.420E-01	1.588E-02	-0.334

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Activity Key	(pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
		88.47		4.117E-03	4.715E-02	7.805E-02	8.755E-03	0.053
		193.51	*	-2.088E-01	2.411E-01	3.476E-01	1.982E-02	-0.601
		210.85		1.417E-01	3.653E-01	6.379E-01	3.743E-02	0.222
PA-231		283.69	*	3.449E-02	7.006E-01	1.174E+00	1.575E-01	0.029
		301.36		-1.809E-02	2.365E-01	3.899E-01	4.204E-02	-0.046
TH-231		81.07		-2.681E-02	8.794E-02	1.411E-01	1.552E-02	-0.190
		83.79		4.185E-03	5.660E-02	9.088E-02	1.009E-02	0.046
		94.87		-4.252E-01	2.079E-01	2.742E-01	2.679E-02	-1.550
		144.24		-2.655E-01	3.321E-01	4.648E-01	3.396E-02	-0.571
		154.21		-8.180E-03	1.537E-01	2.448E-01	1.685E-02	-0.033
		269.46		1.011E-01	8.255E-02	1.521E-01	1.002E-02	0.665
		323.87	*	-1.072E-01	2.865E-01	4.537E-01	7.461E-02	-0.236
		338.28		1.855E-01	4.498E-01	7.720E-01	8.328E-02	0.240
TH-232		338.32		4.861E-02	1.135E-01	1.952E-01	1.308E-02	0.249
		911.20	*	3.806E-02	7.722E-02	1.412E-01	1.787E-02	0.270
		968.97		5.260E-02	1.206E-01	2.092E-01	5.159E-02	0.251
PA-233		300.13		-8.720E-02	1.814E-01	2.868E-01	3.936E-02	-0.304
		311.90	*	1.206E-02	2.917E-02	5.043E-02	3.491E-03	0.239
		340.48		4.755E-03	2.944E-01	4.865E-01	1.141E-01	0.010
PA-234		94.67		-9.747E-02	7.188E-02	1.020E-01	1.353E-02	-0.955
		98.44		5.344E-03	3.622E-02	5.988E-02	3.346E-02	0.089
		111.00		-6.885E-02	7.595E-02	1.121E-01	1.272E-02	-0.614
		131.20		-3.204E-03	4.663E-02	7.485E-02	4.689E-03	-0.043
		569.50		-1.842E-01	1.610E-01	2.182E-01	1.302E-02	-0.844
		733.00		1.300E-01	1.637E-01	3.010E-01	6.441E-02	0.432
		880.51		5.714E-02	1.288E-01	2.273E-01	2.199E-02	0.251
		883.24		5.724E-02	1.325E-01	2.249E-01	1.515E-01	0.255
		926.50		2.167E-02	7.720E-02	1.325E-01	3.408E-02	0.164
		946.00	*	5.336E-03	1.265E-01	2.077E-01	4.002E-02	0.026
		949.00		-6.146E-02	2.051E-01	3.135E-01	3.021E-02	-0.196
PA-234M		766.42		2.015E-01	4.961E+00	8.250E+00	4.165E+00	0.024
		1001.03	*	4.157E-01	2.293E+00	3.676E+00	3.794E-01	0.113
TH-234		63.29	*	-9.327E-01	8.660E-01	1.250E+00	2.506E-01	-0.746
		92.59		-3.983E-02	3.279E-01	5.542E-01	1.261E-01	-0.072
U-235		89.96		-7.507E-01	4.154E-01	5.056E-01	1.288E-01	-1.485
		93.35		-1.226E-01	2.399E-01	3.930E-01	9.306E-02	-0.312
		143.76	*	-6.006E-02	9.709E-02	1.373E-01	2.164E-02	-0.437
		163.33		-1.808E-01	2.177E-01	2.919E-01	4.871E-02	-0.619
		185.72		-1.048E-03	2.316E-02	3.738E-02	2.104E-03	-0.028
		205.31		1.581E-01	2.303E-01	3.939E-01	6.694E-02	0.401
NP-237		86.48	*	1.201E-03	9.762E-02	1.607E-01	3.824E-02	0.007
		95.86		-6.885E-01	4.230E-01	5.305E-01	1.292E-01	-1.298
U-238		63.29	*	-9.327E-01	8.660E-01	1.250E+00	2.506E-01	-0.746
		92.59		-3.983E-02	3.278E-01	5.542E-01	5.670E-02	-0.072
NP-239		99.53		-9.877E-03	6.607E-02	1.065E-01	9.556E-03	-0.093
		103.37		-1.749E-02	4.177E-02	6.548E-02	5.519E-03	-0.267
		106.12		1.127E-02	3.592E-02	6.016E-02	4.865E-03	0.187
		117.23	*	-4.635E-02	1.556E-01	2.449E-01	1.708E-02	-0.189
		228.18		1.151E-01	9.537E-02	1.760E-01	1.061E-02	0.654

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	277.60			5.959E-02	8.688E-02	1.531E-01	9.819E-03	0.389
AM-241	59.54	*		9.220E-02	9.799E-02	1.741E-01	2.236E-02	0.530
CM-247	278.00			2.729E-01	3.712E-01	6.565E-01	4.211E-02	0.416
	287.50			-4.780E-01	6.109E-01	9.424E-01	6.101E-02	-0.507
	402.40	*		-2.227E-03	1.677E-02	2.693E-02	1.828E-03	-0.083
CF-249	252.80			-1.690E-01	4.664E-01	7.585E-01	4.729E-02	-0.223
	333.37			-2.575E-02	7.071E-02	1.115E-01	7.455E-03	-0.231
	388.16	*		1.619E-02	1.886E-02	3.381E-02	2.297E-03	0.479
CF-251	177.52	*		-1.243E-02	5.886E-02	9.171E-02	5.093E-03	-0.136
	227.38			1.732E-01	1.496E-01	2.763E-01	1.663E-02	0.627
	285.41			7.249E-01	1.035E+00	1.833E+00	1.184E-01	0.396
ANH-511	511.00	*		-3.095E-02	2.845E-02	5.076E-02	3.252E-03	-0.610

# VAX/VMS Nuclide Identification Report Generated

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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202052272      *
* Acquisition date   : 5-MAR-2010 10:54:48 Detector SN#      :              *
* Detector ID        : GAM10 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 02:00:00.38 Half life ratio : 8.000   *
*****
*
*                                     SAMPLE DATA                          *
*
* Sample date       : 26-FEB-2010 00:00:00 Nuclide Library : SOLID          *
* Sample ID         : G1202052272 Analyst initials: MXR1          *
* Batch Number      : 957136 Sample Quantity : 1.4398E+02 GRAM      *
* Recovery          : 1.00000 Carrier Weight  : 0.00000          *
*****
*
*                                     QC DATA                              *
*
* Standard Weight   : 0.00000 MS Isotope      :                  *
* CALIB. DATE/TIME  : 16-MAR-2009 13:18:08 MSD Isotope      :                  *
* MSD DPM           : 0.000 LCS Isotope       :                  *
* LCS DPM           : 0.000 LCSD Isotope      :                  *
* LCSD DPM          : 0.000
*****

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## Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )
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---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	-1.847E-03	1.424E-01	2.415E-01	0.000E+00 NOT IDENT.
NA-22	-8.205E-03	1.939E-02	3.025E-02	0.000E+00 NOT IDENT.
NA-24	0.000E+00	7.423E+01	0.000E+00	0.000E+00 SHORT HLIF
K-40	-3.727E-02	2.536E-01	4.726E-01	0.000E+00 NOT IDENT.
SC-46	5.776E-03	1.302E-02	2.426E-02	0.000E+00 NOT IDENT.
V-48	-5.735E-03	2.025E-02	3.175E-02	0.000E+00 NOT IDENT.
CR-51	1.529E-03	1.372E-01	2.414E-01	0.000E+00 NOT IDENT.
MN-54	-8.030E-04	1.636E-02	2.768E-02	0.000E+00 NOT IDENT.
CO-56	-9.967E-03	1.984E-02	3.120E-02	0.000E+00 NOT IDENT.
CO-57	1.049E-02	1.013E-02	1.936E-02	0.000E+00 NOT IDENT.
CO-58	-1.332E-02	1.667E-02	2.439E-02	0.000E+00 NOT IDENT.
FE-59	-3.483E-03	3.119E-02	5.034E-02	0.000E+00 NOT IDENT.
CO-60	7.949E-04	1.973E-02	3.389E-02	0.000E+00 NOT IDENT.
ZN-65	3.467E-02	3.987E-02	7.637E-02	0.000E+00 NOT IDENT.
SE-75	1.665E-03	1.938E-02	3.483E-02	0.000E+00 NOT IDENT.
SR-85	-2.843E-02	2.662E-02	4.080E-02	0.000E+00 NOT IDENT.
Y-88	1.438E-02	1.263E-02	2.988E-02	0.000E+00 NOT IDENT.
Y-91	2.643E+00	7.198E+00	1.330E+01	0.000E+00 NOT IDENT.
NB-94	-1.184E-03	1.642E-02	2.821E-02	0.000E+00 NOT IDENT.
NB-95	2.702E-04	1.639E-02	2.828E-02	0.000E+00 NOT IDENT.
NB-95M	-3.901E-02	5.059E-02	8.534E-02	0.000E+00 NOT IDENT.
ZR-95	8.804E-03	2.947E-02	5.310E-02	0.000E+00 NOT IDENT.
MO-99	6.398E-01	8.549E-01	1.621E+00	0.000E+00 NOT IDENT.
TC-99M	0.000E+00	1.022E+07	0.000E+00	0.000E+00 SHORT HLIF
RU-103	-1.294E-02	1.931E-02	2.987E-02	0.000E+00 NOT IDENT.
RH-106	1.176E-05	1.280E-01	2.245E-01	0.000E+00 NOT IDENT.

RU-106	1.176E-05	1.280E-01	2.245E-01	0.000E+00	NOT IDENT.
AG-108M	7.544E-03	1.472E-02	2.668E-02	0.000E+00	NOT IDENT.
CD-109	1.316E-02	3.062E-01	5.505E-01	0.000E+00	NOT IDENT.
AG-110M	-2.367E-03	1.439E-02	2.448E-02	0.000E+00	NOT IDENT.
SN-113	-1.137E-02	1.927E-02	3.084E-02	0.000E+00	NOT IDENT.
CD-115	-2.023E-01	4.841E-01	7.618E-01	0.000E+00	NOT IDENT.
SN-117M	-1.266E-02	1.502E-02	2.362E-02	0.000E+00	NOT IDENT.
TE-123M	-5.519E-03	1.094E-02	1.787E-02	0.000E+00	NOT IDENT.
SB-124	1.826E-04	3.437E-02	5.721E-02	0.000E+00	NOT IDENT.
SB-125	-1.506E-03	4.079E-02	6.962E-02	0.000E+00	NOT IDENT.
TE-125M	1.827E-01	3.564E+00	6.328E+00	0.000E+00	NOT IDENT.
I-126	1.715E-02	6.942E-02	1.248E-01	0.000E+00	NOT IDENT.
SB-126	-9.161E-03	4.330E-02	7.258E-02	0.000E+00	NOT IDENT.
SN-126	6.455E-04	3.065E-02	5.503E-02	0.000E+00	NOT IDENT.
SB-127	1.362E-01	1.537E-01	2.985E-01	0.000E+00	NOT IDENT.
I-131	1.209E-02	2.714E-02	4.951E-02	0.000E+00	NOT IDENT.
TE-132	7.415E-02	6.065E-02	1.184E-01	0.000E+00	NOT IDENT.
BA-133	-5.388E-03	1.824E-02	3.066E-02	0.000E+00	NOT IDENT.
I-133	0.000E+00	5.943E+00	0.000E+00	0.000E+00	SHORT HLIF
CS-134	1.875E-02	1.928E-02	3.803E-02	0.000E+00	NOT IDENT.
CS-135	-3.983E-03	6.994E-02	1.240E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	9.345E+06	0.000E+00	0.000E+00	SHORT HLIF
CS-136	-8.612E-03	2.777E-02	4.275E-02	0.000E+00	NOT IDENT.
BA-137M	-4.439E-03	1.724E-02	2.904E-02	0.000E+00	NOT IDENT.
CS-137	-4.689E-03	1.821E-02	3.068E-02	0.000E+00	NOT IDENT.
CE-139	1.414E-03	1.263E-02	2.192E-02	0.000E+00	NOT IDENT.
BA-140	6.249E-02	8.043E-02	1.462E-01	0.000E+00	NOT IDENT.
LA-140	-2.473E-02	2.752E-02	3.204E-02	0.000E+00	NOT IDENT.
CE-141	-1.212E-02	2.255E-02	3.716E-02	0.000E+00	NOT IDENT.
CE-143	-1.629E+00	1.363E+00	1.990E+00	0.000E+00	NOT IDENT.
CE-144	-3.320E-02	8.704E-02	1.466E-01	0.000E+00	NOT IDENT.
PM-144	-6.584E-03	1.701E-02	2.803E-02	0.000E+00	NOT IDENT.
PR-144	-4.978E-01	1.267E+00	2.086E+00	0.000E+00	NOT IDENT.
PM-146	-3.475E-04	1.978E-02	3.368E-02	0.000E+00	NOT IDENT.
ND-147	1.322E-01	1.588E-01	2.972E-01	0.000E+00	NOT IDENT.
PM-149	2.221E+00	3.869E+00	7.190E+00	0.000E+00	NOT IDENT.
EU-152	-3.277E-02	4.647E-02	7.503E-02	0.000E+00	NOT IDENT.
GD-153	6.652E-03	3.123E-02	5.670E-02	0.000E+00	NOT IDENT.
EU-154	-3.473E-02	5.745E-02	8.605E-02	0.000E+00	NOT IDENT.
EU-155	-1.587E-04	4.328E-02	7.665E-02	0.000E+00	NOT IDENT.
TB-160	5.939E-03	5.641E-02	9.765E-02	0.000E+00	NOT IDENT.
HO-166M	-1.226E-02	2.992E-02	4.888E-02	0.000E+00	NOT IDENT.
TA-182	1.724E-02	6.246E-02	1.138E-01	0.000E+00	NOT IDENT.
IR-192	-6.671E-03	1.474E-02	2.468E-02	0.000E+00	NOT IDENT.
HG-203	5.704E-03	1.637E-02	2.993E-02	0.000E+00	NOT IDENT.
BI-207	1.422E-02	2.257E-02	4.235E-02	0.000E+00	NOT IDENT.
TL-208	7.217E-04	2.025E-02	3.594E-02	0.000E+00	NOT IDENT.
PB-210	2.584E+00	4.009E+00	7.356E+00	0.000E+00	NOT IDENT.
BI-211	2.437E-03	1.183E-01	2.027E-01	0.000E+00	NOT IDENT.
PB-211	-1.647E-01	3.384E-01	5.331E-01	0.000E+00	NOT IDENT.
BI-212	5.427E-02	2.267E-01	4.053E-01	0.000E+00	NOT IDENT.
PB-212	1.694E-02	3.033E-02	5.287E-02	0.000E+00	NOT IDENT.
BI-214	-2.090E-02	4.248E-02	6.540E-02	0.000E+00	NOT IDENT.
PB-214	-1.681E-02	4.187E-02	6.885E-02	0.000E+00	NOT IDENT.
RN-219	6.934E-02	1.736E-01	3.138E-01	0.000E+00	NOT IDENT.
RA-223	-1.072E-01	2.807E-01	4.716E-01	0.000E+00	NOT IDENT.
RA-224	-1.048E-01	2.841E-01	4.954E-01	0.000E+00	NOT IDENT.
RA-226	-2.090E-02	4.248E-02	6.540E-02	0.000E+00	NOT IDENT.
AC-227	-6.835E-02	1.207E-01	2.050E-01	0.000E+00	NOT IDENT.
TH-227	-6.835E-02	1.207E-01	2.050E-01	0.000E+00	NOT IDENT.
AC-228	3.806E-02	7.568E-02	1.434E-01	0.000E+00	NOT IDENT.
RA-228	3.806E-02	7.568E-02	1.434E-01	0.000E+00	NOT IDENT.
TH-228	1.694E-02	3.033E-02	5.287E-02	0.000E+00	NOT IDENT.
TH-229	-2.088E-01	2.363E-01	3.653E-01	0.000E+00	NOT IDENT.
PA-231	3.449E-02	6.866E-01	1.223E+00	0.000E+00	NOT IDENT.
TH-231	-1.072E-01	2.807E-01	4.716E-01	0.000E+00	NOT IDENT.
TH-232	3.806E-02	7.568E-02	1.434E-01	0.000E+00	NOT IDENT.
PA-233	1.206E-02	2.858E-02	5.246E-02	0.000E+00	NOT IDENT.
PA-234	5.336E-03	1.240E-01	2.108E-01	0.000E+00	NOT IDENT.
PA-234M	4.157E-01	2.247E+00	3.727E+00	0.000E+00	NOT IDENT.
TH-234	-9.327E-01	8.487E-01	1.344E+00	0.000E+00	NOT IDENT.
U-235	-6.006E-02	9.515E-02	1.452E-01	0.000E+00	NOT IDENT.
NP-237	1.201E-03	9.567E-02	1.717E-01	0.000E+00	NOT IDENT.
U-238	-9.327E-01	8.487E-01	1.344E+00	0.000E+00	NOT IDENT.
NP-239	-4.635E-02	1.525E-01	2.601E-01	0.000E+00	NOT IDENT.
AM-241	9.220E-02	9.603E-02	1.875E-01	0.000E+00	NOT IDENT.
CM-247	-2.227E-03	1.643E-02	2.786E-02	0.000E+00	NOT IDENT.
CF-249	1.619E-02	1.849E-02	3.501E-02	0.000E+00	NOT IDENT.

CF-251	-1.243E-02	5.768E-02	9.656E-02	0.000E+00 NOT IDENT.
ANH-511	-3.095E-02	2.789E-02	5.224E-02	0.000E+00 NOT IDENT.



```
*****
*                               GEL Laboratories LLC                      *
*                               2040 Savage Road                        *
*                               Charleston, SC 29414                    *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202052272.CNF;1
Sample date        : 26-FEB-2010 00:00:00 Acquisition date : 5-MAR-2010 10:54:48.
Sample ID          : G1202052272 Sample quantity : 1.43980E+02 GRAM
Detector name      : GAM10 Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00 Elapsed real time: 0 02:00:00.38 0.0%
Energy tolerance   : 1.50000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 957136 Detector SN# :
Matrix Spike ID    : LCS ID : 1032-A
*****
```

Nuclide Line Activity Report

Flag: "\*" = Keyline

Summary of Nuclide Activity  
Sample ID : G1202052272

Page : 2  
Acquisition date : 5-MAR-2010 10:54:48

\*\*\*\* There are no nuclides meeting summary criteria \*\*\*\*

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

Unidentified Energy Lines  
Sample ID : G1202052272

Page : 3  
Acquisition date : 5-MAR-2010 10:54:48

None

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202052272.CNF;1
* Acquisition date   : 5-MAR-2010 10:54:48.  Detector SN#      :
* Detector ID        : GAM10                  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 02:00:00.38          Half life ratio   : 8.00000
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 26-FEB-2010 00:00:00  Nuclide Library   : SOLID
* Sample ID          : G1202052272          Analyst initials: MXR1
* Batch Number       : 957136              Sample Quantity  : 1.43980E+02 GRAM
*****
*                                     QC DATA                               *
*
* CALIB. DATE/TIME   : 16-MAR-2009 13:18:08.8MS Isotope       :
* MSD ID             :                      MSD Isotope       :
* LCS ID             : 1032-A              LCS Isotope       :
*****

```

## Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	-1.847E-03		1.453E-01	2.343E-01	1.742E-02	-0.008
NA-22	-8.205E-03		1.978E-02	3.001E-02	2.324E-03	-0.273
NA-24	-3.503E-05		3.787E-05	Half-Life too short		
K-40	-3.727E-02		2.587E-01	4.703E-01	4.051E-02	-0.079
SC-46	5.776E-03		1.329E-02	2.387E-02	2.362E-03	0.242
V-48	-5.735E-03		2.066E-02	3.131E-02	2.895E-03	-0.183
CR-51	1.529E-03		1.400E-01	2.322E-01	1.675E-02	0.007
MN-54	-8.030E-04		1.669E-02	2.720E-02	2.323E-03	-0.030
CO-56	-9.967E-03		2.024E-02	3.066E-02	2.707E-03	-0.325
CO-57	1.049E-02		1.034E-02	1.825E-02	1.204E-03	0.575
CO-58	-1.332E-02		1.701E-02	2.394E-02	1.916E-03	-0.556
FE-59	-3.483E-03		3.183E-02	4.977E-02	4.152E-03	-0.070
CO-60	7.949E-04		2.013E-02	3.365E-02	2.924E-03	0.024
ZN-65	3.467E-02		4.068E-02	7.552E-02	5.500E-03	0.459
SE-75	1.665E-03		1.978E-02	3.336E-02	2.129E-03	0.050
SR-85	-2.843E-02		2.716E-02	3.965E-02	2.533E-03	-0.717
Y-88	1.438E-02		1.289E-02	2.989E-02	1.834E-03	0.481

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
Y-91	2.643E+00		7.345E+00	1.317E+01	8.747E-01	0.201
NB-94	-1.184E-03		1.676E-02	2.761E-02	1.572E-03	-0.043
NB-95	2.702E-04		1.673E-02	2.772E-02	1.935E-03	0.010
NB-95M	-3.901E-02		5.162E-02	8.154E-02	6.345E-03	-0.478
ZR-95	8.804E-03		3.007E-02	5.205E-02	4.112E-03	0.169
MO-99	6.398E-01		8.723E-01	1.588E+00	2.330E-01	0.403
TC-99M	-9.774E-01		5.217E+00	Half-Life too short		
RU-103	-1.294E-02		1.971E-02	2.900E-02	3.701E-03	-0.446
RH-106	1.176E-05		1.306E-01	2.191E-01	2.506E-02	0.000
RU-106	1.176E-05		1.306E-01	2.191E-01	1.190E-02	0.000
AG-108M	7.544E-03		1.502E-02	2.583E-02	1.832E-03	0.292
CD-109	1.316E-02		3.124E-01	5.153E-01	5.842E-02	0.026
AG-110M	-2.367E-03		1.468E-02	2.392E-02	1.296E-03	-0.099
SN-113	-1.137E-02		1.966E-02	2.979E-02	2.124E-03	-0.382
CD-115	-2.023E-01		4.940E-01	7.407E-01	4.663E-02	-0.273
SN-117M	-1.266E-02		1.532E-02	2.238E-02	1.255E-03	-0.565
TE-123M	-5.519E-03		1.116E-02	1.694E-02	9.619E-04	-0.326
SB-124	1.826E-04		3.508E-02	5.712E-02	4.353E-03	0.003
SB-125	-1.506E-03		4.162E-02	6.739E-02	4.688E-03	-0.022
TE-125M	1.827E-01		3.637E+00	5.950E+00	5.800E-01	0.031
I-126	1.715E-02		7.084E-02	1.220E-01	6.121E-03	0.141
SB-126	-9.161E-03		4.418E-02	7.107E-02	4.297E-03	-0.129
SN-126	6.455E-04		3.128E-02	5.151E-02	5.829E-03	0.013
SB-127	1.362E-01		1.569E-01	2.920E-01	1.977E-02	0.466
I-131	1.209E-02		2.769E-02	4.775E-02	3.487E-03	0.253
TE-132	7.415E-02		6.188E-02	1.131E-01	1.504E-02	0.656
BA-133	-5.388E-03		1.861E-02	2.955E-02	3.485E-03	-0.182
I-133	4.006E-06		3.032E-06	Half-Life too short		
CS-134	1.875E-02		1.967E-02	3.732E-02	2.877E-03	0.502
CS-135	-3.983E-03		7.137E-02	1.188E-01	9.600E-03	-0.034
I-135	2.727E+00		4.768E+00	Half-Life too short		
CS-136	-8.612E-03		2.834E-02	4.221E-02	3.691E-03	-0.204
BA-137M	-4.439E-03		1.759E-02	2.838E-02	1.400E-03	-0.156
CS-137	-4.689E-03		1.858E-02	2.998E-02	1.488E-03	-0.156
CE-139	1.414E-03		1.289E-02	2.079E-02	1.135E-03	0.068
BA-140	6.249E-02		8.207E-02	1.422E-01	4.747E-02	0.439
LA-140	-2.473E-02		2.808E-02	3.194E-02	2.479E-03	-0.774
CE-141	-1.212E-02		2.301E-02	3.515E-02	2.151E-03	-0.345
CE-143	-1.629E+00		1.391E+00	1.911E+00	3.881E-01	-0.853
CE-144	-3.320E-02		8.881E-02	1.384E-01	1.946E-02	-0.240
PM-144	-6.584E-03		1.736E-02	2.742E-02	1.529E-03	-0.240
PR-144	-4.978E-01		1.293E+00	2.041E+00	1.138E-01	-0.244
PM-146	-3.475E-04		2.019E-02	3.264E-02	2.964E-03	-0.011
ND-147	1.322E-01		1.621E-01	2.890E-01	3.968E-02	0.458
PM-149	2.221E+00		3.948E+00	6.898E+00	9.960E-01	0.322
EU-152	-3.277E-02		4.742E-02	7.228E-02	5.323E-03	-0.453
GD-153	6.652E-03		3.186E-02	5.318E-02	4.952E-03	0.125
EU-154	-3.473E-02		5.862E-02	8.535E-02	9.152E-03	-0.407

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
EU-155	-1.587E-04		4.416E-02	7.201E-02	5.970E-03	-0.002
TB-160	5.939E-03		5.757E-02	9.605E-02	9.261E-03	0.062
HO-166M	-1.226E-02		3.054E-02	4.785E-02	2.808E-03	-0.256
TA-182	1.724E-02		6.374E-02	1.128E-01	7.776E-03	0.153
IR-192	-6.671E-03		1.504E-02	2.374E-02	1.578E-03	-0.281
HG-203	5.704E-03		1.671E-02	2.870E-02	1.927E-03	0.199
BI-207	1.422E-02		2.303E-02	4.183E-02	3.405E-03	0.340
TL-208	7.217E-04		2.066E-02	3.503E-02	2.348E-03	0.021
PB-210	2.584E+00		4.090E+00	6.797E+00	6.670E-01	0.380
BI-211	2.437E-03		1.207E-01	1.954E-01	1.425E-02	0.012
PB-211	-1.647E-01		3.453E-01	5.153E-01	2.479E-01	-0.320
BI-212	5.427E-02		2.313E-01	3.970E-01	4.332E-02	0.137
PB-212	1.694E-02		3.095E-02	5.053E-02	3.864E-03	0.335
BI-214	-2.090E-02		4.334E-02	6.379E-02	4.895E-03	-0.328
PB-214	-1.681E-02		4.272E-02	6.636E-02	6.069E-03	-0.253
RN-219	6.934E-02		1.772E-01	3.034E-01	4.215E-02	0.229
RA-223	-1.072E-01		2.865E-01	4.537E-01	7.461E-02	-0.236
RA-224	-1.048E-01		2.899E-01	4.736E-01	2.907E-02	-0.221
RA-226	-2.090E-02		4.334E-02	6.379E-02	4.895E-03	-0.328
AC-227	-6.835E-02		1.231E-01	1.962E-01	2.059E-02	-0.348
TH-227	-6.835E-02		1.232E-01	1.962E-01	2.403E-02	-0.348
AC-228	3.806E-02		7.722E-02	1.412E-01	1.787E-02	0.270
RA-228	3.806E-02		7.722E-02	1.412E-01	1.787E-02	0.270
TH-228	1.694E-02		3.095E-02	5.053E-02	3.864E-03	0.335
TH-229	-2.088E-01		2.411E-01	3.476E-01	1.982E-02	-0.601
PA-231	3.449E-02		7.006E-01	1.174E+00	1.575E-01	0.029
TH-231	-1.072E-01		2.865E-01	4.537E-01	7.461E-02	-0.236
TH-232	3.806E-02		7.722E-02	1.412E-01	1.787E-02	0.270
PA-233	1.206E-02		2.917E-02	5.043E-02	3.491E-03	0.239
PA-234	5.336E-03		1.265E-01	2.077E-01	4.002E-02	0.026
PA-234M	4.157E-01		2.293E+00	3.676E+00	3.794E-01	0.113
TH-234	-9.327E-01		8.660E-01	1.250E+00	2.506E-01	-0.746
U-235	-6.006E-02		9.709E-02	1.373E-01	2.164E-02	-0.437
NP-237	1.201E-03		9.762E-02	1.607E-01	3.824E-02	0.007
U-238	-9.327E-01		8.660E-01	1.250E+00	2.506E-01	-0.746
NP-239	-4.635E-02		1.556E-01	2.449E-01	1.708E-02	-0.189
AM-241	9.220E-02		9.799E-02	1.741E-01	2.236E-02	0.530
CM-247	-2.227E-03		1.677E-02	2.693E-02	1.828E-03	-0.083
CF-249	1.619E-02		1.886E-02	3.381E-02	2.297E-03	0.479
CF-251	-1.243E-02		5.886E-02	9.171E-02	5.093E-03	-0.136
ANH-511	-3.095E-02		2.845E-02	5.076E-02	3.252E-03	-0.610

## VAX/VMS Nuclide Identification Report Generated

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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*
*                                     DETECTOR DATA                          *
*
* Configuration      : SYS$SYSROOT:[ALPHA.ARCHIVE.GAMMA]G1202052272          *
* Acquisition date   : 5-MAR-2010 10:54:48 Detector SN# :                    *
* Detector ID        : GAM10 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 02:00:00.38 Half life ratio : 8.000                *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date        : 26-FEB-2010 00:00:00 Nuclide Library : SOLID          *
* Sample ID          : G1202052272 Analyst initials: MXR1                  *
* Batch Number       : 957136 Sample Quantity : 1.4398E+02 GRAM            *
* Recovery           : 1.00000 Carrier Weight : 0.00000                   *
*****
*
*                                     QC DATA                                *
*
* CALIB. DATE/TIME  : 16-MAR-2009 13:18:08 MS Isotope :                    *
* MSD DPM           : 0.000 MSD Isotope :                                *
* LCS DPM           : 0.000 LCS Isotope :                                *
* LCSD DPM          : 0.000 LCSD Isotope :                                *
*****

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## Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act Error	DLC (pCi/GRAM )	TPU
---- Non-Identified Nuclides ----				
Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	-1.847E-03	1.424E-01	1.208E-01	7.267E-02 NOT IDENT.
NA-22	-8.205E-03	1.939E-02	1.513E-02	9.892E-03 NOT IDENT.
NA-24	-3.503E+01	7.423E+01	0.000E+00	3.787E+01 SHORT HLIF
K-40	-3.727E-02	2.536E-01	2.364E-01	1.294E-01 NOT IDENT.
SC-46	5.776E-03	1.302E-02	1.214E-02	6.645E-03 NOT IDENT.
V-48	-5.735E-03	2.025E-02	1.588E-02	1.033E-02 NOT IDENT.
CR-51	1.529E-03	1.372E-01	1.208E-01	7.002E-02 NOT IDENT.
MN-54	-8.030E-04	1.636E-02	1.385E-02	8.346E-03 NOT IDENT.
CO-56	-9.967E-03	1.984E-02	1.561E-02	1.012E-02 NOT IDENT.
CO-57	1.049E-02	1.013E-02	9.687E-03	5.168E-03 NOT IDENT.
CO-58	-1.332E-02	1.667E-02	1.220E-02	8.506E-03 NOT IDENT.
FE-59	-3.483E-03	3.119E-02	2.519E-02	1.591E-02 NOT IDENT.
CO-60	7.949E-04	1.973E-02	1.695E-02	1.006E-02 NOT IDENT.
ZN-65	3.467E-02	3.987E-02	3.821E-02	2.034E-02 NOT IDENT.
SE-75	1.665E-03	1.938E-02	1.742E-02	9.888E-03 NOT IDENT.
SR-85	-2.843E-02	2.662E-02	2.041E-02	1.358E-02 NOT IDENT.
Y-88	1.438E-02	1.263E-02	1.495E-02	6.444E-03 NOT IDENT.
Y-91	2.643E+00	7.198E+00	6.653E+00	3.673E+00 NOT IDENT.
NB-94	-1.184E-03	1.642E-02	1.411E-02	8.379E-03 NOT IDENT.
NB-95	2.702E-04	1.639E-02	1.415E-02	8.364E-03 NOT IDENT.
NB-95M	-3.901E-02	5.059E-02	4.270E-02	2.581E-02 NOT IDENT.
ZR-95	8.804E-03	2.947E-02	2.657E-02	1.504E-02 NOT IDENT.
MO-99	6.398E-01	8.549E-01	8.108E-01	4.361E-01 NOT IDENT.
TC-99M	-9.774E+05	1.022E+07	0.000E+00	5.217E+06 SHORT HLIF
RU-103	-1.294E-02	1.931E-02	1.494E-02	9.853E-03 NOT IDENT.
RH-106	1.176E-05	1.280E-01	1.123E-01	6.531E-02 NOT IDENT.

RU-106	1.176E-05	1.280E-01	1.123E-01	6.531E-02	NOT IDENT.
AG-108M	7.544E-03	1.472E-02	1.335E-02	7.509E-03	NOT IDENT.
CD-109	1.316E-02	3.062E-01	2.754E-01	1.562E-01	NOT IDENT.
AG-110M	-2.367E-03	1.439E-02	1.225E-02	7.342E-03	NOT IDENT.
SN-113	-1.137E-02	1.927E-02	1.543E-02	9.829E-03	NOT IDENT.
CD-115	-2.023E-01	4.841E-01	3.811E-01	2.470E-01	NOT IDENT.
SN-117M	-1.266E-02	1.502E-02	1.182E-02	7.662E-03	NOT IDENT.
TE-123M	-5.519E-03	1.094E-02	8.942E-03	5.580E-03	NOT IDENT.
SB-124	1.826E-04	3.437E-02	2.862E-02	1.754E-02	NOT IDENT.
SB-125	-1.506E-03	4.079E-02	3.483E-02	2.081E-02	NOT IDENT.
TE-125M	1.827E-01	3.564E+00	3.166E+00	1.819E+00	NOT IDENT.
I-126	1.715E-02	6.942E-02	6.246E-02	3.542E-02	NOT IDENT.
SB-126	-9.161E-03	4.330E-02	3.631E-02	2.209E-02	NOT IDENT.
SN-126	6.455E-04	3.065E-02	2.753E-02	1.564E-02	NOT IDENT.
SB-127	1.362E-01	1.537E-01	1.493E-01	7.844E-02	NOT IDENT.
I-131	1.209E-02	2.714E-02	2.477E-02	1.385E-02	NOT IDENT.
TE-132	7.415E-02	6.065E-02	5.925E-02	3.094E-02	NOT IDENT.
BA-133	-5.388E-03	1.824E-02	1.534E-02	9.304E-03	NOT IDENT.
I-133	4.006E+00	5.943E+00	0.000E+00	3.032E+00	SHORT HLIF
CS-134	1.875E-02	1.928E-02	1.902E-02	9.836E-03	NOT IDENT.
CS-135	-3.983E-03	6.994E-02	6.203E-02	3.569E-02	NOT IDENT.
I-135	2.727E+06	9.345E+06	0.000E+00	4.768E+06	SHORT HLIF
CS-136	-8.612E-03	2.777E-02	2.139E-02	1.417E-02	NOT IDENT.
BA-137M	-4.439E-03	1.724E-02	1.453E-02	8.794E-03	NOT IDENT.
CS-137	-4.689E-03	1.821E-02	1.535E-02	9.290E-03	NOT IDENT.
CE-139	1.414E-03	1.263E-02	1.096E-02	6.446E-03	NOT IDENT.
BA-140	6.249E-02	8.043E-02	7.313E-02	4.103E-02	NOT IDENT.
LA-140	-2.473E-02	2.752E-02	1.603E-02	1.404E-02	NOT IDENT.
CE-141	-1.212E-02	2.255E-02	1.859E-02	1.151E-02	NOT IDENT.
CE-143	-1.629E+00	1.363E+00	9.958E-01	6.954E-01	NOT IDENT.
CE-144	-3.320E-02	8.704E-02	7.334E-02	4.441E-02	NOT IDENT.
PM-144	-6.584E-03	1.701E-02	1.402E-02	8.679E-03	NOT IDENT.
PR-144	-4.978E-01	1.267E+00	1.044E+00	6.465E-01	NOT IDENT.
PM-146	-3.475E-04	1.978E-02	1.685E-02	1.009E-02	NOT IDENT.
ND-147	1.322E-01	1.588E-01	1.487E-01	8.103E-02	NOT IDENT.
PM-149	2.221E+00	3.869E+00	3.597E+00	1.974E+00	NOT IDENT.
EU-152	-3.277E-02	4.647E-02	3.754E-02	2.371E-02	NOT IDENT.
GD-153	6.652E-03	3.123E-02	2.837E-02	1.593E-02	NOT IDENT.
EU-154	-3.473E-02	5.745E-02	4.305E-02	2.931E-02	NOT IDENT.
EU-155	-1.587E-04	4.328E-02	3.835E-02	2.208E-02	NOT IDENT.
TB-160	5.939E-03	5.641E-02	4.886E-02	2.878E-02	NOT IDENT.
HO-166M	-1.226E-02	2.992E-02	2.446E-02	1.527E-02	NOT IDENT.
TA-182	1.724E-02	6.246E-02	5.694E-02	3.187E-02	NOT IDENT.
IR-192	-6.671E-03	1.474E-02	1.235E-02	7.519E-03	NOT IDENT.
HG-203	5.704E-03	1.637E-02	1.497E-02	8.353E-03	NOT IDENT.
BI-207	1.422E-02	2.257E-02	2.119E-02	1.152E-02	NOT IDENT.
TL-208	7.217E-04	2.025E-02	1.798E-02	1.033E-02	NOT IDENT.
PB-210	2.584E+00	4.009E+00	3.680E+00	2.045E+00	NOT IDENT.
BI-211	2.437E-03	1.183E-01	1.014E-01	6.037E-02	NOT IDENT.
PB-211	-1.647E-01	3.384E-01	2.667E-01	1.727E-01	NOT IDENT.
BI-212	5.427E-02	2.267E-01	2.028E-01	1.156E-01	NOT IDENT.
PB-212	1.694E-02	3.033E-02	2.645E-02	1.547E-02	NOT IDENT.
BI-214	-2.090E-02	4.248E-02	3.272E-02	2.167E-02	NOT IDENT.
PB-214	-1.681E-02	4.187E-02	3.445E-02	2.136E-02	NOT IDENT.
RN-219	6.934E-02	1.736E-01	1.570E-01	8.859E-02	NOT IDENT.
RA-223	-1.072E-01	2.807E-01	2.360E-01	1.432E-01	NOT IDENT.
RA-224	-1.048E-01	2.841E-01	2.479E-01	1.450E-01	NOT IDENT.
RA-226	-2.090E-02	4.248E-02	3.272E-02	2.167E-02	NOT IDENT.
AC-227	-6.835E-02	1.207E-01	1.025E-01	6.156E-02	NOT IDENT.
TH-227	-6.835E-02	1.207E-01	1.025E-01	6.160E-02	NOT IDENT.
AC-228	3.806E-02	7.568E-02	7.175E-02	3.861E-02	NOT IDENT.
RA-228	3.806E-02	7.568E-02	7.175E-02	3.861E-02	NOT IDENT.
TH-228	1.694E-02	3.033E-02	2.645E-02	1.547E-02	NOT IDENT.
TH-229	-2.088E-01	2.363E-01	1.828E-01	1.206E-01	NOT IDENT.
PA-231	3.449E-02	6.866E-01	6.120E-01	3.503E-01	NOT IDENT.
TH-231	-1.072E-01	2.807E-01	2.360E-01	1.432E-01	NOT IDENT.
TH-232	3.806E-02	7.568E-02	7.175E-02	3.861E-02	NOT IDENT.
PA-233	1.206E-02	2.858E-02	2.625E-02	1.458E-02	NOT IDENT.
PA-234	5.336E-03	1.240E-01	1.055E-01	6.326E-02	NOT IDENT.
PA-234M	4.157E-01	2.247E+00	1.864E+00	1.146E+00	NOT IDENT.
TH-234	-9.327E-01	8.487E-01	6.724E-01	4.330E-01	NOT IDENT.
U-235	-6.006E-02	9.515E-02	7.264E-02	4.854E-02	NOT IDENT.
NP-237	1.201E-03	9.567E-02	8.592E-02	4.881E-02	NOT IDENT.
U-238	-9.327E-01	8.487E-01	6.724E-01	4.330E-01	NOT IDENT.
NP-239	-4.635E-02	1.525E-01	1.301E-01	7.780E-02	NOT IDENT.
AM-241	9.220E-02	9.603E-02	9.380E-02	4.900E-02	NOT IDENT.
CM-247	-2.227E-03	1.643E-02	1.394E-02	8.385E-03	NOT IDENT.
CF-249	1.619E-02	1.849E-02	1.751E-02	9.432E-03	NOT IDENT.



CF-251	-1.243E-02	5.768E-02	4.831E-02	2.943E-02 NOT IDENT.
ANH-511	-3.095E-02	2.789E-02	2.613E-02	1.423E-02 NOT IDENT.

\*\*\*\*\*  
 \* GEL Laboratories LLC \*  
 \* 2040 SAVAGE ROAD \*  
 \* CHARLESTON , SC 29417 \*  
 \* GAMMA SPECTROSCOPY BACKGROUND REPORT \*  
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ENERGY	MDA COUNTS
46.54	63.9500
49.72	68.1873
57.36	74.2130
59.54	59.4912
63.29	76.2024
63.29	76.2024
64.28	59.1890
67.75	66.3780
69.67	66.6532
70.83	65.8484
72.81	79.7349
72.87	79.7449
72.87	79.7449
74.82	76.1588
74.82	76.1588
74.82	76.1588
74.97	76.1822
77.11	91.2247
77.11	91.2247
77.11	91.2247
79.69	70.0004
79.80	74.9459
80.12	74.9926
80.19	68.0949
80.57	70.1203
81.00	73.1441
81.07	73.1539
81.07	73.1539
83.79	64.5914
83.79	64.5914
85.43	73.7617
86.48	72.9068
86.55	72.9165
86.79	78.9442
86.94	78.9662
87.57	69.0505
88.03	68.1072
88.47	67.1595
89.96	118.6008
91.11	95.6813
92.59	55.5405
92.59	55.5405
93.35	54.6037
94.67	94.2573
94.87	111.5257
94.87	111.5257
95.86	90.3897
97.43	51.9362
98.44	55.0860
99.53	60.2979
100.11	63.4257
103.18	64.7781
103.37	66.8557
105.31	63.9725
106.12	63.0232
109.28	61.2657
111.00	71.8438
111.76	70.8869
116.30	59.8363
117.23	56.7669
121.12	61.3270
121.78	51.8614
122.06	49.7649
123.07	65.7448
131.20	74.0228
133.52	79.6427
136.00	64.7955

136.47	66.9983
140.51	70.6236
140.51	0.0000
143.76	76.3845
144.24	82.9835
144.24	82.9835
145.44	75.4589
152.43	67.3107
153.25	60.7527
154.21	57.5077
154.21	57.5077
156.02	47.6620
158.56	67.8258
159.00	63.4124
162.66	70.4001
163.33	69.3382
165.86	67.3053
176.60	73.8305
177.52	69.3597
181.07	66.2129
184.41	68.7512
185.72	59.6701
193.51	75.2197
197.04	63.8864
205.31	60.6298
210.85	58.3205
215.65	53.2727
222.11	43.7819
227.38	43.1060
228.16	46.7326
228.18	46.7334
235.69	80.5517
235.96	80.5721
235.96	80.5721
238.63	60.8051
238.63	60.8051
240.99	74.5790
242.00	71.9168
244.70	59.3174
252.40	64.3208
252.80	67.1008
256.23	68.2255
256.23	68.2255
260.90	60.1708
264.66	52.9357
268.22	55.8902
269.46	41.9616
269.46	41.9616
271.23	56.9660
273.65	74.8608
276.40	58.1496
277.37	57.2573
277.60	55.3908
278.00	55.4088
279.20	55.4637
279.54	64.8823
280.46	63.9907
283.69	54.7237
284.31	46.2553
285.41	45.3516
285.90	46.3151
287.50	65.3024
293.27	68.4569
295.22	57.1353
295.96	54.3099
298.57	49.6474
299.98	56.3928
299.98	56.3928
300.09	56.3973
300.09	56.3973
300.13	56.3991
301.36	44.0143
302.85	52.6862
304.50	38.3661
304.50	38.3661
304.85	43.1735
308.46	44.2551
311.90	38.5834

316.51	48.3971
319.41	42.6814
320.08	42.7029
323.87	44.7689
323.87	44.7689
328.76	29.3019
333.37	35.2798
334.37	41.1893
334.37	41.1893
338.28	44.2550
338.28	44.2550
338.32	44.2564
338.32	44.2564
338.32	44.2564
340.48	50.2343
340.55	50.2374
344.28	52.3449
351.06	43.6623
351.93	44.6814
356.01	38.8328
364.49	33.0488
366.42	40.1111
383.85	37.5318
388.16	29.4991
388.63	31.5430
391.69	39.7611
400.66	36.9113
401.81	27.7037
402.40	33.8726
404.85	40.0926
410.95	47.4677
414.70	33.0972
423.72	20.7993
427.09	27.0938
427.87	31.2767
433.94	32.4361
453.88	31.7555
463.37	27.6702
468.07	25.6091
473.00	34.2393
476.78	31.0939
477.60	32.1808
487.02	34.5029
492.35	27.0332
497.08	44.4465
511.00	44.7746
514.00	99.5333
527.90	27.5406
529.87	0.0000
531.02	18.7572
537.26	17.7095
546.56	0.0000
563.25	36.9971
569.33	42.7280
569.50	42.7314
569.70	42.7349
583.19	19.0154
600.60	31.0375
602.73	33.8095
604.72	34.7548
609.32	30.2454
609.32	30.2454
610.33	29.3422
614.28	28.4767
618.01	17.4827
621.93	19.3568
621.93	19.3568
633.25	25.0132
635.95	23.1885
636.99	23.1989
645.85	13.9735
657.76	20.6003
661.66	28.1382
661.66	28.1382
664.57	22.5387
666.33	23.4949
666.50	26.3163
677.62	19.8300

685.70	16.1073
695.00	26.6321
696.49	30.4547
696.51	30.4555
697.00	29.5098
702.65	26.7155
706.68	30.5820
711.68	27.7709
720.70	23.0666
721.93	26.9240
722.78	25.0091
722.91	25.0104
723.31	25.9770
724.19	16.3613
727.33	19.2729
733.00	12.5553
735.93	29.0076
739.50	16.4609
747.24	22.3374
752.31	20.4355
753.82	11.6842
756.73	16.5713
763.94	12.7071
765.81	18.5853
766.42	19.5679
777.92	13.7573
778.90	15.7285
783.70	15.7566
785.37	10.8394
795.86	10.8818
801.95	18.8381
810.29	19.8901
810.76	21.8829
815.77	17.9367
818.51	13.9648
832.01	13.0302
834.85	18.0602
836.80	0.0000
846.77	26.1968
856.80	14.1555
860.56	10.1245
871.09	17.2743
873.19	15.2531
875.33	0.0000
879.36	13.2472
880.51	12.2329
883.24	11.2240
884.68	13.2710
889.28	7.1572
898.04	16.4074
911.20	9.2698
911.20	9.2698
911.20	9.2698
926.50	11.3870
937.49	14.5445
944.13	9.3702
946.00	11.4595
949.00	15.6416
962.29	10.4719
964.08	19.9083
966.15	16.7758
968.97	14.6918
968.97	14.6918
968.97	14.6918
983.53	11.5965
996.26	13.7592
1001.03	11.6596
1004.73	10.6116
1037.84	13.9337
1038.76	0.0000
1048.07	10.7510
1050.41	16.1375
1050.41	16.1375
1063.66	8.6406
1085.87	8.6965
1099.45	9.8213
1112.07	14.2372
1115.54	9.8662

1120.29	17.5633
1120.29	17.5633
1120.55	14.2714
1121.30	12.0785
1131.51	0.0000
1173.23	12.0669
1177.93	9.2940
1189.05	9.3217
1204.77	8.4247
1221.41	7.5215
1231.02	9.4255
1235.36	9.4360
1238.28	13.2201
1260.41	0.0000
1271.85	9.5243
1274.44	15.2493
1274.54	13.3432
1291.59	16.2723
1298.22	0.0000
1312.11	4.8104
1332.49	10.6357
1365.19	6.8217
1368.63	0.0000
1384.29	11.7476
1408.01	8.8597
1457.56	0.0000
1460.82	6.9749
1489.16	11.0300
1505.03	11.0689
1596.21	9.2355
1620.50	11.3451
1678.03	0.0000
1690.97	4.1851
1764.49	4.2458
1764.49	4.2458
1770.23	13.8141
1771.35	11.6915
1791.20	0.0000
1836.06	0.0000

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G1202052272

Total Uranium Activity	-2.8026E+00	ug/g
Total Uranium Counting Unc.	2.5253E+00	ug/g
Total Uranium Tpu	1.2884E-06	ug/g
Total Uranium Mda	2.0006E+00	ug/g

THERE ARE NO PEAKS !



## VAX/VMS Nuclide Identification Report Generated 5-MAR-2010 15:06:12.67

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*****
*                               GEL Laboratories LLC                      *
*                               2040 Savage Road                        *
*                               Charleston, SC 29414                   *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202052273.CNF;1
Sample date        : 19-FEB-2010 12:00:00 Acquisition date : 5-MAR-2010 13:05:38.
Sample ID          : G1202052273 Sample quantity : 1.32540E+02 GRAM
Detector name      : GAM02 Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00 Elapsed real time: 0 02:00:03.72 0.1%
Energy tolerance   : 1.50000 keV Analyst Initials : MXR1
Abundance limit    : 75.00000 Sensitivity : 5.00000
Batch ID           : 957136 Detector SN# :
Matrix Spike ID    : LCS ID : 1032-A
*****

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Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	62.50*	105	483	1.03	124.19	120	9	1.46E-02	40.7	
2	2	74.44*	411	363	1.04	148.10	142	14	5.71E-02	9.1	2.72E+00
3	2	76.78	612	387	0.94	152.77	142	14	8.50E-02	6.5	
4	5	86.90	170	371	0.87	173.03	168	23	2.36E-02	18.0	3.51E+00
5	5	89.64	110	328	0.89	178.50	168	23	1.52E-02	25.9	
6	5	92.41*	241	451	1.28	184.04	168	23	3.35E-02	18.7	
7	0	185.53*	221	381	1.24	370.37	365	10	3.07E-02	19.1	
8	0	209.26	145	345	1.07	417.86	412	10	2.01E-02	25.5	
9	4	238.32*	1345	191	1.11	476.02	470	18	1.87E-01	3.3	8.05E-01
10	4	241.28	331	222	1.72	481.94	470	18	4.60E-02	12.2	
11	0	270.01	119	198	1.10	539.43	535	9	1.65E-02	23.3	
12	0	276.73	66	194	1.22	552.87	548	9	9.14E-03	40.1	
13	0	294.93*	406	242	1.24	589.29	584	11	5.64E-02	9.1	
14	0	299.81	115	132	1.36	599.07	595	8	1.59E-02	19.8	
15	0	327.43	109	182	1.15	654.33	649	11	1.51E-02	25.8	
16	0	337.81	196	187	0.99	675.11	671	9	2.72E-02	14.5	
17	0	351.57*	668	155	1.31	702.63	698	12	9.28E-02	5.5	
18	0	462.79	102	85	1.14	925.20	920	11	1.42E-02	20.1	
19	0	510.42*	176	169	1.69	1020.52	1014	16	2.44E-02	20.0	
20	0	582.83*	395	123	1.35	1165.42	1159	13	5.49E-02	7.8	
21	0	608.84*	465	113	1.57	1217.48	1211	15	6.46E-02	6.9	
22	0	661.25*	78	63	1.26	1322.36	1318	9	1.08E-02	22.2	
23	0	727.21	115	83	1.41	1454.36	1449	13	1.59E-02	19.0	
24	0	771.47	70	179	7.87	1542.95	1529	28	9.78E-03	55.4	
25	0	794.46*	71	52	1.67	1588.96	1584	11	9.80E-03	23.8	
26	0	860.75	42	94	1.59	1721.61	1716	15	5.81E-03	51.2	
27	0	910.55*	299	48	1.92	1821.29	1814	13	4.16E-02	7.7	
28	0	933.44	63	36	1.10	1867.09	1860	13	8.79E-03	23.2	
29	2	963.99	70	56	2.19	1928.24	1921	37	9.76E-03	24.7	1.31E+00
30	2	968.43	183	47	2.05	1937.14	1921	37	2.54E-02	10.7	
31	0	1120.05*	68	83	1.13	2240.58	2232	14	9.45E-03	31.5	
32	0	1460.14*	1318	47	2.25	2921.27	2911	21	1.83E-01	3.1	
33	0	1729.51	28	8	1.15	3460.48	3456	10	3.92E-03	27.7	
34	0	1763.99*	77	14	1.21	3529.50	3523	14	1.07E-02	16.4	

Flag: "\*" = Peak area was modified by background subtraction

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202052273.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 19-FEB-2010 12:00:00 Acquisition date : 5-MAR-2010 13:05:38
Sample ID        : G1202052273 Sample quantity      : 132.54 GRAM
Sample type      : SOLID Sample geometry       :
Detector name    : GAMMA2 Detector geometry    : CAN
Elapsed live time: 0 02:00:00.00 Elapsed real time: 0 02:00:03.72 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	+	1460.82	*	3.407E+01	3.856E+00	6.631E-01	6.304E-02	51.372
CD-109	+	88.03	*	2.540E+00	9.481E-01	1.315E+00	1.320E-01	1.932
SN-126		64.28		9.579E-02	6.285E-01	9.831E-01	1.458E-01	0.097
	+	86.94		1.034E+00	5.690E-01	5.424E-01	2.259E-01	1.906
	+	87.57	*	2.487E-01	9.282E-02	1.294E-01	1.294E-02	1.921
BA-137M	+	661.66	*	1.186E-01	5.360E-02	6.603E-02	5.689E-03	1.797
CS-137	+	661.66	*	1.253E-01	5.662E-02	6.975E-02	6.021E-03	1.797
TL-208	+	277.37		7.066E-01	5.764E-01	6.957E-01	1.068E-01	1.016
	+	583.19	*	5.749E-01	1.068E-01	6.375E-02	6.379E-03	9.018
	+	860.56		5.739E-01	5.914E-01	5.372E-01	5.661E-02	1.068
BI-211		72.87		8.431E+00	3.509E+00	6.231E+00	5.363E-01	1.353
	+	351.06	*	4.371E+00	6.965E-01	3.468E-01	4.002E-02	12.602
PB-212	+	74.82		2.805E+00	6.275E-01	5.979E-01	7.825E-02	4.692
	+	77.11		2.357E+00	3.710E-01	3.502E-01	3.132E-02	6.730
	+	238.63	*	1.960E+00	2.786E-01	9.563E-02	1.207E-02	20.498
	+	300.09		2.609E+00	1.093E+00	1.271E+00	1.729E-01	2.053
BI-214	+	609.32	*	1.308E+00	2.287E-01	1.242E-01	1.318E-02	10.527
	+	1120.29		9.951E-01	6.360E-01	5.069E-01	5.544E-02	1.963
	+	1764.49		1.578E+00	5.356E-01	4.305E-01	3.648E-02	3.665
PB-214	+	74.82		4.972E+00	1.076E+00	1.060E+00	1.252E-01	4.692
	+	77.11		4.155E+00	7.383E-01	6.173E-01	7.510E-02	6.730
	+	242.00		2.929E+00	8.117E-01	5.821E-01	7.662E-02	5.032
	+	295.22		1.636E+00	3.730E-01	2.337E-01	3.240E-02	7.000
	+	351.93	*	1.586E+00	2.675E-01	1.261E-01	1.611E-02	12.575
RA-224	+	240.99	*	5.179E+00	1.404E+00	1.026E+00	1.210E-01	5.050
RA-226	+	609.32	*	1.308E+00	2.287E-01	1.242E-01	1.318E-02	10.527
	+	1120.29		9.951E-01	6.360E-01	5.069E-01	5.544E-02	1.963
	+	1764.49		1.578E+00	5.356E-01	4.305E-01	3.648E-02	3.665
AC-228	+	338.32		1.427E+00	7.325E-01	4.468E-01	1.894E-01	3.195
	+	911.20	*	2.093E+00	4.191E-01	2.599E-01	3.323E-02	8.050
	+	968.97		2.213E+00	7.250E-01	4.142E-01	1.028E-01	5.344
RA-228	+	338.32		1.427E+00	7.325E-01	4.468E-01	1.894E-01	3.195
	+	911.20	*	2.093E+00	4.191E-01	2.599E-01	3.323E-02	8.050
	+	968.97		2.213E+00	7.250E-01	4.142E-01	1.028E-01	5.344

## ---- Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TH-228	+	74.82		2.805E+00	5.660E-01	5.979E-01	5.281E-02	4.692
	+	77.11		2.357E+00	3.710E-01	3.502E-01	3.132E-02	6.730
	+	238.63	*	1.960E+00	2.786E-01	9.563E-02	1.207E-02	20.498
	+	300.09		2.609E+00	1.916E+00	1.271E+00	7.859E-01	2.053
TH-229	+	85.43		6.260E-01	2.336E-01	3.610E-01	3.521E-02	1.734
	+	88.47		2.392E-01	1.259E-01	1.974E-01	1.970E-02	1.212
		193.51	*	5.229E-02	5.737E-01	9.221E-01	9.997E-02	0.057
		210.85		7.735E-01	1.079E+00	1.591E+00	1.784E-01	0.486
TH-232	+	338.32		1.427E+00	4.441E-01	4.468E-01	5.136E-02	3.195
	+	911.20	*	2.093E+00	4.191E-01	2.599E-01	3.323E-02	8.050
	+	968.97		2.213E+00	7.250E-01	4.142E-01	1.028E-01	5.344
TH-234	+	63.29	*	3.257E+00	2.714E+00	2.421E+00	4.367E-01	1.345
	+	92.59		2.897E+00	1.262E+00	1.074E+00	2.410E-01	2.698
U-235	+	89.96		1.655E+00	9.510E-01	1.343E+00	3.364E-01	1.232
	+	93.35		2.188E+00	9.648E-01	8.060E-01	1.887E-01	2.715
		143.76	*	1.164E-01	2.216E-01	3.640E-01	6.265E-02	0.320
		163.33		-1.893E-01	4.922E-01	7.725E-01	1.446E-01	-0.245
	+	185.72		2.066E-01	8.192E-02	7.260E-02	7.748E-03	2.846
		205.31		3.355E-01	6.065E-01	8.644E-01	1.681E-01	0.388
NP-237	+	86.48	*	7.421E-01	3.177E-01	3.917E-01	9.077E-02	1.895
		95.86		-1.240E+00	1.075E+00	1.448E+00	3.505E-01	-0.856
U-238	+	63.29	*	3.257E+00	2.714E+00	2.421E+00	4.367E-01	1.345
	+	92.59		2.897E+00	1.116E+00	1.074E+00	1.020E-01	2.698
ANH-511	+	511.00	*	1.958E-01	8.087E-02	5.042E-02	4.998E-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		477.60	*	2.192E-02	3.677E-01	5.960E-01	6.319E-02	0.037
NA-22		1274.54	*	-1.237E-02	5.077E-02	8.148E-02	7.224E-03	-0.152
NA-24		1368.63	*	-1.981E-02	5.077E-02	Half-Life too short		
SC-46		889.28	*	-3.197E-02	4.944E-02	7.334E-02	7.457E-03	-0.436
	+	1120.55		1.668E-01	1.060E-01	1.392E-01	1.202E-02	1.199
V-48		944.13		-1.149E-01	9.758E-01	1.556E+00	1.558E-01	-0.074
		983.53	*	3.945E-02	8.452E-02	1.381E-01	1.351E-02	0.286
		1312.11		-1.473E-02	9.070E-02	1.462E-01	1.339E-02	-0.101
CR-51		320.08	*	4.249E-02	4.206E-01	7.031E-01	8.574E-02	0.060
MN-54		834.85	*	2.811E-02	4.408E-02	7.538E-02	7.405E-03	0.373
CO-56		846.77	*	-2.979E-02	4.461E-02	6.803E-02	6.736E-03	-0.438
		1037.84		4.311E-02	3.302E-01	5.596E-01	5.489E-02	0.077
		1238.28		1.064E-01	1.158E-01	2.033E-01	1.794E-02	0.523
		1771.35		-1.104E+00	4.184E-01	4.311E-01	3.641E-02	-2.561
CO-57		122.06	*	1.309E-02	2.594E-02	4.357E-02	3.642E-03	0.300
		136.47		1.422E-01	2.191E-01	3.673E-01	3.465E-02	0.387
CO-58		810.76	*	-7.984E-03	4.282E-02	6.882E-02	6.665E-03	-0.116
FE-59		1099.45	*	-5.137E-02	9.453E-02	1.490E-01	1.420E-02	-0.345
		1291.59		-2.893E-02	1.406E-01	2.260E-01	2.286E-02	-0.128
CO-60		1173.23		-1.728E-03	5.205E-02	8.600E-02	6.925E-03	-0.020

----- Non-Identified Nuclides -----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	1332.49	*		-1.397E-02	4.659E-02	7.368E-02	6.865E-03	-0.190
ZN-65	1115.54	*		-3.451E-03	1.169E-01	1.669E-01	1.452E-02	-0.021
SE-75	121.12			2.367E-02	1.312E-01	2.178E-01	2.370E-02	0.109
	136.00			4.120E-02	4.230E-02	7.170E-02	6.347E-03	0.575
	264.66	*		5.944E-03	4.821E-02	7.603E-02	9.294E-03	0.078
	279.54			2.415E-02	1.316E-01	1.971E-01	2.489E-02	0.123
	400.66			8.501E-02	2.741E-01	4.571E-01	5.584E-02	0.186
SR-85	514.00	*		7.953E-02	4.509E-02	7.313E-02	7.240E-03	1.087
Y-88	898.04			-7.196E-03	4.923E-02	7.714E-02	7.911E-03	-0.093
	1836.06	*		7.465E-03	3.712E-02	6.359E-02	5.187E-03	0.117
Y-91	1204.77	*		-1.373E+00	2.593E+01	4.268E+01	3.544E+00	-0.032
NB-94	702.65	*		2.836E-02	3.610E-02	6.315E-02	5.631E-03	0.449
	871.09			2.829E-02	3.766E-02	6.532E-02	6.568E-03	0.433
NB-95	765.81	*		1.731E-03	5.941E-02	8.441E-02	7.903E-03	0.021
NB-95M	235.69	*		3.775E-02	1.490E-01	2.265E-01	2.869E-02	0.167
ZR-95	724.19			1.637E-01	1.216E-01	1.957E-01	1.911E-02	0.836
	756.73	*		1.640E-02	8.368E-02	1.397E-01	1.417E-02	0.117
MO-99	140.51			-3.370E+00	1.798E+01	2.865E+01	6.840E+00	-0.118
	181.07			7.994E+00	1.646E+01	2.414E+01	4.770E+00	0.331
	366.42			-1.029E+02	8.110E+01	1.211E+02	1.307E+01	-0.849
	739.50	*		-9.611E-02	1.106E+01	1.822E+01	2.928E+00	-0.005
	777.92			-6.809E+00	3.656E+01	5.077E+01	4.796E+00	-0.134
TC-99M	140.51	*		-3.936E+08	3.656E+01	Half-Life too short		
RU-103	497.08	*		1.806E-02	4.441E-02	7.349E-02	1.090E-02	0.246
	610.33			1.324E+01	2.874E+00	2.979E+00	4.963E-01	4.446
RH-106	621.93	*		3.286E-02	3.345E-01	5.630E-01	7.635E-02	0.058
	1050.41			-1.481E+00	3.082E+00	4.944E+00	4.594E-01	-0.299
RU-106	621.93	*		3.286E-02	3.344E-01	5.630E-01	5.113E-02	0.058
	1050.41			-1.481E+00	3.082E+00	4.944E+00	4.594E-01	-0.299
AG-108M	433.94	*		1.963E-02	3.354E-02	5.658E-02	5.835E-03	0.347
	614.28			7.929E-03	4.329E-02	6.416E-02	6.048E-03	0.124
	722.91			1.643E-02	4.742E-02	7.043E-02	6.568E-03	0.233
AG-110M	657.76	*		2.533E-02	4.315E-02	6.621E-02	5.907E-03	0.383
	677.62			8.490E-02	3.468E-01	5.861E-01	5.262E-02	0.145
	706.68			3.485E-02	2.285E-01	3.825E-01	3.513E-02	0.091
	763.94			1.539E-01	2.013E-01	3.105E-01	2.971E-02	0.496
	884.68			-1.053E-02	5.825E-02	9.294E-02	9.642E-03	-0.113
	937.49			9.340E-03	1.316E-01	1.852E-01	1.910E-02	0.050
	1384.29			-9.376E-02	1.622E-01	2.420E-01	2.308E-02	-0.388
	1505.03			-3.840E-02	3.138E-01	4.990E-01	4.604E-02	-0.077
SN-113	391.69	*		-2.449E-02	5.095E-02	8.092E-02	8.281E-03	-0.303
CD-115	260.90			-2.502E+01	1.022E+02	1.701E+02	2.065E+01	-0.147
	492.35			1.114E+01	2.961E+01	4.904E+01	4.896E+00	0.227
	527.90	*		7.960E+00	9.555E+00	1.620E+01	1.593E+00	0.491
SN-117M	156.02			-2.030E+00	2.336E+00	3.634E+00	3.531E-01	-0.559
	158.56	*		-1.859E-02	5.578E-02	8.904E-02	8.772E-03	-0.209
TE-123M	159.00	*		-7.483E-03	3.013E-02	4.828E-02	4.790E-03	-0.155
SB-124	602.73			-8.430E-04	4.717E-02	6.864E-02	6.367E-03	-0.012
	645.85			-2.673E-01	5.336E-01	8.538E-01	7.937E-02	-0.313

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
SB-125		722.78		1.630E-01	4.705E-01	6.988E-01	6.464E-02	0.233
		1690.97	*	-1.305E-02	8.011E-02	1.294E-01	1.180E-02	-0.101
		427.87	*	1.729E-02	9.708E-02	1.600E-01	1.634E-02	0.108
	+	463.37		1.010E+00	4.204E-01	5.784E-01	6.140E-02	1.745
		600.60		-6.853E-02	2.029E-01	3.228E-01	3.192E-02	-0.212
TE-125M		635.95		1.859E-01	3.090E-01	5.366E-01	5.153E-02	0.346
		109.28	*	1.147E+00	9.915E+00	1.650E+01	1.717E+00	0.070
		388.63		1.190E-01	1.755E-01	2.992E-01	3.023E-02	0.398
I-126		666.33	*	-3.752E-02	2.586E-01	3.673E-01	3.177E-02	-0.102
		753.82		2.093E+00	1.903E+00	3.387E+00	3.143E-01	0.618
		414.70		-2.695E-02	7.449E-02	1.184E-01	1.190E-02	-0.228
SB-126		666.50		-2.325E-02	8.783E-02	1.230E-01	1.064E-02	-0.189
		695.00		3.673E-02	7.667E-02	1.317E-01	1.167E-02	0.279
		697.00		5.024E-02	2.593E-01	4.361E-01	3.871E-02	0.115
SB-127		720.70	*	3.431E-02	1.650E-01	2.527E-01	2.286E-02	0.136
		856.80		2.522E-01	5.481E-01	8.164E-01	8.135E-02	0.309
		252.40		-1.648E+00	3.836E+00	6.243E+00	2.639E+00	-0.264
		473.00		-1.701E-01	1.705E+00	2.623E+00	3.544E-01	-0.065
		685.70	*	4.919E-01	1.254E+00	2.138E+00	2.395E-01	0.230
I-131		783.70		4.643E+00	3.466E+00	6.167E+00	7.836E-01	0.753
		80.19		9.962E-01	4.611E+00	7.041E+00	6.522E-01	0.141
		284.31		-4.997E-01	1.437E+00	2.364E+00	2.993E-01	-0.211
TE-132		364.49	*	1.047E-01	1.133E-01	1.963E-01	2.200E-02	0.533
		636.99		1.260E+00	1.609E+00	2.827E+00	2.654E-01	0.445
		49.72		-1.073E+01	2.371E+01	3.588E+01	3.889E+00	-0.299
BA-133		111.76		-2.057E+00	2.825E+01	4.568E+01	4.838E+00	-0.045
		116.30		1.679E+01	2.278E+01	3.866E+01	4.070E+00	0.434
		228.16	*	-5.278E-01	6.810E-01	1.024E+00	1.784E-01	-0.515
		81.00		-1.378E-01	1.019E-01	1.511E-01	2.403E-02	-0.911
	+	276.40		6.530E-01	5.344E-01	6.945E-01	1.157E-01	0.940
I-133		302.85		7.640E-02	1.494E-01	2.280E-01	3.560E-02	0.335
		356.01	*	-3.680E-02	5.216E-02	7.057E-02	1.037E-02	-0.521
		383.85		-5.092E-02	3.193E-01	5.186E-01	7.060E-02	-0.098
		529.87	*	7.436E-04	3.193E-01	Half-Life	too short	
		875.33		-2.662E-02	3.193E-01	Half-Life	too short	
CS-134		1298.22		-9.198E-02	3.193E-01	Half-Life	too short	
		563.25		3.079E-01	4.132E-01	7.266E-01	7.034E-02	0.424
		569.33		3.200E-02	2.120E-01	3.604E-01	3.484E-02	0.089
		604.72		-9.097E-03	4.031E-02	5.737E-02	5.321E-03	-0.159
	+	795.86	*	1.485E-01	7.198E-02	1.042E-01	1.003E-02	1.425
CS-135		801.95		1.009E-01	4.686E-01	7.490E-01	7.229E-02	0.135
		1365.19		-7.409E-01	1.488E+00	2.278E+00	2.208E-01	-0.325
		268.22	*	3.935E-01	1.924E-01	3.121E-01	4.129E-02	1.261
		546.56		2.702E+08	1.924E-01	Half-Life	too short	
		836.80		2.868E+09	1.924E-01	Half-Life	too short	
I-135		1038.76		2.804E+08	1.924E-01	Half-Life	too short	
		1131.51		1.064E+08	1.924E-01	Half-Life	too short	
		1260.41	*	-1.452E+08	1.924E-01	Half-Life	too short	
		1457.56		8.949E+10	1.924E-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	1678.03			-4.898E+08	1.924E-01	Half-Life	too short	
	1791.20			4.710E+08	1.924E-01	Half-Life	too short	
	153.25			6.143E-01	8.694E-01	1.450E+00	1.606E-01	0.424
	176.60			-1.430E-01	5.245E-01	8.336E-01	9.353E-02	-0.172
	273.65			1.419E-01	6.903E-01	7.650E-01	9.827E-02	0.185
	340.55			4.929E-02	1.671E-01	2.483E-01	2.904E-02	0.199
	818.51			4.778E-02	8.142E-02	1.394E-01	1.356E-02	0.343
CE-139	1048.07	*		5.749E-02	1.192E-01	2.072E-01	1.998E-02	0.278
	1235.36			2.468E-01	7.127E-01	1.203E+00	1.408E-01	0.205
	165.86	*		-4.708E-03	3.243E-02	5.207E-02	5.342E-03	-0.090
	162.66			1.738E-02	8.467E-01	1.356E+00	1.435E-01	0.013
BA-140	304.85			-3.958E-01	1.383E+00	2.091E+00	6.373E-01	-0.189
	423.72			-1.525E-01	1.961E+00	3.177E+00	1.058E+00	-0.048
	537.26	*		1.444E-01	2.853E-01	4.675E-01	1.600E-01	0.309
	328.76			9.252E-01	4.905E-01	5.908E-01	7.129E-02	1.566
LA-140	487.02			-8.131E-03	1.434E-01	2.301E-01	2.407E-02	-0.035
	815.77			4.736E-02	3.575E-01	5.908E-01	6.267E-02	0.080
	1596.21	*		-7.654E-02	8.675E-02	1.251E-01	1.131E-02	-0.612
	145.44	*		-2.422E-02	6.506E-02	1.043E-01	9.744E-03	-0.232
CE-143	57.36			3.900E-04	6.506E-02	Half-Life	too short	
	293.27	*		5.915E-04	6.506E-02	Half-Life	too short	
	664.57			4.867E-04	6.506E-02	Half-Life	too short	
	721.93			8.918E-05	6.506E-02	Half-Life	too short	
CE-144	80.12			6.611E-01	2.731E+00	4.175E+00	3.846E-01	0.158
	133.52	*		-1.425E-01	2.128E-01	3.369E-01	5.165E-02	-0.423
PM-144	476.78			-1.791E-02	7.556E-02	1.199E-01	1.279E-02	-0.149
	618.01			4.718E-03	3.439E-02	5.807E-02	5.429E-03	0.081
PR-144	696.49	*		1.061E-02	3.621E-02	6.132E-02	5.442E-03	0.173
	696.51	*		7.896E-01	2.708E+00	4.586E+00	4.068E-01	0.172
PM-146	1489.16			-7.383E-01	1.353E+01	2.173E+01	2.010E+00	-0.034
	453.88	*		-1.723E-03	4.797E-02	7.645E-02	9.020E-03	-0.023
	633.25			-8.460E-01	1.619E+00	2.542E+00	9.730E-01	-0.333
	735.93			2.795E-03	1.689E-01	2.787E-01	7.859E-02	0.010
ND-147	747.24			-6.134E-02	1.082E-01	1.690E-01	2.527E-02	-0.363
	91.11	+		1.069E+00	4.136E-01	5.129E-01	5.284E-02	2.084
	319.41			2.666E+00	3.638E+00	6.254E+00	7.427E-01	0.426
	531.02	*		-6.639E-02	6.159E-01	9.772E-01	1.531E-01	-0.068
PM-149	285.90	*		-1.248E+01	6.802E+01	1.128E+02	2.017E+01	-0.111
	121.78			2.890E-02	7.445E-02	1.245E-01	1.204E-02	0.232
EU-152	244.70			-1.541E-01	3.655E-01	5.303E-01	6.294E-02	-0.291
	344.28	*		-2.709E-02	1.099E-01	1.792E-01	2.106E-02	-0.151
	778.90			-1.927E-01	3.441E-01	4.544E-01	4.295E-02	-0.424
	964.08	+		9.137E-01	4.608E-01	6.458E-01	6.392E-02	1.415
GD-153	1085.87			2.360E-02	4.478E-01	7.505E-01	6.740E-02	0.031
	1112.07			2.128E-01	4.006E-01	6.119E-01	5.340E-02	0.348
	1408.01			9.906E-02	2.211E-01	3.738E-01	3.483E-02	0.265
	69.67			1.119E+00	1.973E+00	3.052E+00	2.557E-01	0.367
	97.43	*		7.551E-02	9.736E-02	1.500E-01	1.363E-02	0.504
	103.18			2.515E-02	1.158E-01	1.940E-01	1.699E-02	0.130

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
EU-154		123.07		-6.477E-03	5.393E-02	8.829E-02	9.859E-03	-0.073
		723.31		6.667E-02	2.165E-01	3.202E-01	3.170E-02	0.208
		873.19		-1.785E-01	3.089E-01	4.715E-01	6.121E-02	-0.379
		996.26		-6.591E-01	4.565E-01	6.015E-01	1.084E-01	-1.096
		1004.73		-4.298E-02	2.586E-01	4.285E-01	5.318E-02	-0.100
EU-155		1274.44	*	-3.506E-02	1.439E-01	2.310E-01	2.670E-02	-0.152
	+	86.55		3.014E-01	1.126E-01	1.974E-01	1.965E-02	1.527
		105.31	*	5.285E-02	1.141E-01	1.924E-01	1.687E-02	0.275
TB-160	+	86.79		7.919E-01	2.956E-01	5.161E-01	5.112E-02	1.534
		197.04		5.045E-04	5.951E-01	9.513E-01	1.039E-01	0.001
		215.65		1.533E-01	8.306E-01	1.331E+00	1.506E-01	0.115
	+	298.57		3.637E-01	1.507E-01	2.280E-01	2.781E-02	1.595
		879.36	*	8.484E-02	1.483E-01	2.538E-01	2.565E-02	0.334
		962.29		1.241E+00	6.994E-01	1.153E+00	1.143E-01	1.076
		966.15		1.521E+00	3.379E-01	6.257E-01	6.186E-02	2.431
		1177.93		4.739E-02	4.060E-01	6.793E-01	5.496E-02	0.070
		1271.85		-2.498E-01	8.221E-01	1.311E+00	1.159E-01	-0.191
		80.57		-1.977E-01	2.849E-01	4.444E-01	4.113E-02	-0.445
HO-166M	+	184.41		1.641E-01	6.509E-02	8.232E-02	8.762E-03	1.994
		280.46		9.770E-02	9.954E-02	1.563E-01	1.936E-02	0.625
		410.95		1.553E-01	2.644E-01	4.474E-01	4.496E-02	0.347
		711.68	*	4.651E-02	6.310E-02	1.103E-01	9.909E-03	0.422
		752.31		8.646E-02	2.919E-01	4.923E-01	4.563E-02	0.176
		810.29		-1.256E-02	6.460E-02	1.038E-01	1.003E-02	-0.121
		67.75		-1.608E-02	1.167E-01	1.969E-01	1.623E-02	-0.082
TA-182		100.11		-2.012E-01	1.850E-01	2.933E-01	2.615E-02	-0.686
		152.43		2.283E-01	3.683E-01	6.132E-01	5.845E-02	0.372
		222.11		-2.104E-01	3.968E-01	6.107E-01	6.987E-02	-0.344
	+	1121.30		4.633E-01	2.945E-01	3.814E-01	3.292E-02	1.215
		1189.05		4.068E-01	3.574E-01	6.436E-01	5.263E-02	0.632
		1221.41	*	-3.145E-02	2.230E-01	3.638E-01	3.069E-02	-0.086
		1231.02		-1.734E-01	6.179E-01	9.983E-01	8.497E-02	-0.174
IR-192	+	295.96		1.197E+00	2.620E-01	3.226E-01	3.959E-02	3.712
		308.46		2.304E-02	9.775E-02	1.651E-01	1.996E-02	0.140
		316.51	*	1.216E-02	3.982E-02	6.727E-02	8.032E-03	0.181
		468.07		-2.794E-02	9.146E-02	1.254E-01	1.328E-02	-0.223
HG-203		70.83		-6.466E-01	1.523E+00	2.243E+00	3.583E-01	-0.288
		72.87		2.066E+00	9.004E-01	1.527E+00	2.371E-01	1.353
		279.20	*	8.175E-03	4.632E-02	6.934E-02	8.706E-03	0.118
BI-207		72.81		4.024E-01	1.980E-01	3.503E-01	3.013E-02	1.149
	+	74.97		8.085E-01	1.628E-01	2.603E-01	2.282E-02	3.106
		569.70		3.370E-03	3.267E-02	5.536E-02	5.291E-03	0.061
		1063.66	*	1.577E-02	6.381E-02	1.087E-01	9.982E-03	0.145
		1770.23		-2.621E-01	6.718E-01	8.614E-01	7.279E-02	-0.304
PB-210		46.54	*	4.446E+00	6.257E+00	9.893E+00	9.411E-01	0.449
PB-211		404.85	*	-4.884E-01	8.304E-01	1.249E+00	6.078E-01	-0.391
		427.09		2.871E-01	1.646E+00	2.704E+00	1.259E+00	0.106
		832.01		-1.116E+00	1.289E+00	1.716E+00	8.933E-01	-0.651
BI-212	+	727.33	*	2.544E+00	1.019E+00	1.375E+00	1.758E-01	1.850

----- Non-Identified Nuclides -----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
		785.37		3.437E+00	3.789E+00	6.610E+00	6.277E-01	0.520
		1620.50		3.080E+00	2.762E+00	5.256E+00	4.720E-01	0.586
RN-219	+	271.23		7.651E-01	3.716E-01	4.821E-01	6.503E-02	1.587
		401.81	*	-2.466E-01	4.487E-01	7.048E-01	1.109E-01	-0.350
RA-223		81.07		-3.271E-01	2.171E-01	3.424E-01	3.185E-02	-0.955
		83.79		7.825E-02	1.445E-01	2.205E-01	2.112E-02	0.355
		94.87		-1.560E-01	4.975E-01	7.328E-01	6.806E-02	-0.213
		144.24		3.795E-01	7.344E-01	1.209E+00	1.220E-01	0.314
		154.21		2.830E-01	4.163E-01	6.937E-01	7.192E-02	0.408
	+	269.46		5.945E-01	2.870E-01	3.872E-01	4.797E-02	1.535
		323.87	*	-4.021E-01	8.152E-01	1.141E+00	2.180E-01	-0.352
	+	338.28		5.663E+00	1.826E+00	2.524E+00	3.602E-01	2.244
AC-227		79.69		1.177E+00	1.359E+00	2.114E+00	3.703E-01	0.557
		235.96		4.540E-01	2.048E-01	3.273E-01	4.265E-02	1.387
		256.23	*	1.394E-01	2.751E-01	4.739E-01	6.971E-02	0.294
	+	299.98		2.870E+00	1.219E+00	1.790E+00	2.747E-01	1.603
		304.50		9.324E-02	1.755E+00	2.728E+00	5.071E-01	0.034
		334.37		-1.058E+00	2.224E+00	3.106E+00	5.405E-01	-0.341
TH-227		79.80		1.017E+00	1.809E+00	2.785E+00	6.130E-01	0.365
		235.96		4.540E-01	2.042E-01	3.273E-01	4.114E-02	1.387
		256.23	*	1.394E-01	2.753E-01	4.739E-01	7.587E-02	0.294
	+	299.98		2.870E+00	1.219E+00	1.790E+00	2.747E-01	1.603
		304.50		9.324E-02	1.755E+00	2.728E+00	5.071E-01	0.034
		334.37		-1.058E+00	2.224E+00	3.106E+00	5.405E-01	-0.341
PA-231		283.69	*	-4.912E-01	1.508E+00	2.482E+00	4.236E-01	-0.198
		301.36		1.213E+00	6.923E-01	1.104E+00	1.643E-01	1.098
TH-231		81.07		-3.271E-01	2.171E-01	3.424E-01	3.185E-02	-0.955
		83.79		7.825E-02	1.445E-01	2.205E-01	2.112E-02	0.355
		94.87		-1.560E-01	4.975E-01	7.328E-01	6.806E-02	-0.213
		144.24		3.795E-01	7.344E-01	1.209E+00	1.220E-01	0.314
		154.21		2.830E-01	4.163E-01	6.937E-01	7.192E-02	0.408
	+	269.46		5.945E-01	2.870E-01	3.872E-01	4.797E-02	1.535
		323.87	*	-4.021E-01	8.152E-01	1.141E+00	2.180E-01	-0.352
	+	338.28		5.663E+00	1.826E+00	2.524E+00	3.602E-01	2.244
PA-233	+	300.13		1.299E+00	5.606E-01	8.088E-01	1.386E-01	1.606
		311.90	*	-6.421E-03	6.737E-02	1.116E-01	1.360E-02	-0.058
		340.48		2.355E-01	7.567E-01	1.123E+00	2.833E-01	0.210
PA-234		94.67		1.415E-01	1.793E-01	2.774E-01	3.575E-02	0.510
		98.44		1.253E-01	1.221E-01	1.661E-01	9.276E-02	0.754
		111.00		-4.044E-02	1.910E-01	3.134E-01	3.759E-02	-0.129
		131.20		-8.401E-02	1.141E-01	1.811E-01	1.561E-02	-0.464
		569.50		3.663E-02	2.920E-01	4.955E-01	4.737E-02	0.074
		733.00		-2.774E-01	5.050E-01	6.708E-01	1.503E-01	-0.413
		880.51		4.334E-02	3.126E-01	5.142E-01	5.200E-02	0.084
		883.24		2.075E-01	3.470E-01	5.471E-01	3.689E-01	0.379
		926.50		2.133E-01	2.161E-01	3.342E-01	8.628E-02	0.638
		946.00	*	4.880E-02	3.651E-01	5.959E-01	1.158E-01	0.082
		949.00		6.373E-01	5.336E-01	9.456E-01	9.440E-02	0.674
PA-234M		766.42		3.431E+00	1.671E+01	2.402E+01	1.222E+01	0.143



---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
NP-239	1001.03	*		5.259E+00	5.734E+00	1.002E+01	1.091E+00	0.525
	99.53			6.404E-02	1.691E-01	2.854E-01	2.554E-02	0.224
	103.37			4.048E-02	1.059E-01	1.784E-01	1.560E-02	0.227
	106.12			6.158E-03	8.923E-02	1.484E-01	1.281E-02	0.041
	117.23	*		7.613E-03	3.968E-01	6.553E-01	5.493E-02	0.012
AM-241	228.18			-1.959E-01	2.532E-01	3.829E-01	4.427E-02	-0.512
	277.60			3.230E-01	2.618E-01	3.539E-01	4.382E-02	0.913
	59.54	*		3.488E-02	1.960E-01	3.039E-01	2.490E-02	0.115
CM-247	278.00			1.372E+00	1.112E+00	1.517E+00	1.879E-01	0.904
	287.50			4.061E-01	1.259E+00	2.144E+00	2.643E-01	0.189
	402.40	*		-2.538E-02	4.094E-02	6.409E-02	6.429E-03	-0.396
CF-249	252.80			-6.254E-01	1.031E+00	1.688E+00	2.027E-01	-0.370
	333.37			-9.444E-02	2.748E-01	3.267E-01	3.791E-02	-0.289
	388.16	*		3.939E-02	4.423E-02	7.622E-02	7.713E-03	0.517
CF-251	177.52	*		-1.556E-01	1.478E-01	2.249E-01	2.361E-02	-0.692
	227.38			-1.154E-01	4.120E-01	6.424E-01	7.417E-02	-0.180
	285.41			-1.286E+00	2.279E+00	3.697E+00	4.564E-01	-0.348

# VAX/VMS Nuclide Identification Report Generated

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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202052273      *
* Acquisition date   : 5-MAR-2010 13:05:38 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 02:00:03.72 Half life ratio : 8.000                *
*****
*                                     SAMPLE DATA                            *
*
* Sample date       : 19-FEB-2010 12:00:00 Nuclide Library : SOLID           *
* Sample ID         : G1202052273 Analyst initials: MXR1                   *
* Batch Number      : 957136 Sample Quantity : 1.3254E+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 :                                  *
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## Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM )	Act error	MDA (pCi/GRAM )	
K-40	3.407E+01	3.779E+00	6.641E-01	0.000E+00
CD-109	2.540E+00	9.291E-01	1.381E+00	0.000E+00
SN-126	2.487E-01	9.096E-02	1.360E-01	0.000E+00
BA-137M	1.186E-01	5.252E-02	6.705E-02	0.000E+00
CS-137	1.253E-01	5.549E-02	7.084E-02	0.000E+00
TL-208	5.749E-01	1.046E-01	6.488E-02	0.000E+00
BI-211	4.371E+00	6.826E-01	3.561E-01	0.000E+00
PB-212	1.960E+00	2.730E-01	9.883E-02	0.000E+00
BI-214	1.308E+00	2.241E-01	1.263E-01	0.000E+00
PB-214	1.586E+00	2.621E-01	1.295E-01	0.000E+00
RA-224	5.179E+00	1.376E+00	1.060E+00	0.000E+00
RA-226	1.308E+00	2.241E-01	1.263E-01	0.000E+00
AC-228	2.093E+00	4.107E-01	2.625E-01	0.000E+00
RA-228	2.093E+00	4.107E-01	2.625E-01	0.000E+00
TH-228	1.960E+00	2.730E-01	9.883E-02	0.000E+00
TH-229	5.229E-02	5.622E-01	9.563E-01	0.000E+00
TH-232	2.093E+00	4.107E-01	2.625E-01	0.000E+00
TH-234	3.257E+00	2.660E+00	2.557E+00	0.000E+00
U-235	1.164E-01	2.172E-01	3.793E-01	0.000E+00
NP-237	7.421E-01	3.113E-01	4.116E-01	0.000E+00
U-238	3.257E+00	2.660E+00	2.557E+00	0.000E+00
ANH-511	1.958E-01	7.925E-02	5.143E-02	0.000E+00

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	2.192E-02	3.604E-01	6.087E-01	0.000E+00 NOT IDENT.
NA-22	-1.237E-02	4.975E-02	8.179E-02	0.000E+00 NOT IDENT.
NA-24	0.000E+00	2.596E+05	0.000E+00	0.000E+00 SHORT HLIF
SC-46	-3.197E-02	4.845E-02	7.410E-02	0.000E+00 FAIL ABUN
V-48	3.945E-02	8.283E-02	1.393E-01	0.000E+00 NOT IDENT.

CR-51	4.249E-02	4.122E-01	7.230E-01	0.000E+00	NOT IDENT.
MN-54	2.811E-02	4.320E-02	7.624E-02	0.000E+00	NOT IDENT.
CO-56	-2.979E-02	4.371E-02	6.879E-02	0.000E+00	NOT IDENT.
CO-57	1.309E-02	2.542E-02	4.553E-02	0.000E+00	NOT IDENT.
CO-58	-7.984E-03	4.196E-02	6.965E-02	0.000E+00	NOT IDENT.
FE-59	-5.137E-02	9.264E-02	1.500E-01	0.000E+00	NOT IDENT.
CO-60	-1.397E-02	4.565E-02	7.391E-02	0.000E+00	NOT IDENT.
ZN-65	-3.451E-03	1.146E-01	1.680E-01	0.000E+00	NOT IDENT.
SE-75	5.944E-03	4.724E-02	7.843E-02	0.000E+00	NOT IDENT.
SR-85	0.000E+00	4.419E-02	7.460E-02	0.000E+00	NOT IDENT.
Y-88	7.465E-03	3.638E-02	6.343E-02	0.000E+00	NOT IDENT.
Y-91	-1.373E+00	2.541E+01	4.289E+01	0.000E+00	NOT IDENT.
NB-94	2.836E-02	3.538E-02	6.407E-02	0.000E+00	NOT IDENT.
NB-95	1.731E-03	5.822E-02	8.551E-02	0.000E+00	NOT IDENT.
NB-95M	3.775E-02	1.461E-01	2.342E-01	0.000E+00	NOT IDENT.
ZR-95	1.640E-02	8.201E-02	1.416E-01	0.000E+00	NOT IDENT.
MO-99	-9.611E-02	1.084E+01	1.847E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	2.059E+15	0.000E+00	0.000E+00	SHORT HLIF
RU-103	1.806E-02	4.353E-02	7.500E-02	0.000E+00	FAIL ABUN
RH-106	3.286E-02	3.278E-01	5.724E-01	0.000E+00	NOT IDENT.
RU-106	3.286E-02	3.278E-01	5.724E-01	0.000E+00	NOT IDENT.
AG-108M	1.963E-02	3.287E-02	5.788E-02	0.000E+00	NOT IDENT.
AG-110M	2.533E-02	4.229E-02	6.725E-02	0.000E+00	NOT IDENT.
SN-113	-2.449E-02	4.993E-02	8.293E-02	0.000E+00	NOT IDENT.
CD-115	7.960E+00	9.364E+00	1.652E+01	0.000E+00	NOT IDENT.
SN-117M	-1.859E-02	5.467E-02	9.265E-02	0.000E+00	NOT IDENT.
TE-123M	-7.483E-03	2.953E-02	5.023E-02	0.000E+00	NOT IDENT.
SB-124	-1.305E-02	7.851E-02	1.292E-01	0.000E+00	NOT IDENT.
SB-125	1.729E-02	9.514E-02	1.637E-01	0.000E+00	FAIL ABUN
TE-125M	1.147E+00	9.717E+00	1.727E+01	0.000E+00	NOT IDENT.
I-126	-3.752E-02	2.534E-01	3.729E-01	0.000E+00	NOT IDENT.
SB-126	3.431E-02	1.617E-01	2.563E-01	0.000E+00	NOT IDENT.
SB-127	4.919E-01	1.229E+00	2.170E+00	0.000E+00	NOT IDENT.
I-131	1.047E-01	1.111E-01	2.014E-01	0.000E+00	NOT IDENT.
TE-132	-5.278E-01	6.674E-01	1.059E+00	0.000E+00	NOT IDENT.
BA-133	-3.680E-02	5.111E-02	7.243E-02	0.000E+00	FAIL ABUN
I-133	0.000E+00	2.888E+03	0.000E+00	0.000E+00	SHORT HLIF
CS-134	0.000E+00	7.054E-02	1.055E-01	0.000E+00	FAIL ABUN
CS-135	0.000E+00	1.886E-01	3.219E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	5.172E+14	0.000E+00	0.000E+00	SHORT HLIF
CS-136	5.749E-02	1.168E-01	2.087E-01	0.000E+00	NOT IDENT.
CE-139	-4.708E-03	3.178E-02	5.414E-02	0.000E+00	NOT IDENT.
BA-140	1.444E-01	2.796E-01	4.765E-01	0.000E+00	NOT IDENT.
LA-140	-7.654E-02	8.501E-02	1.251E-01	0.000E+00	FAIL ABUN
CE-141	-2.422E-02	6.376E-02	1.087E-01	0.000E+00	NOT IDENT.
CE-143	0.000E+00	1.775E+02	0.000E+00	0.000E+00	SHORT HLIF
CE-144	-1.425E-01	2.085E-01	3.516E-01	0.000E+00	NOT IDENT.
PM-144	1.061E-02	3.549E-02	6.222E-02	0.000E+00	NOT IDENT.
PR-144	7.896E-01	2.654E+00	4.653E+00	0.000E+00	NOT IDENT.
PM-146	-1.723E-03	4.701E-02	7.815E-02	0.000E+00	NOT IDENT.
ND-147	-6.639E-02	6.036E-01	9.962E-01	0.000E+00	FAIL ABUN
PM-149	-1.248E+01	6.666E+01	1.162E+02	0.000E+00	NOT IDENT.
EU-152	-2.709E-02	1.077E-01	1.840E-01	0.000E+00	FAIL ABUN
GD-153	7.551E-02	9.541E-02	1.573E-01	0.000E+00	NOT IDENT.
EU-154	-3.506E-02	1.411E-01	2.319E-01	0.000E+00	NOT IDENT.
EU-155	5.285E-02	1.118E-01	2.016E-01	0.000E+00	FAIL ABUN
TB-160	8.484E-02	1.454E-01	2.564E-01	0.000E+00	FAIL ABUN
HO-166M	4.651E-02	6.184E-02	1.119E-01	0.000E+00	FAIL ABUN
TA-182	-3.145E-02	2.186E-01	3.655E-01	0.000E+00	FAIL ABUN
IR-192	1.216E-02	3.902E-02	6.918E-02	0.000E+00	FAIL ABUN
HG-203	8.175E-03	4.539E-02	7.147E-02	0.000E+00	NOT IDENT.
BI-207	1.577E-02	6.253E-02	1.095E-01	0.000E+00	FAIL ABUN
PB-210	4.446E+00	6.132E+00	1.050E+01	0.000E+00	NOT IDENT.
PB-211	-4.884E-01	8.138E-01	1.279E+00	0.000E+00	NOT IDENT.
BI-212	0.000E+00	9.983E-01	1.394E+00	0.000E+00	FAIL ABUN
RN-219	-2.466E-01	4.397E-01	7.219E-01	0.000E+00	FAIL ABUN
RA-223	-4.021E-01	7.989E-01	1.173E+00	0.000E+00	FAIL ABUN
AC-227	1.394E-01	2.696E-01	4.891E-01	0.000E+00	FAIL ABUN
TH-227	1.394E-01	2.698E-01	4.891E-01	0.000E+00	FAIL ABUN
PA-231	-4.912E-01	1.478E+00	2.558E+00	0.000E+00	NOT IDENT.
TH-231	-4.021E-01	7.989E-01	1.173E+00	0.000E+00	FAIL ABUN
PA-233	-6.421E-03	6.602E-02	1.148E-01	0.000E+00	FAIL ABUN
PA-234	4.880E-02	3.578E-01	6.014E-01	0.000E+00	NOT IDENT.
PA-234M	5.259E+00	5.620E+00	1.010E+01	0.000E+00	NOT IDENT.
NP-239	7.613E-03	3.889E-01	6.853E-01	0.000E+00	FAIL ABUN
AM-241	3.488E-02	1.921E-01	3.213E-01	0.000E+00	NOT IDENT.
CM-247	-2.538E-02	4.012E-02	6.565E-02	0.000E+00	FAIL ABUN
CF-249	3.939E-02	4.335E-02	7.812E-02	0.000E+00	NOT IDENT.

CF-251	-1.556E-01	1.448E-01	2.336E-01	0.000E+00 NOT IDENT.
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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202052273.CNF;1
Sample date        : 19-FEB-2010 12:00:00 Acquisition date : 5-MAR-2010 13:05:38.
Sample ID          : G1202052273      Sample quantity   : 1.32540E+02 GRAM
Detector name      : GAM02            Detector geometry: CAN
Elapsed live time  : 0 02:00:00.00    Elapsed real time: 0 02:00:03.72  0.1%
Energy tolerance   : 1.50000 keV      Analyst Initials : MXR1
Abundance limit    : 75.00000         Sensitivity      : 5.00000
Batch ID           : 957136           Detector SN#     :
Matrix Spike ID    :                  LCS ID            : 1032-A
*****

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## Nuclide Line Activity Report

## Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	1318	10.66*	1.028E+00	3.407E+01	3.407E+01	11.32
CD-109	88.03	170	3.70*	5.223E+00	2.487E+00	2.540E+00	37.32
SN-126	64.28	-----	9.60	2.716E+00	-----	Line Not Found	-----
	86.94	170	8.90	5.223E+00	1.034E+00	1.034E+00	55.04
	87.57	170	37.00*	5.223E+00	2.487E-01	2.487E-01	37.32
BA-137M	661.66	78	89.90*	2.071E+00	1.185E-01	1.186E-01	45.17
CS-137	661.66	78	85.10*	2.071E+00	1.252E-01	1.253E-01	45.17
TL-208	277.37	66	6.60	3.997E+00	7.066E-01	7.066E-01	81.58
	583.19	395	85.00*	2.292E+00	5.749E-01	5.749E-01	18.57
	860.56	42	12.50	1.651E+00	5.739E-01	5.739E-01	103.04
BI-211	72.87	-----	1.23	3.848E+00	-----	Line Not Found	-----
	351.06	668	12.92*	3.352E+00	4.371E+00	4.371E+00	15.94
PB-212	74.82	411	10.28	4.035E+00	2.805E+00	2.805E+00	22.37
	77.11	612	17.10	4.299E+00	2.357E+00	2.357E+00	15.74
	238.63	1345	43.60*	4.458E+00	1.960E+00	1.960E+00	14.21
	300.09	115	3.30	3.769E+00	2.609E+00	2.609E+00	41.88
BI-214	609.32	465	45.49*	2.214E+00	1.308E+00	1.308E+00	17.49
	1120.29	68	14.92	1.298E+00	9.951E-01	9.951E-01	63.91
	1764.49	77	15.30	9.005E-01	1.578E+00	1.578E+00	33.95
PB-214	74.82	411	5.80	4.035E+00	4.972E+00	4.972E+00	21.65
	77.11	612	9.70	4.299E+00	4.154E+00	4.155E+00	17.77
	242.00	331	7.25	4.419E+00	2.929E+00	2.929E+00	27.71
	295.22	406	18.42	3.814E+00	1.636E+00	1.636E+00	22.81
	351.93	668	35.60*	3.352E+00	1.586E+00	1.586E+00	16.86
RA-224	240.99	331	4.10*	4.419E+00	5.179E+00	5.179E+00	27.10
RA-226	609.32	465	45.49*	2.214E+00	1.308E+00	1.308E+00	17.49
	1120.29	68	14.92	1.298E+00	9.951E-01	9.951E-01	63.91
	1764.49	77	15.30	9.005E-01	1.578E+00	1.578E+00	33.95
AC-228	338.32	196	11.27	3.452E+00	1.427E+00	1.427E+00	51.33
	911.20	299	25.80*	1.570E+00	2.093E+00	2.093E+00	20.03
	968.97	183	15.80	1.484E+00	2.213E+00	2.213E+00	32.76
RA-228	338.32	196	11.27	3.452E+00	1.427E+00	1.427E+00	51.33

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	911.20	299	25.80*	1.570E+00	2.093E+00	2.093E+00	20.03
	968.97	183	15.80	1.484E+00	2.213E+00	2.213E+00	32.76
	74.82	411	10.28	4.035E+00	2.805E+00	2.805E+00	20.18
	77.11	612	17.10	4.299E+00	2.357E+00	2.357E+00	15.74
	238.63	1345	43.60*	4.458E+00	1.960E+00	1.960E+00	14.21
TH-229	300.09	115	3.30	3.769E+00	2.609E+00	2.609E+00	73.42
	85.43	170	14.70	5.223E+00	6.260E-01	6.260E-01	37.32
	88.47	110	24.00	5.412E+00	2.392E-01	2.392E-01	52.65
	193.51	-----	4.41*	5.151E+00	-----	Line Not Found	-----
	210.85	-----	2.80	4.862E+00	-----	Line Not Found	-----
TH-232	338.32	196	11.27	3.452E+00	1.427E+00	1.427E+00	31.12
	911.20	299	25.80*	1.570E+00	2.093E+00	2.093E+00	20.03
	968.97	183	15.80	1.484E+00	2.213E+00	2.213E+00	32.76
TH-234	63.29	105	3.70*	2.467E+00	3.257E+00	3.257E+00	83.34
	92.59	241	4.23	5.579E+00	2.897E+00	2.897E+00	43.56
U-235	89.96	110	3.47	5.412E+00	1.655E+00	1.655E+00	57.48
	93.35	241	5.60	5.579E+00	2.188E+00	2.188E+00	44.08
	143.76	-----	10.96*	6.030E+00	-----	Line Not Found	-----
	163.33	-----	5.08	5.697E+00	-----	Line Not Found	-----
	185.72	221	57.20	5.292E+00	2.066E-01	2.066E-01	39.66
NP-237	205.31	-----	5.01	4.952E+00	-----	Line Not Found	-----
	86.48	170	12.40*	5.223E+00	7.421E-01	7.421E-01	42.81
	95.86	-----	2.68	5.755E+00	-----	Line Not Found	-----
U-238	63.29	105	3.70*	2.467E+00	3.257E+00	3.257E+00	83.34
	92.59	241	4.23	5.579E+00	2.897E+00	2.897E+00	38.53
ANH-511	511.00	176	100.00*	2.540E+00	1.958E-01	1.958E-01	41.30

Flag: "\*" = Keyline

Total number of lines in spectrum 34  
Number of unidentified lines 4  
Number of lines tentatively identified by NID 30 88.24%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	3.407E+01	3.407E+01	0.386E+01	11.32	
CD-109	461.40D	1.02	2.487E+00	2.540E+00	0.948E+00	37.32	
SN-126	2.30E+05Y	1.00	2.487E-01	2.487E-01	0.928E-01	37.32	
BA-137M	30.08Y	1.00	1.185E-01	1.186E-01	0.536E-01	45.17	
CS-137	30.08Y	1.00	1.252E-01	1.253E-01	0.566E-01	45.17	
TL-208	1.41E+10Y	1.00	5.749E-01	5.749E-01	1.068E-01	18.57	
BI-211	7.04E+08Y	1.00	4.371E+00	4.371E+00	0.697E+00	15.94	
PB-212	1.41E+10Y	1.00	1.960E+00	1.960E+00	0.279E+00	14.21	
BI-214	1600.00Y	1.00	1.308E+00	1.308E+00	0.229E+00	17.49	
PB-214	1600.00Y	1.00	1.586E+00	1.586E+00	0.267E+00	16.86	
RA-224	1.41E+10Y	1.00	5.179E+00	5.179E+00	1.404E+00	27.10	
RA-226	1600.00Y	1.00	1.308E+00	1.308E+00	0.229E+00	17.49	
AC-228	1.41E+10Y	1.00	2.093E+00	2.093E+00	0.419E+00	20.03	
RA-228	1.41E+10Y	1.00	2.093E+00	2.093E+00	0.419E+00	20.03	
TH-228	1.41E+10Y	1.00	1.960E+00	1.960E+00	0.279E+00	14.21	
TH-229	7340.00Y	1.00	2.392E-01	2.392E-01	1.259E-01	52.65	K
TH-232	1.41E+10Y	1.00	2.093E+00	2.093E+00	0.419E+00	20.03	
TH-234	4.47E+09Y	1.00	3.257E+00	3.257E+00	2.714E+00	83.34	
U-235	7.04E+08Y	1.00	2.066E-01	2.066E-01	0.819E-01	39.66	K
NP-237	2.14E+06Y	1.00	7.421E-01	7.421E-01	3.177E-01	42.81	
U-238	4.47E+09Y	1.00	3.257E+00	3.257E+00	2.714E+00	83.34	
ANH-511	1.00E+09Y	1.00	1.958E-01	1.958E-01	0.809E-01	41.30	

Total Activity : 6.947E+01 6.952E+01

Grand Total Activity : 6.947E+01 6.952E+01

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

Unidentified Energy Lines  
Sample ID : G1202052273

Page : 4  
Acquisition date : 5-MAR-2010 13:05:38

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	209.26	145	345	1.07	417.86	412	10	2.01E-02	50.9	4.89E+00	
0	270.01	119	198	1.10	539.43	535	9	1.65E-02	46.7	4.07E+00	T
0	327.43	109	182	1.15	654.33	649	11	1.51E-02	51.6	3.53E+00	T
0	462.79	102	85	1.14	925.20	920	11	1.42E-02	40.3	2.74E+00	T
0	727.21	115	83	1.41	1454.36	1449	13	1.59E-02	37.9	1.91E+00	T
0	771.47	70	179	7.87	1542.95	1529	28	9.78E-03	****	1.82E+00	
0	794.46	71	52	1.67	1588.96	1584	11	9.80E-03	47.5	1.77E+00	T
0	933.44	63	36	1.10	1867.09	1860	13	8.79E-03	46.4	1.53E+00	
2	963.99	70	56	2.19	1928.24	1921	37	9.76E-03	49.4	1.49E+00	T
0	1729.51	28	8	1.15	3460.48	3456	10	3.92E-03	55.3	9.11E-01	

Flags: "T" = Tentatively associated



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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202052273.CNF;1 *
* Acquisition date   : 5-MAR-2010 13:05:38.  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 02:00:03.72          Half life ratio   : 8.00000     *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 19-FEB-2010 12:00:00  Nuclide Library   : SOLID        *
* Sample ID          : G1202052273           Analyst initials: MXR1          *
* Batch Number       : 957136                Sample Quantity  : 1.32540E+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      :             *
*****

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## Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	3.407E+01	3.856E+00	6.631E-01	6.304E-02	51.372
CD-109	2.540E+00	9.481E-01	1.315E+00	1.320E-01	1.932
SN-126	2.487E-01	9.282E-02	1.294E-01	1.294E-02	1.921
BA-137M	1.186E-01	5.360E-02	6.603E-02	5.689E-03	1.797
CS-137	1.253E-01	5.662E-02	6.975E-02	6.021E-03	1.797
TL-208	5.749E-01	1.068E-01	6.375E-02	6.379E-03	9.018
BI-211	4.371E+00	6.965E-01	3.468E-01	4.002E-02	12.602
PB-212	1.960E+00	2.786E-01	9.563E-02	1.207E-02	20.498
BI-214	1.308E+00	2.287E-01	1.242E-01	1.318E-02	10.527
PB-214	1.586E+00	2.675E-01	1.261E-01	1.611E-02	12.575
RA-224	5.179E+00	1.404E+00	1.026E+00	1.210E-01	5.050
RA-226	1.308E+00	2.287E-01	1.242E-01	1.318E-02	10.527
AC-228	2.093E+00	4.191E-01	2.599E-01	3.323E-02	8.050
RA-228	2.093E+00	4.191E-01	2.599E-01	3.323E-02	8.050
TH-228	1.960E+00	2.786E-01	9.563E-02	1.207E-02	20.498
TH-229	2.392E-01	1.259E-01	9.221E-01	9.997E-02	0.259
TH-232	2.093E+00	4.191E-01	2.599E-01	3.323E-02	8.050
TH-234	3.257E+00	2.714E+00	2.421E+00	4.367E-01	1.345

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
U-235	2.066E-01	8.192E-02	3.640E-01	6.265E-02	0.568
NP-237	7.421E-01	3.177E-01	3.917E-01	9.077E-02	1.895
U-238	3.257E+00	2.714E+00	2.421E+00	4.367E-01	1.345
ANH-511	1.958E-01	8.087E-02	5.042E-02	4.998E-03	3.883

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	2.192E-02		3.677E-01	5.960E-01	6.319E-02	0.037
NA-22	-1.237E-02		5.077E-02	8.148E-02	7.224E-03	-0.152
NA-24	-1.981E-02		1.324E-01	Half-Life too short		
SC-46	-3.197E-02		4.944E-02	7.334E-02	7.457E-03	-0.436
V-48	3.945E-02		8.452E-02	1.381E-01	1.351E-02	0.286
CR-51	4.249E-02		4.206E-01	7.031E-01	8.574E-02	0.060
MN-54	2.811E-02		4.408E-02	7.538E-02	7.405E-03	0.373
CO-56	-2.979E-02		4.461E-02	6.803E-02	6.736E-03	-0.438
CO-57	1.309E-02		2.594E-02	4.357E-02	3.642E-03	0.300
CO-58	-7.984E-03		4.282E-02	6.882E-02	6.665E-03	-0.116
FE-59	-5.137E-02		9.453E-02	1.490E-01	1.420E-02	-0.345
CO-60	-1.397E-02		4.659E-02	7.368E-02	6.865E-03	-0.190
ZN-65	-3.451E-03		1.169E-01	1.669E-01	1.452E-02	-0.021
SE-75	5.944E-03		4.821E-02	7.603E-02	9.294E-03	0.078
SR-85	7.953E-02		4.509E-02	7.313E-02	7.240E-03	1.087
Y-88	7.465E-03		3.712E-02	6.359E-02	5.187E-03	0.117
Y-91	-1.373E+00		2.593E+01	4.268E+01	3.544E+00	-0.032
NB-94	2.836E-02		3.610E-02	6.315E-02	5.631E-03	0.449
NB-95	1.731E-03		5.941E-02	8.441E-02	7.903E-03	0.021
NB-95M	3.775E-02		1.490E-01	2.265E-01	2.869E-02	0.167
ZR-95	1.640E-02		8.368E-02	1.397E-01	1.417E-02	0.117
MO-99	-9.611E-02		1.106E+01	1.822E+01	2.928E+00	-0.005
TC-99M	-3.936E+08		1.051E+09	Half-Life too short		
RU-103	1.806E-02		4.441E-02	7.349E-02	1.090E-02	0.246
RH-106	3.286E-02		3.345E-01	5.630E-01	7.635E-02	0.058
RU-106	3.286E-02		3.344E-01	5.630E-01	5.113E-02	0.058
AG-108M	1.963E-02		3.354E-02	5.658E-02	5.835E-03	0.347
AG-110M	2.533E-02		4.315E-02	6.621E-02	5.907E-03	0.383
SN-113	-2.449E-02		5.095E-02	8.092E-02	8.281E-03	-0.303
CD-115	7.960E+00		9.555E+00	1.620E+01	1.593E+00	0.491
SN-117M	-1.859E-02		5.578E-02	8.904E-02	8.772E-03	-0.209
TE-123M	-7.483E-03		3.013E-02	4.828E-02	4.790E-03	-0.155
SB-124	-1.305E-02		8.011E-02	1.294E-01	1.180E-02	-0.101
SB-125	1.729E-02		9.708E-02	1.600E-01	1.634E-02	0.108
TE-125M	1.147E+00		9.915E+00	1.650E+01	1.717E+00	0.070
I-126	-3.752E-02		2.586E-01	3.673E-01	3.177E-02	-0.102
SB-126	3.431E-02		1.650E-01	2.527E-01	2.286E-02	0.136
SB-127	4.919E-01		1.254E+00	2.138E+00	2.395E-01	0.230
I-131	1.047E-01		1.133E-01	1.963E-01	2.200E-02	0.533

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TE-132	-5.278E-01		6.810E-01	1.024E+00	1.784E-01	-0.515
BA-133	-3.680E-02		5.216E-02	7.057E-02	1.037E-02	-0.521
I-133	7.436E-04		1.474E-03	Half-Life too short		
CS-134	1.485E-01	+	7.198E-02	1.042E-01	1.003E-02	1.425
CS-135	3.935E-01		1.924E-01	3.121E-01	4.129E-02	1.261
I-135	-1.452E+08		2.639E+08	Half-Life too short		
CS-136	5.749E-02		1.192E-01	2.072E-01	1.998E-02	0.278
CE-139	-4.708E-03		3.243E-02	5.207E-02	5.342E-03	-0.090
BA-140	1.444E-01		2.853E-01	4.675E-01	1.600E-01	0.309
LA-140	-7.654E-02		8.675E-02	1.251E-01	1.131E-02	-0.612
CE-141	-2.422E-02		6.506E-02	1.043E-01	9.744E-03	-0.232
CE-143	5.915E-04		9.054E-05	Half-Life too short		
CE-144	-1.425E-01		2.128E-01	3.369E-01	5.165E-02	-0.423
PM-144	1.061E-02		3.621E-02	6.132E-02	5.442E-03	0.173
PR-144	7.896E-01		2.708E+00	4.586E+00	4.068E-01	0.172
PM-146	-1.723E-03		4.797E-02	7.645E-02	9.020E-03	-0.023
ND-147	-6.639E-02		6.159E-01	9.772E-01	1.531E-01	-0.068
PM-149	-1.248E+01		6.802E+01	1.128E+02	2.017E+01	-0.111
EU-152	-2.709E-02		1.099E-01	1.792E-01	2.106E-02	-0.151
GD-153	7.551E-02		9.736E-02	1.500E-01	1.363E-02	0.504
EU-154	-3.506E-02		1.439E-01	2.310E-01	2.670E-02	-0.152
EU-155	5.285E-02		1.141E-01	1.924E-01	1.687E-02	0.275
TB-160	8.484E-02		1.483E-01	2.538E-01	2.565E-02	0.334
HO-166M	4.651E-02		6.310E-02	1.103E-01	9.909E-03	0.422
TA-182	-3.145E-02		2.230E-01	3.638E-01	3.069E-02	-0.086
IR-192	1.216E-02		3.982E-02	6.727E-02	8.032E-03	0.181
HG-203	8.175E-03		4.632E-02	6.934E-02	8.706E-03	0.118
BI-207	1.577E-02		6.381E-02	1.087E-01	9.982E-03	0.145
PB-210	4.446E+00		6.257E+00	9.893E+00	9.411E-01	0.449
PB-211	-4.884E-01		8.304E-01	1.249E+00	6.078E-01	-0.391
BI-212	2.544E+00	+	1.019E+00	1.375E+00	1.758E-01	1.850
RN-219	-2.466E-01		4.487E-01	7.048E-01	1.109E-01	-0.350
RA-223	-4.021E-01		8.152E-01	1.141E+00	2.180E-01	-0.352
AC-227	1.394E-01		2.751E-01	4.739E-01	6.971E-02	0.294
TH-227	1.394E-01		2.753E-01	4.739E-01	7.587E-02	0.294
PA-231	-4.912E-01		1.508E+00	2.482E+00	4.236E-01	-0.198
TH-231	-4.021E-01		8.152E-01	1.141E+00	2.180E-01	-0.352
PA-233	-6.421E-03		6.737E-02	1.116E-01	1.360E-02	-0.058
PA-234	4.880E-02		3.651E-01	5.959E-01	1.158E-01	0.082
PA-234M	5.259E+00		5.734E+00	1.002E+01	1.091E+00	0.525
NP-239	7.613E-03		3.968E-01	6.553E-01	5.493E-02	0.012
AM-241	3.488E-02		1.960E-01	3.039E-01	2.490E-02	0.115
CM-247	-2.538E-02		4.094E-02	6.409E-02	6.429E-03	-0.396
CF-249	3.939E-02		4.423E-02	7.622E-02	7.713E-03	0.517
CF-251	-1.556E-01		1.478E-01	2.249E-01	2.361E-02	-0.692

# VAX/VMS Nuclide Identification Report Generated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                     *
*****
*
*                                     DETECTOR DATA                          *
*
* Configuration      : SYS$SYSROOT:[ALPHA.ARCHIVE.GAMMA]G1202052273          *
* Acquisition date   : 5-MAR-2010 13:05:38 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 02:00:03.72              Half life ratio : 8.000      *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date        : 19-FEB-2010 12:00:00 Nuclide Library : SOLID          *
* Sample ID          : G1202052273              Analyst initials: MXR1        *
* Batch Number       : 957136                    Sample Quantity : 1.3254E+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  :              *
*****

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## Combined Activity-MDA Report

### ---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM )	Act Error	DLC (pCi/GRAM )	TPU
K-40	3.407E+01	3.779E+00	3.322E-01	1.928E+00
CD-109	2.540E+00	9.291E-01	6.910E-01	4.740E-01
SN-126	2.487E-01	9.096E-02	6.804E-02	4.641E-02
BA-137M	1.186E-01	5.252E-02	3.355E-02	2.680E-02
CS-137	1.253E-01	5.549E-02	3.544E-02	2.831E-02
TL-208	5.749E-01	1.046E-01	3.246E-02	5.339E-02
BI-211	4.371E+00	6.826E-01	1.782E-01	3.483E-01
PB-212	1.960E+00	2.730E-01	4.944E-02	1.393E-01
BI-214	1.308E+00	2.241E-01	6.320E-02	1.144E-01
PB-214	1.586E+00	2.621E-01	6.479E-02	1.337E-01
RA-224	5.179E+00	1.376E+00	5.302E-01	7.018E-01
RA-226	1.308E+00	2.241E-01	6.320E-02	1.144E-01
AC-228	2.093E+00	4.107E-01	1.313E-01	2.095E-01
RA-228	2.093E+00	4.107E-01	1.313E-01	2.095E-01
TH-228	1.960E+00	2.730E-01	4.944E-02	1.393E-01
TH-229	5.229E-02	5.622E-01	4.784E-01	2.869E-01
TH-232	2.093E+00	4.107E-01	1.313E-01	2.095E-01
TH-234	3.257E+00	2.660E+00	1.279E+00	1.357E+00
U-235	1.164E-01	2.172E-01	1.898E-01	1.108E-01
NP-237	7.421E-01	3.113E-01	2.059E-01	1.588E-01
U-238	3.257E+00	2.660E+00	1.279E+00	1.357E+00
ANH-511	1.958E-01	7.925E-02	2.573E-02	4.043E-02

### ---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU
BE-7	2.192E-02	3.604E-01	3.045E-01	1.839E-01 NOT IDENT.
NA-22	-1.237E-02	4.975E-02	4.092E-02	2.538E-02 NOT IDENT.
NA-24	-1.981E+04	2.596E+05	0.000E+00	1.324E+05 SHORT HLIF
SC-46	-3.197E-02	4.845E-02	3.707E-02	2.472E-02 FAIL ABUN
V-48	3.945E-02	8.283E-02	6.970E-02	4.226E-02 NOT IDENT.

CR-51	4.249E-02	4.122E-01	3.617E-01	2.103E-01	NOT IDENT.
MN-54	2.811E-02	4.320E-02	3.814E-02	2.204E-02	NOT IDENT.
CO-56	-2.979E-02	4.371E-02	3.442E-02	2.230E-02	NOT IDENT.
CO-57	1.309E-02	2.542E-02	2.278E-02	1.297E-02	NOT IDENT.
CO-58	-7.984E-03	4.196E-02	3.484E-02	2.141E-02	NOT IDENT.
FE-59	-5.137E-02	9.264E-02	7.502E-02	4.727E-02	NOT IDENT.
CO-60	-1.397E-02	4.565E-02	3.698E-02	2.329E-02	NOT IDENT.
ZN-65	-3.451E-03	1.146E-01	8.405E-02	5.845E-02	NOT IDENT.
SE-75	5.944E-03	4.724E-02	3.924E-02	2.410E-02	NOT IDENT.
SR-85	7.953E-02	4.419E-02	3.732E-02	2.254E-02	NOT IDENT.
Y-88	7.465E-03	3.638E-02	3.173E-02	1.856E-02	NOT IDENT.
Y-91	-1.373E+00	2.541E+01	2.146E+01	1.296E+01	NOT IDENT.
NB-94	2.836E-02	3.538E-02	3.205E-02	1.805E-02	NOT IDENT.
NB-95	1.731E-03	5.822E-02	4.278E-02	2.971E-02	NOT IDENT.
NB-95M	3.775E-02	1.461E-01	1.172E-01	7.452E-02	NOT IDENT.
ZR-95	1.640E-02	8.201E-02	7.082E-02	4.184E-02	NOT IDENT.
MO-99	-9.611E-02	1.084E+01	9.241E+00	5.532E+00	NOT IDENT.
TC-99M	-3.936E+14	2.059E+15	0.000E+00	1.051E+15	SHORT HLIF
RU-103	1.806E-02	4.353E-02	3.752E-02	2.221E-02	FAIL ABUN
RH-106	3.286E-02	3.278E-01	2.864E-01	1.672E-01	NOT IDENT.
RU-106	3.286E-02	3.278E-01	2.864E-01	1.672E-01	NOT IDENT.
AG-108M	1.963E-02	3.287E-02	2.896E-02	1.677E-02	NOT IDENT.
AG-110M	2.533E-02	4.229E-02	3.364E-02	2.158E-02	NOT IDENT.
SN-113	-2.449E-02	4.993E-02	4.149E-02	2.548E-02	NOT IDENT.
CD-115	7.960E+00	9.364E+00	8.265E+00	4.777E+00	NOT IDENT.
SN-117M	-1.859E-02	5.467E-02	4.635E-02	2.789E-02	NOT IDENT.
TE-123M	-7.483E-03	2.953E-02	2.513E-02	1.507E-02	NOT IDENT.
SB-124	-1.305E-02	7.851E-02	6.466E-02	4.005E-02	NOT IDENT.
SB-125	1.729E-02	9.514E-02	8.191E-02	4.854E-02	FAIL ABUN
TE-125M	1.147E+00	9.717E+00	8.641E+00	4.958E+00	NOT IDENT.
I-126	-3.752E-02	2.534E-01	1.866E-01	1.293E-01	NOT IDENT.
SB-126	3.431E-02	1.617E-01	1.282E-01	8.252E-02	NOT IDENT.
SB-127	4.919E-01	1.229E+00	1.086E+00	6.272E-01	NOT IDENT.
I-131	1.047E-01	1.111E-01	1.008E-01	5.666E-02	NOT IDENT.
TE-132	-5.278E-01	6.674E-01	5.300E-01	3.405E-01	NOT IDENT.
BA-133	-3.680E-02	5.111E-02	3.624E-02	2.608E-02	FAIL ABUN
I-133	7.436E+02	2.888E+03	0.000E+00	1.474E+03	SHORT HLIF
CS-134	1.485E-01	7.054E-02	5.277E-02	3.599E-02	FAIL ABUN
CS-135	3.935E-01	1.886E-01	1.611E-01	9.621E-02	NOT IDENT.
I-135	-1.452E+14	5.172E+14	0.000E+00	2.639E+14	SHORT HLIF
CS-136	5.749E-02	1.168E-01	1.044E-01	5.959E-02	NOT IDENT.
CE-139	-4.708E-03	3.178E-02	2.709E-02	1.621E-02	NOT IDENT.
BA-140	1.444E-01	2.796E-01	2.384E-01	1.426E-01	NOT IDENT.
LA-140	-7.654E-02	8.501E-02	6.257E-02	4.337E-02	FAIL ABUN
CE-141	-2.422E-02	6.376E-02	5.437E-02	3.253E-02	NOT IDENT.
CE-143	5.915E+02	1.775E+02	0.000E+00	9.054E+01	SHORT HLIF
CE-144	-1.425E-01	2.085E-01	1.759E-01	1.064E-01	NOT IDENT.
PM-144	1.061E-02	3.549E-02	3.113E-02	1.811E-02	NOT IDENT.
PR-144	7.896E-01	2.654E+00	2.328E+00	1.354E+00	NOT IDENT.
PM-146	-1.723E-03	4.701E-02	3.910E-02	2.399E-02	NOT IDENT.
ND-147	-6.639E-02	6.036E-01	4.984E-01	3.080E-01	FAIL ABUN
PM-149	-1.248E+01	6.666E+01	5.816E+01	3.401E+01	NOT IDENT.
EU-152	-2.709E-02	1.077E-01	9.207E-02	5.493E-02	FAIL ABUN
GD-153	7.551E-02	9.541E-02	7.869E-02	4.868E-02	NOT IDENT.
EU-154	-3.506E-02	1.411E-01	1.160E-01	7.197E-02	NOT IDENT.
EU-155	5.285E-02	1.118E-01	1.009E-01	5.704E-02	FAIL ABUN
TB-160	8.484E-02	1.454E-01	1.283E-01	7.416E-02	FAIL ABUN
HO-166M	4.651E-02	6.184E-02	5.598E-02	3.155E-02	FAIL ABUN
TA-182	-3.145E-02	2.186E-01	1.829E-01	1.115E-01	FAIL ABUN
IR-192	1.216E-02	3.902E-02	3.461E-02	1.991E-02	FAIL ABUN
HG-203	8.175E-03	4.539E-02	3.575E-02	2.316E-02	NOT IDENT.
BI-207	1.577E-02	6.253E-02	5.479E-02	3.190E-02	FAIL ABUN
PB-210	4.446E+00	6.132E+00	5.253E+00	3.129E+00	NOT IDENT.
PB-211	-4.884E-01	8.138E-01	6.400E-01	4.152E-01	NOT IDENT.
BI-212	2.544E+00	9.983E-01	6.973E-01	5.093E-01	FAIL ABUN
RN-219	-2.466E-01	4.397E-01	3.612E-01	2.244E-01	FAIL ABUN
RA-223	-4.021E-01	7.989E-01	5.868E-01	4.076E-01	FAIL ABUN
AC-227	1.394E-01	2.696E-01	2.447E-01	1.376E-01	FAIL ABUN
TH-227	1.394E-01	2.698E-01	2.447E-01	1.376E-01	FAIL ABUN
PA-231	-4.912E-01	1.478E+00	1.280E+00	7.541E-01	NOT IDENT.
TH-231	-4.021E-01	7.989E-01	5.868E-01	4.076E-01	FAIL ABUN
PA-233	-6.421E-03	6.602E-02	5.745E-02	3.368E-02	FAIL ABUN
PA-234	4.880E-02	3.578E-01	3.009E-01	1.825E-01	NOT IDENT.
PA-234M	5.259E+00	5.620E+00	5.055E+00	2.867E+00	NOT IDENT.
NP-239	7.613E-03	3.889E-01	3.428E-01	1.984E-01	FAIL ABUN
AM-241	3.488E-02	1.921E-01	1.607E-01	9.800E-02	NOT IDENT.
CM-247	-2.538E-02	4.012E-02	3.284E-02	2.047E-02	FAIL ABUN
CF-249	3.939E-02	4.335E-02	3.908E-02	2.212E-02	NOT IDENT.

CF-251

-1.556E-01

1.448E-01

1.169E-01

7.388E-02 NOT IDENT.

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 \* GEL Laboratories LLC \*  
 \* 2040 SAVAGE ROAD \*  
 \* CHARLESTON , SC 29417 \*  
 \* GAMMA SPECTROSCOPY BACKGROUND REPORT \*  
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ENERGY	MDA COUNTS
46.54	255.4146
49.72	285.7599
57.36	0.0000
59.54	280.8718
63.29	307.5052
63.29	307.5052
64.28	292.7161
67.75	332.5861
69.67	299.8700
70.83	347.4093
72.81	360.4187
72.87	360.4762
72.87	360.4762
74.82	362.3400
74.82	362.3400
74.82	362.3400
74.97	362.4818
77.11	388.4064
77.11	388.4064
77.11	388.4064
79.69	329.6556
79.80	347.4597
80.12	360.0110
80.19	360.0754
80.57	397.5496
81.00	418.7473
81.07	422.8293
81.07	422.8293
83.79	377.0343
83.79	377.0343
85.43	424.1136
86.48	366.5437
86.55	366.6043
86.79	366.8102
86.94	366.9415
87.57	367.4867
88.03	367.8824
88.47	368.2600
89.96	369.5332
91.11	370.5075
92.59	371.7534
92.59	371.7534
93.35	372.3894
94.67	310.4559
94.87	344.4765
94.87	344.4765
95.86	355.1346
97.43	283.9500
98.44	273.1890
99.53	302.3546
100.11	346.5209
103.18	312.3619
103.37	309.6107
105.31	323.3689
106.12	322.9432
109.28	302.7023
111.00	311.5283
111.76	295.4222
116.30	252.7935
117.23	265.0678
121.12	259.0751
121.78	266.3493
122.06	266.4869
123.07	291.8897
131.20	338.6395
133.52	318.6986
136.00	274.1937

136.47	278.4931
140.51	293.7505
140.51	0.0000
143.76	273.6506
144.24	267.6628
144.24	267.6628
145.44	307.5381
152.43	274.3452
153.25	278.8936
154.21	276.1602
154.21	276.1602
156.02	316.9527
158.56	287.5335
159.00	280.3225
162.66	269.1111
163.33	288.5468
165.86	284.2891
176.60	283.2996
177.52	309.7502
181.07	258.8595
184.41	277.6067
185.72	278.1008
193.51	248.7985
197.04	247.7175
205.31	228.3584
210.85	233.3448
215.65	237.5737
222.11	247.4761
227.38	246.6951
228.16	257.3514
228.18	257.3582
235.69	258.1795
235.96	255.4510
235.96	255.4510
238.63	198.8535
238.63	198.8535
240.99	199.3777
242.00	199.6018
244.70	197.0094
252.40	202.7728
252.80	210.9041
256.23	189.2532
256.23	189.2532
260.90	179.3721
264.66	162.8806
268.22	149.6744
269.46	172.7818
269.46	172.7818
271.23	142.1177
273.65	142.4676
276.40	175.8281
277.37	193.6011
277.60	193.6430
278.00	190.7852
279.20	183.6670
279.54	179.3215
280.46	150.0590
283.69	169.7261
284.31	175.3650
285.41	173.7055
285.90	163.6202
287.50	149.0631
293.27	0.0000
295.22	155.2103
295.96	141.8784
298.57	142.2286
299.98	143.9156
299.98	143.9156
300.09	143.9320
300.09	143.9320
300.13	143.9367
301.36	141.1010
302.85	121.7551
304.50	143.0195
304.50	143.0195
304.85	149.3407
308.46	136.9331
311.90	145.8907



316.51	168.3817
319.41	160.2352
320.08	174.6453
323.87	171.5984
323.87	171.5984
328.76	175.4142
333.37	169.9387
334.37	173.1789
334.37	173.1789
338.28	173.7613
338.28	173.7613
338.32	173.7668
338.32	173.7668
338.32	173.7668
340.48	156.9889
340.55	156.9988
344.28	159.8334
351.06	130.3577
351.93	130.4531
356.01	148.0156
364.49	109.0063
366.42	143.9114
383.85	126.7825
388.16	113.0715
388.63	118.1613
391.69	144.7565
400.66	115.1639
401.81	132.6045
402.40	132.6620
404.85	136.9934
410.95	110.9095
414.70	112.2433
423.72	108.8292
427.09	104.9345
427.87	102.9140
433.94	106.4871
453.88	103.7242
463.37	103.9606
468.07	128.2178
473.00	114.6990
476.78	114.9822
477.60	108.5916
487.02	96.2723
492.35	84.6591
497.08	93.6216
511.00	94.4339
514.00	75.6862
527.90	85.4219
529.87	0.0000
531.02	100.0305
537.26	82.5499
546.56	0.0000
563.25	93.3136
569.33	89.9967
569.50	90.0064
569.70	89.1068
583.19	88.8630
600.60	102.7588
602.73	94.1335
604.72	94.2328
609.32	90.1276
609.32	90.1276
610.33	90.1773
614.28	86.9486
618.01	81.2088
621.93	78.5695
621.93	78.5695
633.25	92.2052
635.95	79.1417
636.99	74.4714
645.85	87.1192
657.76	73.0355
661.66	86.8566
661.66	86.8566
664.57	0.0000
666.33	82.9131
666.50	82.9194
677.62	77.9230

685.70	80.1590
695.00	68.8766
696.49	72.8082
696.51	72.8082
697.00	69.9135
702.65	69.1262
706.68	76.0862
711.68	60.6210
720.70	75.7435
721.93	0.0000
722.78	76.9870
722.91	76.9908
723.31	78.6445
724.19	75.3976
727.33	86.6680
733.00	88.8684
735.93	80.0884
739.50	82.1996
747.24	79.5059
752.31	63.7484
753.82	59.8052
756.73	78.8438
763.94	66.7480
765.81	86.8444
766.42	93.5498
777.92	77.2319
778.90	80.6230
783.70	65.6427
785.37	73.7753
795.86	65.9855
801.95	59.9370
810.29	65.3672
810.76	66.4012
815.77	67.5646
818.51	61.4927
832.01	84.5104
834.85	72.2268
836.80	0.0000
846.77	73.6140
856.80	55.5208
860.56	70.8953
871.09	49.2066
873.19	62.8682
875.33	0.0000
879.36	48.3157
880.51	56.7448
883.24	50.4938
884.68	67.3625
889.28	74.8637
898.04	62.4210
911.20	63.7998
911.20	63.7998
911.20	63.7998
926.50	39.2144
937.49	48.3245
944.13	61.3613
946.00	64.6348
949.00	50.6868
962.29	54.1846
964.08	54.2188
966.15	54.2603
968.97	54.3152
968.97	54.3152
968.97	54.3152
983.53	58.2396
996.26	83.3662
1001.03	48.3452
1004.73	73.3447
1037.84	51.9303
1038.76	0.0000
1048.07	57.6961
1050.41	72.6426
1050.41	72.6426
1063.66	64.5443
1085.87	59.3676
1099.45	56.7896
1112.07	55.3923
1115.54	65.2400

1120.29	55.5370
1120.29	55.5370
1120.55	55.5417
1121.30	62.0919
1131.51	0.0000
1173.23	65.8750
1177.93	62.0885
1189.05	53.5386
1204.77	76.2861
1221.41	70.7695
1231.02	97.5820
1235.36	96.7200
1238.28	81.9868
1260.41	0.0000
1271.85	55.8542
1274.44	54.8971
1274.54	54.8993
1291.59	50.1506
1298.22	0.0000
1312.11	47.4131
1332.49	43.6229
1365.19	39.9172
1368.63	0.0000
1384.29	30.8630
1408.01	30.0207
1457.56	0.0000
1460.82	30.4325
1489.16	21.1377
1505.03	26.5259
1596.21	27.8896
1620.50	15.8936
1678.03	0.0000
1690.97	15.1998
1764.49	20.2734
1764.49	20.2734
1770.23	21.9899
1771.35	63.8109
1791.20	0.0000
1836.06	12.7411

TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G1202052273

Total Uranium Activity	9.7422E+00	ug/g
Total Uranium Counting Unc.	7.9132E+00	ug/g
Total Uranium Tpu	4.0373E-06	ug/g
Total Uranium Mda	3.8069E+00	ug/g

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*****
*
*                               GEL Laboratories LLC                               *
*                               2040 SAVAGE ROAD                               *
*                               CHARLESTON ,SC 29417                          *
*                               GROSS GAMMA REPORT                            *
*
*****
*
*  BATCH ID      : 957136                SAMPLE ID   : G1202052273            *
*  ANALYST       : MXR1                  DETECTOR    : GAM02                *
*  SAMPLE DATE   : 19-FEB-2010 12:00:00.00  COUNT TIME : 0 02:00:00.00      *
*  ANALYSIS DATE : 5-MAR-2010 13:05:38.92  SAMPLE ALQT: 132.540 GRAM        *
*
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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 1.089E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 1.586E+00
GROSS GAMMA MDA     (pCi/GRAM ) : 3.876E+00
GROSS GAMMA DLC     (pCi/GRAM ) : 1.881E+00

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VAX/VMS Nuclide Identification Report Generated 8-MAR-2010 10:47:12.53

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29414                          *
*****
Configuration   : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202052274.CNF;1
Sample date     : 26-FEB-2010 00:00:00 Acquisition date : 8-MAR-2010 09:46:42.
Sample ID      : G1202052274 Sample quantity   : 1.55440E+02 GRAM
Detector name   : GAM02 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:02.71 0.1%
Energy tolerance: 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity       : 5.00000
Batch ID       : 957136 Detector SN#       :
Matrix Spike ID : LCS ID                   : 1032-A
*****

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Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	59.18	2212	644	1.01	117.54	112	11	6.14E-01	3.1	
2	2	74.43	146	379	1.08	148.06	145	14	4.06E-02	23.6	1.11E+00
3	2	76.87*	234	365	1.09	152.95	145	14	6.49E-02	15.3	
4	0	87.73	1314	615	1.05	174.68	169	11	3.65E-01	4.6	
5	0	92.31*	77	342	0.92	183.84	180	8	2.14E-02	45.6	
6	0	121.78	213	374	0.99	242.81	238	10	5.93E-02	18.3	
7	0	238.29*	478	295	0.97	475.95	472	8	1.33E-01	7.8	
8	0	294.96*	162	187	0.97	589.36	586	9	4.49E-02	17.2	
9	0	338.22*	149	260	1.56	675.91	669	15	4.14E-02	25.2	
10	0	351.57*	219	212	1.18	702.64	699	10	6.09E-02	14.5	
11	0	582.88*	193	142	1.60	1165.52	1157	13	5.35E-02	14.7	
12	0	609.15*	160	143	1.11	1218.09	1211	14	4.45E-02	17.9	
13	0	661.21	2027	112	1.56	1322.29	1316	13	5.63E-01	2.5	
14	0	726.82	48	47	1.51	1453.58	1450	7	1.34E-02	27.6	
15	0	910.88*	69	90	1.31	1821.94	1820	7	1.92E-02	26.6	
16	0	968.26*	52	83	1.41	1936.78	1933	9	1.44E-02	34.9	
17	0	1172.58	1600	63	1.85	2345.73	2339	14	4.44E-01	2.7	
18	0	1331.81	1524	33	1.91	2664.42	2656	19	4.23E-01	2.7	
19	8	1405.61	18	4	2.39	2812.13	2808	12	5.05E-03	28.0	1.92E+00
20	8	1408.03	8	4	1.58	2816.99	2808	12	2.28E-03	55.9	
21	0	1460.30*	15	9	1.08	2921.60	2914	12	4.22E-03	52.9	
22	0	1763.90*	33	7	2.57	3529.32	3524	13	9.15E-03	24.7	

Flag: "\*" = Peak area was modified by background subtraction

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Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202052274.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,MINACT V2.8
Sample title      : MXR1
Sample date       : 26-FEB-2010 00:00:00 Acquisition date : 8-MAR-2010 09:46:42
Sample ID         : G1202052274 Sample quantity : 155.44 GRAM
Sample type       : SOLID Sample geometry :
Detector name     : GAMMA2 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:02.71 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

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## 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	+	1460.82	*	6.690E-01	7.106E-01	6.735E-01	6.403E-02	0.993
CO-57	+	122.06	*	1.982E-01	7.442E-02	6.647E-02	5.556E-03	2.982
		136.47		3.407E-01	3.377E-01	5.750E-01	5.424E-02	0.592
CO-60	+	1173.23		6.242E+00	6.064E-01	1.215E-01	9.787E-03	51.359
	+	1332.49	*	6.655E+00	7.175E-01	9.595E-02	8.940E-03	69.357
CD-109	+	88.03	*	3.298E+01	4.479E+00	2.158E+00	2.167E-01	15.282
SN-126		64.28		-2.247E-01	9.040E-01	1.482E+00	2.199E-01	-0.152
	+	86.94		1.350E+01	5.760E+00	8.955E-01	3.729E-01	15.076
	+	87.57	*	3.247E+00	4.409E-01	2.137E-01	2.136E-02	15.196
BA-137M	+	661.66	*	5.262E+00	5.229E-01	1.180E-01	1.017E-02	44.591
CS-137	+	661.66	*	5.559E+00	5.532E-01	1.247E-01	1.076E-02	44.591
TL-208		277.37		6.747E-01	6.952E-01	1.209E+00	1.856E-01	0.558
	+	583.19	*	4.778E-01	1.481E-01	1.095E-01	1.095E-02	4.365
		860.56		3.749E-01	7.092E-01	1.183E+00	1.247E-01	0.317
BI-211		72.87		6.013E+00	5.616E+00	8.937E+00	7.692E-01	0.673
	+	351.06	*	2.445E+00	7.626E-01	7.107E-01	8.199E-02	3.441
PB-212	+	74.82		1.701E+00	8.323E-01	9.638E-01	1.261E-01	1.765
	+	77.11		1.532E+00	4.895E-01	5.469E-01	4.891E-02	2.802
	+	238.63	*	1.188E+00	2.380E-01	2.113E-01	2.666E-02	5.623
		300.09		1.838E+00	1.691E+00	2.642E+00	3.593E-01	0.696
BI-214	+	609.32	*	7.682E-01	2.871E-01	2.096E-01	2.225E-02	3.664
		1120.29		1.306E+00	7.424E-01	1.346E+00	1.472E-01	0.970
	+	1764.49		1.154E+00	5.782E-01	4.238E-01	3.592E-02	2.724
PB-214	+	74.82		3.015E+00	1.465E+00	1.708E+00	2.018E-01	1.765
	+	77.11		2.701E+00	8.912E-01	9.641E-01	1.173E-01	2.802
		242.00		1.943E+00	7.397E-01	1.205E+00	1.586E-01	1.613
	+	295.22		1.112E+00	4.130E-01	4.380E-01	6.072E-02	2.540
	+	351.93	*	8.874E-01	2.811E-01	2.503E-01	3.196E-02	3.546
RA-226	+	609.32	*	7.682E-01	2.871E-01	2.096E-01	2.225E-02	3.664
		1120.29		1.306E+00	7.424E-01	1.346E+00	1.472E-01	0.970
	+	1764.49		1.154E+00	5.782E-01	4.238E-01	3.592E-02	2.724
AC-228	+	338.32		1.850E+00	1.218E+00	7.154E-01	3.034E-01	2.587
	+	911.20	*	8.237E-01	4.504E-01	5.607E-01	7.168E-02	1.469
	+	968.97		1.067E+00	7.900E-01	1.071E+00	2.660E-01	0.996

---- Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
RA-228	+	338.32		1.850E+00	1.218E+00	7.154E-01	3.034E-01	2.587
	+	911.20	*	8.237E-01	4.504E-01	5.607E-01	7.168E-02	1.469
	+	968.97		1.067E+00	7.900E-01	1.071E+00	2.660E-01	0.996
TH-228	+	74.82		1.701E+00	8.159E-01	9.638E-01	8.514E-02	1.765
	+	77.11		1.532E+00	4.895E-01	5.469E-01	4.891E-02	2.802
	+	238.63	*	1.188E+00	2.380E-01	2.113E-01	2.666E-02	5.623
		300.09		1.838E+00	2.022E+00	2.642E+00	1.633E+00	0.696
TH-232	+	338.32		1.850E+00	9.550E-01	7.154E-01	8.225E-02	2.587
	+	911.20	*	8.237E-01	4.504E-01	5.607E-01	7.168E-02	1.469
	+	968.97		1.067E+00	7.900E-01	1.071E+00	2.660E-01	0.996
NP-237	+	86.48	*	9.689E+00	2.420E+00	6.466E-01	1.498E-01	14.985
		95.86		-4.090E-01	1.496E+00	2.196E+00	5.316E-01	-0.186
AM-241	+	59.54	*	1.484E+01	1.524E+00	5.725E-01	4.690E-02	25.919

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7		477.60	*	4.726E-01	6.714E-01	1.128E+00	1.196E-01	0.419
NA-22		1274.54	*	-1.664E-02	6.309E-02	1.000E-01	8.868E-03	-0.166
NA-24		1368.63	*	-3.566E-03	6.309E-02	Half-Life too short		
SC-46		889.28	*	-1.450E-01	9.856E-02	1.404E-01	1.427E-02	-1.033
		1120.55		2.028E-01	1.187E-01	2.163E-01	1.868E-02	0.938
V-48		944.13		-1.238E+00	2.113E+00	3.272E+00	3.274E-01	-0.378
		983.53	*	8.174E-02	1.602E-01	2.663E-01	2.605E-02	0.307
		1312.11		-2.401E-02	1.003E-01	1.590E-01	1.456E-02	-0.151
CR-51		320.08	*	-7.587E-02	6.337E-01	1.047E+00	1.277E-01	-0.072
MN-54		834.85	*	9.716E-02	7.924E-02	1.399E-01	1.374E-02	0.694
CO-56		846.77	*	-1.158E-02	8.601E-02	1.387E-01	1.373E-02	-0.084
		1037.84		-2.615E-01	6.730E-01	1.093E+00	1.072E-01	-0.239
		1238.28		8.777E-02	1.062E-01	1.931E-01	1.703E-02	0.455
		1771.35		-8.203E-01	4.356E-01	4.190E-01	3.539E-02	-1.958
CO-58		810.76	*	-4.850E-02	8.501E-02	1.328E-01	1.286E-02	-0.365
FE-59		1099.45	*	7.205E-02	2.121E-01	3.614E-01	3.445E-02	0.199
		1291.59		-2.819E-02	1.660E-01	2.661E-01	2.691E-02	-0.106
ZN-65		1115.54	*	-3.099E-01	2.259E-01	3.386E-01	2.945E-02	-0.915
SE-75	+	121.12		1.020E+00	3.896E-01	4.619E-01	5.027E-02	2.209
		136.00		3.599E-02	6.400E-02	1.072E-01	9.492E-03	0.336
		264.66	*	-6.394E-02	7.897E-02	1.270E-01	1.553E-02	-0.503
		279.54		-5.453E-02	1.944E-01	3.216E-01	4.062E-02	-0.170
		400.66		-9.540E-02	5.330E-01	8.631E-01	1.054E-01	-0.111
SR-85		514.00	*	-1.261E-01	8.529E-02	1.231E-01	1.218E-02	-1.025
Y-88		898.04		-1.240E-01	1.109E-01	1.645E-01	1.687E-02	-0.754
		1836.06	*	-3.394E-02	5.226E-02	7.272E-02	5.932E-03	-0.467
Y-91		1204.77	*	-1.350E+01	2.969E+01	4.643E+01	3.855E+00	-0.291
NB-94		702.65	*	3.879E-02	6.409E-02	1.106E-01	9.863E-03	0.351
		871.09		3.158E-02	8.496E-02	1.417E-01	1.424E-02	0.223
NB-95		765.81	*	2.266E-02	8.352E-02	1.395E-01	1.306E-02	0.163
NB-95M		235.69	*	9.923E-02	2.265E-01	3.480E-01	4.407E-02	0.285



---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
ZR-95		724.19		1.647E-01	1.897E-01	2.954E-01	2.884E-02	0.558
		756.73	*	3.054E-02	1.488E-01	2.482E-01	2.517E-02	0.123
MO-99		140.51		-7.748E+00	1.086E+01	1.688E+01	4.029E+00	-0.459
		181.07		-8.114E+00	8.876E+00	1.333E+01	2.635E+00	-0.608
		366.42		2.280E+01	6.260E+01	1.051E+02	1.133E+01	0.217
		739.50	*	-4.396E+00	7.553E+00	1.182E+01	1.899E+00	-0.372
		777.92		-1.157E+01	2.402E+01	3.815E+01	3.604E+00	-0.303
TC-99M		140.51	*	-9.268E+04	2.402E+01	Half-Life too short		
RU-103		497.08	*	3.832E-02	7.765E-02	1.288E-01	1.911E-02	0.298
	+	610.33		7.293E+00	2.883E+00	3.400E+00	5.664E-01	2.145
RH-106		621.93	*	-8.931E-01	6.320E-01	9.284E-01	1.259E-01	-0.962
		1050.41		2.622E-01	6.138E+00	1.030E+01	9.570E-01	0.025
RU-106		621.93	*	-8.931E-01	6.256E-01	9.284E-01	8.431E-02	-0.962
		1050.41		2.622E-01	6.138E+00	1.030E+01	9.570E-01	0.025
AG-108M		433.94	*	3.887E-02	6.459E-02	1.086E-01	1.120E-02	0.358
		614.28		-5.872E-03	7.938E-02	1.147E-01	1.081E-02	-0.051
		722.91		2.481E-02	7.981E-02	1.182E-01	1.102E-02	0.210
AG-110M		657.76	*	3.007E-01	1.005E-01	1.724E-01	1.538E-02	1.744
		677.62		-6.666E-01	6.300E-01	9.590E-01	8.610E-02	-0.695
		706.68		-1.824E-02	4.101E-01	6.762E-01	6.211E-02	-0.027
		763.94		-1.831E-01	3.443E-01	5.422E-01	5.187E-02	-0.338
		884.68		2.382E-02	1.181E-01	1.946E-01	2.019E-02	0.122
		937.49		-2.677E-01	3.139E-01	4.758E-01	4.906E-02	-0.563
		1384.29		-9.062E-02	1.913E-01	2.807E-01	2.678E-02	-0.323
		1505.03		1.512E-01	4.297E-01	7.383E-01	6.811E-02	0.205
SN-113		391.69	*	8.305E-03	9.312E-02	1.534E-01	1.569E-02	0.054
CD-115		260.90		-1.650E+01	5.738E+01	9.534E+01	1.157E+01	-0.173
		492.35		-1.453E+00	1.956E+01	3.134E+01	3.129E+00	-0.046
		527.90	*	-1.477E+00	5.614E+00	8.812E+00	8.663E-01	-0.168
SN-117M		156.02		6.613E-01	2.879E+00	4.723E+00	4.589E-01	0.140
		158.56	*	8.906E-03	6.868E-02	1.121E-01	1.104E-02	0.079
TE-123M		159.00	*	-5.510E-03	4.343E-02	6.993E-02	6.938E-03	-0.079
SB-124		602.73		-3.345E-02	8.600E-02	1.208E-01	1.121E-02	-0.277
		645.85		4.728E-01	9.517E-01	1.638E+00	1.523E-01	0.289
		722.78		2.178E-01	7.579E-01	1.119E+00	1.035E-01	0.195
		1690.97	*	9.515E-02	9.667E-02	1.952E-01	1.780E-02	0.487
SB-125		427.87	*	1.582E-01	2.036E-01	3.449E-01	3.521E-02	0.459
		463.37		7.439E-01	6.336E-01	1.084E+00	1.150E-01	0.687
		600.60		-1.440E-01	3.876E-01	6.170E-01	6.101E-02	-0.233
		635.95		-1.670E-01	5.708E-01	9.331E-01	8.962E-02	-0.179
TE-125M		109.28	*	-4.007E+00	1.461E+01	2.390E+01	2.484E+00	-0.168
I-126		388.63		-3.856E-02	2.751E-01	4.476E-01	4.523E-02	-0.086
		666.33	*	-4.744E-02	3.869E-01	5.513E-01	4.769E-02	-0.086
		753.82		2.688E-01	3.053E+00	5.055E+00	4.691E-01	0.053
SB-126		414.70		-1.313E-01	1.245E-01	1.892E-01	1.902E-02	-0.694
		666.50		-6.339E-03	1.307E-01	1.877E-01	1.624E-02	-0.034
		695.00		-1.538E-03	1.175E-01	1.935E-01	1.715E-02	-0.008
		697.00		-1.810E-01	4.151E-01	6.654E-01	5.905E-02	-0.272
		720.70	*	-1.040E-01	2.356E-01	3.523E-01	3.187E-02	-0.295

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Activity Key (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
SB-127	856.80		-4.356E-01	9.061E-01	1.424E+00	1.419E-01	-0.306
	252.40		1.423E+00	3.379E+00	5.731E+00	2.409E+00	0.248
	473.00		-1.843E+00	1.724E+00	2.583E+00	3.297E-01	-0.714
I-131	685.70	*	-8.161E-01	1.143E+00	1.790E+00	1.842E-01	-0.456
	783.70		1.731E+00	3.075E+00	5.245E+00	6.246E-01	0.330
	80.19		-3.769E+00	5.277E+00	7.669E+00	7.088E-01	-0.491
	284.31		2.498E-01	1.770E+00	2.990E+00	3.781E-01	0.084
TE-132	364.49	*	4.900E-02	1.673E-01	2.797E-01	3.131E-02	0.175
	636.99		8.120E-01	2.175E+00	3.715E+00	3.480E-01	0.219
	49.72		-6.492E+00	2.047E+01	3.127E+01	3.115E+00	-0.208
	111.76		-9.188E+00	1.904E+01	3.074E+01	2.978E+00	-0.299
BA-133	116.30		5.779E+00	1.663E+01	2.665E+01	2.565E+00	0.217
	228.16	*	-1.130E-01	5.051E-01	7.892E-01	1.332E-01	-0.143
	81.00		-1.122E-01	1.673E-01	2.429E-01	3.863E-02	-0.462
	276.40		4.191E-01	6.509E-01	1.120E+00	1.867E-01	0.374
I-133	302.85		-1.143E-01	2.654E-01	4.323E-01	6.750E-02	-0.264
	356.01	*	-2.823E-02	9.130E-02	1.288E-01	1.893E-02	-0.219
	383.85		5.074E-02	5.843E-01	9.639E-01	1.312E-01	0.053
	529.87	*	5.096E-05	5.843E-01	Half-Life	too short	
CS-134	875.33		-8.905E-03	5.843E-01	Half-Life	too short	
	1298.22		3.514E-03	5.843E-01	Half-Life	too short	
	563.25		3.834E-02	7.086E-01	1.197E+00	1.159E-01	0.032
	569.33		-1.467E-01	3.682E-01	5.985E-01	5.786E-02	-0.245
CS-135	604.72		-2.408E-02	7.247E-02	1.022E-01	9.475E-03	-0.236
	795.86	*	1.120E-01	9.798E-02	1.727E-01	1.661E-02	0.649
	801.95		2.283E-02	8.502E-01	1.394E+00	1.346E-01	0.016
	1365.19		-1.521E+00	1.491E+00	1.847E+00	1.791E-01	-0.824
I-135	268.22	*	3.339E-01	2.993E-01	5.231E-01	6.920E-02	0.638
	546.56		-4.721E+04	2.993E-01	Half-Life	too short	
	836.80		1.644E+05	2.993E-01	Half-Life	too short	
	1038.76		-1.177E+05	2.993E-01	Half-Life	too short	
CS-136	1131.51		-7.870E+04	2.993E-01	Half-Life	too short	
	1260.41	*	-1.317E+04	2.993E-01	Half-Life	too short	
	1457.56		1.766E+05	2.993E-01	Half-Life	too short	
	1678.03		-1.459E+05	2.993E-01	Half-Life	too short	
CE-139	1791.20		9.246E+04	2.993E-01	Half-Life	too short	
	153.25		6.513E-01	1.062E+00	1.772E+00	1.963E-01	0.367
	176.60		2.049E-01	6.347E-01	1.038E+00	1.165E-01	0.197
	273.65		-9.430E-01	7.483E-01	1.166E+00	1.497E-01	-0.809
BA-140	340.55		2.084E-01	2.235E-01	3.468E-01	4.055E-02	0.601
	818.51		5.886E-02	1.328E-01	2.239E-01	2.177E-02	0.263
	1048.07	*	7.657E-02	2.059E-01	3.530E-01	3.405E-02	0.217
	1235.36		9.711E-01	5.528E-01	1.079E+00	1.263E-01	0.900
LA-140	165.86	*	1.681E-02	4.652E-02	7.654E-02	7.852E-03	0.220
	162.66		-2.714E-01	1.023E+00	1.634E+00	1.729E-01	-0.166
	304.85		-9.591E-01	1.919E+00	3.079E+00	9.385E-01	-0.311
	423.72		3.264E-01	3.202E+00	5.246E+00	1.747E+00	0.062
LA-140	537.26	*	-1.479E-01	4.498E-01	6.974E-01	2.387E-01	-0.212
	328.76		2.074E-01	4.338E-01	7.369E-01	8.892E-02	0.281

----- Non-Identified Nuclides -----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
		487.02		4.479E-02	2.355E-01	3.841E-01	4.019E-02	0.117
		815.77		-2.088E-01	5.748E-01	9.126E-01	9.681E-02	-0.229
		1596.21	*	-1.031E-01	9.942E-02	1.322E-01	1.196E-02	-0.780
CE-141		145.44	*	-2.259E-02	9.338E-02	1.504E-01	1.405E-02	-0.150
CE-143		57.36		6.471E+02	3.006E+02	4.894E+02	4.895E+01	1.322
		293.27	*	5.702E+01	2.845E+01	4.231E+01	9.834E+00	1.348
		664.57		9.999E+02	4.170E+02	5.272E+02	1.587E+02	1.897
		721.93		-1.156E+02	2.756E+02	3.737E+02	1.055E+02	-0.309
CE-144		80.12		-3.010E+00	4.245E+00	6.171E+00	5.685E-01	-0.488
		133.52	*	-2.791E-01	3.281E-01	5.117E-01	7.844E-02	-0.546
PM-144		476.78		1.318E-01	1.477E-01	2.500E-01	2.669E-02	0.527
		618.01		6.164E-02	6.409E-02	1.134E-01	1.061E-02	0.543
		696.49	*	3.794E-03	6.796E-02	1.130E-01	1.003E-02	0.034
PR-144		696.51	*	2.460E-01	5.071E+00	8.427E+00	7.476E-01	0.029
		1489.16		1.039E+00	1.570E+01	2.584E+01	2.390E+00	0.040
PM-146		453.88	*	-4.359E-02	1.009E-01	1.593E-01	1.880E-02	-0.274
		633.25		1.267E+00	2.876E+00	4.876E+00	1.866E+00	0.260
		735.93		4.110E-01	2.969E-01	5.034E-01	1.419E-01	0.817
		747.24		-6.386E-02	2.014E-01	3.233E-01	4.835E-02	-0.198
ND-147	+	91.11		4.612E-01	4.232E-01	5.369E-01	5.531E-02	0.859
		319.41		-2.003E+00	4.804E+00	7.802E+00	9.266E-01	-0.257
		531.02	*	2.907E-01	8.745E-01	1.427E+00	2.236E-01	0.204
PM-149		285.90	*	1.945E+00	3.815E+01	6.411E+01	1.145E+01	0.030
EU-152	+	121.78		5.771E-01	2.185E-01	2.634E-01	2.548E-02	2.191
		244.70		-1.359E+00	6.016E-01	8.731E-01	1.036E-01	-1.557
		344.28	*	-6.939E-02	2.057E-01	2.904E-01	3.413E-02	-0.239
		778.90		-1.147E-01	5.568E-01	9.039E-01	8.543E-02	-0.127
		964.08		8.776E-02	8.399E-01	1.177E+00	1.165E-01	0.075
		1085.87		1.735E-01	9.164E-01	1.550E+00	1.391E-01	0.112
		1112.07		3.667E-01	7.120E-01	1.227E+00	1.071E-01	0.299
	+	1408.01		1.781E-01	1.999E-01	5.147E-01	4.796E-02	0.346
GD-153		69.67		-1.393E+00	2.782E+00	4.616E+00	3.867E-01	-0.302
		97.43	*	-5.242E-02	1.268E-01	2.070E-01	1.881E-02	-0.253
		103.18		-8.197E-02	1.667E-01	2.705E-01	2.368E-02	-0.303
EU-154	+	123.07		4.078E-01	1.561E-01	1.699E-01	1.897E-02	2.400
		723.31		9.419E-02	3.676E-01	5.408E-01	5.353E-02	0.174
		873.19		1.755E-01	6.858E-01	1.135E+00	1.473E-01	0.155
		996.26		2.114E-01	8.629E-01	1.411E+00	2.544E-01	0.150
		1004.73		-7.907E-02	5.012E-01	8.322E-01	1.033E-01	-0.095
		1274.44	*	-4.725E-02	1.792E-01	2.841E-01	3.284E-02	-0.166
EU-155	+	86.55		3.930E+00	5.358E-01	4.937E-01	4.914E-02	7.960
		105.31	*	7.690E-02	1.657E-01	2.804E-01	2.458E-02	0.274
TB-160	+	86.79		9.983E+00	1.356E+00	1.366E+00	1.353E-01	7.308
		197.04		4.539E-01	9.611E-01	1.570E+00	1.714E-01	0.289
		215.65		-1.374E+00	1.317E+00	1.959E+00	2.216E-01	-0.701
		298.57		9.639E-02	2.300E-01	3.474E-01	4.237E-02	0.277
		879.36	*	2.843E-01	3.186E-01	5.494E-01	5.552E-02	0.517
		962.29		2.055E-01	1.423E+00	2.099E+00	2.080E-01	0.098
		966.15		8.298E-01	5.772E-01	8.942E-01	8.840E-02	0.928

----- Non-Identified Nuclides -----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
HO-166M	1177.93			-2.233E-01	7.158E-01	9.742E-01	7.882E-02	-0.229
	1271.85			1.711E-01	8.985E-01	1.519E+00	1.342E-01	0.113
	80.57			-3.899E-01	4.706E-01	6.792E-01	6.285E-02	-0.574
	184.41			4.614E-02	6.228E-02	1.080E-01	1.149E-02	0.427
	280.46			-7.208E-02	1.553E-01	2.542E-01	3.149E-02	-0.284
	410.95			2.676E-01	5.273E-01	8.842E-01	8.886E-02	0.303
	711.68	*		3.933E-02	1.206E-01	2.041E-01	1.833E-02	0.193
TA-182	752.31			1.313E-01	5.783E-01	9.674E-01	8.967E-02	0.136
	810.29			-5.924E-02	1.316E-01	2.075E-01	2.005E-02	-0.285
	67.75			-7.336E-02	1.781E-01	2.970E-01	2.448E-02	-0.247
	100.11			-4.108E-02	2.581E-01	4.264E-01	3.801E-02	-0.096
	152.43			3.741E-02	5.454E-01	8.891E-01	8.475E-02	0.042
	222.11			-6.787E-01	6.374E-01	9.439E-01	1.080E-01	-0.719
	1121.30			5.149E-01	3.222E-01	5.859E-01	5.057E-02	0.879
IR-192	1189.05			8.226E-02	4.734E-01	7.977E-01	6.524E-02	0.103
	1221.41	*		-1.221E-02	2.610E-01	4.285E-01	3.614E-02	-0.029
	1231.02			-9.176E-01	5.800E-01	7.261E-01	6.181E-02	-1.264
	295.96			7.868E-01	2.877E-01	4.087E-01	5.017E-02	1.925
	308.46			-9.209E-02	1.735E-01	2.805E-01	3.391E-02	-0.328
	316.51	*		1.520E-02	6.182E-02	1.042E-01	1.244E-02	0.146
	468.07			1.092E-01	1.515E-01	2.543E-01	2.693E-02	0.429
HG-203	70.83			1.699E+00	2.172E+00	3.415E+00	5.455E-01	0.498
	72.87			1.395E+00	1.316E+00	2.074E+00	3.220E-01	0.673
	279.20	*		2.499E-02	6.498E-02	1.110E-01	1.394E-02	0.225
BI-207	72.81			3.032E-01	3.216E-01	5.096E-01	4.384E-02	0.595
	74.97			4.901E-01	2.350E-01	3.325E-01	2.915E-02	1.474
	569.70			-2.547E-02	5.668E-02	9.172E-02	8.767E-03	-0.278
PB-210	1063.66	*		4.282E-02	1.242E-01	2.125E-01	1.951E-02	0.201
	1770.23			4.027E-02	6.775E-01	9.821E-01	8.299E-02	0.041
	46.54	*		3.561E+00	1.105E+01	1.744E+01	1.659E+00	0.204
PB-211	404.85	*		-4.527E-02	1.541E+00	2.515E+00	1.224E+00	-0.018
	427.09			1.722E+00	3.459E+00	5.639E+00	2.626E+00	0.305
	832.01			-1.965E+00	2.486E+00	3.454E+00	1.799E+00	-0.569
BI-212	727.33	*		1.830E+00	1.036E+00	1.950E+00	2.494E-01	0.938
	785.37			-3.411E+00	6.900E+00	1.089E+01	1.034E+00	-0.313
	1620.50			6.689E-01	3.489E+00	6.034E+00	5.419E-01	0.111
RN-219	271.23			4.683E-01	4.479E-01	7.807E-01	1.053E-01	0.600
	401.81	*		3.465E-02	8.657E-01	1.419E+00	2.233E-01	0.024
	81.07			-1.062E-01	3.705E-01	5.517E-01	5.131E-02	-0.193
RA-223	83.79			1.051E-01	2.239E-01	3.458E-01	3.311E-02	0.304
	94.87			-1.311E-01	7.102E-01	1.051E+00	9.765E-02	-0.125
	144.24			4.933E-01	1.102E+00	1.832E+00	1.849E-01	0.269
RA-224	154.21			9.156E-02	6.378E-01	1.043E+00	1.081E-01	0.088
	269.46			4.105E-01	3.486E-01	6.106E-01	7.563E-02	0.672
	323.87	*		-2.469E-01	1.243E+00	2.043E+00	3.904E-01	-0.121
AC-227	338.28			7.343E+00	3.840E+00	3.746E+00	5.345E-01	1.960
	240.99	*		2.821E+00	1.361E+00	2.203E+00	2.600E-01	1.281
	79.69			-9.970E-01	2.134E+00	3.139E+00	5.499E-01	-0.318
	235.96			4.180E-01	3.029E-01	4.818E-01	6.278E-02	0.868

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
TH-227	256.23	*		2.394E-01	4.630E-01	7.979E-01	1.174E-01	0.300
	299.98			2.115E+00	1.872E+00	2.920E+00	4.480E-01	0.724
	304.50			-8.352E-01	2.945E+00	4.834E+00	8.987E-01	-0.173
	334.37			2.967E+00	3.569E+00	5.476E+00	9.528E-01	0.542
	79.80			-1.919E+00	2.860E+00	4.130E+00	9.088E-01	-0.465
	235.96			4.180E-01	3.026E-01	4.818E-01	6.056E-02	0.868
TH-229	256.23	*		2.394E-01	4.632E-01	7.979E-01	1.277E-01	0.300
	299.98			2.115E+00	1.872E+00	2.920E+00	4.480E-01	0.724
	304.50			-8.352E-01	2.945E+00	4.834E+00	8.987E-01	-0.173
	334.37			2.967E+00	3.569E+00	5.476E+00	9.528E-01	0.542
	85.43			3.449E-01	3.938E-01	6.154E-01	6.001E-02	0.561
	88.47			5.006E+00	6.798E-01	6.723E-01	6.711E-02	7.446
PA-231	193.51	*		-2.343E-01	9.645E-01	1.525E+00	1.653E-01	-0.154
	210.85			-5.256E-01	1.654E+00	2.589E+00	2.903E-01	-0.203
	283.69	*		-5.475E-01	2.600E+00	4.310E+00	7.356E-01	-0.127
TH-231	301.36			6.593E-01	1.081E+00	1.796E+00	2.671E-01	0.367
	81.07			-1.062E-01	3.705E-01	5.517E-01	5.131E-02	-0.193
	83.79			1.051E-01	2.239E-01	3.458E-01	3.311E-02	0.304
PA-233	94.87			-1.311E-01	7.102E-01	1.051E+00	9.765E-02	-0.125
	144.24			4.933E-01	1.102E+00	1.832E+00	1.849E-01	0.269
	154.21			9.156E-02	6.378E-01	1.043E+00	1.081E-01	0.088
	269.46			4.105E-01	3.486E-01	6.106E-01	7.563E-02	0.672
	323.87	*		-2.469E-01	1.243E+00	2.043E+00	3.904E-01	-0.121
	338.28			7.343E+00	3.840E+00	3.746E+00	5.345E-01	1.960
	300.13			8.994E-01	8.462E-01	1.313E+00	2.250E-01	0.685
	311.90	*		7.274E-02	1.236E-01	2.118E-01	2.580E-02	0.343
	340.48			1.234E+00	1.260E+00	1.915E+00	4.830E-01	0.644
	94.67			1.000E-01	2.550E-01	3.901E-01	5.028E-02	0.256
PA-234	98.44			4.024E-02	1.376E-01	2.289E-01	1.278E-01	0.176
	111.00			6.442E-02	2.822E-01	4.718E-01	5.659E-02	0.137
	131.20			-3.141E-02	1.722E-01	2.801E-01	2.413E-02	-0.112
	569.50			-2.414E-01	5.071E-01	8.191E-01	7.830E-02	-0.295
	733.00			-2.785E-01	7.657E-01	1.187E+00	2.660E-01	-0.235
	880.51			1.870E-02	6.807E-01	1.107E+00	1.120E-01	0.017
	883.24			9.910E-02	6.942E-01	1.134E+00	7.644E-01	0.087
	926.50			-1.588E-01	4.811E-01	7.567E-01	1.954E-01	-0.210
	946.00	*		1.375E-01	8.824E-01	1.437E+00	2.793E-01	0.096
	949.00			7.506E-01	1.331E+00	2.219E+00	2.215E-01	0.338
PA-234M	766.42			3.775E+00	2.388E+01	3.944E+01	2.006E+01	0.096
	1001.03	*		-1.008E+01	1.161E+01	1.749E+01	1.903E+00	-0.576
TH-234	63.29	*		3.924E-01	2.598E+00	4.109E+00	7.412E-01	0.096
	92.59			1.575E+00	1.479E+00	1.924E+00	4.317E-01	0.819
U-235	89.96			1.522E+00	1.683E+00	2.110E+00	5.284E-01	0.722
	93.35			1.190E+00	1.120E+00	1.386E+00	3.245E-01	0.858
U-238	143.76	*		1.704E-01	3.270E-01	5.438E-01	9.359E-02	0.313
	163.33			-2.016E-01	7.091E-01	1.130E+00	2.116E-01	-0.178
	185.72			6.771E-02	8.047E-02	1.395E-01	1.489E-02	0.485
	205.31			-3.624E-01	8.628E-01	1.341E+00	2.608E-01	-0.270
	63.29	*		3.924E-01	2.598E+00	4.109E+00	7.412E-01	0.096

---- Non-Identified Nuclides ----

Nuclide	Line Ided	Energy (keV)	Activity Key	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
	+	92.59		1.575E+00	1.444E+00	1.924E+00	1.827E-01	0.819
NP-239		99.53		1.009E-02	2.467E-01	4.109E-01	3.677E-02	0.025
		103.37		-4.334E-02	1.541E-01	2.527E-01	2.210E-02	-0.172
		106.12		1.164E-01	1.321E-01	2.269E-01	1.959E-02	0.513
	*	117.23		-5.485E-01	7.257E-01	1.020E+00	8.548E-02	-0.538
		228.18		-9.477E-02	4.167E-01	6.511E-01	7.528E-02	-0.146
		277.60		3.092E-01	3.191E-01	5.566E-01	6.891E-02	0.556
CM-247		278.00		1.370E+00	1.361E+00	2.376E+00	2.943E-01	0.577
		287.50		1.132E+00	2.263E+00	3.879E+00	4.780E-01	0.292
	*	402.40		-1.613E-02	8.068E-02	1.305E-01	1.309E-02	-0.124
CF-249		252.80		7.132E-01	1.749E+00	3.007E+00	3.610E-01	0.237
		333.37		2.511E-01	3.713E-01	5.678E-01	6.588E-02	0.442
	*	388.16		1.372E-03	8.469E-02	1.390E-01	1.407E-02	0.010
CF-251		177.52		7.595E-02	2.114E-01	3.464E-01	3.636E-02	0.219
		227.38		-2.945E-01	6.817E-01	1.053E+00	1.216E-01	-0.280
		285.41		2.989E-01	3.984E+00	6.703E+00	8.275E-01	0.045
ANH-511		511.00	*	3.801E-02	7.711E-02	1.361E-01	1.349E-02	0.279

# VAX/VMS Nuclide Identification Report Generated

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*****
*                               GEL Laboratories LLC                      *
*                               2040 Savage Road                        *
*                               Charleston, SC 29414                    *
*****
*                               DETECTOR DATA                          *
*                               *                                         *
* Configuration      : DKA300:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202052274 *
* Acquisition date   : 8-MAR-2010 09:46:42 Detector SN#      :          *
* Detector ID        : GAM02                                           *
* Geometry           : CAN                                             *
* Elapsed live time  : 0 01:00:00.00 Abundance limit : 75.000         *
* Elapsed real time  : 0 01:00:02.71 Half life ratio  : 8.000         *
*****
*                               SAMPLE DATA                             *
*                               *                                         *
* Sample date        : 26-FEB-2010 00:00:00 Nuclide Library : SOLID    *
* Sample ID          : G1202052274 Analyst initials: MXR1           *
* Batch Number       : 957136 Sample Quantity : 1.5544E+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                   :          *
*****

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## Combined Activity-MDA Report

### ---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM )	Act error	MDA (pCi/GRAM )	
K-40	6.690E-01	6.964E-01	6.792E-01	0.000E+00
CO-57	1.982E-01	7.293E-02	7.159E-02	0.000E+00
CO-60	6.655E+00	7.031E-01	9.702E-02	0.000E+00
CD-109	3.298E+01	4.389E+00	2.343E+00	0.000E+00
SN-126	3.247E+00	4.321E-01	2.320E-01	0.000E+00
BA-137M	5.262E+00	5.125E-01	1.217E-01	0.000E+00
CS-137	5.559E+00	5.422E-01	1.285E-01	0.000E+00
TL-208	4.778E-01	1.451E-01	1.132E-01	0.000E+00
BI-211	2.445E+00	7.473E-01	7.451E-01	0.000E+00
PB-212	1.188E+00	2.332E-01	2.237E-01	0.000E+00
BI-214	7.682E-01	2.814E-01	2.166E-01	0.000E+00
PB-214	8.874E-01	2.754E-01	2.624E-01	0.000E+00
RA-226	7.682E-01	2.814E-01	2.166E-01	0.000E+00
AC-228	8.237E-01	4.414E-01	5.730E-01	0.000E+00
RA-228	8.237E-01	4.414E-01	5.730E-01	0.000E+00
TH-228	1.188E+00	2.332E-01	2.237E-01	0.000E+00
TH-232	8.237E-01	4.414E-01	5.730E-01	0.000E+00
NP-237	9.689E+00	2.372E+00	7.023E-01	0.000E+00
AM-241	1.484E+01	1.494E+00	6.275E-01	0.000E+00

### ---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM )	K.L. Act error ) Ided	MDA (pCi/GRAM )	
BE-7	4.726E-01	6.580E-01	1.173E+00	0.000E+00 NOT IDENT.
NA-22	-1.664E-02	6.183E-02	1.013E-01	0.000E+00 NOT IDENT.
NA-24	0.000E+00	4.475E+03	0.000E+00	0.000E+00 SHORT HLIF
SC-46	-1.450E-01	9.659E-02	1.435E-01	0.000E+00 NOT IDENT.
V-48	8.174E-02	1.570E-01	2.716E-01	0.000E+00 NOT IDENT.
CR-51	-7.587E-02	6.210E-01	1.100E+00	0.000E+00 NOT IDENT.
MN-54	9.716E-02	7.766E-02	1.433E-01	0.000E+00 NOT IDENT.
CO-56	-1.158E-02	8.429E-02	1.420E-01	0.000E+00 NOT IDENT.

CO-58	-4.850E-02	8.331E-02	1.361E-01	0.000E+00	NOT IDENT.
FE-59	7.205E-02	2.079E-01	3.674E-01	0.000E+00	NOT IDENT.
ZN-65	-3.099E-01	2.213E-01	3.441E-01	0.000E+00	NOT IDENT.
SE-75	-6.394E-02	7.739E-02	1.342E-01	0.000E+00	FAIL ABUN
SR-85	-1.261E-01	8.358E-02	1.277E-01	0.000E+00	NOT IDENT.
Y-88	-3.394E-02	5.122E-02	7.287E-02	0.000E+00	NOT IDENT.
Y-91	-1.350E+01	2.910E+01	4.708E+01	0.000E+00	NOT IDENT.
NB-94	3.879E-02	6.281E-02	1.138E-01	0.000E+00	NOT IDENT.
NB-95	2.266E-02	8.185E-02	1.432E-01	0.000E+00	NOT IDENT.
NB-95M	9.923E-02	2.220E-01	3.686E-01	0.000E+00	NOT IDENT.
ZR-95	3.054E-02	1.458E-01	2.550E-01	0.000E+00	NOT IDENT.
MO-99	-4.396E+00	7.402E+00	1.215E+01	0.000E+00	NOT IDENT.
TC-99M	0.000E+00	1.269E+11	0.000E+00	0.000E+00	SHORT HLIF
RU-103	3.832E-02	7.610E-02	1.338E-01	0.000E+00	FAIL ABUN
RH-106	-8.931E-01	6.194E-01	9.587E-01	0.000E+00	NOT IDENT.
RU-106	-8.931E-01	6.131E-01	9.587E-01	0.000E+00	NOT IDENT.
AG-108M	3.887E-02	6.330E-02	1.132E-01	0.000E+00	NOT IDENT.
AG-110M	0.000E+00	9.852E-02	1.778E-01	0.000E+00	NOT IDENT.
SN-113	8.305E-03	9.125E-02	1.603E-01	0.000E+00	NOT IDENT.
CD-115	-1.477E+00	5.502E+00	9.140E+00	0.000E+00	NOT IDENT.
SN-117M	8.906E-03	6.731E-02	1.199E-01	0.000E+00	NOT IDENT.
TE-123M	-5.510E-03	4.256E-02	7.482E-02	0.000E+00	NOT IDENT.
SB-124	9.515E-02	9.473E-02	1.961E-01	0.000E+00	NOT IDENT.
SB-125	1.582E-01	1.995E-01	3.597E-01	0.000E+00	NOT IDENT.
TE-125M	-4.007E+00	1.432E+01	2.581E+01	0.000E+00	NOT IDENT.
I-126	-4.744E-02	3.791E-01	5.682E-01	0.000E+00	NOT IDENT.
SB-126	-1.040E-01	2.309E-01	3.624E-01	0.000E+00	NOT IDENT.
SB-127	-8.161E-01	1.121E+00	1.844E+00	0.000E+00	NOT IDENT.
I-131	4.900E-02	1.639E-01	2.930E-01	0.000E+00	NOT IDENT.
TE-132	-1.130E-01	4.950E-01	8.367E-01	0.000E+00	NOT IDENT.
BA-133	-2.823E-02	8.947E-02	1.350E-01	0.000E+00	NOT IDENT.
I-133	0.000E+00	2.747E+02	0.000E+00	0.000E+00	SHORT HLIF
CS-134	1.120E-01	9.602E-02	1.771E-01	0.000E+00	NOT IDENT.
CS-135	3.339E-01	2.933E-01	5.523E-01	0.000E+00	NOT IDENT.
I-135	0.000E+00	5.467E+10	0.000E+00	0.000E+00	SHORT HLIF
CS-136	7.657E-02	2.018E-01	3.594E-01	0.000E+00	NOT IDENT.
CE-139	1.681E-02	4.559E-02	8.180E-02	0.000E+00	NOT IDENT.
BA-140	-1.479E-01	4.408E-01	7.230E-01	0.000E+00	NOT IDENT.
LA-140	-1.031E-01	9.743E-02	1.330E-01	0.000E+00	NOT IDENT.
CE-141	-2.259E-02	9.151E-02	1.613E-01	0.000E+00	NOT IDENT.
CE-143	0.000E+00	2.788E+01	4.457E+01	0.000E+00	NOT IDENT.
CE-144	-2.791E-01	3.215E-01	5.499E-01	0.000E+00	NOT IDENT.
PM-144	3.794E-03	6.660E-02	1.163E-01	0.000E+00	NOT IDENT.
PR-144	2.460E-01	4.969E+00	8.675E+00	0.000E+00	NOT IDENT.
PM-146	-4.359E-02	9.892E-02	1.659E-01	0.000E+00	NOT IDENT.
ND-147	2.907E-01	8.570E-01	1.480E+00	0.000E+00	FAIL ABUN
PM-149	1.945E+00	3.739E+01	6.757E+01	0.000E+00	NOT IDENT.
EU-152	-6.939E-02	2.016E-01	3.047E-01	0.000E+00	FAIL ABUN
GD-153	-5.242E-02	1.242E-01	2.242E-01	0.000E+00	NOT IDENT.
EU-154	-4.725E-02	1.756E-01	2.876E-01	0.000E+00	FAIL ABUN
EU-155	7.690E-02	1.624E-01	3.031E-01	0.000E+00	FAIL ABUN
TB-160	2.843E-01	3.122E-01	5.620E-01	0.000E+00	FAIL ABUN
HO-166M	3.933E-02	1.182E-01	2.100E-01	0.000E+00	NOT IDENT.
TA-182	-1.221E-02	2.557E-01	4.343E-01	0.000E+00	NOT IDENT.
IR-192	1.520E-02	6.059E-02	1.096E-01	0.000E+00	FAIL ABUN
HG-203	2.499E-02	6.368E-02	1.171E-01	0.000E+00	NOT IDENT.
BI-207	4.282E-02	1.217E-01	2.163E-01	0.000E+00	FAIL ABUN
PB-210	3.561E+00	1.083E+01	1.922E+01	0.000E+00	NOT IDENT.
PB-211	-4.527E-02	1.510E+00	2.627E+00	0.000E+00	NOT IDENT.
BI-212	1.830E+00	1.015E+00	2.005E+00	0.000E+00	FAIL ABUN
RN-219	3.465E-02	8.483E-01	1.483E+00	0.000E+00	NOT IDENT.
RA-223	-2.469E-01	1.219E+00	2.147E+00	0.000E+00	FAIL ABUN
RA-224	0.000E+00	1.333E+00	2.332E+00	0.000E+00	NOT IDENT.
AC-227	2.394E-01	4.537E-01	8.434E-01	0.000E+00	NOT IDENT.
TH-227	2.394E-01	4.540E-01	8.434E-01	0.000E+00	NOT IDENT.
TH-229	-2.343E-01	9.452E-01	1.623E+00	0.000E+00	FAIL ABUN
PA-231	-5.475E-01	2.548E+00	4.544E+00	0.000E+00	NOT IDENT.
TH-231	-2.469E-01	1.219E+00	2.147E+00	0.000E+00	FAIL ABUN
PA-233	7.274E-02	1.212E-01	2.227E-01	0.000E+00	NOT IDENT.
PA-234	1.375E-01	8.648E-01	1.467E+00	0.000E+00	NOT IDENT.
PA-234M	-1.008E+01	1.138E+01	1.783E+01	0.000E+00	NOT IDENT.
TH-234	3.924E-01	2.546E+00	4.497E+00	0.000E+00	FAIL ABUN
U-235	1.704E-01	3.204E-01	5.833E-01	0.000E+00	FAIL ABUN
U-238	3.924E-01	2.546E+00	4.497E+00	0.000E+00	FAIL ABUN
NP-239	-5.485E-01	7.112E-01	1.099E+00	0.000E+00	NOT IDENT.
CM-247	-1.613E-02	7.906E-02	1.363E-01	0.000E+00	NOT IDENT.
CF-249	1.372E-03	8.300E-02	1.454E-01	0.000E+00	NOT IDENT.
CF-251	7.595E-02	2.071E-01	3.696E-01	0.000E+00	NOT IDENT.



ANH-511	3.801E-02	7.557E-02	1.413E-01	0.000E+00 NOT IDENT.
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*****
*                               GEL Laboratories LLC                      *
*                               2040 Savage Road                        *
*                               Charleston, SC 29414                    *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202052274.CNF;1
Sample date       : 26-FEB-2010 00:00:00 Acquisition date : 8-MAR-2010 09:46:42.
Sample ID        : G1202052274 Sample quantity : 1.55440E+02 GRAM
Detector name    : GAM02 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:02.71 0.1%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit  : 75.00000 Sensitivity : 5.00000
Batch ID        : 957136 Detector SN# :
Matrix Spike ID : LCS ID : 1032-A
*****

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## Nuclide Line Activity Report

## Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	15	10.66*	1.028E+00	6.690E-01	6.690E-01	106.22
CO-57	122.06	213	85.60*	6.236E+00	1.930E-01	1.982E-01	37.55
	136.47	-----	10.68	6.129E+00	-----	Line Not Found	-----
CO-60	1173.23	1600	99.85	1.245E+00	6.218E+00	6.242E+00	9.72
	1332.49	1524	99.98*	1.111E+00	6.630E+00	6.655E+00	10.78
CD-109	88.03	1314	3.70*	5.283E+00	3.247E+01	3.298E+01	13.58
SN-126	64.28	-----	9.60	2.716E+00	-----	Line Not Found	-----
	86.94	1314	8.90	5.283E+00	1.350E+01	1.350E+01	42.67
	87.57	1314	37.00*	5.283E+00	3.247E+00	3.247E+00	13.58
BA-137M	661.66	2027	89.90*	2.071E+00	5.259E+00	5.262E+00	9.94
CS-137	661.66	2027	85.10*	2.071E+00	5.555E+00	5.559E+00	9.95
TL-208	277.37	-----	6.60	3.991E+00	-----	Line Not Found	-----
	583.19	193	85.00*	2.292E+00	4.778E-01	4.778E-01	31.00
	860.56	-----	12.50	1.651E+00	-----	Line Not Found	-----
BI-211	72.87	-----	1.23	3.848E+00	-----	Line Not Found	-----
	351.06	219	12.92*	3.352E+00	2.445E+00	2.445E+00	31.19
PB-212	74.82	146	10.28	4.033E+00	1.701E+00	1.701E+00	48.93
	77.11	234	17.10	4.309E+00	1.532E+00	1.532E+00	31.94
	238.63	478	43.60*	4.459E+00	1.188E+00	1.188E+00	20.04
	300.09	-----	3.30	3.766E+00	-----	Line Not Found	-----
BI-214	609.32	160	45.49*	2.213E+00	7.682E-01	7.682E-01	37.38
	1120.29	-----	14.92	1.298E+00	-----	Line Not Found	-----
	1764.49	33	15.30	9.005E-01	1.154E+00	1.154E+00	50.08
PB-214	74.82	146	5.80	4.033E+00	3.015E+00	3.015E+00	48.60
	77.11	234	9.70	4.309E+00	2.701E+00	2.701E+00	32.99
	242.00	-----	7.25	4.409E+00	-----	Line Not Found	-----
	295.22	162	18.42	3.814E+00	1.112E+00	1.112E+00	37.13
	351.93	219	35.60*	3.352E+00	8.874E-01	8.874E-01	31.67
RA-226	609.32	160	45.49*	2.213E+00	7.682E-01	7.682E-01	37.38
	1120.29	-----	14.92	1.298E+00	-----	Line Not Found	-----
	1764.49	33	15.30	9.005E-01	1.154E+00	1.154E+00	50.08
AC-228	338.32	149	11.27	3.449E+00	1.850E+00	1.850E+00	65.80

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	911.20	69	25.80*	1.569E+00	8.237E-01	8.237E-01	54.68
	968.97	52	15.80	1.484E+00	1.067E+00	1.067E+00	74.05
RA-228	338.32	149	11.27	3.449E+00	1.850E+00	1.850E+00	65.80
	911.20	69	25.80*	1.569E+00	8.237E-01	8.237E-01	54.68
	968.97	52	15.80	1.484E+00	1.067E+00	1.067E+00	74.05
TH-228	74.82	146	10.28	4.033E+00	1.701E+00	1.701E+00	47.97
	77.11	234	17.10	4.309E+00	1.532E+00	1.532E+00	31.94
	238.63	478	43.60*	4.459E+00	1.188E+00	1.188E+00	20.04
	300.09	-----	3.30	3.766E+00	-----	Line Not Found	-----
TH-232	338.32	149	11.27	3.449E+00	1.850E+00	1.850E+00	51.61
	911.20	69	25.80*	1.569E+00	8.237E-01	8.237E-01	54.68
	968.97	52	15.80	1.484E+00	1.067E+00	1.067E+00	74.05
NP-237	86.48	1314	12.40*	5.283E+00	9.689E+00	9.689E+00	24.98
	95.86	-----	2.68	5.755E+00	-----	Line Not Found	-----
AM-241	59.54	2212	35.90*	2.005E+00	1.484E+01	1.484E+01	10.27

Flag: "\*" = Keyline

Total number of lines in spectrum 22  
Number of unidentified lines 1  
Number of lines tentatively identified by NID 21 95.45%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	6.690E-01	6.690E-01	7.106E-01	106.22	
CO-57	271.74D	1.03	1.930E-01	1.982E-01	0.744E-01	37.55	
CO-60	5.27Y	1.00	6.630E+00	6.655E+00	0.717E+00	10.78	
CD-109	461.40D	1.02	3.247E+01	3.298E+01	0.448E+01	13.58	
SN-126	2.30E+05Y	1.00	3.247E+00	3.247E+00	0.441E+00	13.58	
BA-137M	30.08Y	1.00	5.259E+00	5.262E+00	0.523E+00	9.94	
CS-137	30.08Y	1.00	5.555E+00	5.559E+00	0.553E+00	9.95	
TL-208	1.41E+10Y	1.00	4.778E-01	4.778E-01	1.481E-01	31.00	
BI-211	7.04E+08Y	1.00	2.445E+00	2.445E+00	0.763E+00	31.19	
PB-212	1.41E+10Y	1.00	1.188E+00	1.188E+00	0.238E+00	20.04	
BI-214	1600.00Y	1.00	7.682E-01	7.682E-01	2.871E-01	37.38	
PB-214	1600.00Y	1.00	8.874E-01	8.874E-01	2.811E-01	31.67	
RA-226	1600.00Y	1.00	7.682E-01	7.682E-01	2.871E-01	37.38	
AC-228	1.41E+10Y	1.00	8.237E-01	8.237E-01	4.504E-01	54.68	
RA-228	1.41E+10Y	1.00	8.237E-01	8.237E-01	4.504E-01	54.68	
TH-228	1.41E+10Y	1.00	1.188E+00	1.188E+00	0.238E+00	20.04	
TH-232	1.41E+10Y	1.00	8.237E-01	8.237E-01	4.504E-01	54.68	
NP-237	2.14E+06Y	1.00	9.689E+00	9.689E+00	2.420E+00	24.98	
AM-241	432.60Y	1.00	1.484E+01	1.484E+01	0.152E+01	10.27	
Total Activity :			8.875E+01	8.930E+01			

Grand Total Activity : 8.875E+01 8.930E+01

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

Unidentified Energy Lines  
Sample ID : G1202052274

Page : 4  
Acquisition date : 8-MAR-2010 09:46:42

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	92.31	77	342	0.92	183.84	180	8	2.14E-02	91.2	5.57E+00	T
0	726.82	48	47	1.51	1453.58	1450	7	1.34E-02	55.1	1.91E+00	T
8	1405.61	18	4	2.39	2812.13	2808	12	5.05E-03	56.1	1.06E+00	
8	1408.03	8	4	1.58	2816.99	2808	12	2.28E-03	****	1.06E+00	T

Flags: "T" = Tentatively associated

```

*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*                                     DETECTOR DATA                          *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]G1202052274.CNF;1 *
* Acquisition date   : 8-MAR-2010 09:46:42.  Detector SN#      :             *
* Detector ID        : GAM02                  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 01:00:02.71          Half life ratio  : 8.00000      *
*****
*                                     SAMPLE DATA                            *
*
* Sample date        : 26-FEB-2010 00:00:00  Nuclide Library   : SOLID        *
* Sample ID          : G1202052274           Analyst initials: MXR1          *
* Batch Number       : 957136                Sample Quantity  : 1.55440E+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      :             *
*****

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## Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	6.690E-01	7.106E-01	6.735E-01	6.403E-02	0.993
CO-57	1.982E-01	7.442E-02	6.647E-02	5.556E-03	2.982
CO-60	6.655E+00	7.175E-01	9.595E-02	8.940E-03	69.357
CD-109	3.298E+01	4.479E+00	2.158E+00	2.167E-01	15.282
SN-126	3.247E+00	4.409E-01	2.137E-01	2.136E-02	15.196
BA-137M	5.262E+00	5.229E-01	1.180E-01	1.017E-02	44.591
CS-137	5.559E+00	5.532E-01	1.247E-01	1.076E-02	44.591
TL-208	4.778E-01	1.481E-01	1.095E-01	1.095E-02	4.365
BI-211	2.445E+00	7.626E-01	7.107E-01	8.199E-02	3.441
PB-212	1.188E+00	2.380E-01	2.113E-01	2.666E-02	5.623
BI-214	7.682E-01	2.871E-01	2.096E-01	2.225E-02	3.664
PB-214	8.874E-01	2.811E-01	2.503E-01	3.196E-02	3.546
RA-226	7.682E-01	2.871E-01	2.096E-01	2.225E-02	3.664
AC-228	8.237E-01	4.504E-01	5.607E-01	7.168E-02	1.469
RA-228	8.237E-01	4.504E-01	5.607E-01	7.168E-02	1.469
TH-228	1.188E+00	2.380E-01	2.113E-01	2.666E-02	5.623
TH-232	8.237E-01	4.504E-01	5.607E-01	7.168E-02	1.469
NP-237	9.689E+00	2.420E+00	6.466E-01	1.498E-01	14.985

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
AM-241	1.484E+01	1.524E+00	5.725E-01	4.690E-02	25.919

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
BE-7	4.726E-01		6.714E-01	1.128E+00	1.196E-01	0.419
NA-22	-1.664E-02		6.309E-02	1.000E-01	8.868E-03	-0.166
NA-24	-3.566E-03		2.283E-03	Half-Life too short		
SC-46	-1.450E-01		9.856E-02	1.404E-01	1.427E-02	-1.033
V-48	8.174E-02		1.602E-01	2.663E-01	2.605E-02	0.307
CR-51	-7.587E-02		6.337E-01	1.047E+00	1.277E-01	-0.072
MN-54	9.716E-02		7.924E-02	1.399E-01	1.374E-02	0.694
CO-56	-1.158E-02		8.601E-02	1.387E-01	1.373E-02	-0.084
CO-58	-4.850E-02		8.501E-02	1.328E-01	1.286E-02	-0.365
FE-59	7.205E-02		2.121E-01	3.614E-01	3.445E-02	0.199
ZN-65	-3.099E-01		2.259E-01	3.386E-01	2.945E-02	-0.915
SE-75	-6.394E-02		7.897E-02	1.270E-01	1.553E-02	-0.503
SR-85	-1.261E-01		8.529E-02	1.231E-01	1.218E-02	-1.025
Y-88	-3.394E-02		5.226E-02	7.272E-02	5.932E-03	-0.467
Y-91	-1.350E+01		2.969E+01	4.643E+01	3.855E+00	-0.291
NB-94	3.879E-02		6.409E-02	1.106E-01	9.863E-03	0.351
NB-95	2.266E-02		8.352E-02	1.395E-01	1.306E-02	0.163
NB-95M	9.923E-02		2.265E-01	3.480E-01	4.407E-02	0.285
ZR-95	3.054E-02		1.488E-01	2.482E-01	2.517E-02	0.123
MO-99	-4.396E+00		7.553E+00	1.182E+01	1.899E+00	-0.372
TC-99M	-9.268E+04		6.477E+04	Half-Life too short		
RU-103	3.832E-02		7.765E-02	1.288E-01	1.911E-02	0.298
RH-106	-8.931E-01		6.320E-01	9.284E-01	1.259E-01	-0.962
RU-106	-8.931E-01		6.256E-01	9.284E-01	8.431E-02	-0.962
AG-108M	3.887E-02		6.459E-02	1.086E-01	1.120E-02	0.358
AG-110M	3.007E-01		1.005E-01	1.724E-01	1.538E-02	1.744
SN-113	8.305E-03		9.312E-02	1.534E-01	1.569E-02	0.054
CD-115	-1.477E+00		5.614E+00	8.812E+00	8.663E-01	-0.168
SN-117M	8.906E-03		6.868E-02	1.121E-01	1.104E-02	0.079
TE-123M	-5.510E-03		4.343E-02	6.993E-02	6.938E-03	-0.079
SB-124	9.515E-02		9.667E-02	1.952E-01	1.780E-02	0.487
SB-125	1.582E-01		2.036E-01	3.449E-01	3.521E-02	0.459
TE-125M	-4.007E+00		1.461E+01	2.390E+01	2.484E+00	-0.168
I-126	-4.744E-02		3.869E-01	5.513E-01	4.769E-02	-0.086
SB-126	-1.040E-01		2.356E-01	3.523E-01	3.187E-02	-0.295
SB-127	-8.161E-01		1.143E+00	1.790E+00	1.842E-01	-0.456
I-131	4.900E-02		1.673E-01	2.797E-01	3.131E-02	0.175
TE-132	-1.130E-01		5.051E-01	7.892E-01	1.332E-01	-0.143
BA-133	-2.823E-02		9.130E-02	1.288E-01	1.893E-02	-0.219
I-133	5.096E-05		1.401E-04	Half-Life too short		
CS-134	1.120E-01		9.798E-02	1.727E-01	1.661E-02	0.649
CS-135	3.339E-01		2.993E-01	5.231E-01	6.920E-02	0.638

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
I-135	-1.317E+04		2.789E+04	Half-Life too short		
CS-136	7.657E-02		2.059E-01	3.530E-01	3.405E-02	0.217
CE-139	1.681E-02		4.652E-02	7.654E-02	7.852E-03	0.220
BA-140	-1.479E-01		4.498E-01	6.974E-01	2.387E-01	-0.212
LA-140	-1.031E-01		9.942E-02	1.322E-01	1.196E-02	-0.780
CE-141	-2.259E-02		9.338E-02	1.504E-01	1.405E-02	-0.150
CE-143	5.702E+01		2.845E+01	4.231E+01	9.834E+00	1.348
CE-144	-2.791E-01		3.281E-01	5.117E-01	7.844E-02	-0.546
PM-144	3.794E-03		6.796E-02	1.130E-01	1.003E-02	0.034
PR-144	2.460E-01		5.071E+00	8.427E+00	7.476E-01	0.029
PM-146	-4.359E-02		1.009E-01	1.593E-01	1.880E-02	-0.274
ND-147	2.907E-01		8.745E-01	1.427E+00	2.236E-01	0.204
PM-149	1.945E+00		3.815E+01	6.411E+01	1.145E+01	0.030
EU-152	-6.939E-02		2.057E-01	2.904E-01	3.413E-02	-0.239
GD-153	-5.242E-02		1.268E-01	2.070E-01	1.881E-02	-0.253
EU-154	-4.725E-02		1.792E-01	2.841E-01	3.284E-02	-0.166
EU-155	7.690E-02		1.657E-01	2.804E-01	2.458E-02	0.274
TB-160	2.843E-01		3.186E-01	5.494E-01	5.552E-02	0.517
HO-166M	3.933E-02		1.206E-01	2.041E-01	1.833E-02	0.193
TA-182	-1.221E-02		2.610E-01	4.285E-01	3.614E-02	-0.029
IR-192	1.520E-02		6.182E-02	1.042E-01	1.244E-02	0.146
HG-203	2.499E-02		6.498E-02	1.110E-01	1.394E-02	0.225
BI-207	4.282E-02		1.242E-01	2.125E-01	1.951E-02	0.201
PB-210	3.561E+00		1.105E+01	1.744E+01	1.659E+00	0.204
PB-211	-4.527E-02		1.541E+00	2.515E+00	1.224E+00	-0.018
BI-212	1.830E+00	+	1.036E+00	1.950E+00	2.494E-01	0.938
RN-219	3.465E-02		8.657E-01	1.419E+00	2.233E-01	0.024
RA-223	-2.469E-01		1.243E+00	2.043E+00	3.904E-01	-0.121
RA-224	2.821E+00		1.361E+00	2.203E+00	2.600E-01	1.281
AC-227	2.394E-01		4.630E-01	7.979E-01	1.174E-01	0.300
TH-227	2.394E-01		4.632E-01	7.979E-01	1.277E-01	0.300
TH-229	-2.343E-01		9.645E-01	1.525E+00	1.653E-01	-0.154
PA-231	-5.475E-01		2.600E+00	4.310E+00	7.356E-01	-0.127
TH-231	-2.469E-01		1.243E+00	2.043E+00	3.904E-01	-0.121
PA-233	7.274E-02		1.236E-01	2.118E-01	2.580E-02	0.343
PA-234	1.375E-01		8.824E-01	1.437E+00	2.793E-01	0.096
PA-234M	-1.008E+01		1.161E+01	1.749E+01	1.903E+00	-0.576
TH-234	3.924E-01		2.598E+00	4.109E+00	7.412E-01	0.096
U-235	1.704E-01		3.270E-01	5.438E-01	9.359E-02	0.313
U-238	3.924E-01		2.598E+00	4.109E+00	7.412E-01	0.096
NP-239	-5.485E-01		7.257E-01	1.020E+00	8.548E-02	-0.538
CM-247	-1.613E-02		8.068E-02	1.305E-01	1.309E-02	-0.124
CF-249	1.372E-03		8.469E-02	1.390E-01	1.407E-02	0.010
CF-251	7.595E-02		2.114E-01	3.464E-01	3.636E-02	0.219
ANH-511	3.801E-02		7.711E-02	1.361E-01	1.349E-02	0.279



# VAX/VMS Nuclide Identification Report Generated

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*****
*                                     GEL Laboratories LLC                      *
*                                     2040 Savage Road                        *
*                                     Charleston, SC 29414                    *
*****
*
*                                     DETECTOR DATA                          *
*
* Configuration      : SYSSYSROOT:[ALPHA.ARCHIVE.GAMMA]G1202052274          *
* Acquisition date   : 8-MAR-2010 09:46:42 Detector SN# :                  *
* Detector ID        : GAM02 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 01:00:02.71 Half life ratio : 8.000              *
*****
*
*                                     SAMPLE DATA                            *
*
* Sample date        : 26-FEB-2010 00:00:00 Nuclide Library : SOLID          *
* Sample ID          : G1202052274 Analyst initials: MXR1                 *
* Batch Number       : 957136 Sample Quantity : 1.5544E+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 :                               *
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## Combined Activity-MDA Report

### ---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM )	Act Error	DLC (pCi/GRAM )	TPU
K-40	6.690E-01	6.964E-01	3.398E-01	3.553E-01
CO-57	1.982E-01	7.293E-02	3.582E-02	3.721E-02
CO-60	6.655E+00	7.031E-01	4.854E-02	3.587E-01
CD-109	3.298E+01	4.389E+00	1.172E+00	2.239E+00
SN-126	3.247E+00	4.321E-01	1.161E-01	2.205E-01
BA-137M	5.262E+00	5.125E-01	6.086E-02	2.615E-01
CS-137	5.559E+00	5.422E-01	6.430E-02	2.766E-01
TL-208	4.778E-01	1.451E-01	5.665E-02	7.405E-02
BI-211	2.445E+00	7.473E-01	3.728E-01	3.813E-01
PB-212	1.188E+00	2.332E-01	1.119E-01	1.190E-01
BI-214	7.682E-01	2.814E-01	1.084E-01	1.436E-01
PB-214	8.874E-01	2.754E-01	1.313E-01	1.405E-01
RA-226	7.682E-01	2.814E-01	1.084E-01	1.436E-01
AC-228	8.237E-01	4.414E-01	2.867E-01	2.252E-01
RA-228	8.237E-01	4.414E-01	2.867E-01	2.252E-01
TH-228	1.188E+00	2.332E-01	1.119E-01	1.190E-01
TH-232	8.237E-01	4.414E-01	2.867E-01	2.252E-01
NP-237	9.689E+00	2.372E+00	3.514E-01	1.210E+00
AM-241	1.484E+01	1.494E+00	3.139E-01	7.621E-01

### ---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM )	K.L Act error	DLC (pCi/GRAM )	TPU	
BE-7	4.726E-01	6.580E-01	5.870E-01	3.357E-01	NOT IDENT.
NA-22	-1.664E-02	6.183E-02	5.066E-02	3.154E-02	NOT IDENT.
NA-24	-3.566E+03	4.475E+03	0.000E+00	2.283E+03	SHORT HLIF
SC-46	-1.450E-01	9.659E-02	7.181E-02	4.928E-02	NOT IDENT.
V-48	8.174E-02	1.570E-01	1.359E-01	8.009E-02	NOT IDENT.
CR-51	-7.587E-02	6.210E-01	5.504E-01	3.168E-01	NOT IDENT.
MN-54	9.716E-02	7.766E-02	7.170E-02	3.962E-02	NOT IDENT.
CO-56	-1.158E-02	8.429E-02	7.103E-02	4.301E-02	NOT IDENT.

CO-58	-4.850E-02	8.331E-02	6.810E-02	4.250E-02	NOT IDENT.
FE-59	7.205E-02	2.079E-01	1.838E-01	1.061E-01	NOT IDENT.
ZN-65	-3.099E-01	2.213E-01	1.721E-01	1.129E-01	NOT IDENT.
SE-75	-6.394E-02	7.739E-02	6.713E-02	3.949E-02	FAIL ABUN
SR-85	-1.261E-01	8.358E-02	6.390E-02	4.264E-02	NOT IDENT.
Y-88	-3.394E-02	5.122E-02	3.646E-02	2.613E-02	NOT IDENT.
Y-91	-1.350E+01	2.910E+01	2.356E+01	1.485E+01	NOT IDENT.
NB-94	3.879E-02	6.281E-02	5.696E-02	3.205E-02	NOT IDENT.
NB-95	2.266E-02	8.185E-02	7.164E-02	4.176E-02	NOT IDENT.
NB-95M	9.923E-02	2.220E-01	1.844E-01	1.132E-01	NOT IDENT.
ZR-95	3.054E-02	1.458E-01	1.276E-01	7.438E-02	NOT IDENT.
MO-99	-4.396E+00	7.402E+00	6.077E+00	3.776E+00	NOT IDENT.
TC-99M	-9.268E+10	1.269E+11	0.000E+00	6.477E+10	SHORT HLIF
RU-103	3.832E-02	7.610E-02	6.693E-02	3.883E-02	FAIL ABUN
RH-106	-8.931E-01	6.194E-01	4.796E-01	3.160E-01	NOT IDENT.
RU-106	-8.931E-01	6.131E-01	4.796E-01	3.128E-01	NOT IDENT.
AG-108M	3.887E-02	6.330E-02	5.664E-02	3.230E-02	NOT IDENT.
AG-110M	3.007E-01	9.852E-02	8.893E-02	5.027E-02	NOT IDENT.
SN-113	8.305E-03	9.125E-02	8.021E-02	4.656E-02	NOT IDENT.
CD-115	-1.477E+00	5.502E+00	4.573E+00	2.807E+00	NOT IDENT.
SN-117M	8.906E-03	6.731E-02	5.999E-02	3.434E-02	NOT IDENT.
TE-123M	-5.510E-03	4.256E-02	3.743E-02	2.172E-02	NOT IDENT.
SB-124	9.515E-02	9.473E-02	9.810E-02	4.833E-02	NOT IDENT.
SB-125	1.582E-01	1.995E-01	1.800E-01	1.018E-01	NOT IDENT.
TE-125M	-4.007E+00	1.432E+01	1.291E+01	7.304E+00	NOT IDENT.
I-126	-4.744E-02	3.791E-01	2.843E-01	1.934E-01	NOT IDENT.
SB-126	-1.040E-01	2.309E-01	1.813E-01	1.178E-01	NOT IDENT.
SB-127	-8.161E-01	1.121E+00	9.225E-01	5.717E-01	NOT IDENT.
I-131	4.900E-02	1.639E-01	1.466E-01	8.364E-02	NOT IDENT.
TE-132	-1.130E-01	4.950E-01	4.186E-01	2.526E-01	NOT IDENT.
BA-133	-2.823E-02	8.947E-02	6.753E-02	4.565E-02	NOT IDENT.
I-133	5.096E+01	2.747E+02	0.000E+00	1.401E+02	SHORT HLIF
CS-134	1.120E-01	9.602E-02	8.860E-02	4.899E-02	NOT IDENT.
CS-135	3.339E-01	2.933E-01	2.763E-01	1.497E-01	NOT IDENT.
I-135	-1.317E+10	5.467E+10	0.000E+00	2.789E+10	SHORT HLIF
CS-136	7.657E-02	2.018E-01	1.798E-01	1.030E-01	NOT IDENT.
CE-139	1.681E-02	4.559E-02	4.093E-02	2.326E-02	NOT IDENT.
BA-140	-1.479E-01	4.408E-01	3.617E-01	2.249E-01	NOT IDENT.
LA-140	-1.031E-01	9.743E-02	6.653E-02	4.971E-02	NOT IDENT.
CE-141	-2.259E-02	9.151E-02	8.070E-02	4.669E-02	NOT IDENT.
CE-143	5.702E+01	2.788E+01	2.230E+01	1.422E+01	NOT IDENT.
CE-144	-2.791E-01	3.215E-01	2.751E-01	1.640E-01	NOT IDENT.
PM-144	3.794E-03	6.660E-02	5.820E-02	3.398E-02	NOT IDENT.
PR-144	2.460E-01	4.969E+00	4.340E+00	2.535E+00	NOT IDENT.
PM-146	-4.359E-02	9.892E-02	8.301E-02	5.047E-02	NOT IDENT.
ND-147	2.907E-01	8.570E-01	7.403E-01	4.373E-01	FAIL ABUN
PM-149	1.945E+00	3.739E+01	3.381E+01	1.908E+01	NOT IDENT.
EU-152	-6.939E-02	2.016E-01	1.524E-01	1.029E-01	FAIL ABUN
GD-153	-5.242E-02	1.242E-01	1.122E-01	6.339E-02	NOT IDENT.
EU-154	-4.725E-02	1.756E-01	1.439E-01	8.961E-02	FAIL ABUN
EU-155	7.690E-02	1.624E-01	1.516E-01	8.287E-02	FAIL ABUN
TB-160	2.843E-01	3.122E-01	2.812E-01	1.593E-01	FAIL ABUN
HO-166M	3.933E-02	1.182E-01	1.051E-01	6.030E-02	NOT IDENT.
TA-182	-1.221E-02	2.557E-01	2.173E-01	1.305E-01	NOT IDENT.
IR-192	1.520E-02	6.059E-02	5.482E-02	3.091E-02	FAIL ABUN
HG-203	2.499E-02	6.368E-02	5.857E-02	3.249E-02	NOT IDENT.
BI-207	4.282E-02	1.217E-01	1.082E-01	6.210E-02	FAIL ABUN
PB-210	3.561E+00	1.083E+01	9.617E+00	5.527E+00	NOT IDENT.
PB-211	-4.527E-02	1.510E+00	1.314E+00	7.704E-01	NOT IDENT.
BI-212	1.830E+00	1.015E+00	1.003E+00	5.179E-01	FAIL ABUN
RN-219	3.465E-02	8.483E-01	7.418E-01	4.328E-01	NOT IDENT.
RA-223	-2.469E-01	1.219E+00	1.074E+00	6.217E-01	FAIL ABUN
RA-224	2.821E+00	1.333E+00	1.167E+00	6.803E-01	NOT IDENT.
AC-227	2.394E-01	4.537E-01	4.220E-01	2.315E-01	NOT IDENT.
TH-227	2.394E-01	4.540E-01	4.220E-01	2.316E-01	NOT IDENT.
TH-229	-2.343E-01	9.452E-01	8.120E-01	4.823E-01	FAIL ABUN
PA-231	-5.475E-01	2.548E+00	2.273E+00	1.300E+00	NOT IDENT.
TH-231	-2.469E-01	1.219E+00	1.074E+00	6.217E-01	FAIL ABUN
PA-233	7.274E-02	1.212E-01	1.114E-01	6.182E-02	NOT IDENT.
PA-234	1.375E-01	8.648E-01	7.340E-01	4.412E-01	NOT IDENT.
PA-234M	-1.008E+01	1.138E+01	8.918E+00	5.805E+00	NOT IDENT.
TH-234	3.924E-01	2.546E+00	2.250E+00	1.299E+00	FAIL ABUN
U-235	1.704E-01	3.204E-01	2.918E-01	1.635E-01	FAIL ABUN
U-238	3.924E-01	2.546E+00	2.250E+00	1.299E+00	FAIL ABUN
NP-239	-5.485E-01	7.112E-01	5.500E-01	3.628E-01	NOT IDENT.
CM-247	-1.613E-02	7.906E-02	6.818E-02	4.034E-02	NOT IDENT.
CF-249	1.372E-03	8.300E-02	7.273E-02	4.235E-02	NOT IDENT.
CF-251	7.595E-02	2.071E-01	1.849E-01	1.057E-01	NOT IDENT.

ANH-511	3.801E-02	7.557E-02	7.067E-02	3.856E-02 NOT IDENT.
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 \* GEL Laboratories LLC \*  
 \* 2040 SAVAGE ROAD \*  
 \* CHARLESTON , SC 29417 \*  
 \* GAMMA SPECTROSCOPY BACKGROUND REPORT \*  
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ENERGY	MDA COUNTS
46.54	299.8345
49.72	353.1444
57.36	408.2271
59.54	353.8812
63.29	259.2946
63.29	259.2946
64.28	270.7624
67.75	285.0738
69.67	299.8700
70.83	258.2276
72.81	295.7396
72.87	295.7868
72.87	295.7868
74.82	323.7741
74.82	323.7741
74.82	323.7741
74.97	323.9008
77.11	325.7020
77.11	325.7020
77.11	325.7020
79.69	313.3090
79.80	324.2957
80.12	324.5554
80.19	324.6135
80.57	333.1116
81.00	340.3005
81.07	319.8558
81.07	319.8558
83.79	321.9928
83.79	321.9928
85.43	360.5656
86.48	343.4616
86.55	343.5184
86.79	343.7114
86.94	343.8344
87.57	344.3452
88.03	344.7161
88.47	345.0699
89.96	254.1123
91.11	254.7822
92.59	273.8989
92.59	273.8989
93.35	216.6800
94.67	222.9638
94.87	240.0041
94.87	240.0041
95.86	240.5294
97.43	239.4645
98.44	211.5317
99.53	220.5857
100.11	228.4753
103.18	241.4577
103.37	238.6782
105.31	233.8650
106.12	223.6502
109.28	255.1625
111.00	224.8845
111.76	252.5226
116.30	213.6450
117.23	258.6628
121.12	236.2447
121.78	236.5341
122.06	236.6563
123.07	230.1247
131.20	255.7487
133.52	268.9654
136.00	233.4214

136.47	221.3663
140.51	252.6665
140.51	0.0000
143.76	218.9204
144.24	224.2581
144.24	224.2581
145.44	252.6576
152.43	227.2249
153.25	210.7429
154.21	234.1586
154.21	234.1586
156.02	221.1298
158.56	209.3075
159.00	207.3329
162.66	211.6723
163.33	209.7554
165.86	198.7886
176.60	198.6353
177.52	195.6317
181.07	228.2770
184.41	230.4245
185.72	239.6283
193.51	248.7985
197.04	227.6323
205.31	230.0499
210.85	261.1646
215.65	242.1424
222.11	238.2677
227.38	235.1132
228.16	230.6889
228.18	230.6950
235.69	217.4882
235.96	216.1508
235.96	216.1508
238.63	333.6516
238.63	333.6516
240.99	210.3170
242.00	165.3339
244.70	260.4351
252.40	184.9074
252.80	188.5626
256.23	183.8716
256.23	183.8716
260.90	190.1885
264.66	198.1713
268.22	187.0930
269.46	189.1506
269.46	189.1506
271.23	189.4902
273.65	230.1400
276.40	178.5754
277.37	164.0842
277.60	166.8704
278.00	166.9370
279.20	173.5653
279.54	189.2430
280.46	190.3322
283.69	171.5709
284.31	163.3663
285.41	170.9336
285.90	171.0155
287.50	162.0251
293.27	160.8794
295.22	187.4837
295.96	215.0578
298.57	187.1429
299.98	166.4025
299.98	166.4025
300.09	166.4214
300.09	166.4214
300.13	166.4268
301.36	172.6235
302.85	189.7726
304.50	166.5425
304.50	166.5425
304.85	172.2438
308.46	172.8191
311.90	155.3641

316.51	150.3069
319.41	169.7730
320.08	163.1931
323.87	174.2797
323.87	174.2797
328.76	159.6423
333.37	139.0408
334.37	137.6154
334.37	137.6154
338.28	153.2047
338.28	153.2047
338.32	153.2096
338.32	153.2096
338.32	153.2096
340.48	130.5650
340.55	130.5732
344.28	149.6977
351.06	188.1855
351.93	176.5530
356.01	151.1649
364.49	170.4463
366.42	156.8138
383.85	141.8757
388.16	161.5308
388.63	164.6179
391.69	162.9776
400.66	166.1214
401.81	159.1254
402.40	168.3788
404.85	164.5966
410.95	155.0679
414.70	171.9690
423.72	145.1056
427.09	146.4928
427.87	145.5350
433.94	136.7628
453.88	178.8714
463.37	146.9935
468.07	150.6559
473.00	189.7357
476.78	132.1758
477.60	125.7943
487.02	128.7236
492.35	132.4155
497.08	111.0396
511.00	142.7489
514.00	198.0162
527.90	116.4844
529.87	0.0000
531.02	101.1420
537.26	120.4783
546.56	0.0000
563.25	105.9970
569.33	98.1782
569.50	98.1888
569.70	96.3808
583.19	90.0845
600.60	129.4761
602.73	121.9106
604.72	106.5912
609.32	88.2693
609.32	88.2693
610.33	86.7686
614.28	104.0278
618.01	85.8760
621.93	115.9836
621.93	115.9836
633.25	87.5008
635.95	107.4066
636.99	95.2103
645.85	89.0131
657.76	95.2637
661.66	95.4468
661.66	95.4468
664.57	81.2480
666.33	94.0745
666.50	92.4871
677.62	107.7453

685.70	100.4402
695.00	89.2485
696.49	93.1945
696.51	93.1945
697.00	101.9572
702.65	77.8887
706.68	88.7672
711.68	83.1095
720.70	94.5041
721.93	94.9675
722.78	75.3490
722.91	75.3527
723.31	78.6445
724.19	73.7585
727.33	76.8193
733.00	87.7713
735.93	54.3810
739.50	90.1224
747.24	91.4317
752.31	87.6541
753.82	95.6883
756.73	92.8161
763.94	109.1330
765.81	94.1928
766.42	100.2319
777.92	98.7226
778.90	90.7009
783.70	78.7712
785.37	105.1045
795.86	76.1371
801.95	87.5306
810.29	96.0080
810.76	101.1342
815.77	96.2284
818.51	86.0897
832.01	109.2452
834.85	73.2586
836.80	0.0000
846.77	92.2767
856.80	120.7578
860.56	98.0023
871.09	95.2723
873.19	93.2544
875.33	0.0000
879.36	79.8260
880.51	94.5747
883.24	91.5199
884.68	91.5709
889.28	128.6391
898.04	139.6538
911.20	102.0797
911.20	102.0797
911.20	102.0797
926.50	120.8515
937.49	143.8995
944.13	142.0998
946.00	130.3468
949.00	129.4131
962.29	123.8504
964.08	126.5104
966.15	112.1379
968.97	124.9249
968.97	124.9249
968.97	124.9249
983.53	105.9232
996.26	84.4631
1001.03	107.6780
1004.73	94.4313
1037.84	86.2415
1038.76	0.0000
1048.07	90.2665
1050.41	92.2002
1050.41	92.2002
1063.66	83.2528
1085.87	83.8684
1099.45	94.6492
1112.07	81.7308
1115.54	134.1497

1120.29	80.0386
1120.29	80.0386
1120.55	79.0925
1121.30	75.3001
1131.51	0.0000
1173.23	44.8393
1177.93	56.5449
1189.05	40.8840
1204.77	41.0771
1221.41	34.4019
1231.02	41.3984
1235.36	15.7910
1238.28	22.7192
1260.41	0.0000
1271.85	21.9427
1274.44	29.9438
1274.54	29.9451
1291.59	27.0813
1298.22	0.0000
1312.11	28.2461
1332.49	22.3187
1365.19	17.3998
1368.63	0.0000
1384.29	15.4315
1408.01	15.9716
1457.56	0.0000
1460.82	10.7938
1489.16	9.5120
1505.03	14.8545
1596.21	20.4524
1620.50	12.1539
1678.03	0.0000
1690.97	3.7999
1764.49	6.7578
1764.49	6.7578
1770.23	6.7661
1771.35	27.0713
1791.20	0.0000
1836.06	12.7411



TOTAL URANIUM BY GAMMA SPEC REPORT  
Sample:G1202052274

Total Uranium Activity	1.2464E+00	ug/g
Total Uranium Counting Unc.	7.5765E+00	ug/g
Total Uranium Tpu	3.8655E-06	ug/g
Total Uranium Mda	6.6947E+00	ug/g

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*
*               GEL Laboratories LLC               *
*               2040 SAVAGE ROAD                   *
*               CHARLESTON ,SC 29417                *
*               GROSS GAMMA REPORT                  *
*
*****
*
*  BATCH ID      : 957136                      SAMPLE ID   : G1202052274
*  ANALYST       : MXR1                        DETECTOR    : GAM02
*  SAMPLE DATE   : 26-FEB-2010 00:00:00.00    COUNT TIME   : 0 01:00:00.00
*  ANALYSIS DATE : 8-MAR-2010 09:46:42.32    SAMPLE ALQT  : 155.440 GRAM
*
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GROSS GAMMA ACTIVITY (pCi/GRAM ) : 2.764E+01
GROSS GAMMA ERROR   (pCi/GRAM ) : 2.657E+00
GROSS GAMMA MDA     (pCi/GRAM ) : 4.720E+00
GROSS GAMMA DLC     (pCi/GRAM ) : 2.287E+00

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# Radiochemistry Batch Checklist, Rev10

Batch# 961540 Product: H3 Date: 3/14/10

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)			N/A
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%.			N/A
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.	✓		
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 stasured.	✓		
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 REMF, 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] 3/14/10

Secondary Review Performed By: [Signature] 3/16/10

LANL

317-3/17

# Tritium Que Sheet

05-MAR-10

Pink

Vacuum

Batch #: 961540

Analyst: KXK2

First Client Due Date 17-MAR-10

Internal Due Date: 07-MAR-10

Spike Isotope: Hydrogen-3

Spike Code: 0134K

Expiration Date: 3/27/10

Vol: 0.1

LCS Isotope: Hydrogen-3

LCS Code: 0134K

Expiration Date: 3/27/10

Vol: 0.1

Prep Date: 3/8/10

Initials: KXK

Pipet ID: 2910968

Witness: AW 3/8/10

Sample ID	Client Samp ID	Type	Hazard Code	Min CRDL	Matrix	Client	Sample Date	Aliquot in vial (g/mL)	LSC Rack #	Dist Rig #	Vol added for Dist (mL)	Initial Sample Aliquot (g/mL)	Final Wt (g)	Total Moisture Dist Vol (mL)
247797001-1	RE15-10-8317	SAMPLE	25	pCi/mL SOIL	LANL010	LANL010	17-FEB-10	10	22	1		568.72	532.89	35.83
247797002-1	RE15-10-8319	SAMPLE	25	pCi/mL SOIL	LANL010	LANL010	17-FEB-10	5	23	2		575.23	556.82	18.41
247797003-1	RE15-10-8316	SAMPLE	25	pCi/mL SOIL	LANL010	LANL010	17-FEB-10	9	24	3		512.26	491.17	20.49
247797004-1	RE15-10-8326	SAMPLE	25	pCi/mL SOIL	LANL010	LANL010	17-FEB-10	5	25	4		530.34	509.13	21.21
247797005-1	RE15-10-8318	SAMPLE	25	pCi/mL SOIL	LANL010	LANL010	17-FEB-10	8.5	26	5		551.64	526.72	24.82
247900004-1	RE15-10-7898	SAMPLE	25	pCi/mL SOIL	LANL010	LANL010	18-FEB-10	10	27	6		484.06	393.06	71.00
247900006-1	RE15-10-7895	SAMPLE	25	pCi/mL SOIL	LANL010	LANL010	18-FEB-10	10	28	7		531.10	479.05	52.05
247900008-1	RE15-10-7893	SAMPLE	25	pCi/mL SOIL	LANL010	LANL010	18-FEB-10	10	29	8		390.46	281.52	108.94
247900011-1	RE15-10-8009	SAMPLE	25	pCi/mL SOIL	LANL010	LANL010	18-FEB-10	10	30	9		360.92	276.10	84.82
247920002-1	WSTPU-10-13410	SAMPLE	25	pCi/mL SOIL	LANL010	LANL010	23-FEB-10	10	31	10		443.47	404.71	56.76
248385001-1	WST16-10-13294	SAMPLE	25	pCi/mL SOIL	LANL010	LANL010	24-FEB-10	10	32	11		372.16	311.87	60.29
248385002-1	WST16-10-13289	SAMPLE	25	pCi/mL SOIL	LANL010	LANL010	24-FEB-10	10	33	12		609.00	546.71	60.29
248385003-1	WST16-10-13293	SAMPLE	25	pCi/mL SOIL	LANL010	LANL010	24-FEB-10	10	34	13		521.23	468.59	52.64
248385004-1	WST16-10-13292	SAMPLE	25	pCi/mL SOIL	LANL010	LANL010	24-FEB-10	10	35	14		555.21	511.35	43.86
248385005-1	WST16-10-13291	SAMPLE	25	pCi/mL SOIL	LANL010	LANL010	24-FEB-10	10	36	15		623.72	553.24	70.48
248385006-1	WST16-10-13290	SAMPLE	25	pCi/mL SOIL	LANL010	LANL010	24-FEB-10	10	37	16		527.87	456.61	71.26
248386003-1	WSTPU-10-13500	SAMPLE	25	pCi/mL SOIL	LANL010	LANL010	26-FEB-10	10	38	17		481.42	441.94	39.48
248386004-1	WSTPU-10-13501	SAMPLE	25	pCi/mL SOIL	LANL010	LANL010	26-FEB-10	10	39	18		556.61	473.48	82.93
1202662409-1	MB for batch 961540	MB	25	pCi/mL SOIL	QC ACCOUNT	QC ACCOUNT		10	40	19		20.00	0.00	20.00
1202662410-1	WSTPU-10-13410(247920002DUP)	DUP	25	pCi/mL SOIL	QC ACCOUNT	QC ACCOUNT	23-FEB-10	10	41	10		443.47	404.71	56.76
1202662411-1	LCS for batch 961540	LCS	25	pCi/mL SOIL	QC ACCOUNT	QC ACCOUNT		10	42	20		20.00	0.00	20.00

Bkg Rack #: 21

Comments:

Bkg prepared with dead water? Yes/No

Instrument Used (circle as appropriate): LS6000 (Red) 7065155, LS6500 (Blue) 7067083, LS6500

(Gold) 7070506, LS6500 (Green) 7067404, Wallac (Yellow) 4140127, LS6000 (Brown) 7060655, Wallac

(Pink) 2200082, Wallac (White) 4140299, Purple 7069123, Silver 7060656, Orange DG06095168

GEL Laboratories LLC, Radiochemistry Division

Page 1 of 1

DATE	3/8/2010	INITIALS	KXK2	BATCH NUMBER	961540				
Sample #	Flask (g)	Sample Wet (g)	Sample Wet & Flask (g)	% Moisture of Sample (Balance Interface using % Moisture Batch)	Total Moisture in Sample (mL)	Sample Dry (g)	Sample Dry & Flask (g)	mLs aliquoted into LSC vial	Collection Tube Number
247797001	200	568.72	768.72	0.063	35.83	532.89	732.89	10	
247797002	200	575.23	775.23	0.032	18.41	556.82	756.82	5	
247797003	200	512.26	712.26	0.040	20.49	491.77	691.77	9	
247797004	200	530.34	730.34	0.040	21.21	509.13	709.13	5	
247797005	200	551.54	751.54	0.045	24.82	526.72	726.72	8.5	
247900004	200	464.06	664.06	0.153	71.00	393.06	593.06	10	
247900006	200	531.10	731.10	0.098	52.05	479.05	679.05	10	
247900008	200	390.46	590.46	0.279	108.94	281.52	481.52	10	
247900011	200	360.92	560.92	0.235	84.82	276.10	476.10	10	
247920002	200	461.47	661.47	0.123	56.76	404.71	604.71	10	
248385001	200	372.16	572.16	0.162	60.29	311.87	511.87	10	
348385002	200	609.00	809.00	0.099	60.29	548.71	748.71	10	
448385003	200	521.23	721.23	0.101	52.64	468.59	668.59	10	
548385004	200	555.21	755.21	0.079	43.86	511.35	711.35	10	
648385005	200	623.72	823.72	0.113	70.48	553.24	753.24	10	
748385006	200	527.87	727.87	0.135	71.26	456.61	656.61	10	
248386003	200	481.42	681.42	0.082	39.48	441.94	641.94	10	
248385004	200	556.61	756.61	0.149	82.93	473.68	673.68	10	
MB	200	20.00	220.00	1.000	20.00	0.00	200.00	10	
DUP	200	461.47	661.47	0.123	56.76	404.71	604.71	10	
LCS	200	20.00	220.00	1.000	20.00	0.00	200.00	10	

T981540

## Tritium Solid

Filename : H3VAC.XLS  
File type : Excel  
Version # : 1.2.6

Spike S/N :  
Spike Exp Date :  
Spike Activity (dpm/ml):  
Spike Volume Added:

LCS S/N :  
LCS Exp Date :  
LCS Activity (dpm/ml):  
LCS Volume Added:

Batch : 961540  
Analyst : KKK2  
Prep Date : 3/8/2010

H-3 Abundance : 1

Method Uncertainty : 0.0691

Geometry: 10mL DW/13mL  
Eosclint Ultra

Procedure Code : LSC\_VH3S  
Paramname : Tritium  
Required MDC : 250 pCi/L  
Half-life of Tritium : 12.32 years

Pipet, 0.1 ml Sidev : +/- 0.000701 ml  
Pipet, 0.5 ml Sidev : +/- 0.002564 ml  
Pipet, 1.0 ml Sidev : +/- 0.005480 ml  
Pipet, 5.0 ml Sidev : +/- 0.025729 ml

Sample Characteristics			Wet Sample Weight (g)	Total Moisture L	Sample Aliquot in Vial L	Sample Aliquot Stdev. L	Dry Sample Weight (g)	% Moisture of Sample	Rig number	Sample Date/Time
Pos.	Sample ID									
1	247797001.1		568.72	0.0358	0.0100	2.5729E-05	532.89	6.30%	1	2/17/2010 12:00
2	247797002.1		575.23	0.0184	0.0050	2.5729E-05	556.82	3.20%	2	2/17/2010 12:00
3	247797003.1		512.26	0.0205	0.0090	2.5729E-05	491.77	4.00%	3	2/17/2010 12:00
4	247797004.1		530.34	0.0212	0.0050	2.5729E-05	508.13	4.00%	4	2/17/2010 12:00
5	247797005.1		551.54	0.0248	0.0085	2.5729E-05	526.72	4.50%	5	2/17/2010 12:00
6	247900004.1		464.06	0.0710	0.0100	2.5729E-05	393.06	15.30%	6	2/18/2010 12:00
7	247900006.1		531.10	0.0521	0.0100	2.5729E-05	479.05	9.80%	7	2/18/2010 12:00
8	247900008.1		390.46	0.1069	0.0100	2.5729E-05	281.52	27.90%	8	2/18/2010 12:00
9	247900011.1		360.92	0.0848	0.0100	2.5729E-05	276.10	23.50%	9	2/18/2010 12:00
10	247920002.1		461.47	0.0568	0.0100	2.5729E-05	404.71	12.30%	10	2/23/2010 12:00
11	248385001.1		372.16	0.0603	0.0100	2.5729E-05	311.87	16.20%	11	2/24/2010 12:00
12	248385002.1		608.00	0.0603	0.0100	2.5729E-05	548.71	9.90%	12	2/24/2010 12:00
13	248385003.1		521.23	0.0526	0.0100	2.5729E-05	468.59	10.10%	13	2/24/2010 12:00
14	248385004.1		555.21	0.0439	0.0100	2.5729E-05	511.35	7.90%	14	2/24/2010 12:00
15	248385005.1		623.72	0.0705	0.0100	2.5729E-05	553.24	11.30%	15	2/24/2010 12:00
16	248385006.1		527.87	0.0713	0.0100	2.5729E-05	456.61	13.50%	16	2/24/2010 12:00
17	248386003.1		481.42	0.0395	0.0100	2.5729E-05	441.94	8.20%	17	2/26/2010 12:00
18	248386004.1		556.61	0.0829	0.0100	2.5729E-05	473.68	14.90%	18	2/26/2010 12:00
19	1202062408.1		20.00	0.0200	0.0100	2.5729E-05	0.00	100.00%	19	3/8/2010 0:00
20	1202062410.1		461.47	0.0568	0.0100	2.5729E-05	404.71	12.30%	10	2/23/2010 12:00
21	1202062411.1		20.00	0.0200	0.0100	2.5729E-05	0.00	100.00%	20	3/8/2010 0:00

Count raw Data			Background				Calibration Data			Detector Efficiency			Backgrounds	
Pos.	Rack Position #	Counting Time (min.)	Quench#	Gross cpm	Count Time (min.)	Count Start Date/Time	Sample Decay	Counted on	Calibration Date	Calibration Due Date	Detector Efficiency (cpm/dpm)	Detector Error (cpm/dpm)	Rack Position #	Count Start Date/Time
1	22	120.03	806.3	15.34	120	3/11/2010 3:45	0.997	LSCPINK	8/21/2009	8/31/2010	0.1700	0.00792	21	3/11/2010 1:43
2	23	120.03	807.92	2.48	120	3/11/2010 5:48	0.997	LSCPINK	8/21/2009	8/31/2010	0.1716	0.00792	21	3/11/2010 1:43
3	24	120.03	806.73	16.15	120	3/11/2010 7:50	0.997	LSCPINK	8/21/2009	8/31/2010	0.1705	0.00792	21	3/11/2010 1:43
4	25	120.03	807.41	9	120	3/11/2010 9:53	0.997	LSCPINK	8/21/2009	8/31/2010	0.1711	0.00792	21	3/11/2010 1:43
5	26	120.03	805.3	7.83	120	3/11/2010 11:56	0.997	LSCPINK	8/21/2009	8/31/2010	0.1690	0.00792	21	3/11/2010 1:43
6	27	115.48	808.45	87.71	120	3/11/2010 13:59	0.997	LSCPINK	8/21/2009	8/31/2010	0.1722	0.00792	21	3/11/2010 1:43
7	28	120.03	809.31	4.07	120	3/11/2010 15:56	0.997	LSCPINK	8/21/2009	8/31/2010	0.1730	0.00792	21	3/11/2010 1:43
8	29	120.03	806.32	3.83	120	3/11/2010 17:59	0.997	LSCPINK	8/21/2009	8/31/2010	0.1701	0.00792	21	3/11/2010 1:43
9	30	36.5797	807.55	276.98	120	3/11/2010 20:02	0.997	LSCPINK	8/21/2009	8/31/2010	0.1713	0.00792	21	3/11/2010 1:43
10	31	120.03	805.88	1.13	120	3/11/2010 20:40	0.997	LSCPINK	8/21/2009	8/31/2010	0.1696	0.00792	21	3/11/2010 1:43
11	32	120.03	805.85	1.29	120	3/11/2010 22:43	0.998	LSCPINK	8/21/2009	8/31/2010	0.1696	0.00792	21	3/11/2010 1:43
12	33	120.03	804.82	1.16	120	3/12/2010 2:01	0.998	LSCPINK	8/21/2009	8/31/2010	0.1685	0.00792	21	3/11/2010 1:43
13	34	120.03	806.81	1.01	120	3/12/2010 4:03	0.998	LSCPINK	8/21/2009	8/31/2010	0.1705	0.00792	21	3/11/2010 1:43
14	35	120.03	804.34	0.96	120	3/12/2010 6:06	0.998	LSCPINK	8/21/2009	8/31/2010	0.1680	0.00792	21	3/11/2010 1:43
15	36	120.03	805.21	0.91	120	3/12/2010 8:08	0.998	LSCPINK	8/21/2009	8/31/2010	0.1689	0.00792	21	3/11/2010 1:43
16	37	120.03	805.6	0.92	120	3/12/2010 10:11	0.998	LSCPINK	8/21/2009	8/31/2010	0.1693	0.00792	21	3/11/2010 1:43
17	38	120.03	804.48	1.19	120	3/12/2010 12:13	0.998	LSCPINK	8/21/2009	8/31/2010	0.1682	0.00792	21	3/11/2010 1:43
18	39	120.03	808.23	0.95	120	3/12/2010 14:16	0.998	LSCPINK	8/21/2009	8/31/2010	0.1719	0.00792	21	3/11/2010 1:43
19	40	120.03	806.79	0.89	120	3/12/2010 16:18	0.999	LSCPINK	8/21/2009	8/31/2010	0.1705	0.00792	21	3/11/2010 1:43
20	41	120.03	807.73	1.13	120	3/12/2010 18:22	0.997	LSCPINK	8/21/2009	8/31/2010	0.1715	0.00792	21	3/11/2010 1:43
21	42	15.0297	806.71	20.55	120	3/12/2010 20:24	0.999	LSCPINK	8/21/2009	8/31/2010	0.1704	0.00792	21	3/11/2010 1:43

T861540

## Notes:

- 1 - Results are decay corrected to Sample Date/Time
- 2 - Reference date for Spike Activity (dpm/ml) is the batch Prep Date
- 3 - Spike Nominals are decay corrected to Sample Date/Time

Results		Decision Level	Critical Level	Required MDC	MDC	Sample Act. Conc.	Sample Act. Error	Net Count Rate	Net Count Rate Error	1 SIGMA Counting Uncertainty	1 SIGMA Total Prop. Uncertainty	Sample QC	Sample Type	RPD	RER	Nominal pCi/L	Recovery
Pos.	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	CPM	CPM	pCi/L	pCi/L						
1	67.8352	47.8923	250	102.4260	3886.0636	0.028	0.028	14.820	0.366	97.2279	287.5986		SAMPLE				
2	134.4056	94.8915	250	202.9461	916.3764	0.094	0.094	1.740	0.163	85.7223	107.0284		SAMPLE				
3	75.1846	53.0810	250	113.5251	4545.7112	0.028	0.028	15.430	0.375	110.4458	335.4048		SAMPLE				
4	134.8017	95.1712	250	203.5442	4373.5391	0.036	0.036	8.280	0.285	150.3112	340.7904		SAMPLE				
5	80.2872	56.6834	250	121.2288	2236.7784	0.039	0.039	7.110	0.267	83.9638	177.0442		SAMPLE				
6	67.6517	47.7627	250	102.3451	22835.9476	0.013	0.013	86.990	0.875	229.6835	1606.9660		SAMPLE				
7	66.6763	47.0740	250	100.6780	875.2325	0.060	0.060	3.350	0.200	52.1918	80.2486		SAMPLE				
8	67.8230	47.8836	250	102.4095	828.5032	0.063	0.063	3.110	0.195	51.7423	77.4007		SAMPLE				
9	98.5257	69.5600	250	160.7603	72895.5407	0.013	0.013	276.260	2.753	726.3716	5128.6913		SAMPLE				
10	67.9487	47.9723	250	102.5993	109.1621	0.303	0.303	0.410	0.124	33.0544	33.9175		SAMPLE				
11	67.9512	47.9741	250	102.6031	151.7677	0.227	0.227	0.570	0.129	34.4555	36.0404		SAMPLE				
12	68.3750	48.2733	250	103.2430	117.8846	0.285	0.285	0.440	0.125	33.5304	34.5210		SAMPLE				
13	67.5704	47.7053	250	102.0281	76.7824	0.414	0.414	0.290	0.120	31.7865	32.2332		SAMPLE				
14	68.5776	48.4163	250	103.5489	64.4912	0.493	0.493	0.240	0.118	31.7907	32.1064		SAMPLE				
15	68.2164	48.1613	250	103.0035	50.7866	0.613	0.613	0.190	0.117	31.1491	31.3493		SAMPLE				
16	68.0577	48.0493	250	102.7638	53.3352	0.585	0.585	0.200	0.117	31.1718	31.3923		SAMPLE				
17	68.5003	48.3618	250	103.4322	126.1630	0.269	0.269	0.470	0.126	33.8588	34.9803		SAMPLE				
18	67.0059	47.3068	250	101.1758	60.3677	0.513	0.513	0.230	0.118	30.9695	31.2538		SAMPLE				
19	67.4640	47.6302	250	101.8675	-7.9305	3.613	3.613	-0.030	0.108	28.6513	28.6517		MB				
20	67.2292	47.4844	250	101.5130	108.0063	0.303	0.303	0.410	0.124	32.7045	33.5584	24792002.1	DUP	1.1%	0.0086	5537.6461	94.7%
21	143.0723	101.0103	250	254.8117	5244.8164	0.060	0.060	19.830	1.172	309.9359	479.0467		LCS				



# REGISTRY

THU 11 MAR 2010 1:41

\*\*\* DIRECTORY PATH :S:\LSC\Q\DA\961540A0 \*\*\*

PARAMETER GROUP: 8  
ID: H-3(3)

00A PROGRAM MODE 6 ->

ORDER	POS	ID	CTIME	COUNTS	CUCNTS	MCW	REP	STD	STMS	STIME
1	21	BKG	120:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
2	22	247797001	120:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
3	23	247797002	120:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
4	24	247797003	120:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
5	25	247797004	120:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
6	26	247797005	120:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
7	27	247900004	120:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
8	28	247000006	120:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
9	29	247900008	120:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
10	30	247900011	120:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
11	31	247920002	120:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
12	32	248385001	120:00	1.0E04	NO LIM	1	1	Y	1/10	1:00

NUMBER OF CYCLES 1  
COINCIDENCE BIAS (L/H) L

MCA INPUT TRIGG. INHIBIT  
1 LRSUM DCOS G  
2 GSUM G

MEMORY SPLIT  
L\*R  
L\*R

WINDOW	CHANNELS	MCA	HALF
1	1- 174	1	2
2	1- 174	1	2
3	60- 220	1	2
4	50- 320	1	1
5	50- 270	1	1
6	60- 220	1	1
7	1- 1024	2	1
8	1- 1024	2	2

SELECTED PRINTOUT FOR TERMINAL 1 (A)

SELECTED PRINTOUT FOR TERMINAL 2 (B)

1.	2.	3.	4.	5.	6.	7.
POS	ID	CTIME	SQP	CPM1	CPM2	CPM3
SEND SPECTRA	12					
RESOLUTION OF SPECTRA	1024					
LISTING	Y					
INSTRUMENT NUMBER	1					

POS	ID	CTIME	SQP	CPM1	CPM2	CPM3
Q012101N.001	11 MAR 2010	3:44				
21	BKG	120:01.785	808.36	.72	.72	1.06
Q022201N.001	11 MAR 2010	5:46				

Page 1

			REGISTRY			
22	247797001	120:01.785	806.30	15.34	15.34	16.53
Q032301N.001	11 MAR 2010	7:49				
23	247797002	120:01.785	807.92	2.46	2.46	2.82
Q042401N.001	11 MAR 2010	9:51				
24	247797003	120:01.785	806.73	16.15	16.15	17.73
Q052501N.001	11 MAR 2010	11:54				
25	247797004	120:01.785	807.41	9.00	9.00	9.99
Q062601N.001	11 MAR 2010	13:57				
26	247797005	120:01.785	805.30	7.83	7.83	9.23
Q072701N.001	11 MAR 2010	15:55				
27	247900004	115:28.778	808.45	87.71	87.71	94.38
Q082801N.001	11 MAR 2010	17:57				
28	247000006	120:01.784	809.31	4.07	4.07	4.42
Q092901N.001	11 MAR 2010	20:00				
29	247900008	120:01.784	806.32	3.83	3.83	4.31
Q103001N.001	11 MAR 2010	20:39				
30	247900011	36:34.784	807.55	276.98	276.98	298.99
Q113101N.001	11 MAR 2010	22:41				
31	247920002	120:01.784	805.88	1.13	1.13	1.53
Q123201N.001	12 MAR 2010	0:44				
32	248385001	120:01.784	805.85	1.29	1.29	1.62

Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

Quantulus  
THU 11 MAR 2010 1:41  
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s:\sc\files\pink\961540A0\U961540A0.xls

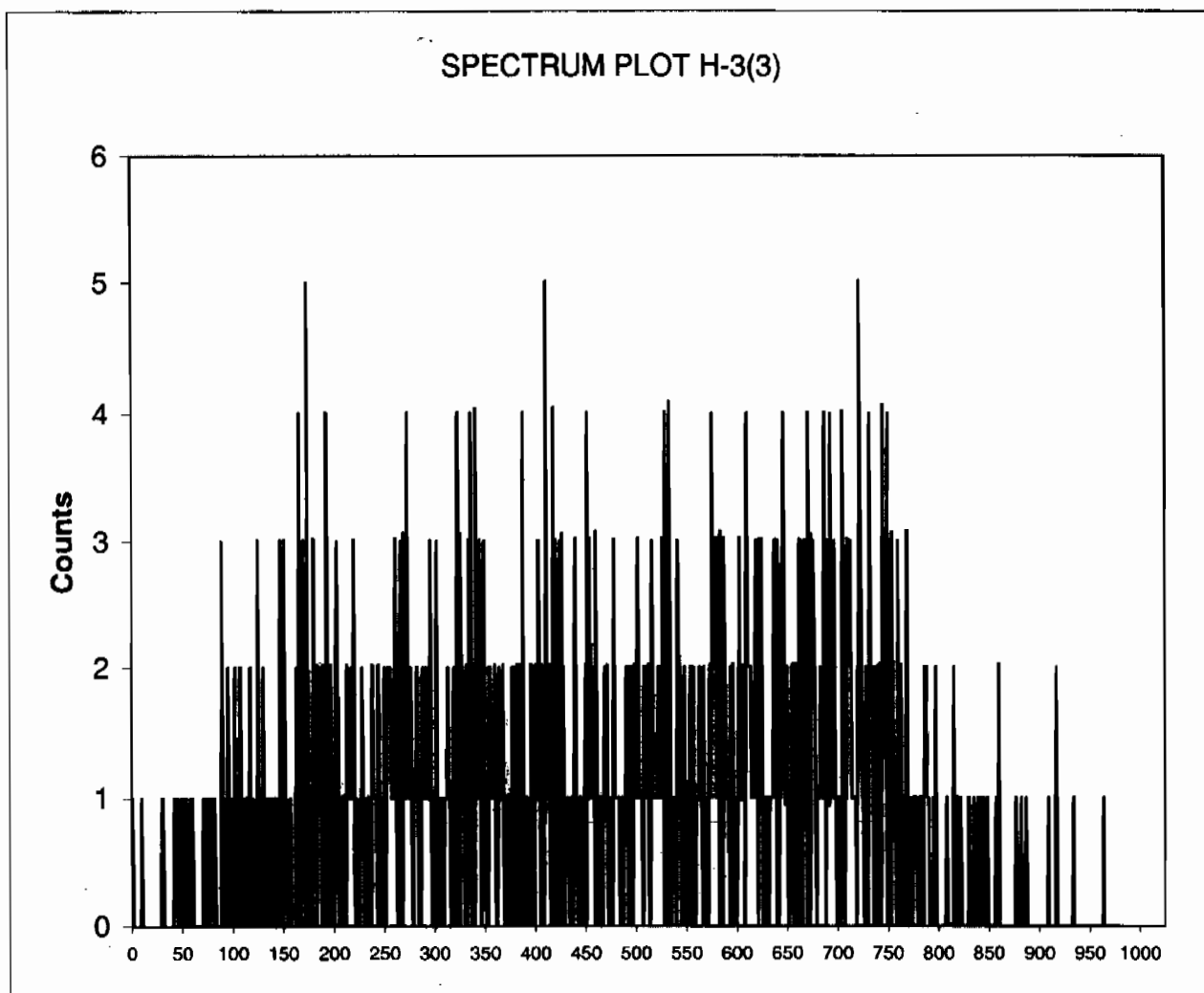
ID:  
Comments:

H-3(3)  
PINK

Sample, Rack-Pos, Time:  
Quench:  
Start, End, X-Axis

1, BKG, 120.0297:  
808.36  
1-174

Channel Counts



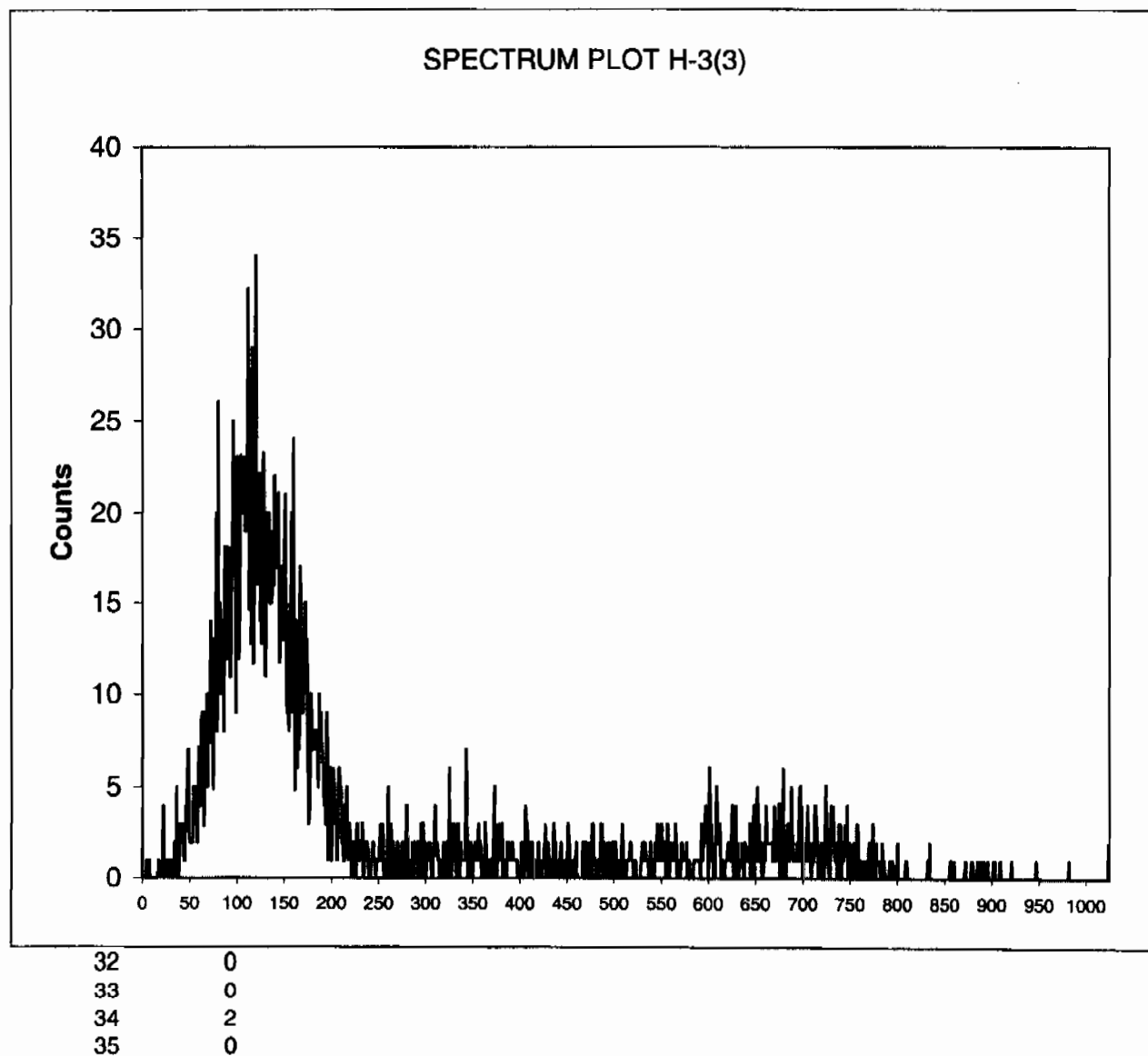
32	0
33	0
34	0
35	0

Instrument Type: Quantulus  
Data Capture Date: THU 11 MAR 2010 1:41  
FileName: s:\sc\files\pink\961540A0\SQ022201N.001.xls  
File Info: s:\sc\files\pink\961540A0\U961540A0.xls

ID: H-3(3)  
Comments: PINK

Sample, Rack-Pos, Time: 2, 247797001, 120.0297:  
Quench: 806.3  
Start, End, X-Axis 1-174

Channel Counts



Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

Quantulus  
THU 11 MAR 2010 1:41  
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s:\sc\files\pink\961540A0\U961540A0.xls

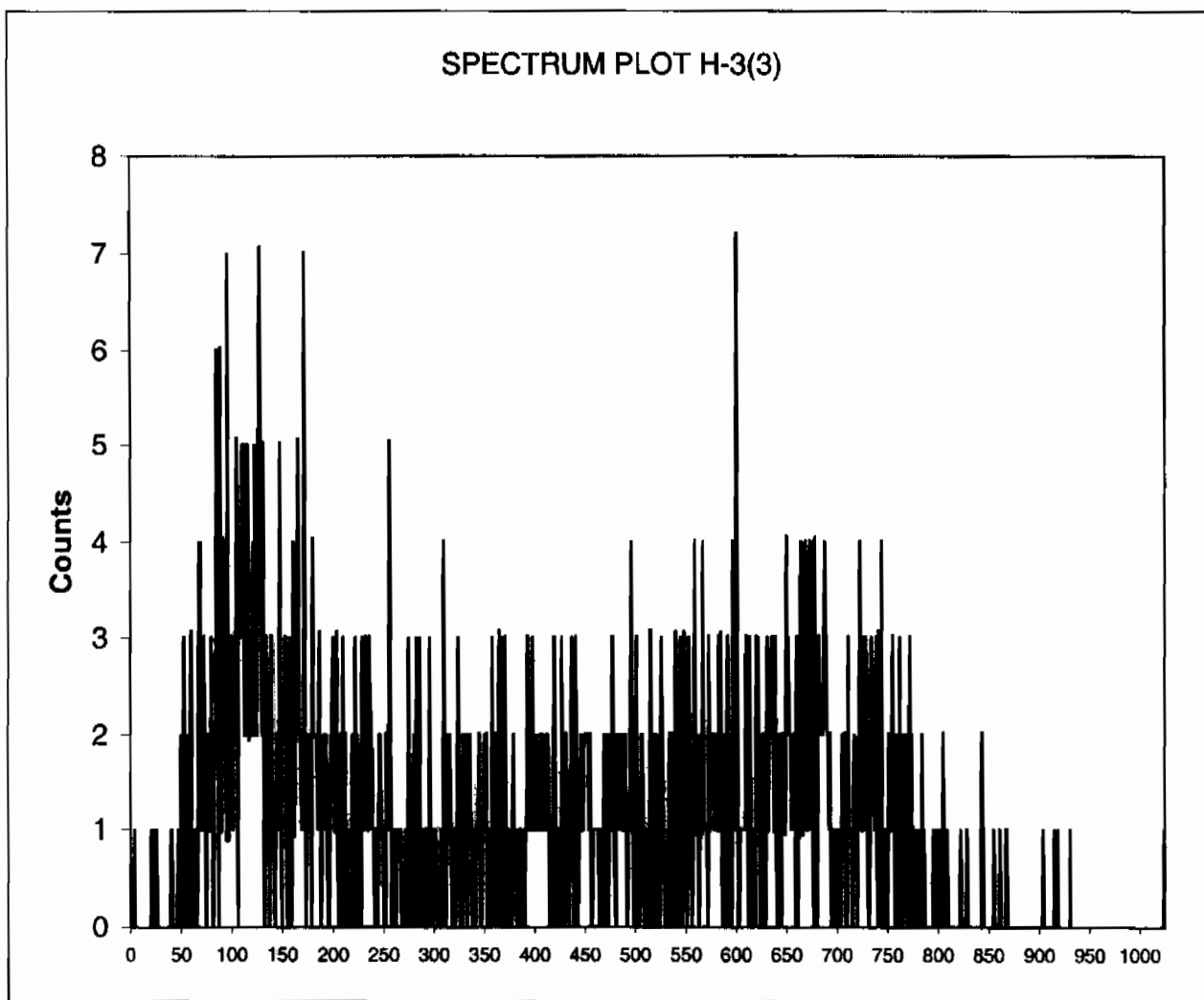
ID:  
Comments:

H-3(3)  
PINK

Sample, Rack-Pos, Time:  
Quench:  
Start, End, X-Axis

3, 247797002, 120.0297:  
807.92  
1-174

Channel Counts



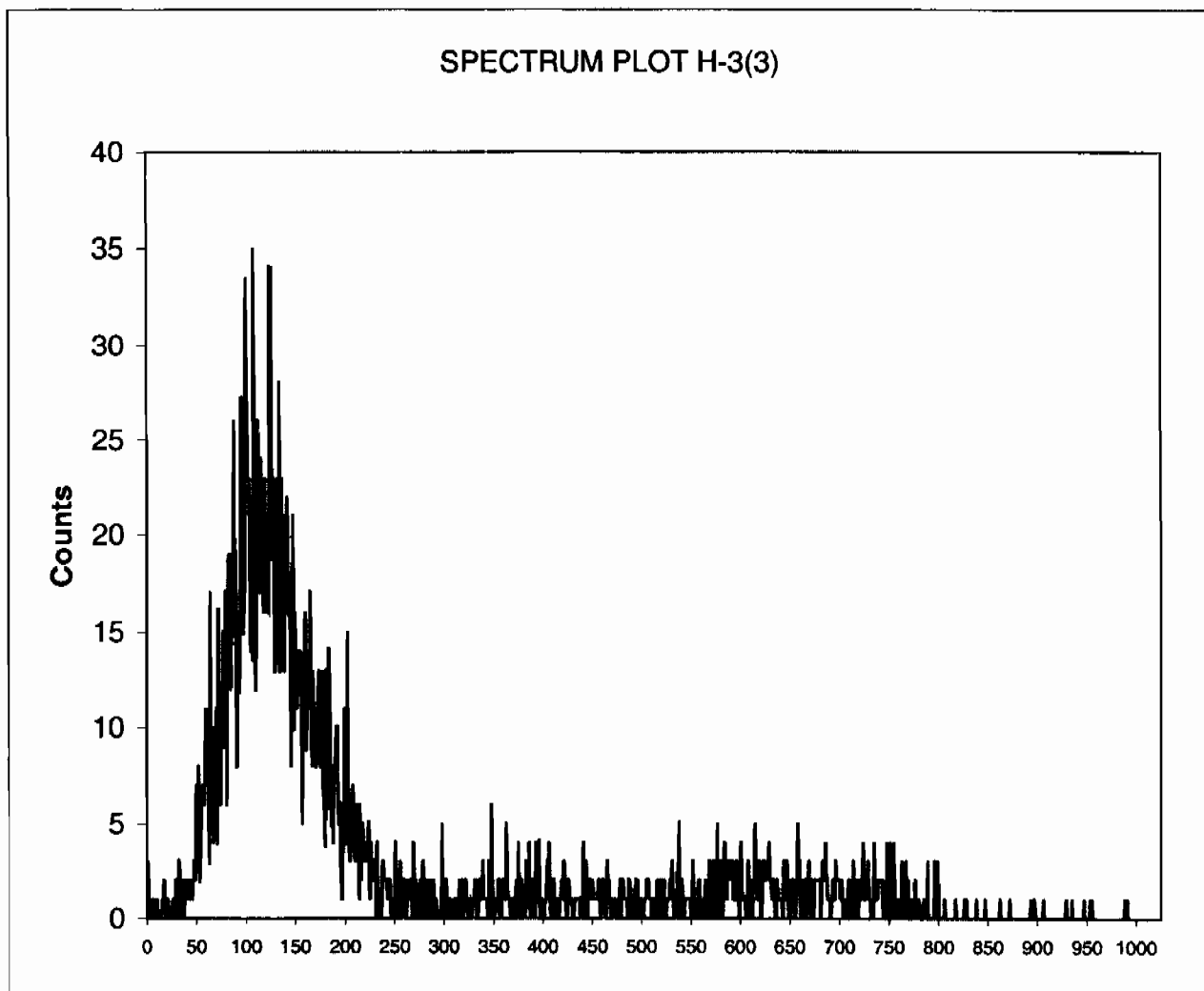
32	0
33	0
34	0
35	0

Instrument Type: Quantulus  
Data Capture Date: THU 11 MAR 2010 1:41  
FileName: s:\sc\files\pink\961540A0\SQ042401N.001.xls  
File Info: s:\sc\files\pink\961540A0\U961540A0.xls

ID: H-3(3)  
Comments: PINK

Sample, Rack-Pos, Time: 4, 247797003, 120.0297:  
Quench: 806.73  
Start, End, X-Axis 1-174

Channel Counts



32	3
33	2
34	0
35	1

Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

Quantulus  
THU 11 MAR 2010 1:41  
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s:\sc\files\pink\961540A0\U961540A0.xls

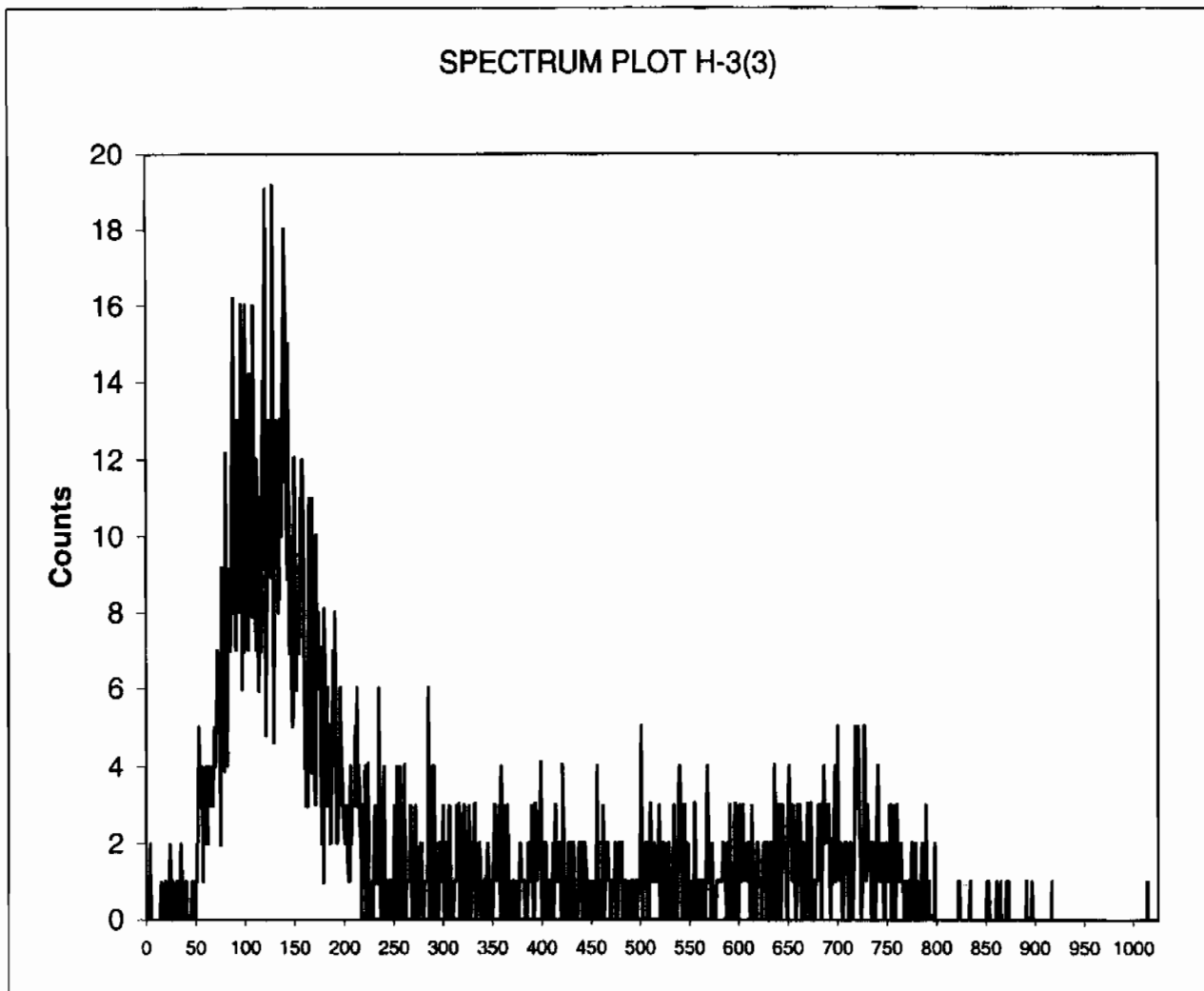
ID:  
Comments:

H-3(3)  
PINK

Sample, Rack-Pos, Time:  
Quench:  
Start, End, X-Axis

5, 247797004, 120.0297:  
807.41  
1-174

Channel Counts



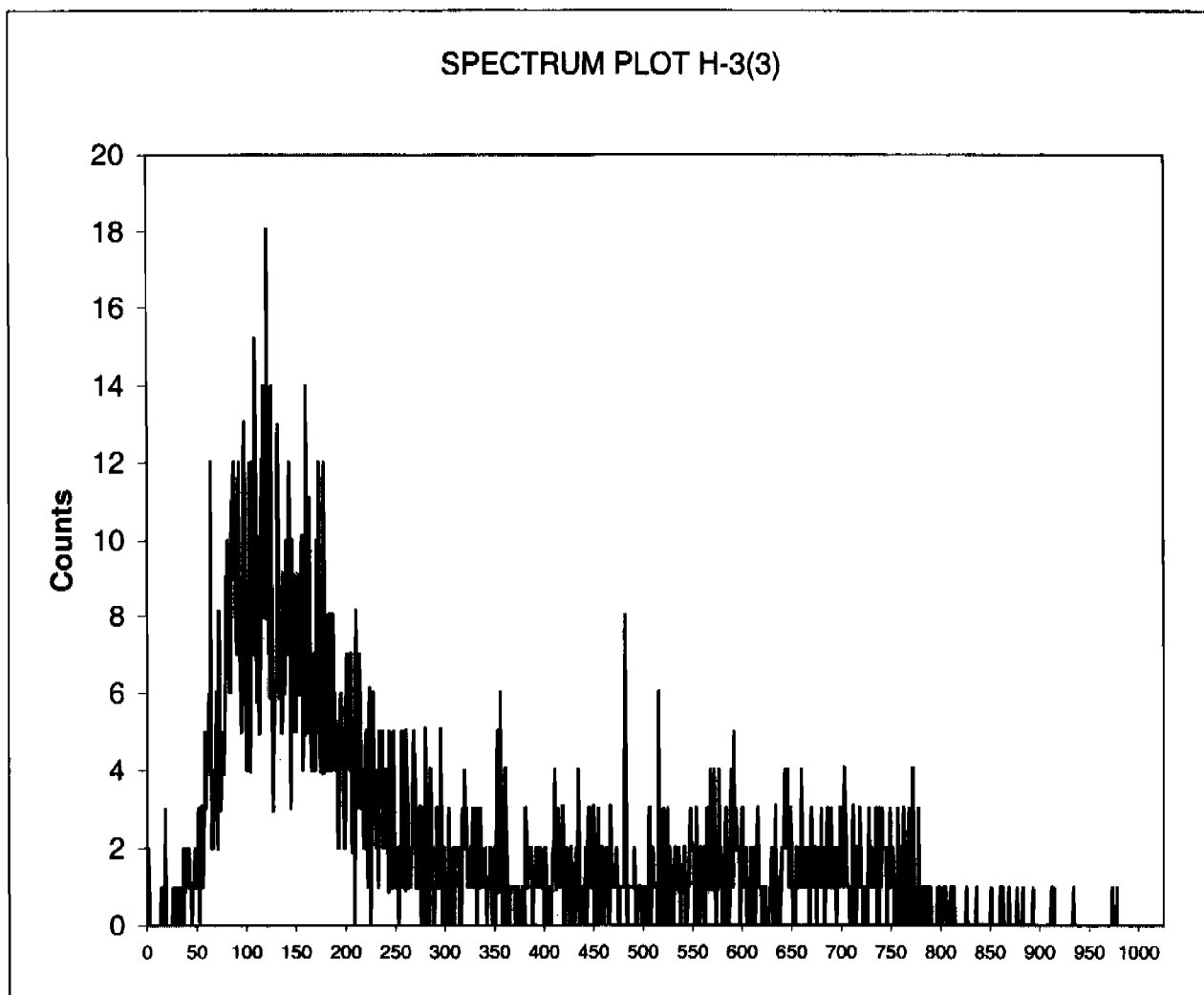
32	1
33	0
34	1
35	2

Instrument Type: Quantulus  
Data Capture Date: THU 11 MAR 2010 1:41  
FileName: s:\lsc\files\pink\961540A0\SQ062601N.001.xls  
File Info: s:\lsc\files\pink\961540A0\U961540A0.xls

ID: H-3(3)  
Comments: PINK

Sample, Rack-Pos, Time: 6, 247797005, 120.0297:  
Quench: 805.3  
Start, End, X-Axis 1-174

Channel Counts



32	1
33	1
34	1
35	0



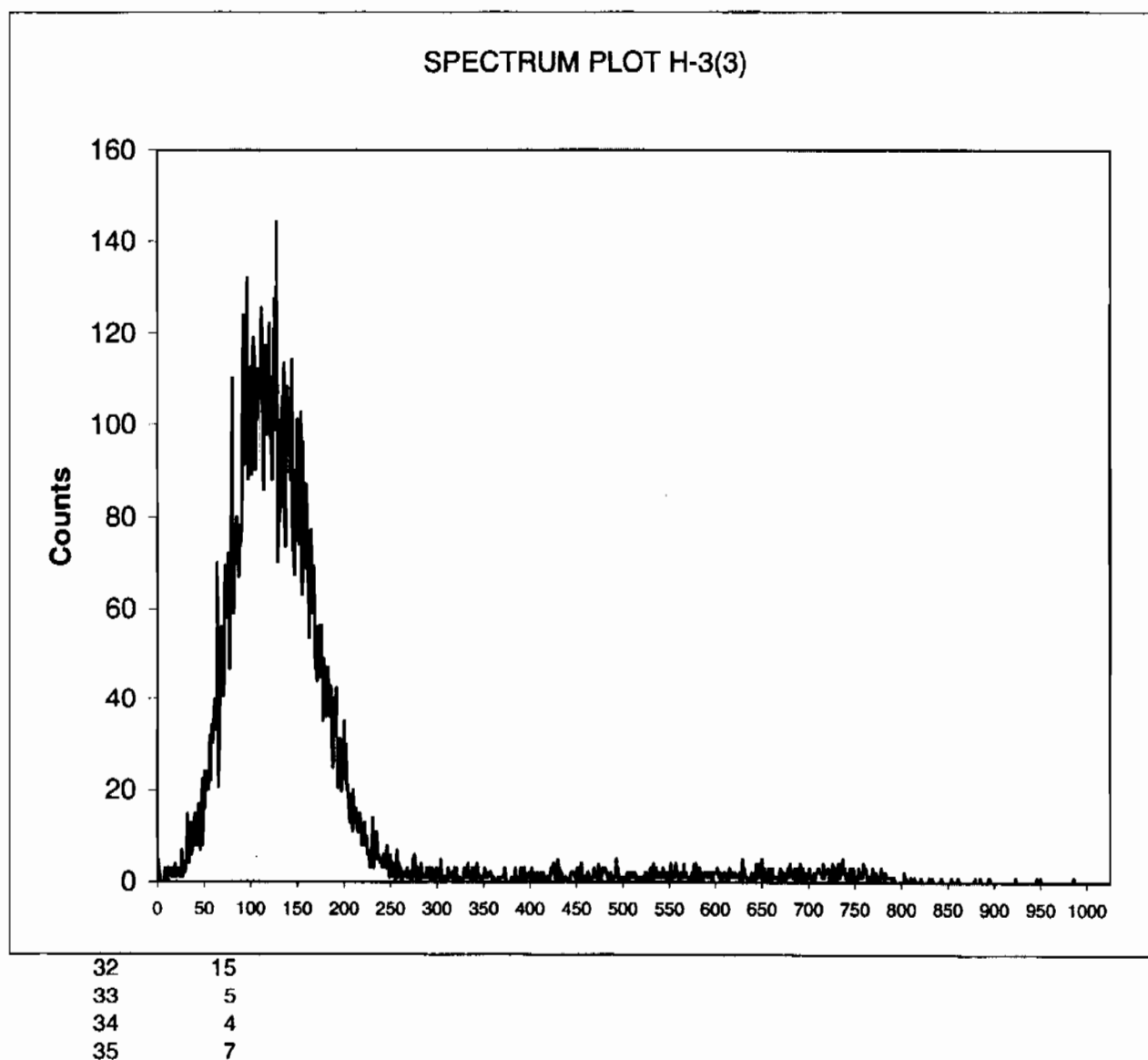
Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

Quantulus  
THU 11 MAR 2010 1:41  
s:\sc\files\pink\961540A0\SQ072701N.001.xls  
s:\sc\files\pink\961540A0\U961540A0.xls

ID: H-3(3)  
Comments: PINK

Sample, Rack-Pos, Time: 7, 247900004, 115.4796:  
Quench: 808.45  
Start, End, X-Axis 1-174

Channel Counts



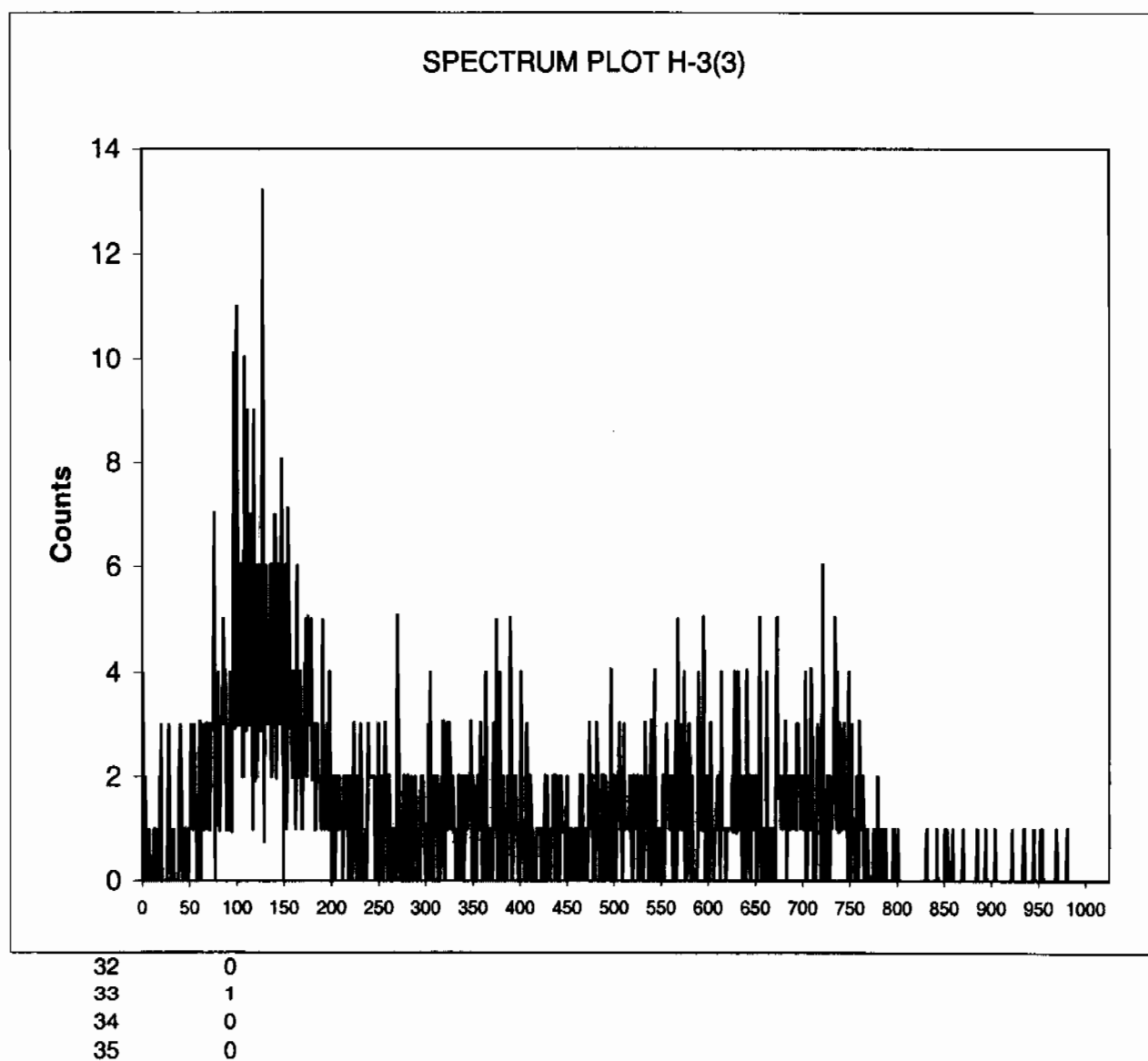
Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

Quantulus  
THU 11 MAR 2010 1:41  
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s:\sc\files\pink\961540A0\U961540A0.xls

ID: H-3(3)  
Comments: PINK

Sample, Rack-Pos, Time: 8, 247000006, 120.0297:  
Quench: 809.31  
Start, End, X-Axis 1-174

Channel Counts

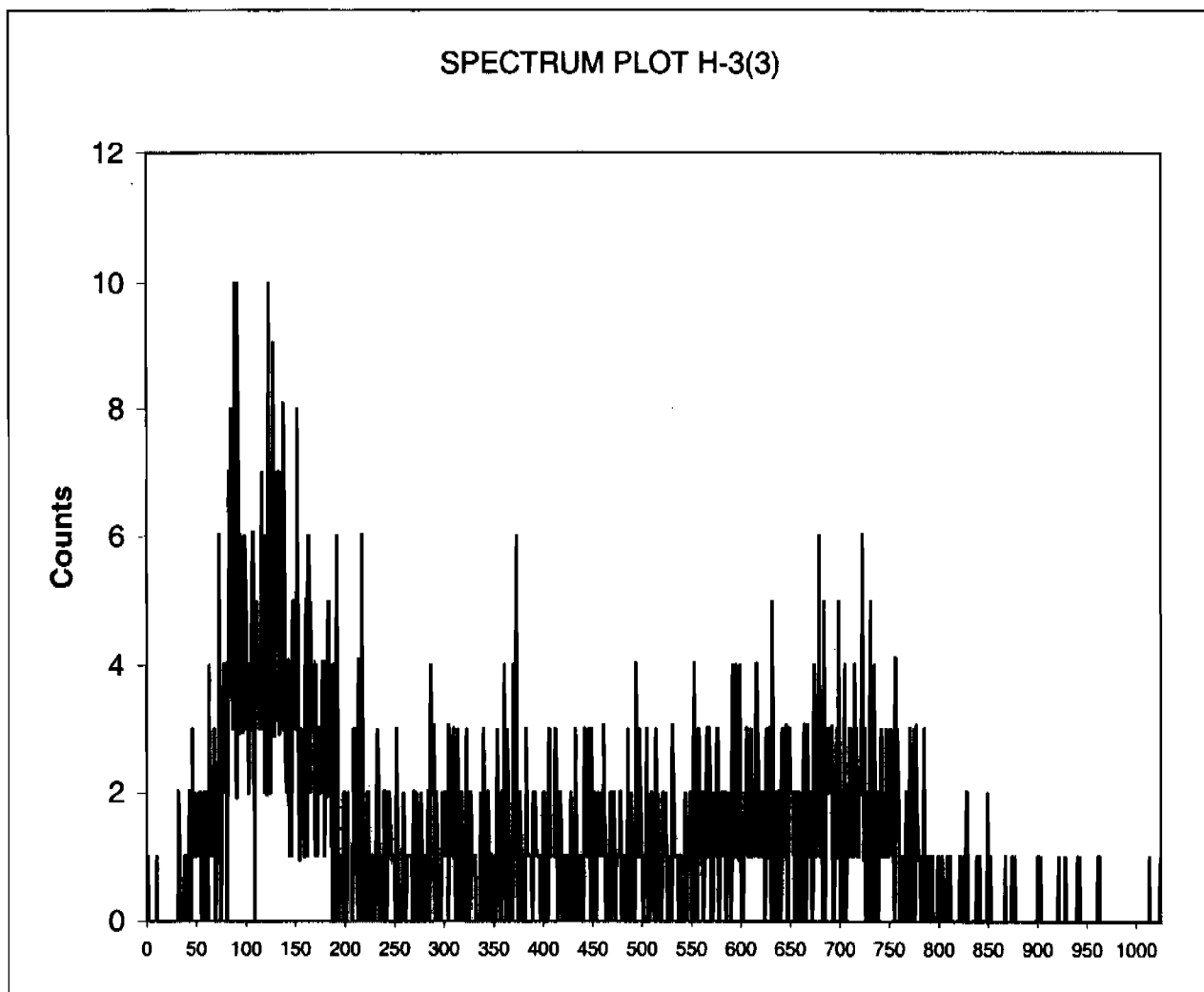


Instrument Type: Quantulus  
Data Capture Date: THU 11 MAR 2010 1:41  
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File Info: s:\sc\files\pink\961540A0\U961540A0.xls

ID: H-3(3)  
Comments: PINK

Sample, Rack-Pos, Time: 9, 247900008, 120.0297:  
Quench: 806.32  
Start, End, X-Axis 1-174

Channel Counts



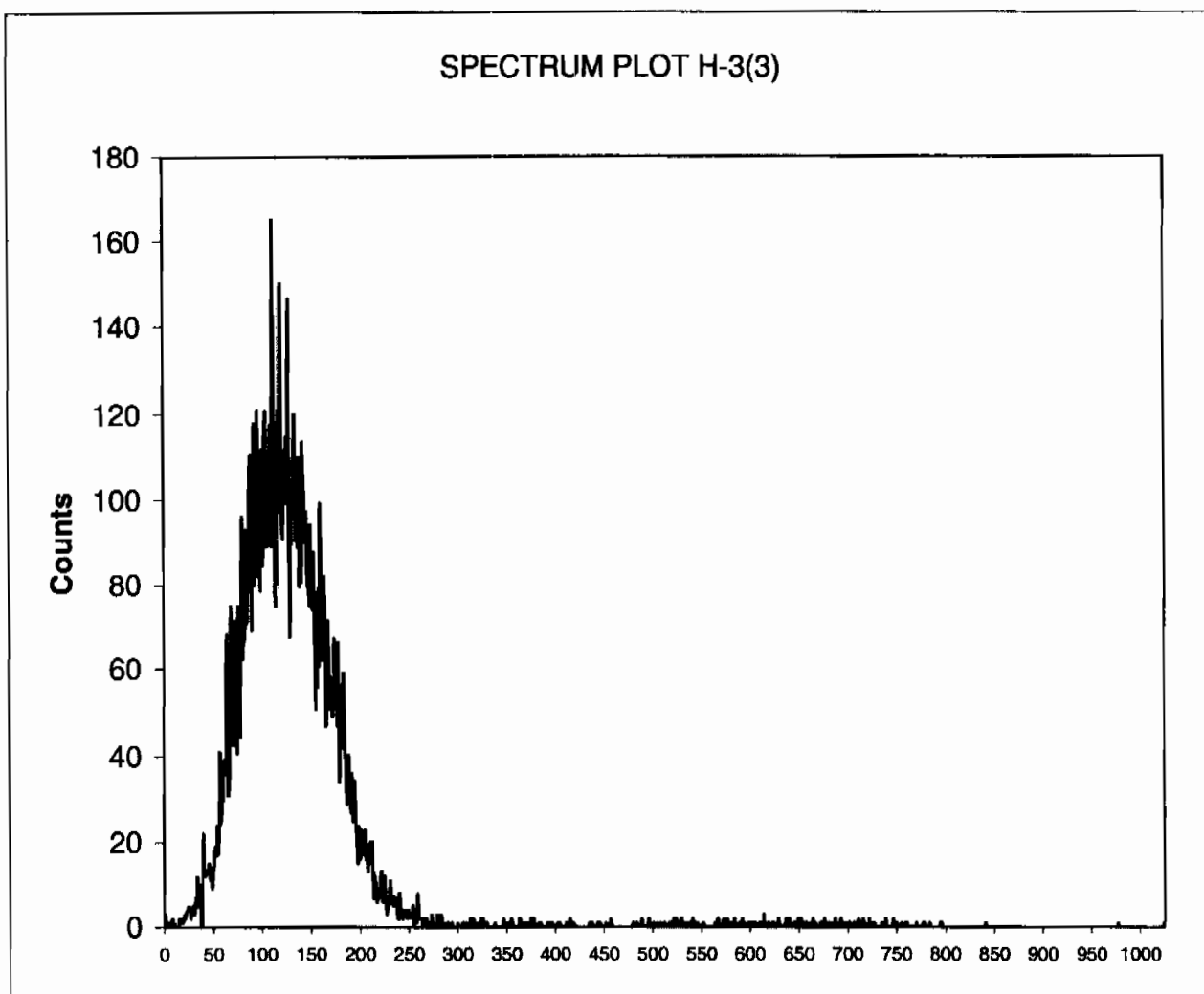
32	2
33	1
34	0
35	0

Instrument Type: Quantulus  
Data Capture Date: THU 11 MAR 2010 1:41  
FileName: s:\sc\files\pink\961540A0\SQ103001N.001.xls  
File Info: s:\sc\files\pink\961540A0\U961540A0.xls

ID: H-3(3)  
Comments: PINK

Sample, Rack-Pos, Time: 10, 247900011, 36.57973:  
Quench: 807.55  
Start, End, X-Axis 1-174

Channel Counts



32	7
33	5
34	12
35	6

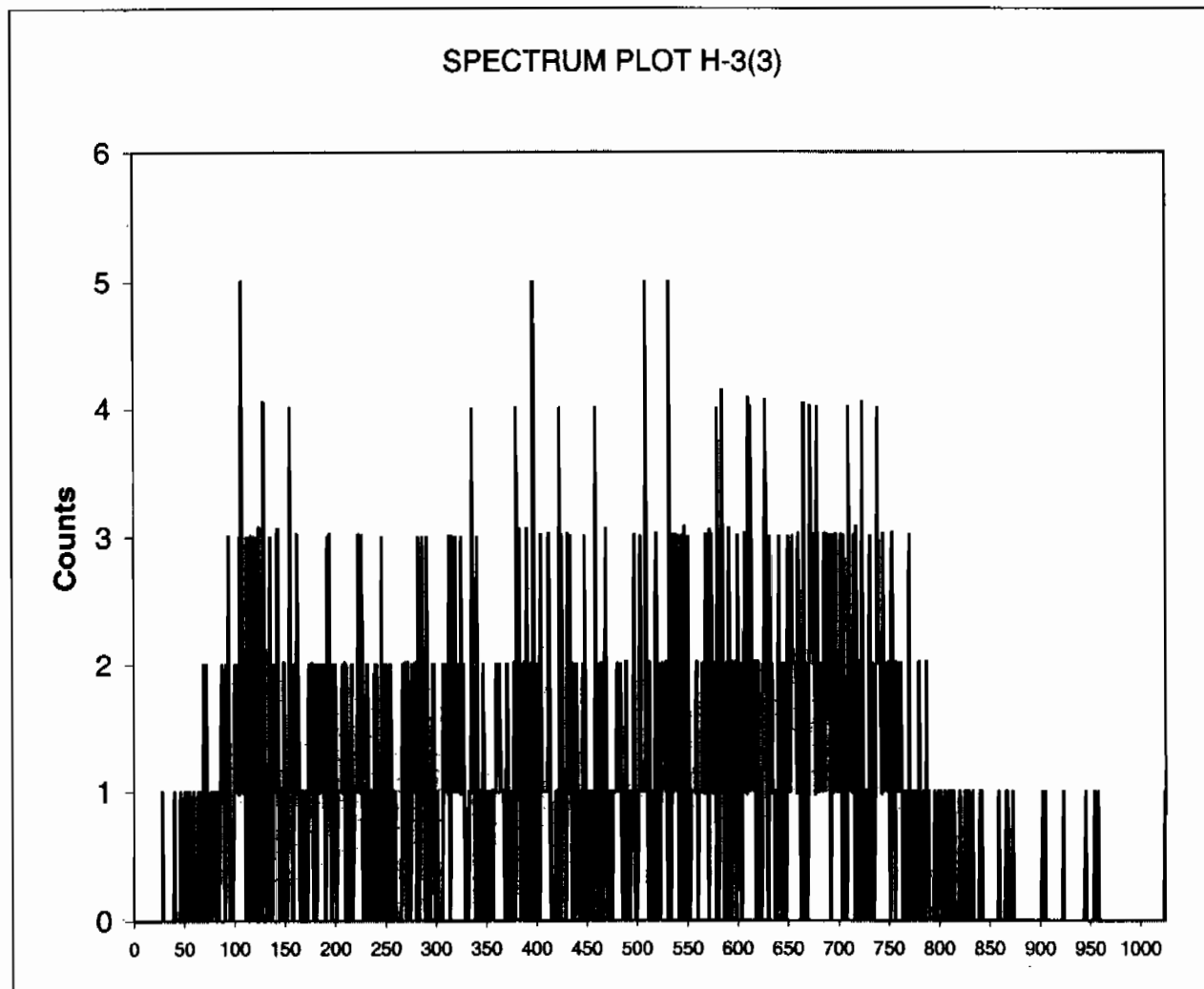
Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

Quantulus  
THU 11 MAR 2010 1:41  
s:\sc\files\pink\961540A0\SQ113101N.001.xls  
s:\sc\files\pink\961540A0\U961540A0.xls

ID: H-3(3)  
Comments: PINK

Sample, Rack-Pos, Time: 11, 247920002, 120.0297:  
Quench: 805.88  
Start, End, X-Axis 1-174

Channel Counts



32	0
33	0
34	0
35	0

Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

Quantulus  
THU 11 MAR 2010 1:41  
s:\lsc\files\pink\961540A0\SQ123201N.001.xls  
s:\lsc\files\pink\961540A0\U961540A0.xls

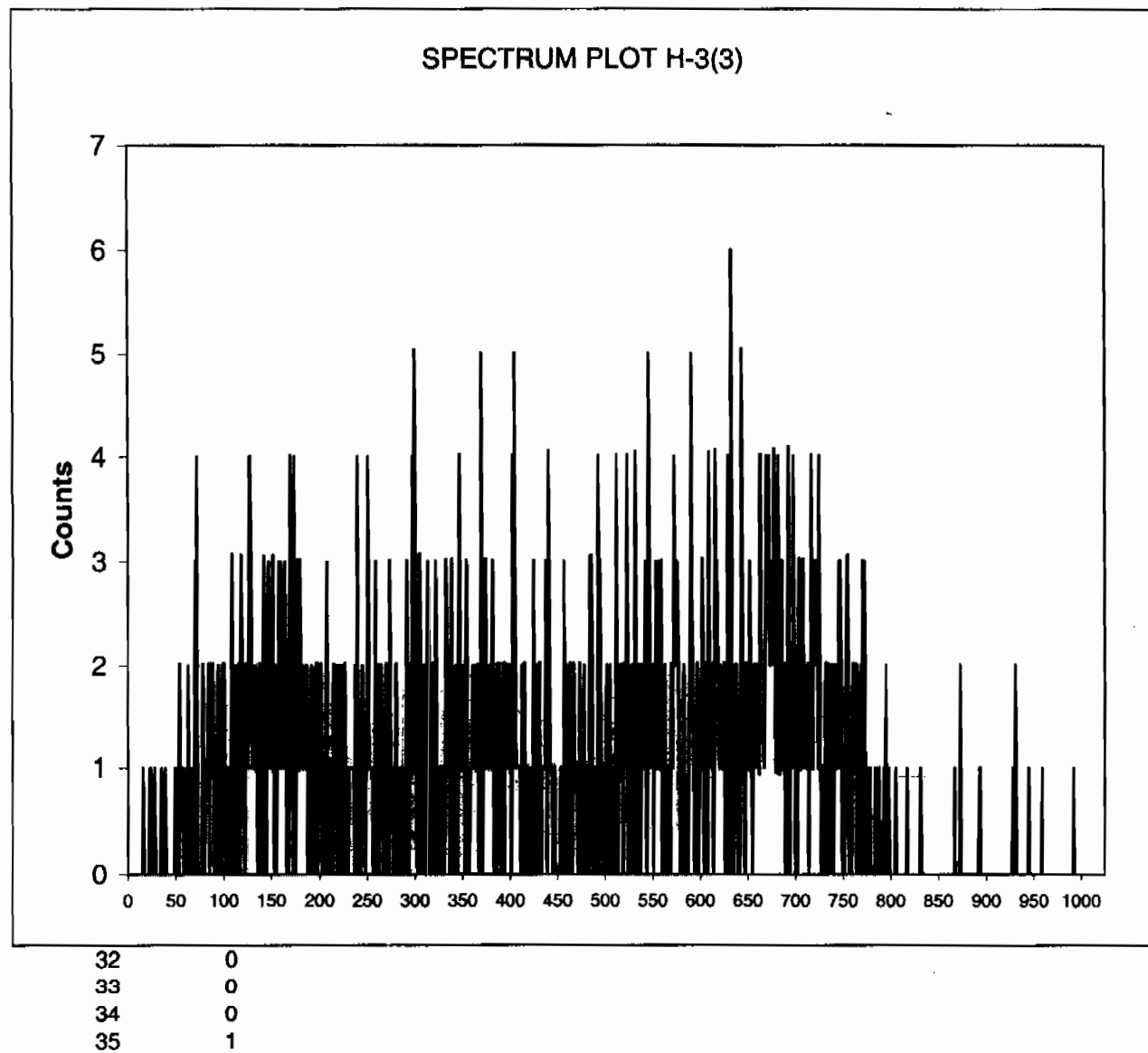
ID:  
Comments:

H-3(3)  
PINK

Sample, Rack-Pos, Time:  
Quench:  
Start, End, X-Axis

12, 248385001, 120.0297:  
805.85  
1-174

Channel Counts



# REGISTRY

FRI 12 MAR 2010 1:59

\*\*\* DIRECTORY PATH :S:\LSC\Q\DA\961540A1 \*\*\*

PARAMETER GROUP: 8  
ID: H-3(4)

00A PROGRAM MODE 6 ->

ORDER	POS	ID	CTIME	COUNTS	CUCNTS	MCW	REP	STD	STMS	STIME
1	33	248385002	120:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
2	34	248385003	120:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
3	35	248385004	120:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
4	36	248385005	120:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
5	37	248385006	120:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
6	38	248386003	120:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
7	39	248386004	120:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
8	40	1202062409	120:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
9	41	1202062410	120:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
10	42	1202062411	15:00	1.0E04	NO LIM	1	1	Y	1/10	1:00

NUMBER OF CYCLES 1  
COINCIDENCE BIAS (L/H) L

MCA INPUT	TRIGG.	INHIBIT	MEMORY SPLIT
1 LRSUM	DCOS	G	L*R
2 GSUM	G		L*R

WINDOW	CHANNELS	MCA	HALF
1	1- 174	1	2
2	1- 174	1	2
3	60- 220	1	2
4	50- 320	1	1
5	50- 270	1	1
6	60- 220	1	1
7	1- 1024	2	1
8	1- 1024	2	2

SELECTED PRINTOUT FOR TERMINAL 1 (A)

SELECTED PRINTOUT FOR TERMINAL 2 (B)

1. POS	2. ID	3. CTIME	4. SQP	5. CPM1	6. CPM2	7. CPM3
SEND SPECTRA		12				
RESOLUTION OF SPECTRA	1024					
LISTING	Y					
INSTRUMENT NUMBER	1					

POS	ID	CTIME	SQP	CPM1	CPM2	CPM3
Q013301N.001	12 MAR 2010	4:02				
33	248385002	120:01.785	804.82	1.16	1.16	1.45
Q023401N.001	12 MAR 2010	6:04				
34	248385003	120:01.785	806.81	1.01	1.01	1.28
Q033501N.001	12 MAR 2010	8:07				

Page 1

			REGISTRY			
35	248385004	120:01.785	804.34	.96	.96	1.32
Q043601N.001	12 MAR 2010	10:09				
36	248385005	120:01.785	805.21	.91	.91	1.24
Q053701N.001	12 MAR 2010	12:12				
37	248385006	120:01.785	805.60	.92	.92	1.25
Q063801N.001	12 MAR 2010	14:14				
38	248386003	120:01.785	804.48	1.19	1.19	1.50
Q073901N.001	12 MAR 2010	16:17				
39	248386004	120:01.778	808.23	.95	.95	1.18
Q084001N.001	12 MAR 2010	18:19				
40	1202062409	120:01.778	806.79	.69	.69	.97
Q094101N.001	12 MAR 2010	20:23				
41	1202062410	120:01.784	807.73	1.13	1.13	1.47
Q104201N.001	12 MAR 2010	20:40				
42	1202062411	15:01.784	806.71	20.55	20.55	22.70

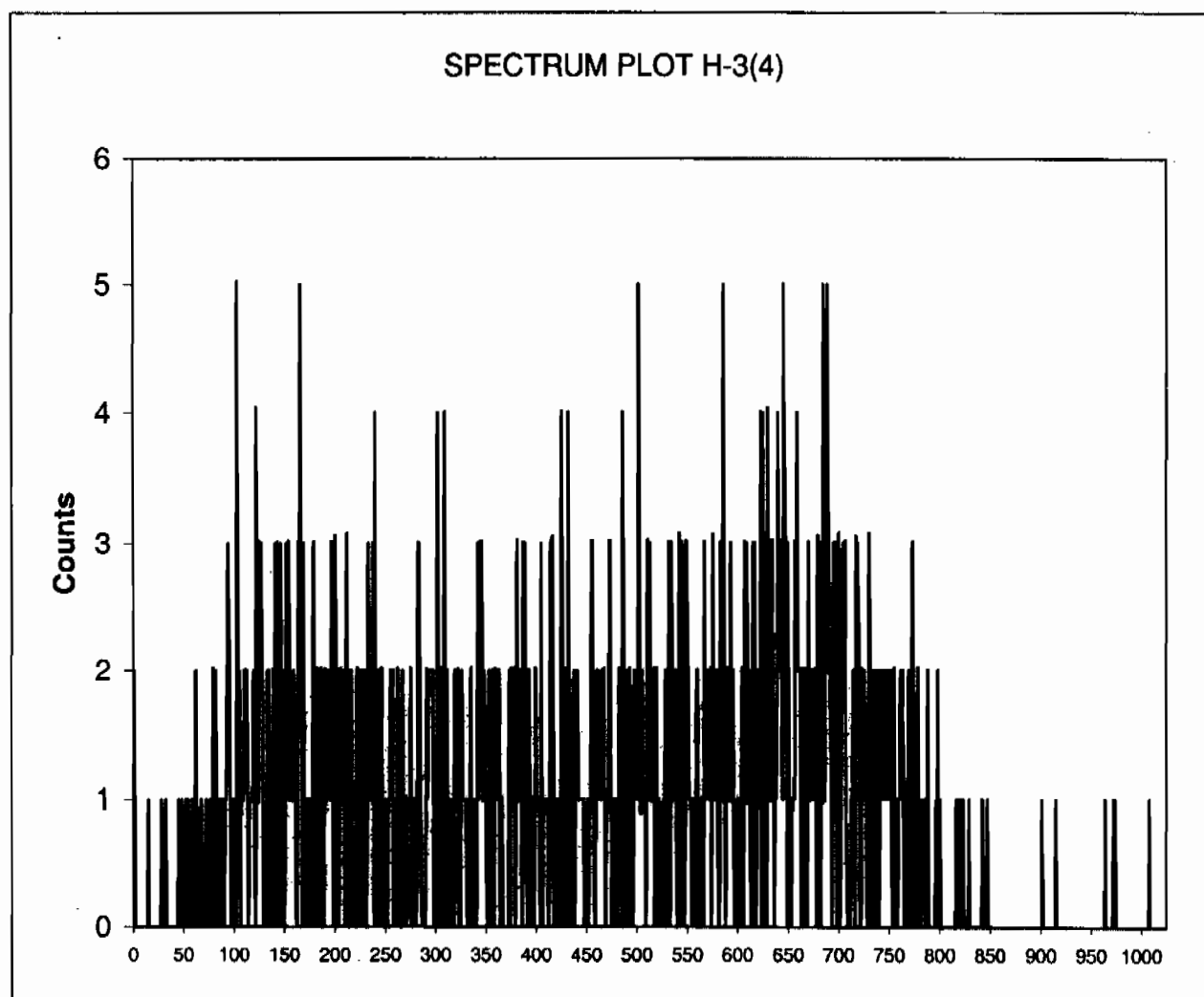


Instrument Type: Quantulus  
Data Capture Date: FRI 12 MAR 2010 1:59  
FileName: s:\scfiles\pink\961540A1\SQ013301N.001.xls  
File Info: s:\scfiles\pink\961540A1\U961540A1.xls

ID: H-3(4)  
Comments: PINK

Sample, Rack-Pos, Time: 1, 248385002, 120.0297:  
Quench: 804.82  
Start, End, X-Axis 1-174

Channel Counts



32	1
33	0
34	0
35	0

Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

Quantulus  
FRI 12 MAR 2010 1:59  
s:\sc\files\pink\961540A1\SQ023401N.001.xls  
s:\sc\files\pink\961540A1\U961540A1.xls

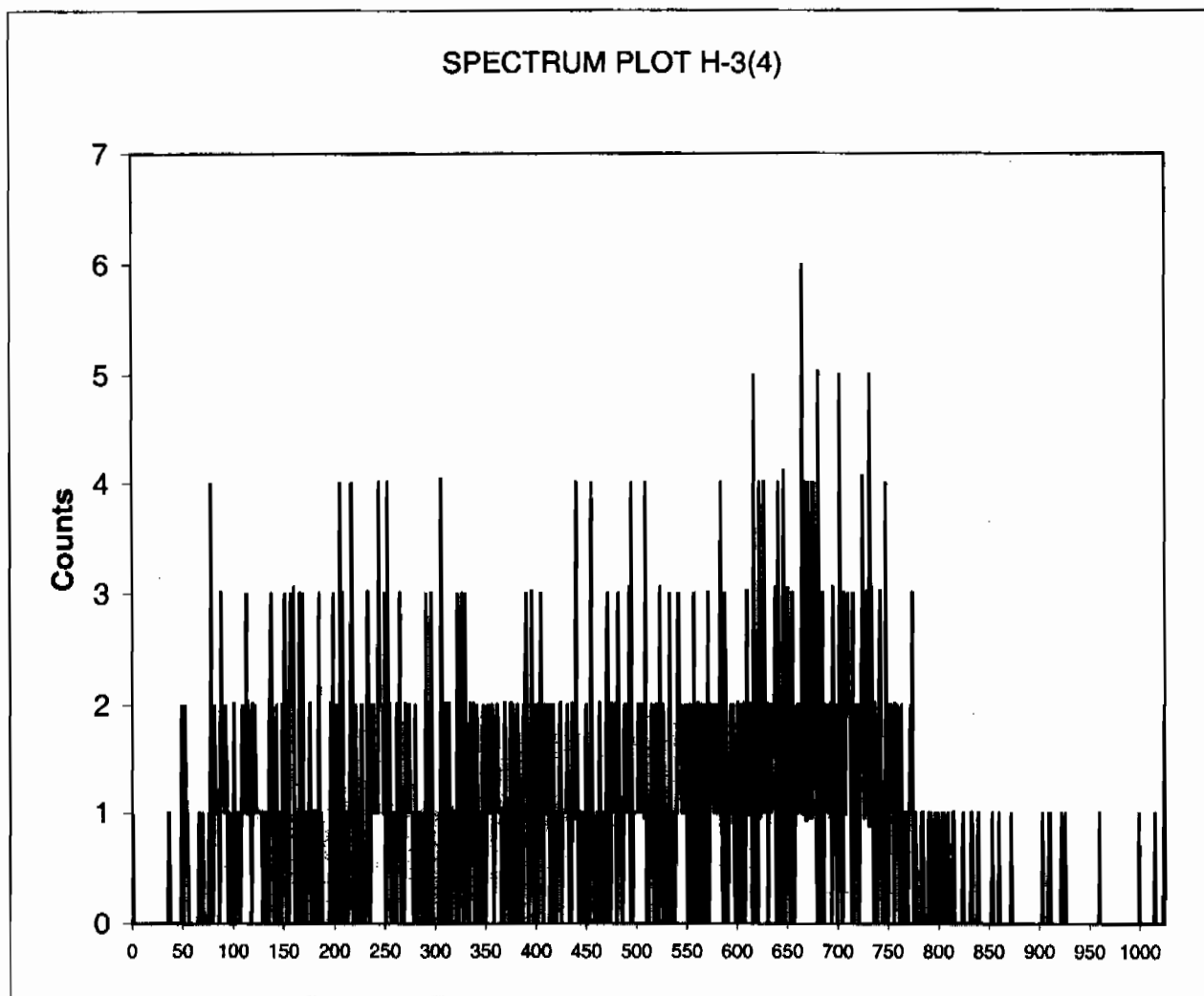
ID:  
Comments:

H-3(4)  
PINK

Sample, Rack-Pos, Time:  
Quench:  
Start, End, X-Axis

2, 248385003, 120.0297:  
806.81  
1-174

Channel Counts



32	0
33	0
34	0
35	0

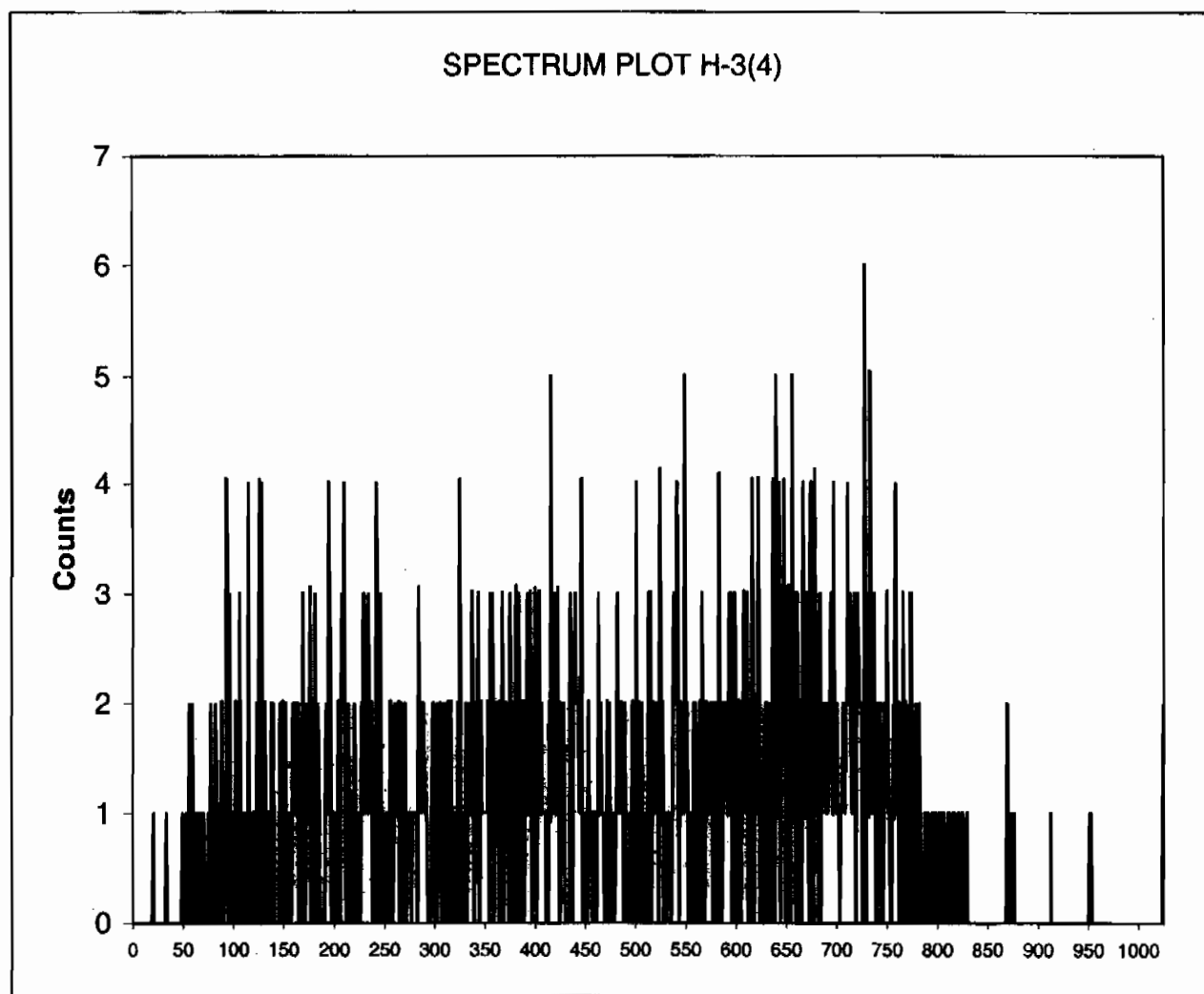
Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

Quantulus  
FRI 12 MAR 2010 1:59  
s:\sc\files\pink\961540A1\SQ033501N.001.xls  
s:\sc\files\pink\961540A1\U961540A1.xls

ID: H-3(4)  
Comments: PINK

Sample, Rack-Pos, Time: 3, 248385004, 120.0297:  
Quench: 804.34  
Start, End, X-Axis 1-174

Channel Counts



32	0
33	1
34	0
35	0

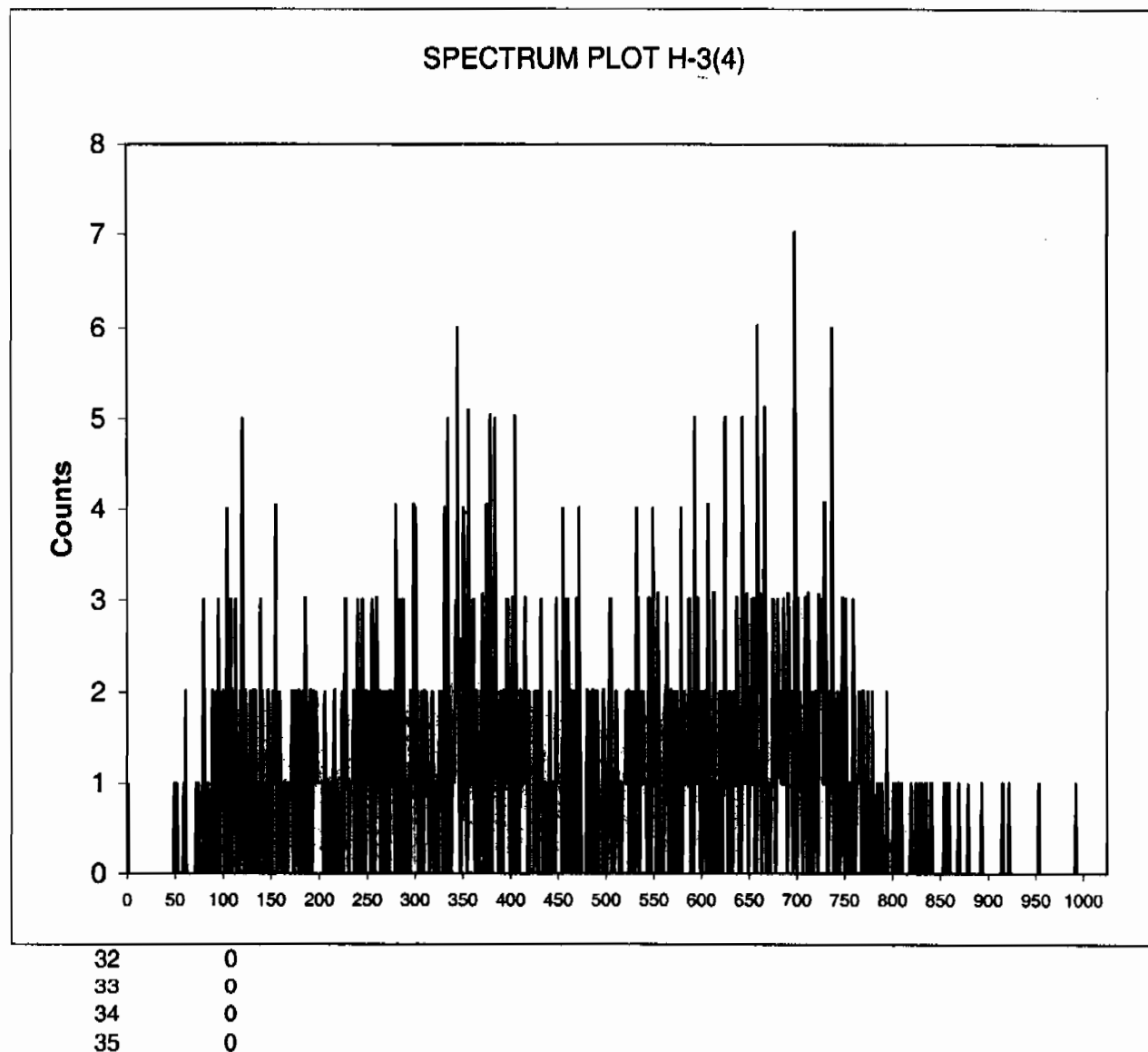
Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

Quantulus  
FRI 12 MAR 2010 1:59  
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s:\sc\files\pink\961540A1\U961540A1.xls

ID: H-3(4)  
Comments: PINK

Sample, Rack-Pos, Time: 4, 248385005, 120.0297:  
Quench: 805.21  
Start, End, X-Axis 1-174

Channel Counts



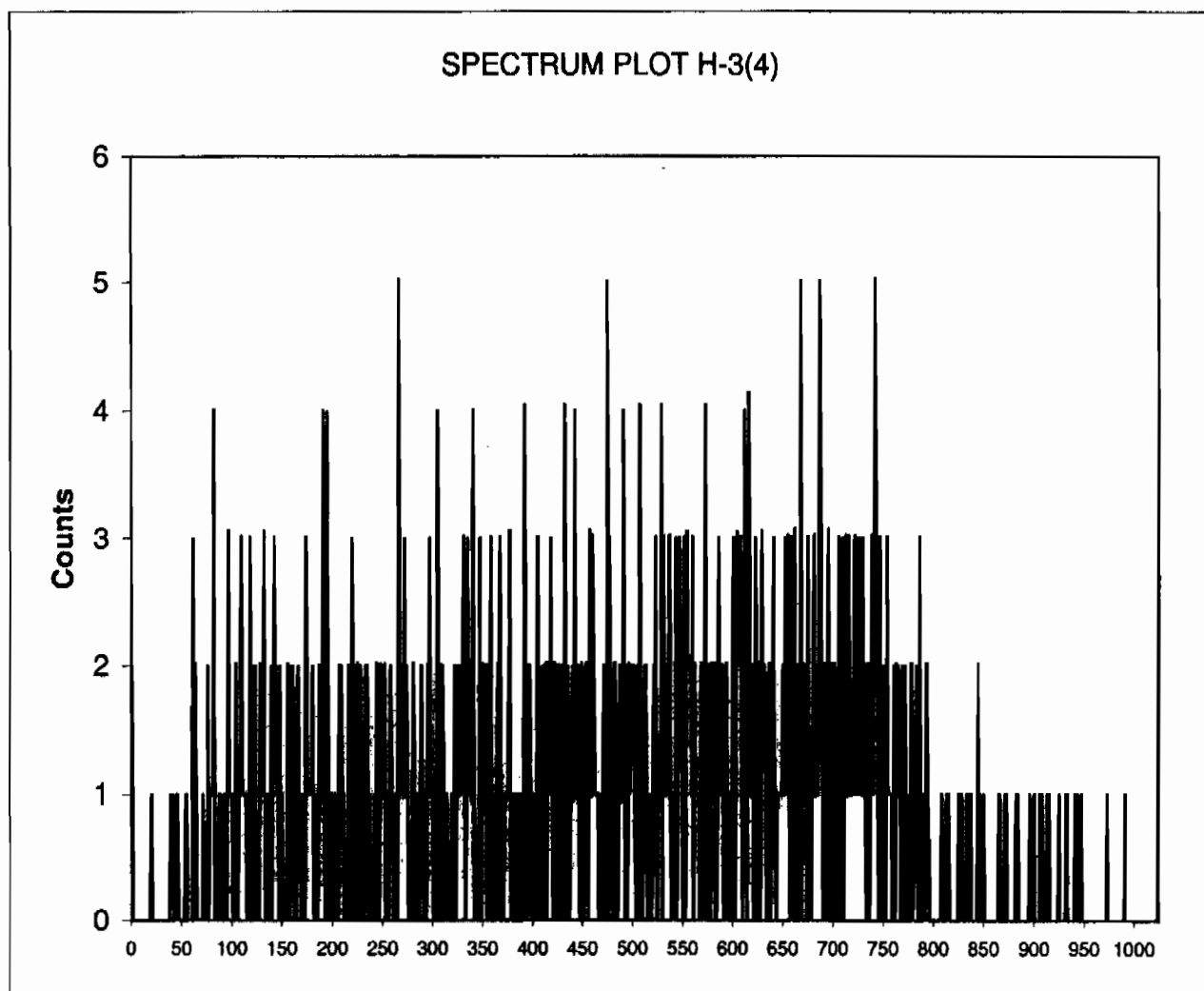
Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

Quantulus  
FRI 12 MAR 2010 1:59  
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s:\sc\files\pink\961540A1\U961540A1.xls

ID: H-3(4)  
Comments: PINK

Sample, Rack-Pos, Time: 5, 248385006, 120.0297:  
Quench: 805.6  
Start, End, X-Axis 1-174

Channel Counts



32	0
33	0
34	0
35	0

Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

Quantulus  
FRI 12 MAR 2010 1:59  
s:\sc\files\pink\961540A1\SQ063801N.001.xls  
s:\sc\files\pink\961540A1\U961540A1.xls

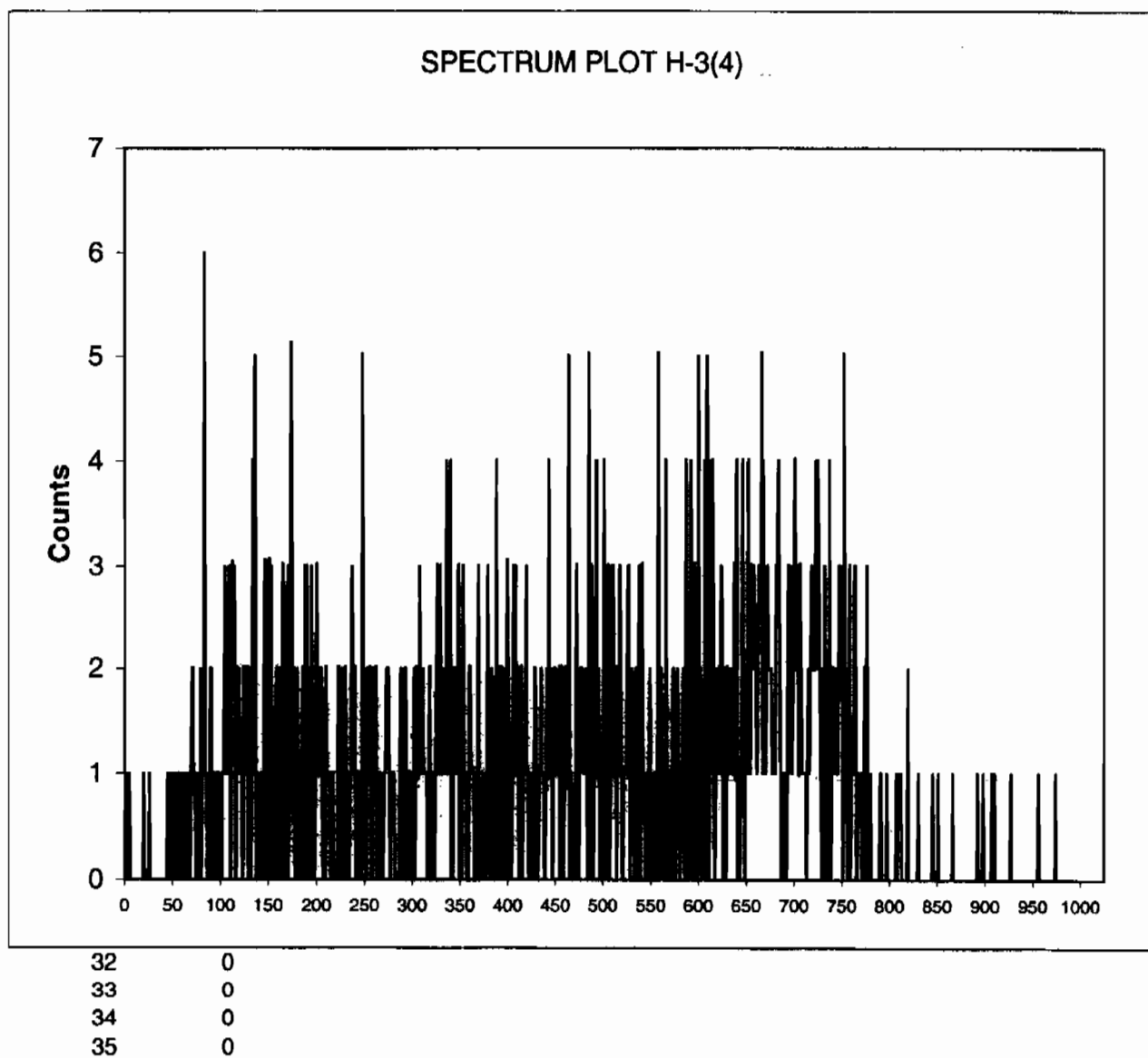
ID:  
Comments:

H-3(4)  
PINK

Sample, Rack-Pos, Time:  
Quench:  
Start, End, X-Axis

6, 248386003, 120.0297:  
804.48  
1-174

Channel Counts



Instrument Type:  
Data Capture Date:  
FileName:  
File Info:

Quantulus  
FRI 12 MAR 2010 1:59  
s:\sc\files\pink\961540A1\SQ073901N.001.xls  
s:\sc\files\pink\961540A1\U961540A1.xls

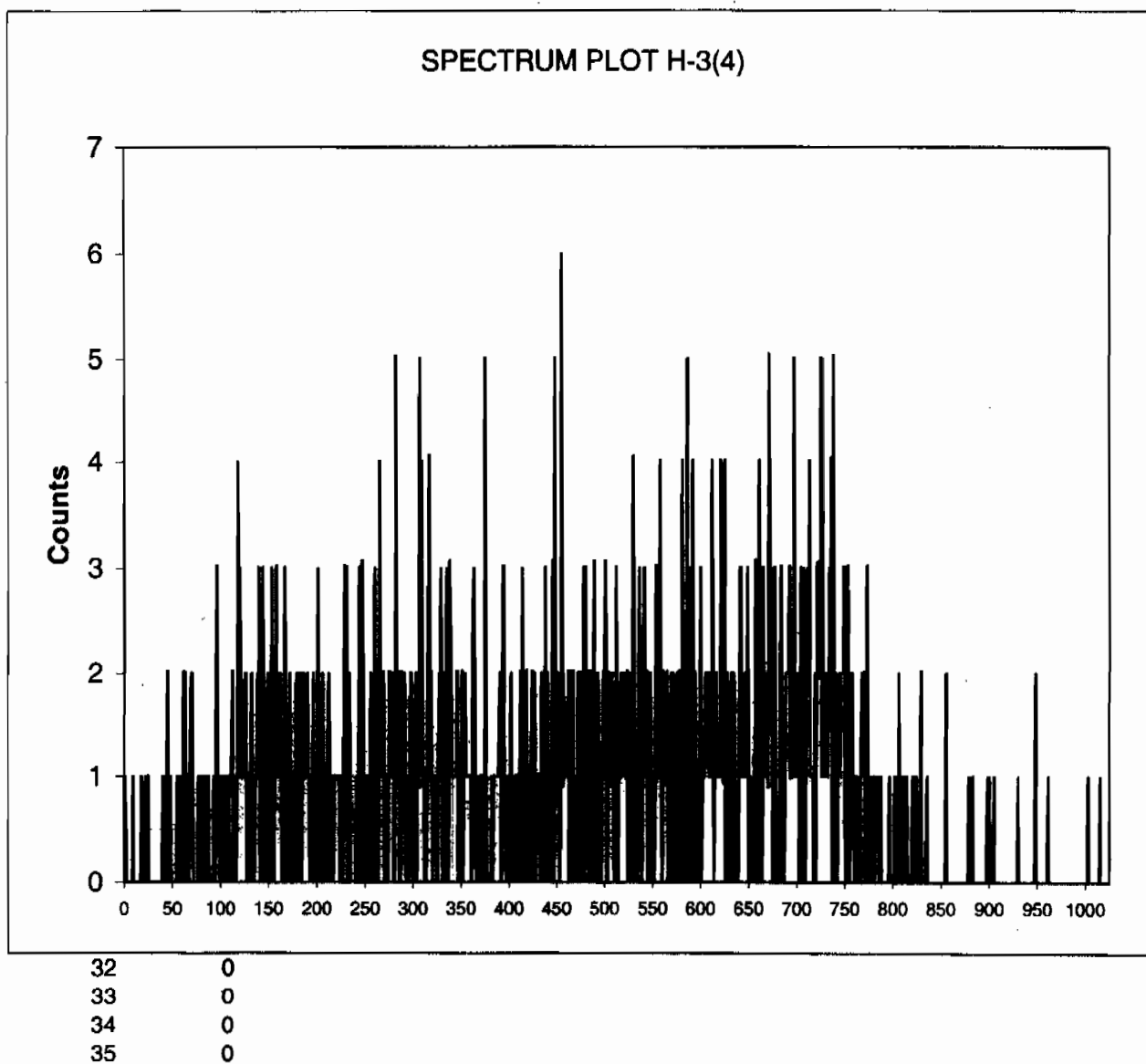
ID:  
Comments:

H-3(4)  
PINK

Sample, Rack-Pos, Time:  
Quench:  
Start, End, X-Axis

7, 248386004, 120.0296:  
808.23  
1-174

Channel Counts

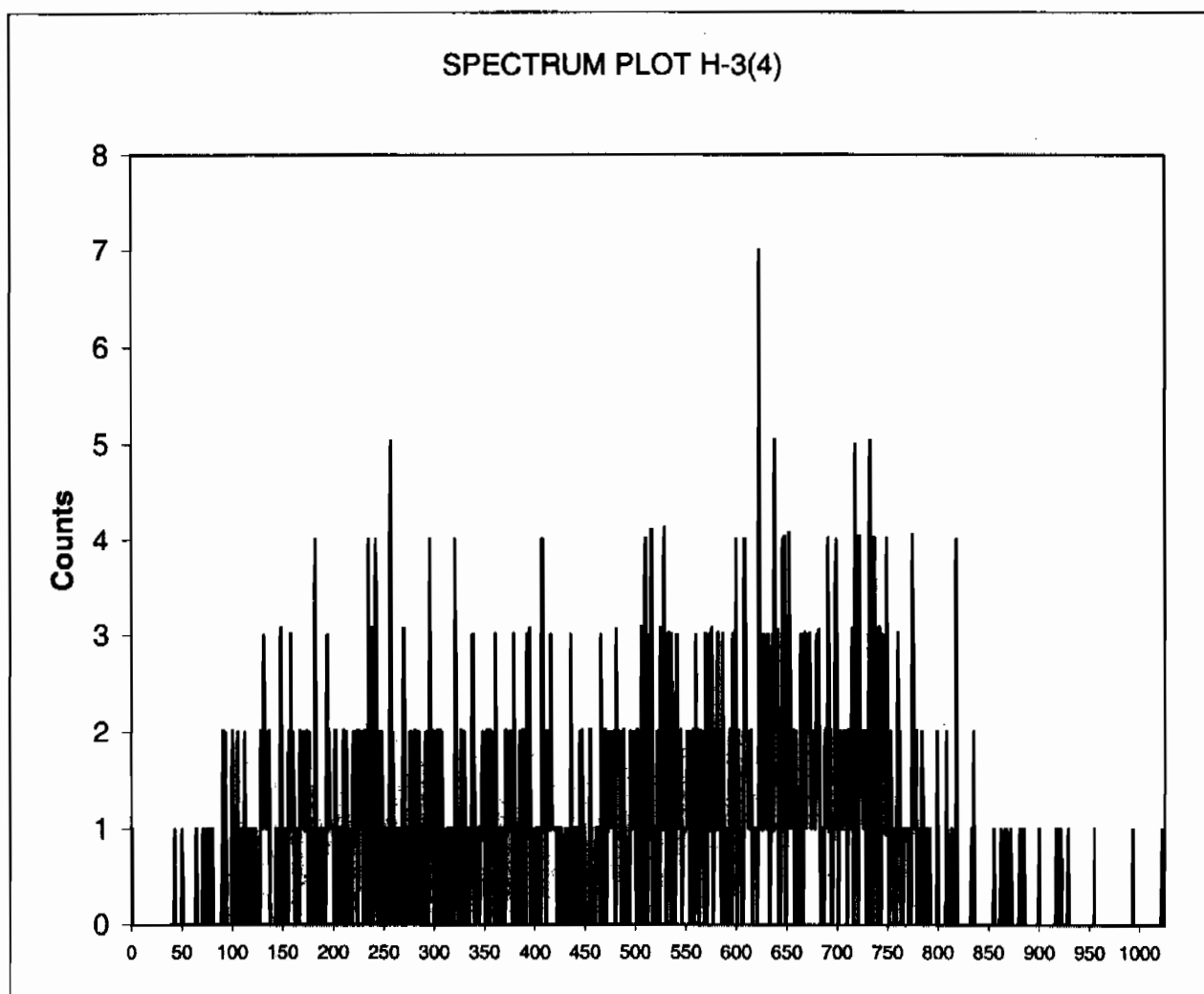


Instrument Type: Quantulus  
Data Capture Date: FRI 12 MAR 2010 1:59  
FileName: s:\sc\files\pink\961540A1\SQ084001N.001.xls  
File Info: s:\sc\files\pink\961540A1\U961540A1.xls

ID: H-3(4)  
Comments: PINK

Sample, Rack-Pos, Time: 8, 1202062409, 120.0296:  
Quench: 806.79  
Start, End, X-Axis 1-174

Channel Counts



32	0
33	0
34	0
35	0

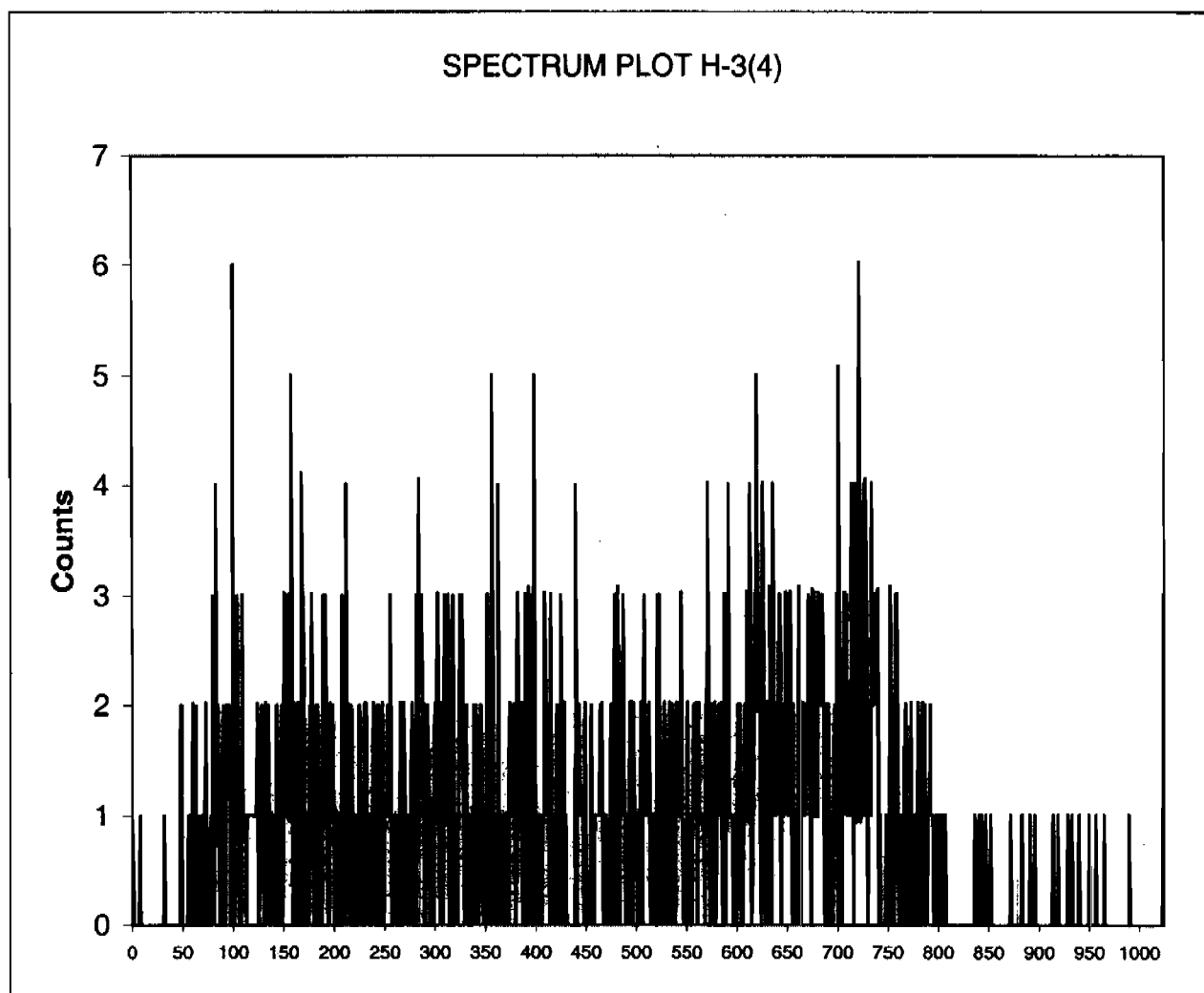


Instrument Type: Quantulus  
Data Capture Date: FRI 12 MAR 2010 1:59  
FileName: s:\sc\files\pink\961540A1\SQ094101N.001.xls  
File Info: s:\sc\files\pink\961540A1\U961540A1.xls

ID: H-3(4)  
Comments: PINK

Sample, Rack-Pos, Time: 9, 1202062410, 120.0297:  
Quench: 807.73  
Start, End, X-Axis 1-174

Channel Counts



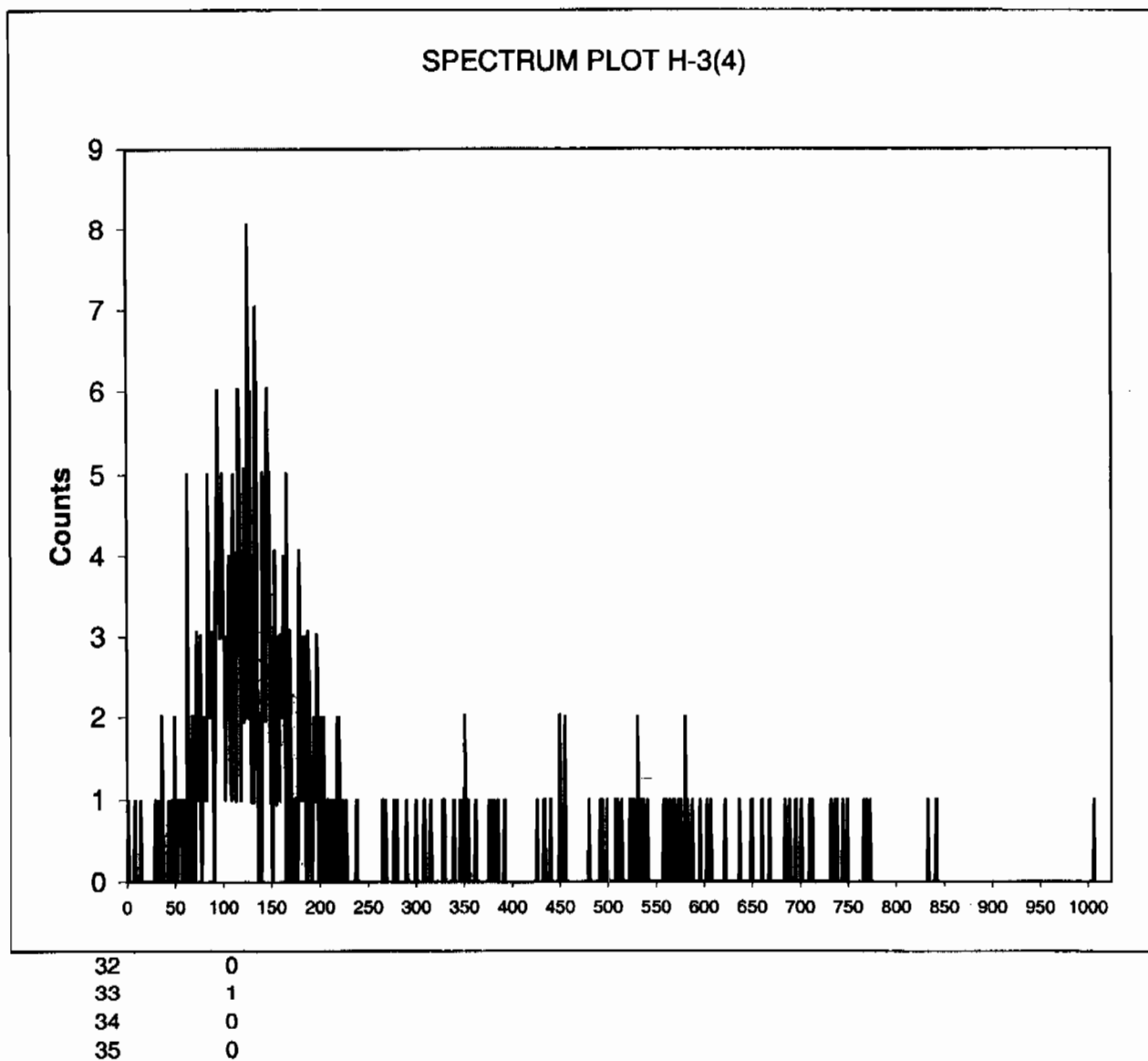
32	1
33	0
34	0
35	0

Instrument Type: Quantulus  
Data Capture Date: FRI 12 MAR 2010 1:59  
FileName: s:\sc\files\pink\961540A1\SQ104201N.001.xls  
File Info: s:\sc\files\pink\961540A1\U961540A1.xls

ID: H-3(4)  
Comments: PINK

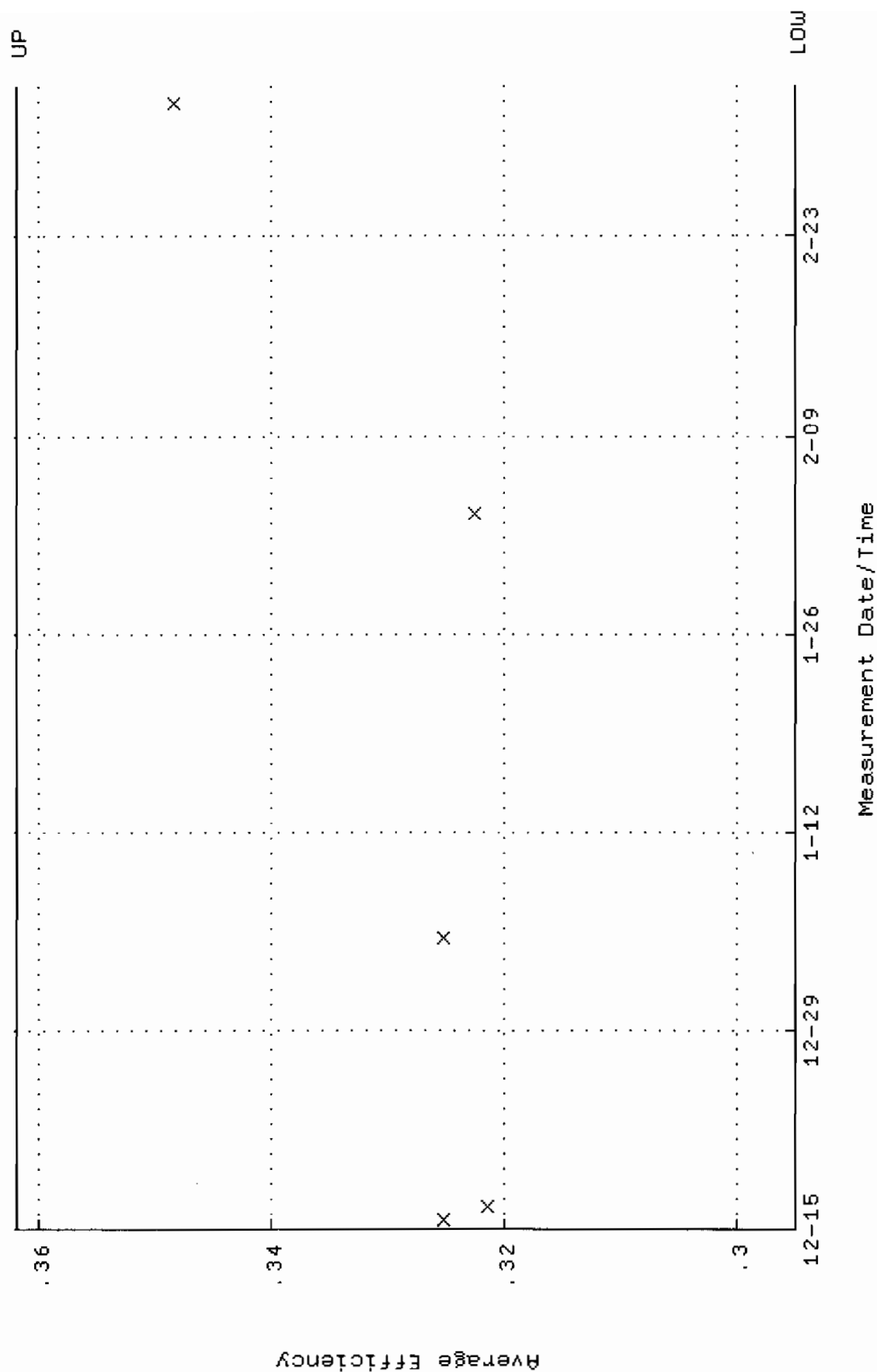
Sample, Rack-Pos, Time: 10, 1202062411, 15.02973:  
Quench: 806.71  
Start, End, X-Axis 1-174

Channel Counts

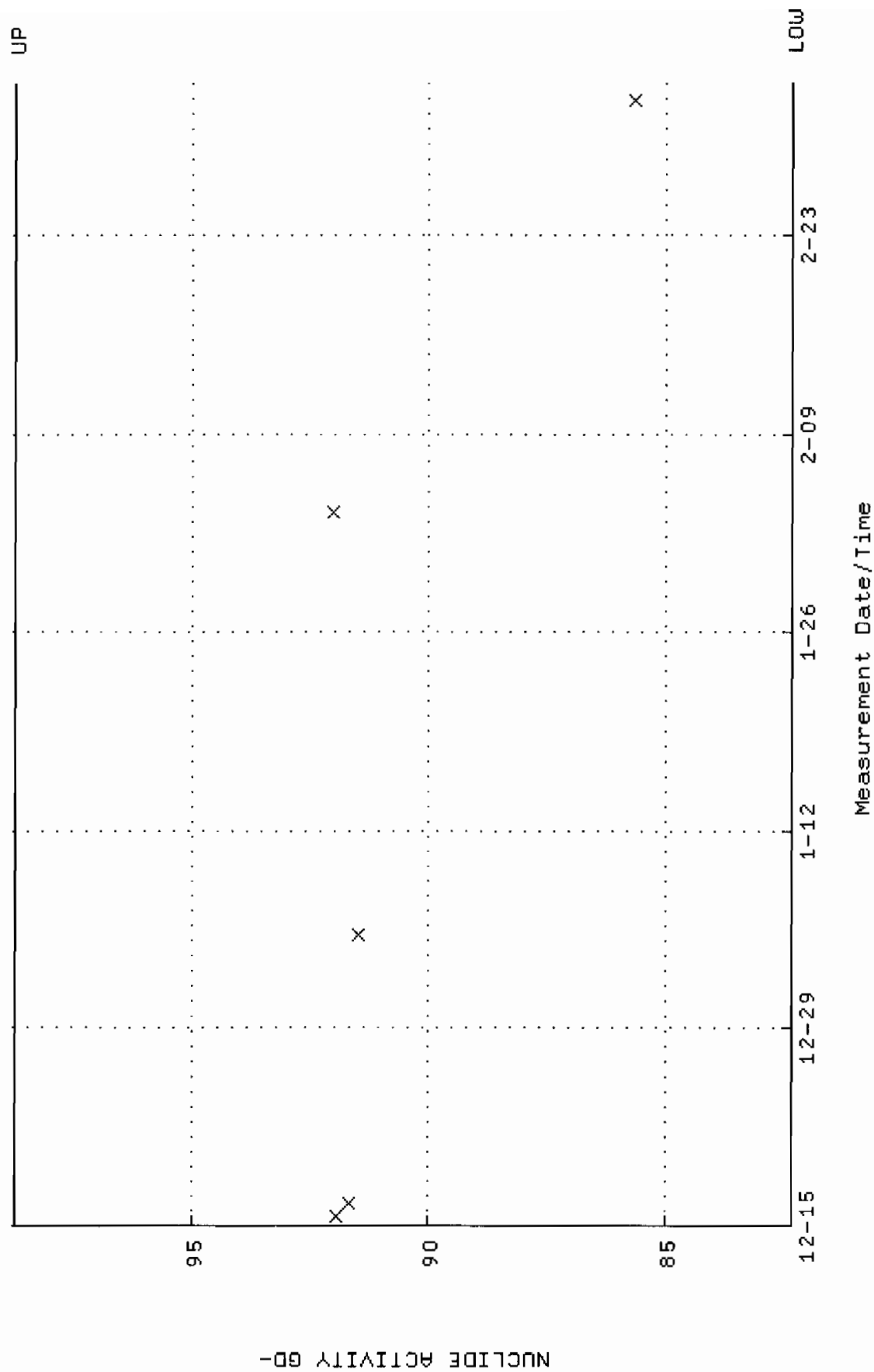


# BACKGROUND AND EFFICIENCY DATA

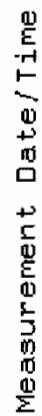
QA filename : DKA100:[ENV\_ALPHA.QA.W]W001.QAF;7  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 15-DEC-2009 14:48:34 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.294900 through 0.361886



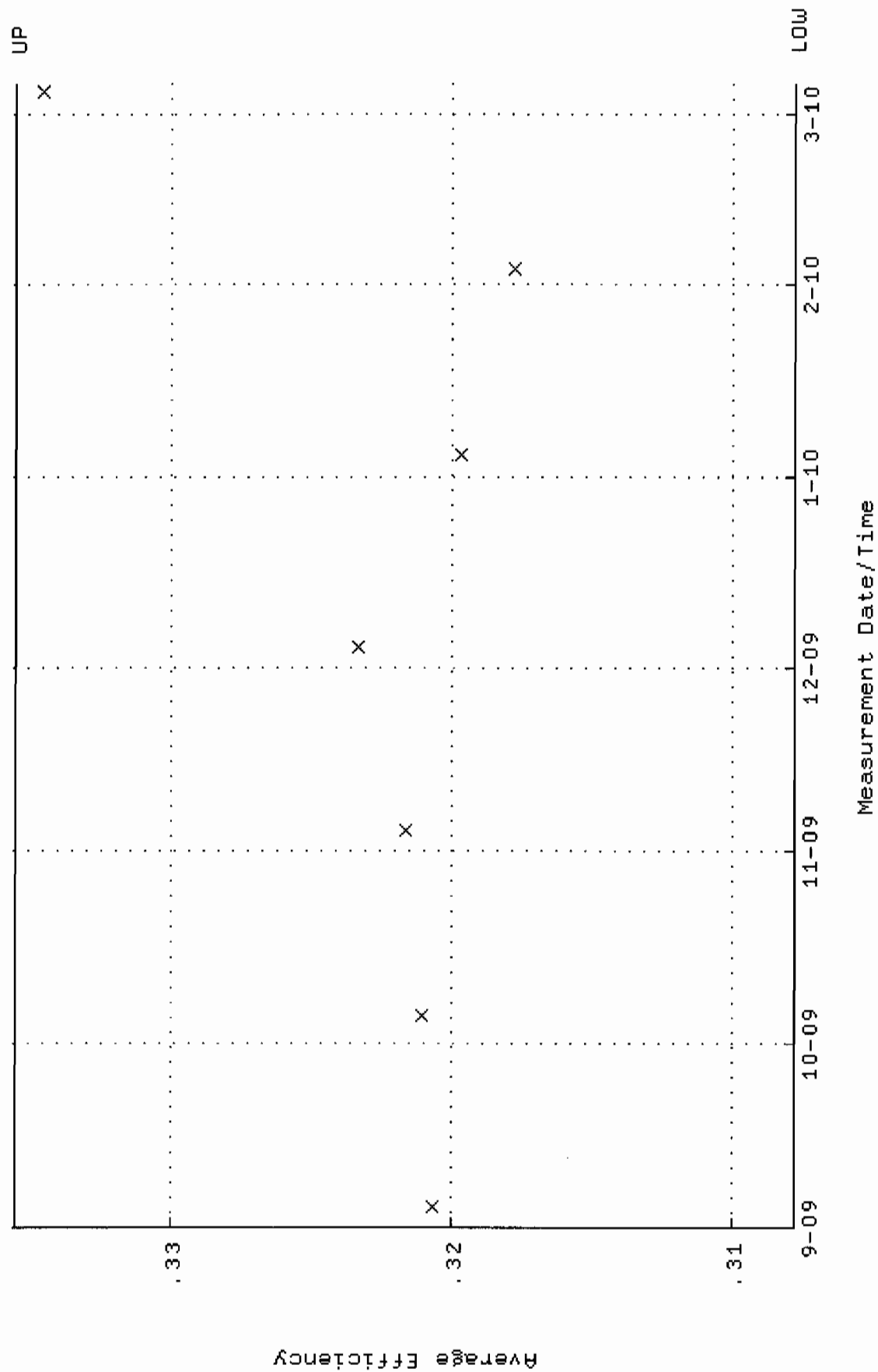
QA filename : DKA100:[ENV\_ALPHA.QA.W]W001.QAF;7  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 15-DEC-2009 14:48:34 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 82.3264 through 98.7414



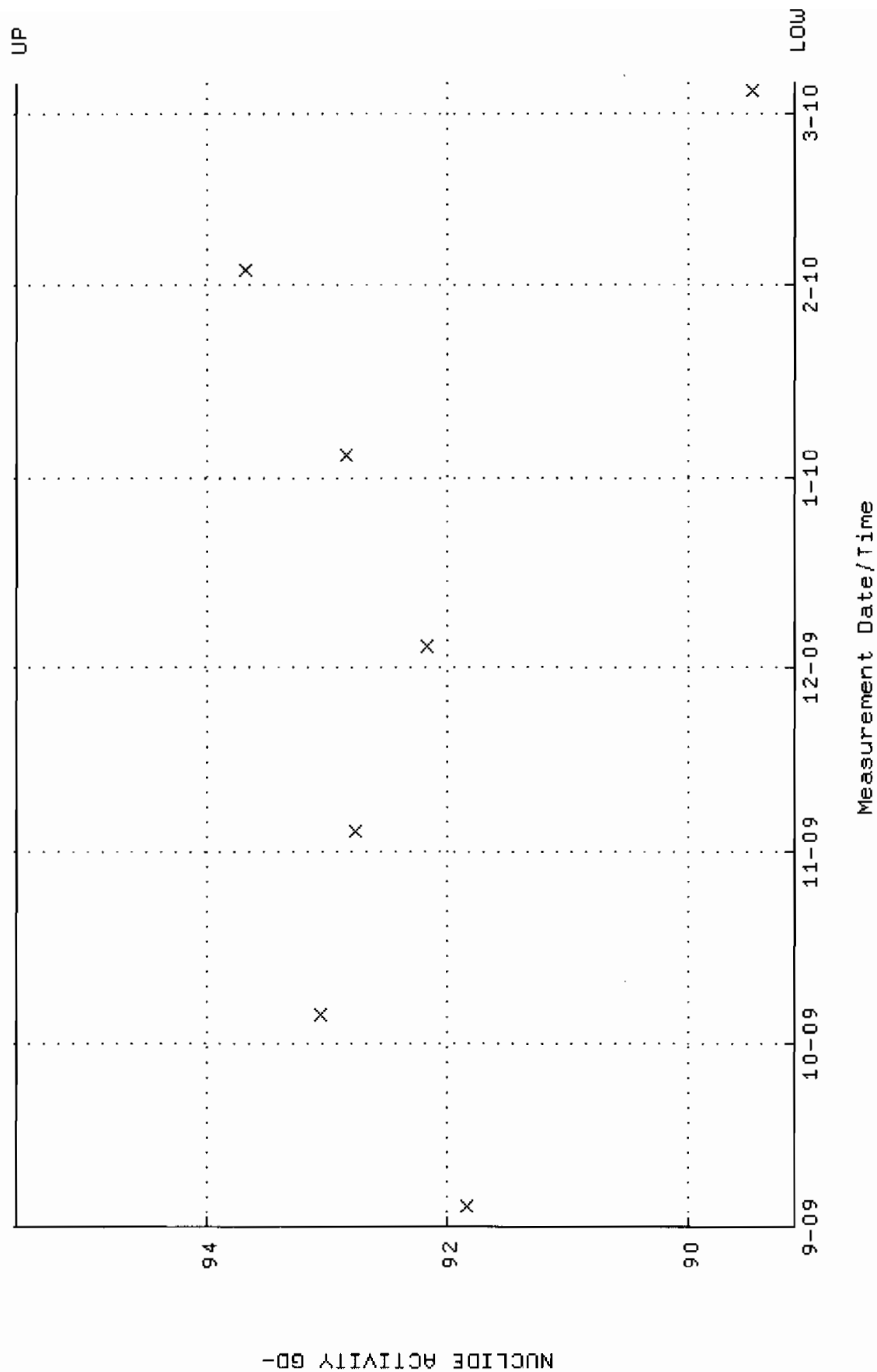
Lower/Upper Lmts: 0.00000E+00 through 2.00000E-02



QA filename : DKA100:[ENV\_ALPHA.QA.W]W008.QAF;4  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 4-SEP-2009 07:36:40 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.307754 through 0.335576



QA filename : DKA100:[ENV\_ALPHA.QA.W]W008.QAF;4  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 4-SEP-2009 07:36:40 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 89.1115 through 95.5851



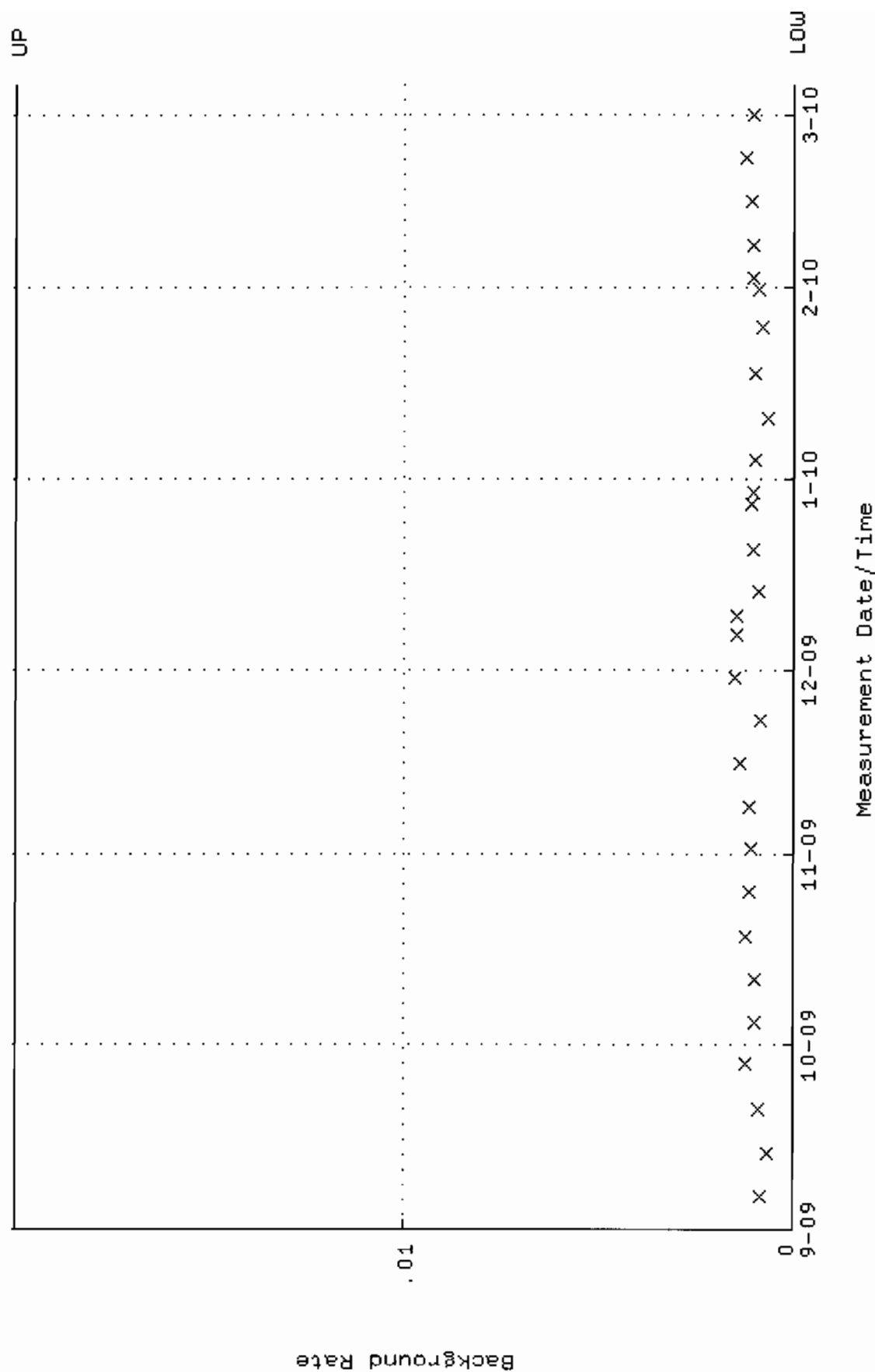


QA filename : DKA100:[ENV\_ALPHA.QA.B]B008.QAF;1

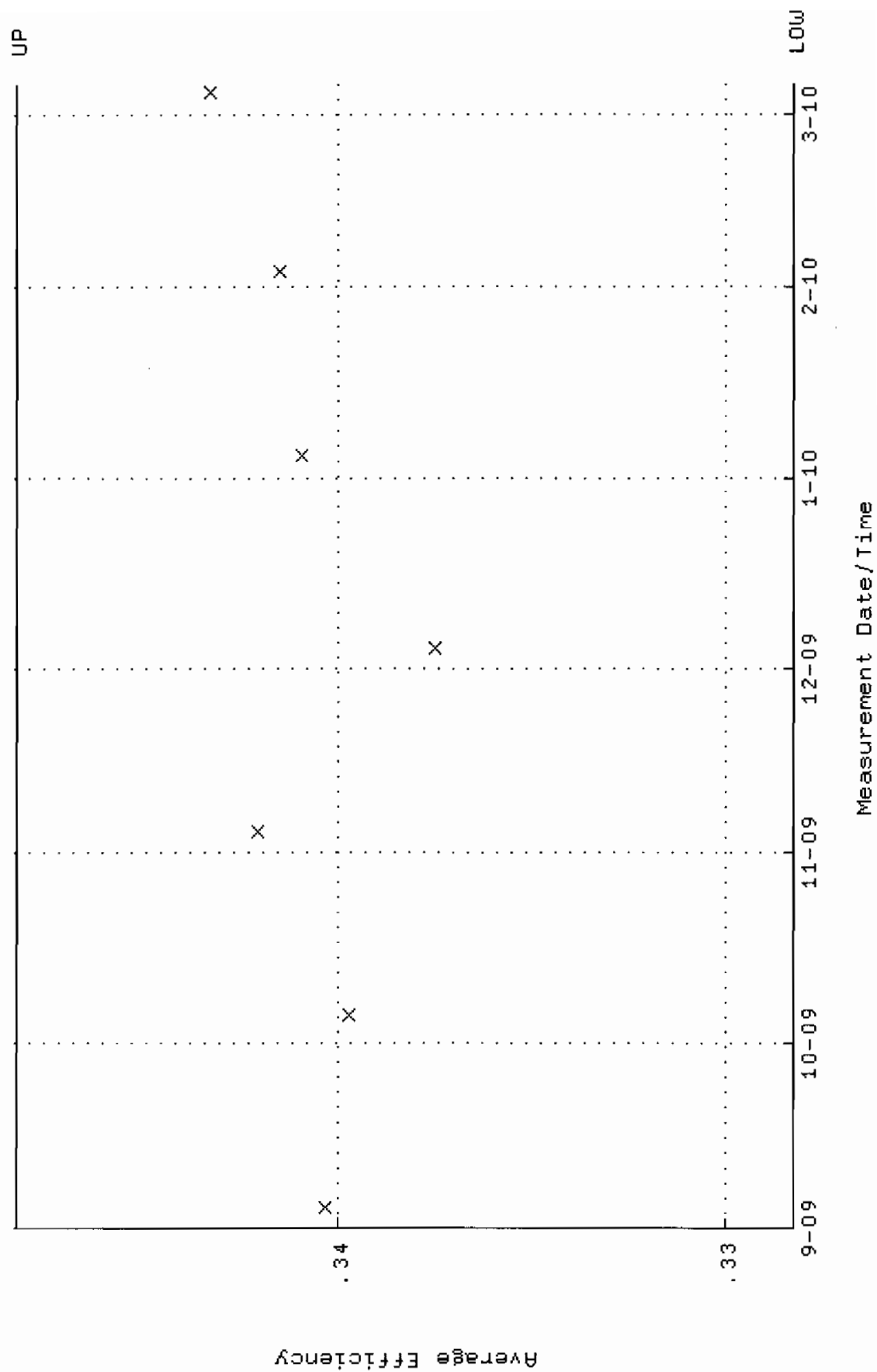
Parameter Name : BACKRATE (Background Rate)

Start/End Dates : 6-SEP-2009 14:27:01 through 5-MAR-2010 12:00:00

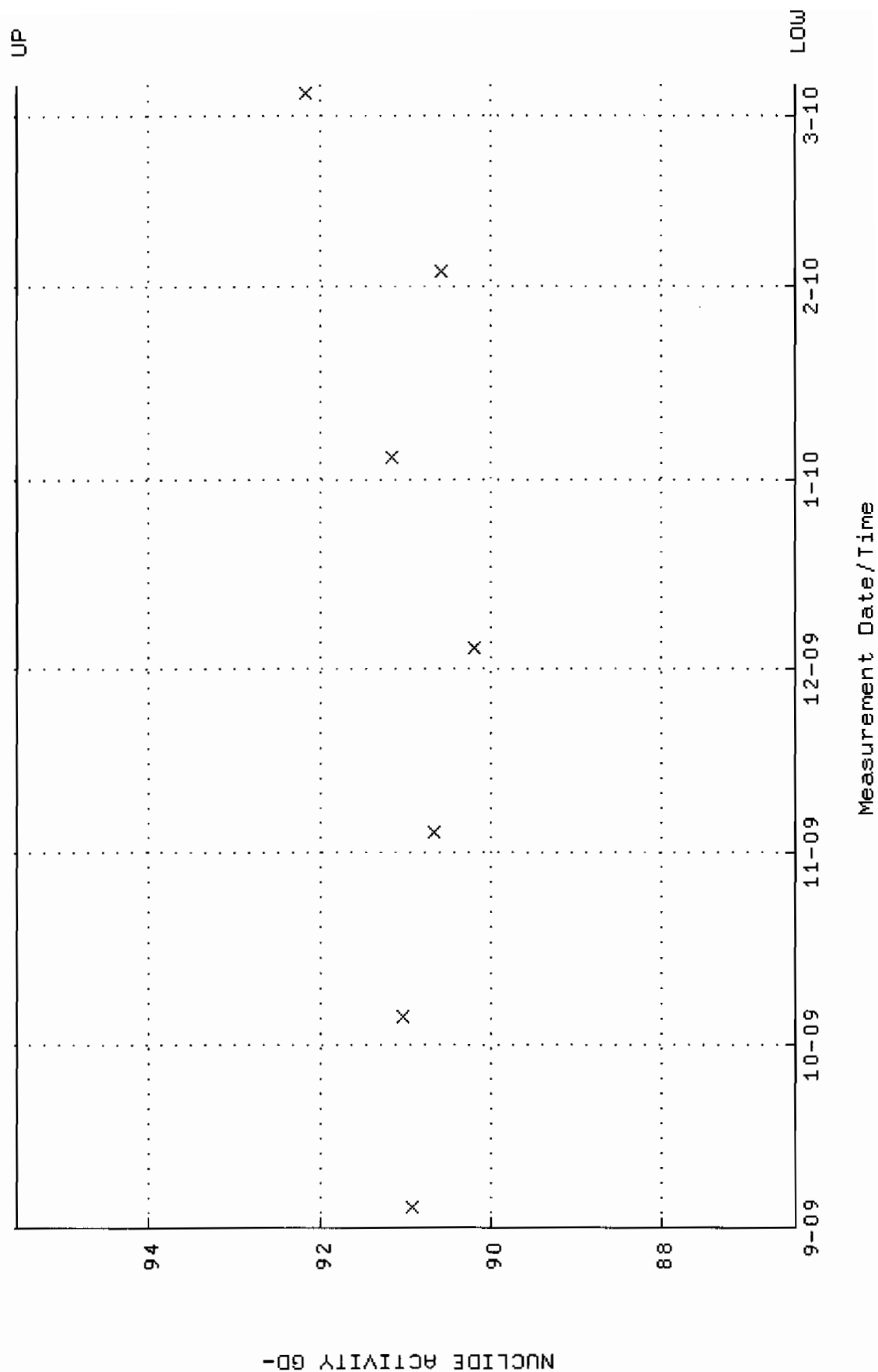
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



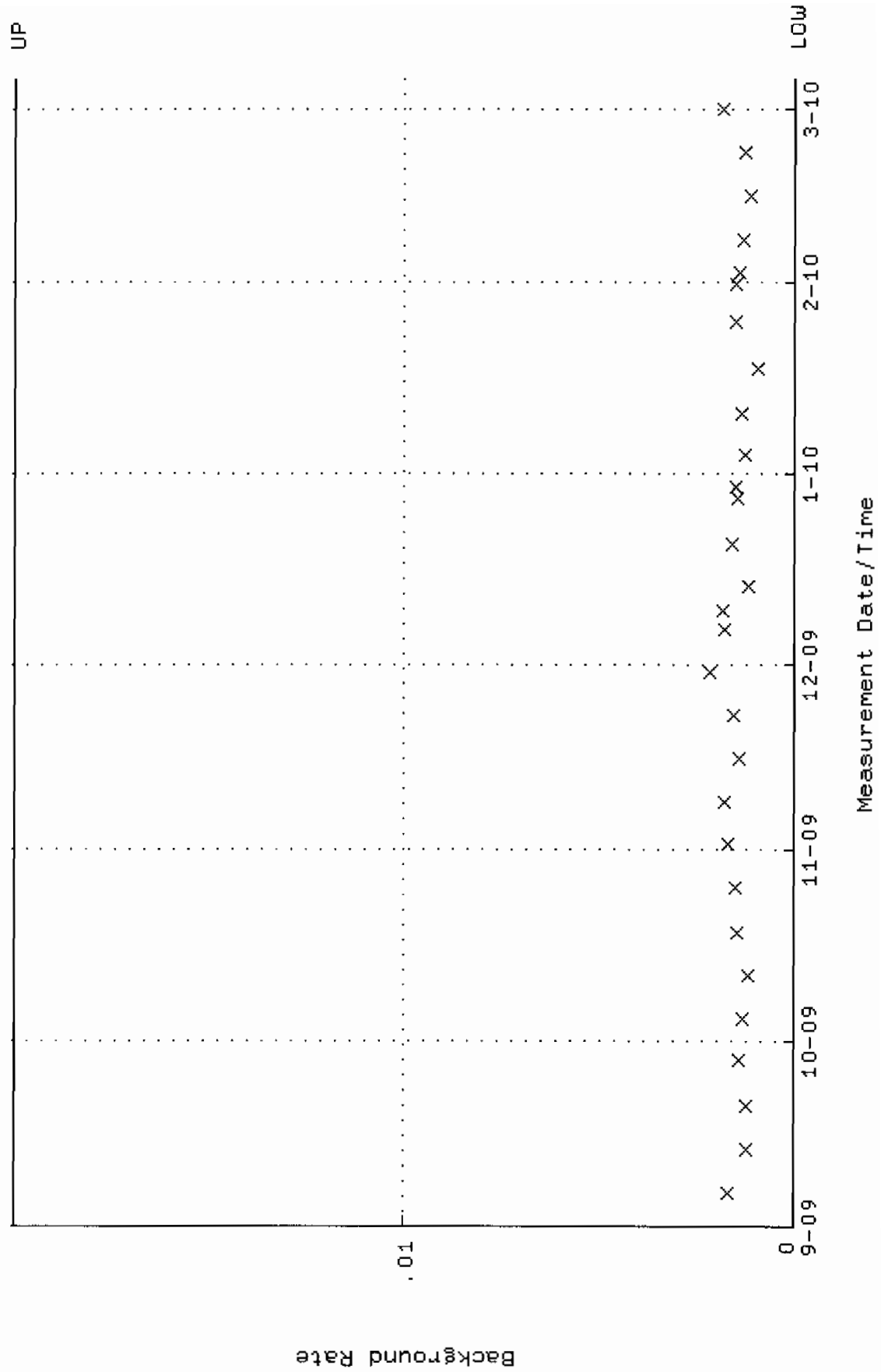
QA filename : DKA100:[ENV\_ALPHA.QA.W]W009.QAF;3  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 4-SEP-2009 07:36:40 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.328261 through 0.348261



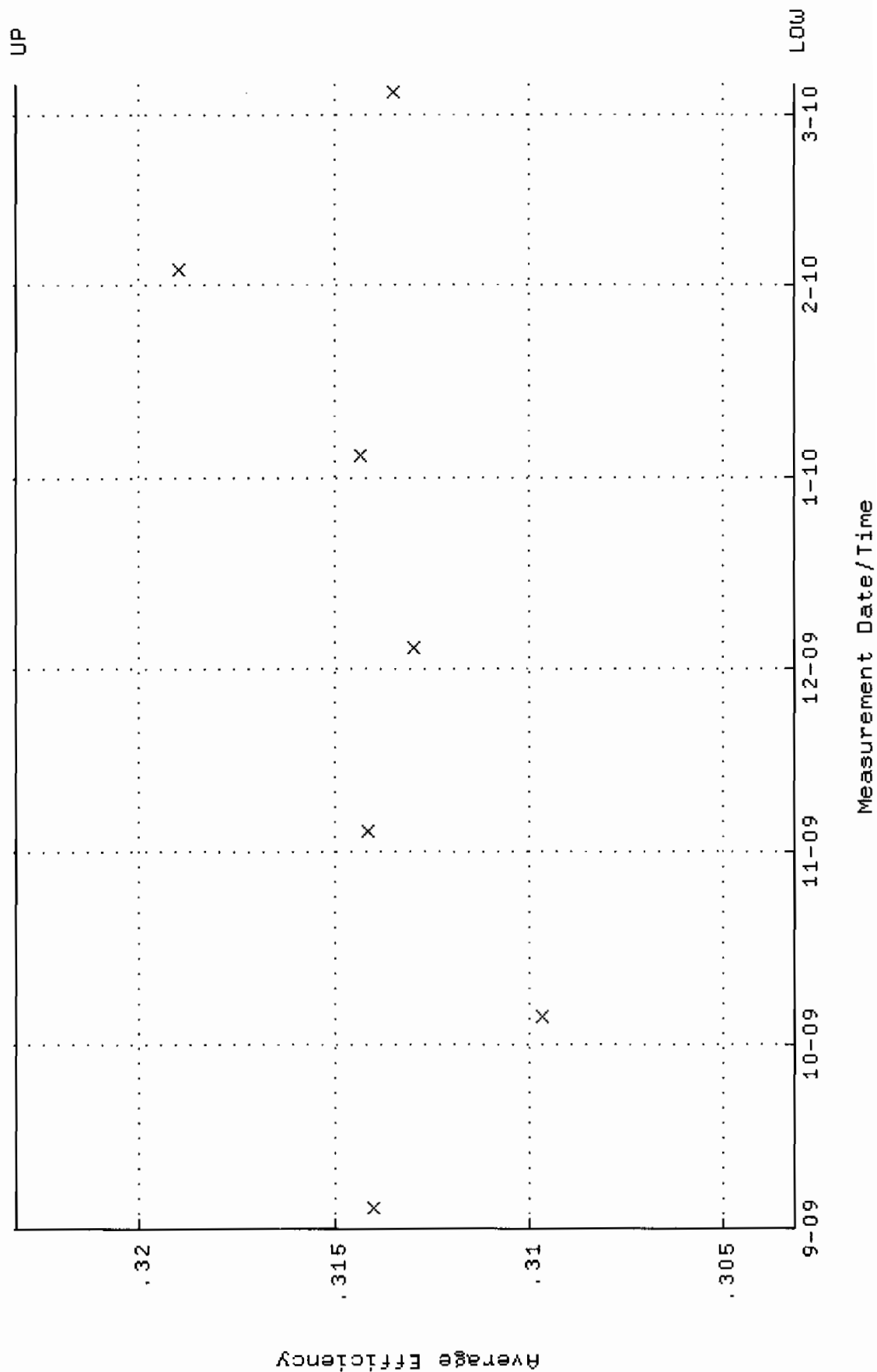
QA filename : DKA100:[ENV\_ALPHA.QA.W]W009.QAF;3  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 4-SEP-2009 07:36:40 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 86.4475 through 95.5473



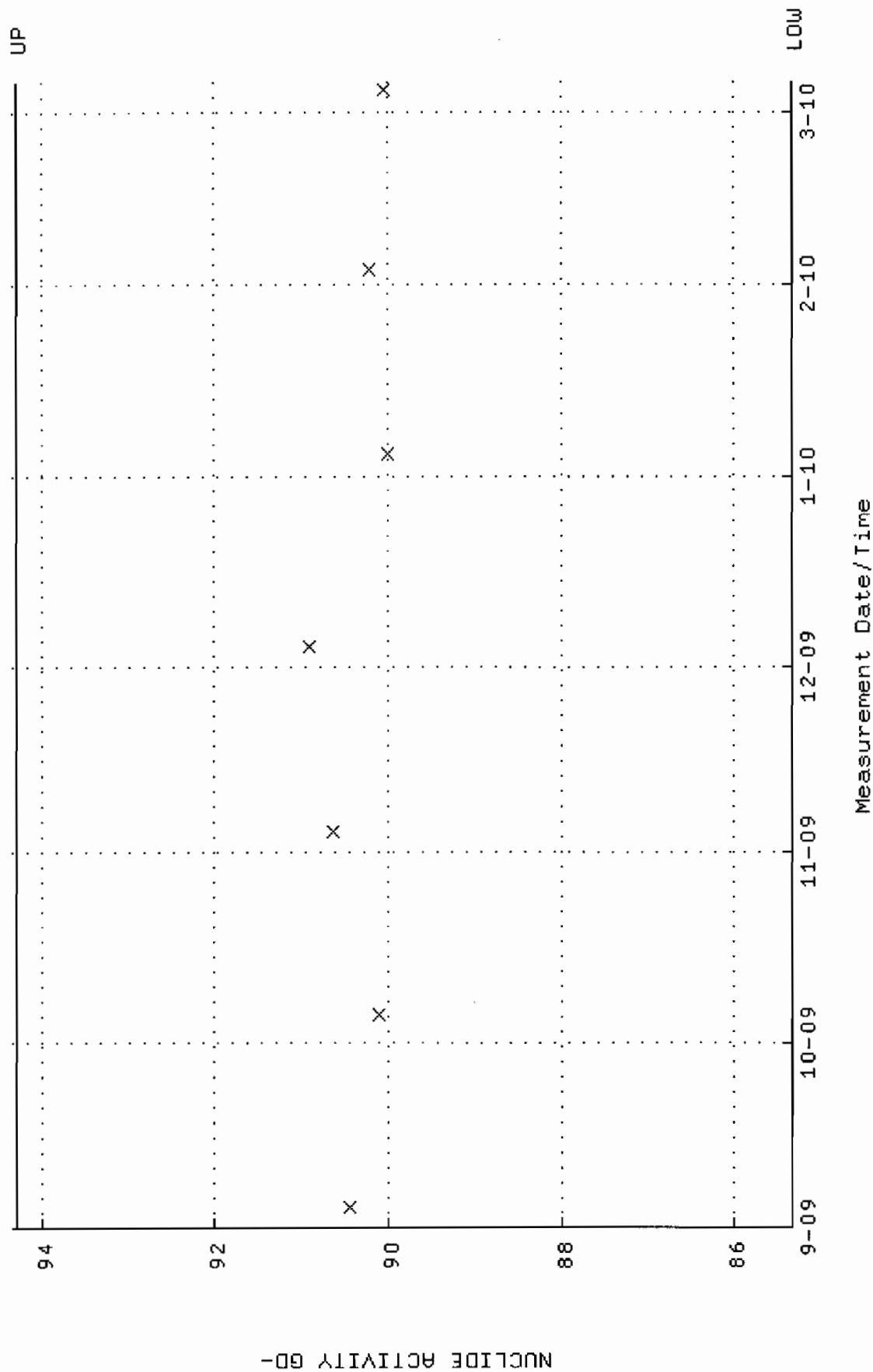
QA filename : DKA100:[ENV\_ALPHA.QA.B]B009.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:01 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



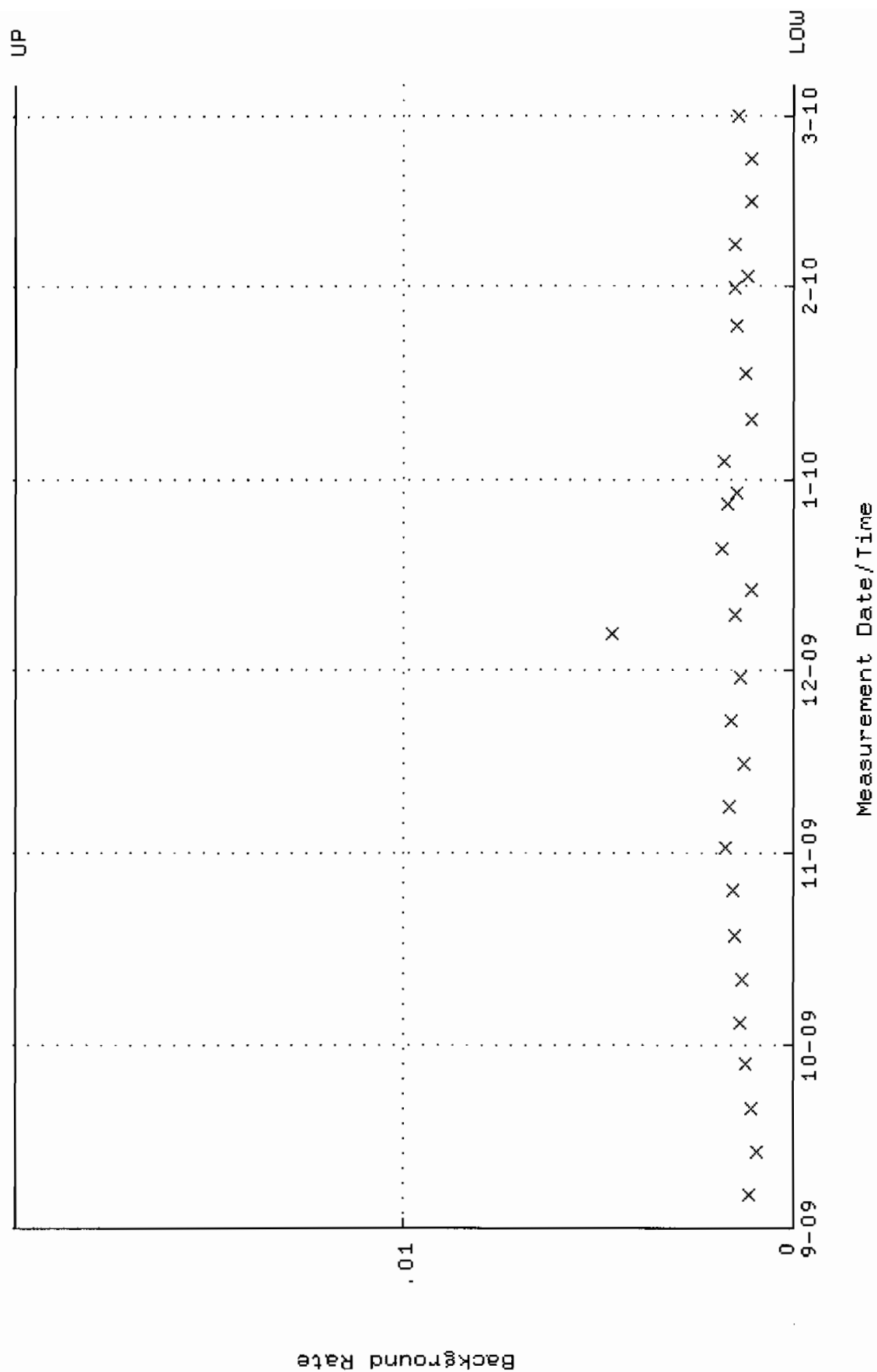
QA filename : DKA100:[ENV\_ALPHA.QA.W]W010.QAF;5  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 4-SEP-2009 07:36:40 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.303169 through 0.323169



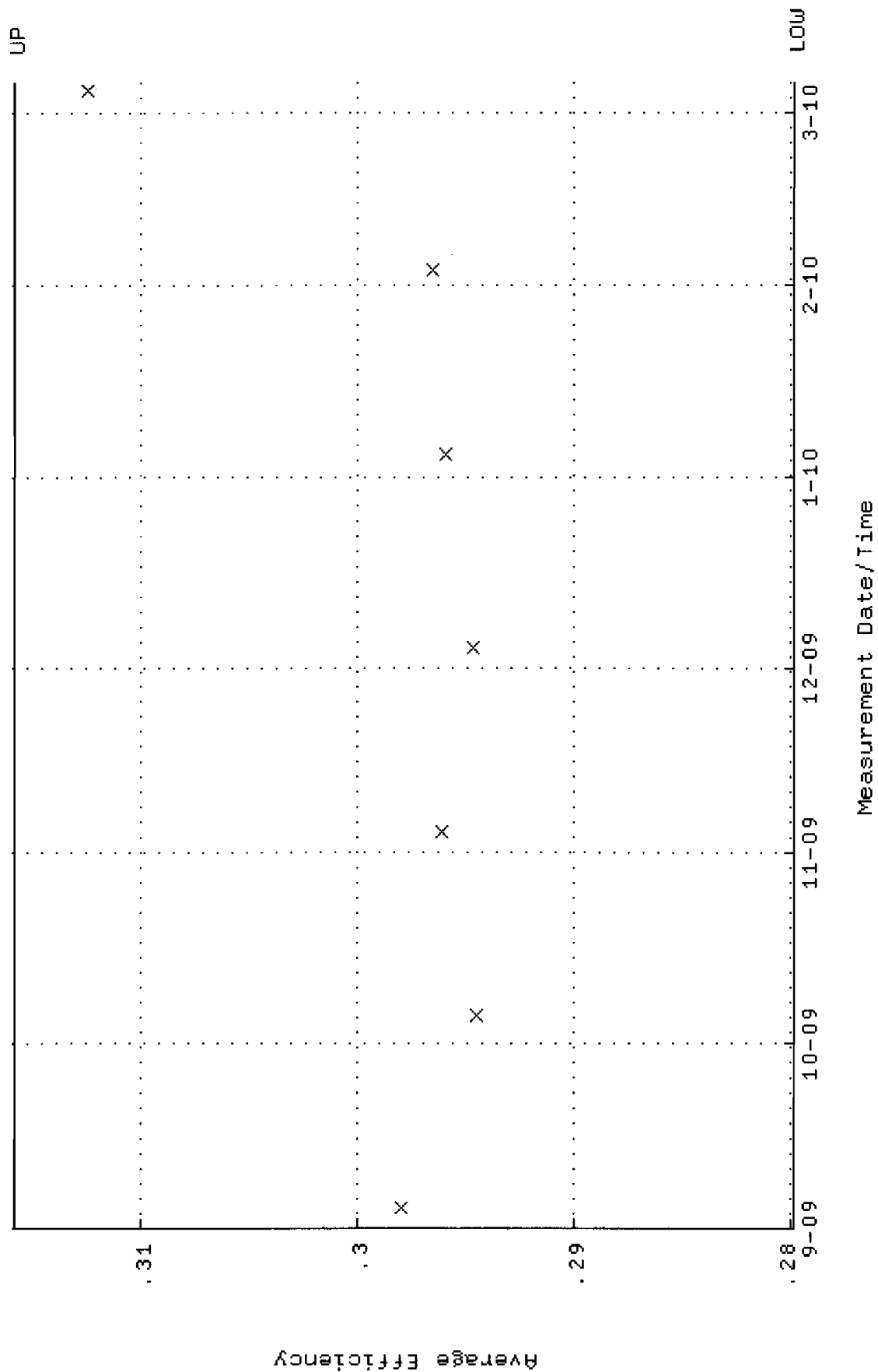
QA filename : DKA100:[ENV\_ALPHA.QA.W]W010.QAF;5  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 4-SEP-2009 07:36:40 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 85.3273 through 94.3091



QA filename : DKA100:[ENV\_ALPHA.QA.B]B010.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:01 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02

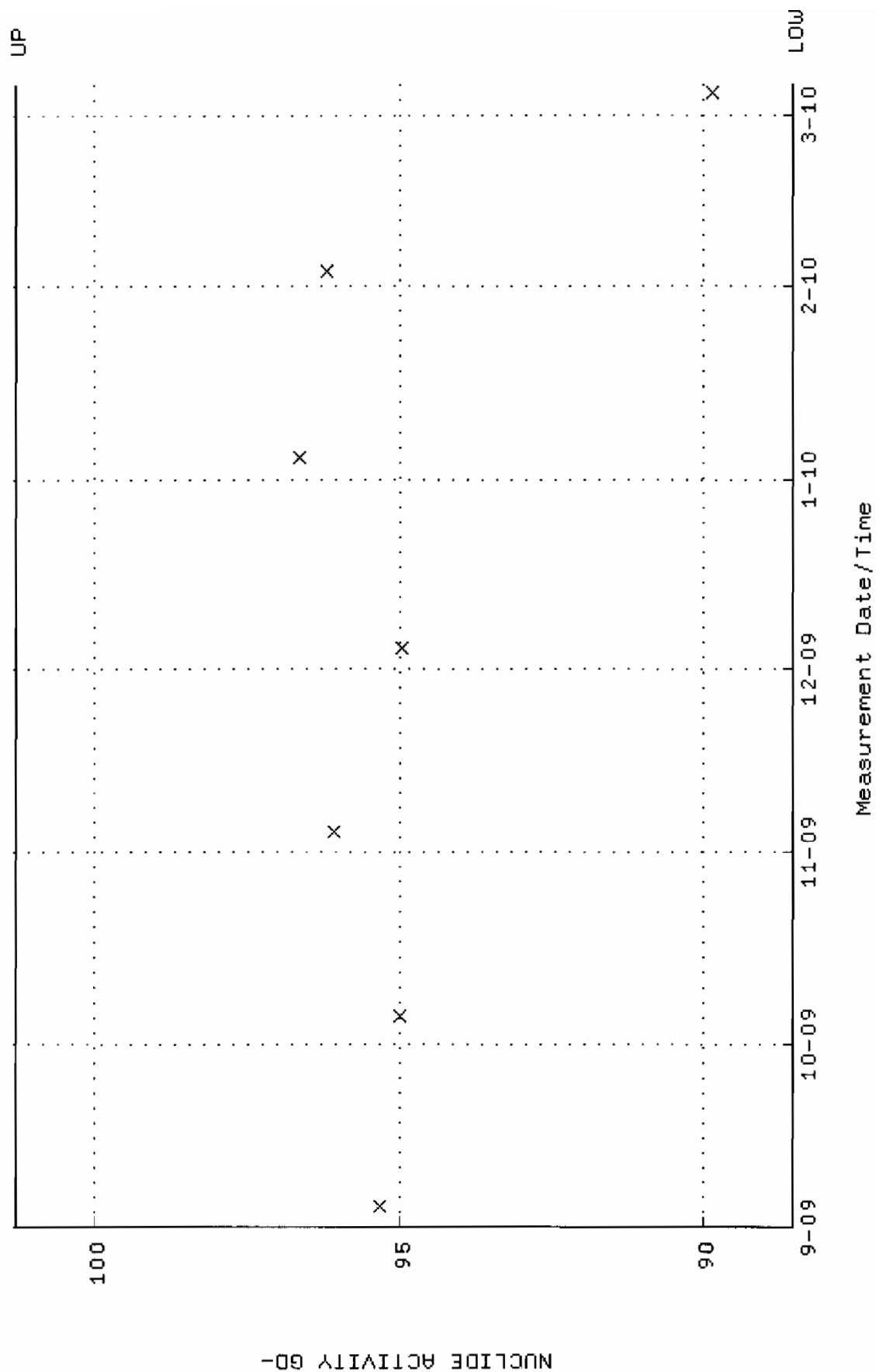


QA filename : DKA100:[ENV\_ALPHA.QA.W]W011.QAF;4  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 4-SEP-2009 07:36:40 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.279805 through 0.315875

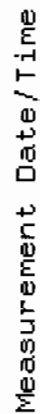




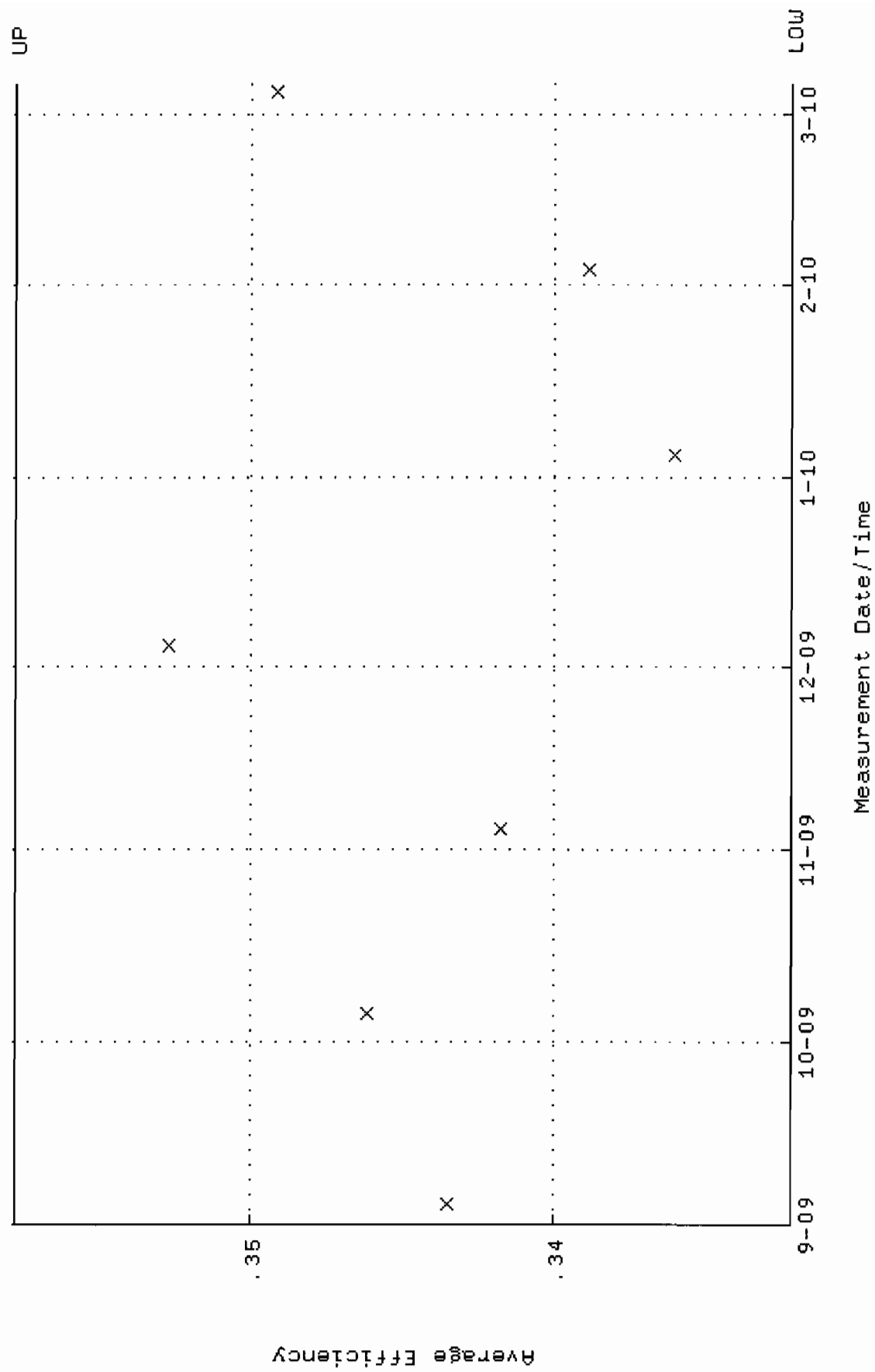
QA filename : DKA100:[ENV\_ALPHA.QA.W]W011.QAF;4  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 4-SEP-2009 07:36:40 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 88.5390 through 101.289



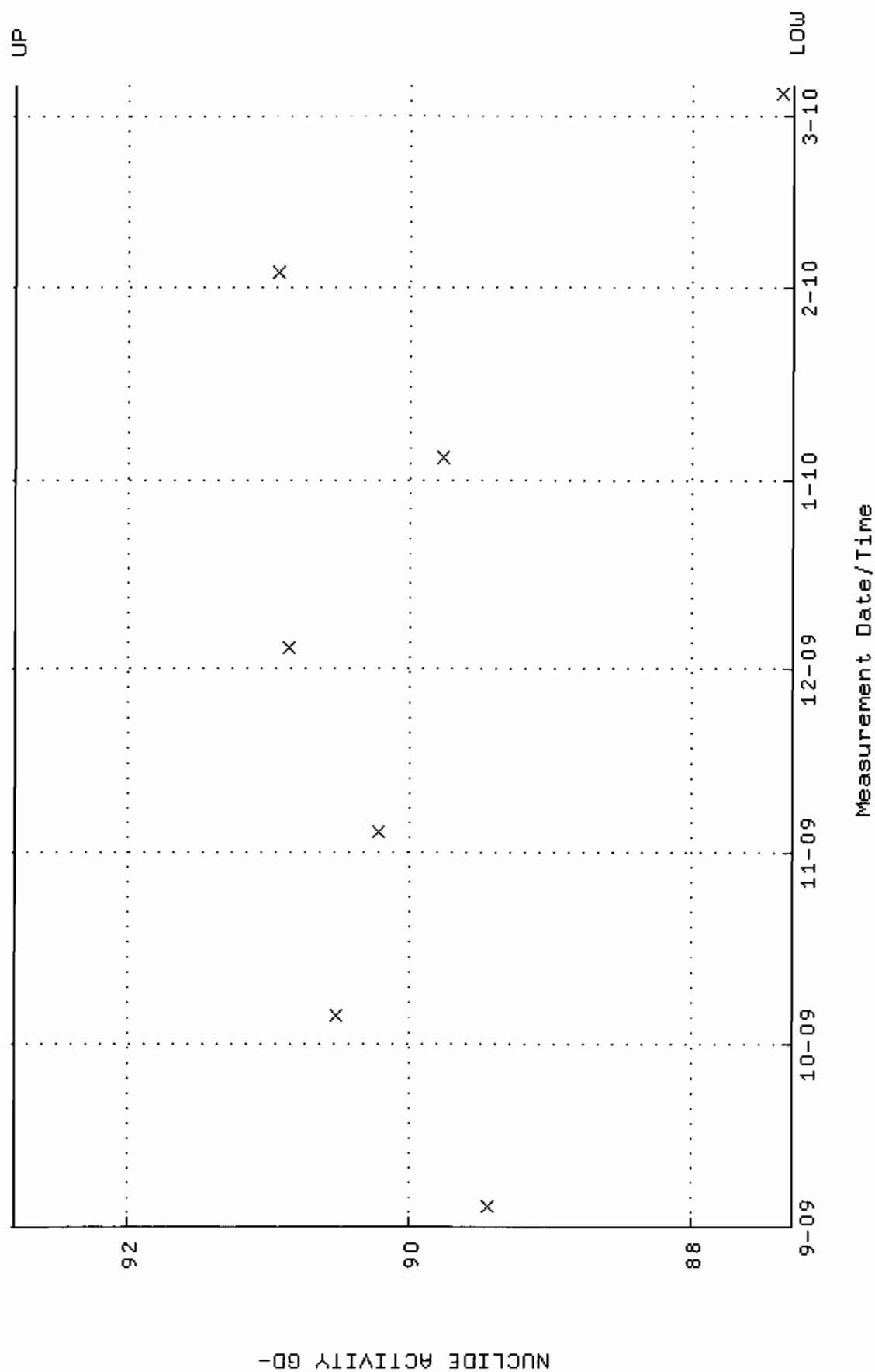
Lower/Upper Lmts: 0.00000E+00 through 2.00000E-02



QA filename : DKA100:[ENV\_ALPHA.QA.W]W020.QAF;3  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 4-SEP-2009 07:36:42 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.332206 through 0.357714



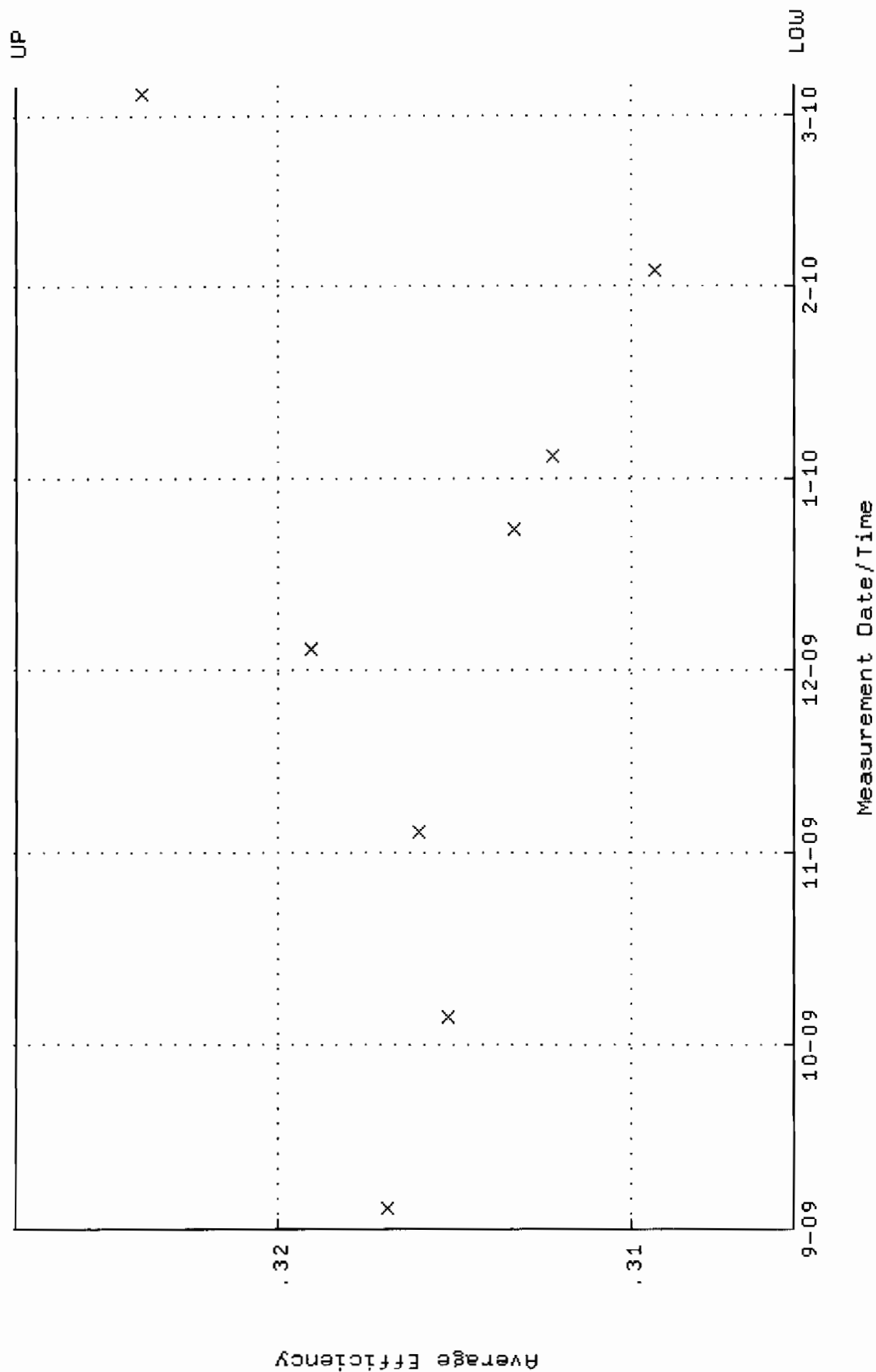
QA filename : DKA100:[ENV\_ALPHA.QA.W]W020.QAF;3  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 4-SEP-2009 07:36:42 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 87.2879 through 92.8099



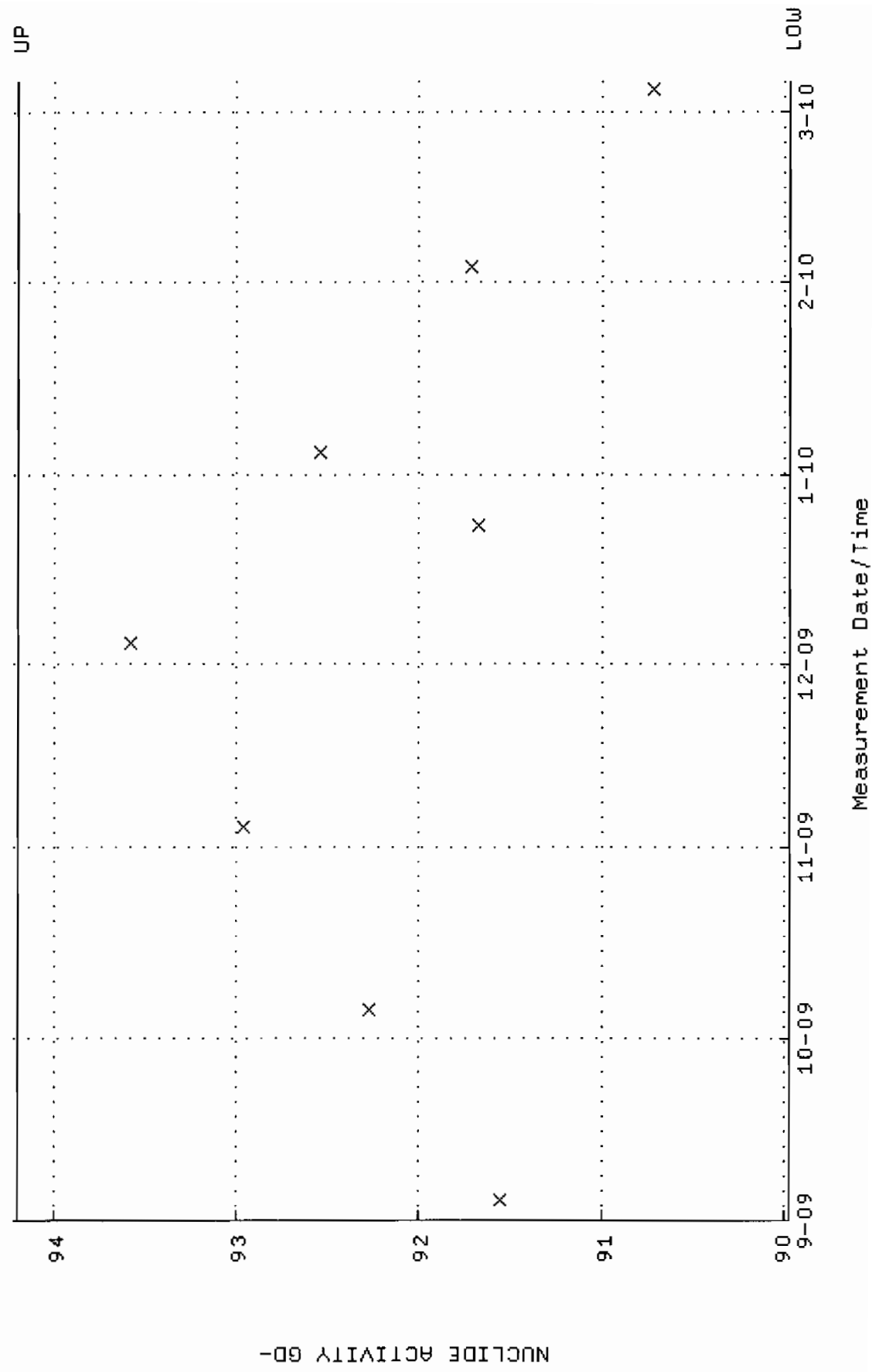
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



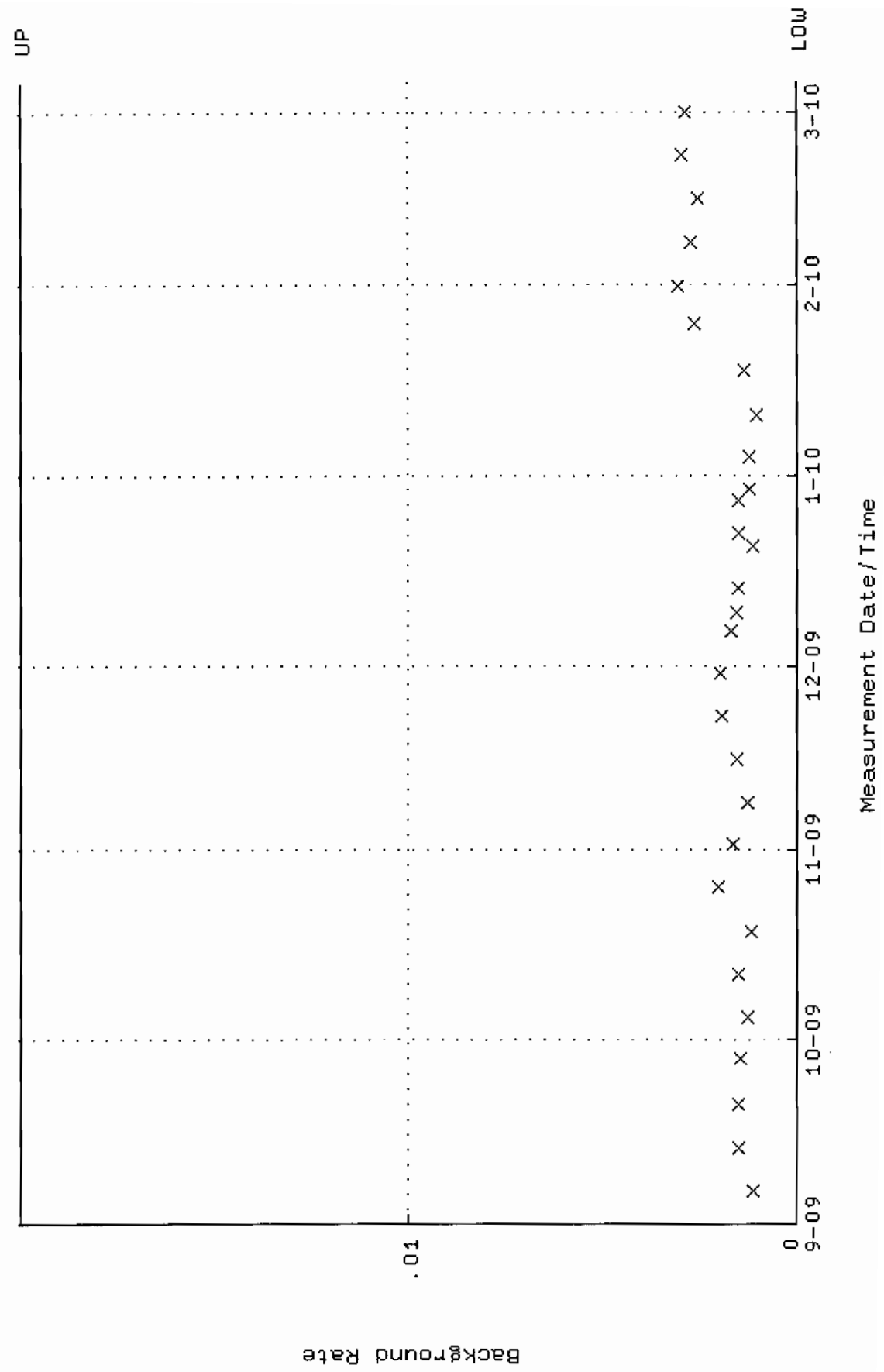
QA filename : DKA100:[ENV\_ALPHA.QA.W]W022.QAF;5  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 4-SEP-2009 07:36:42 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.305380 through 0.327376



QA filename : DKA100:[ENV\_ALPHA.QA.W]W022.QAF;5  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 4-SEP-2009 07:36:42 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 89.9706 through 94.2088

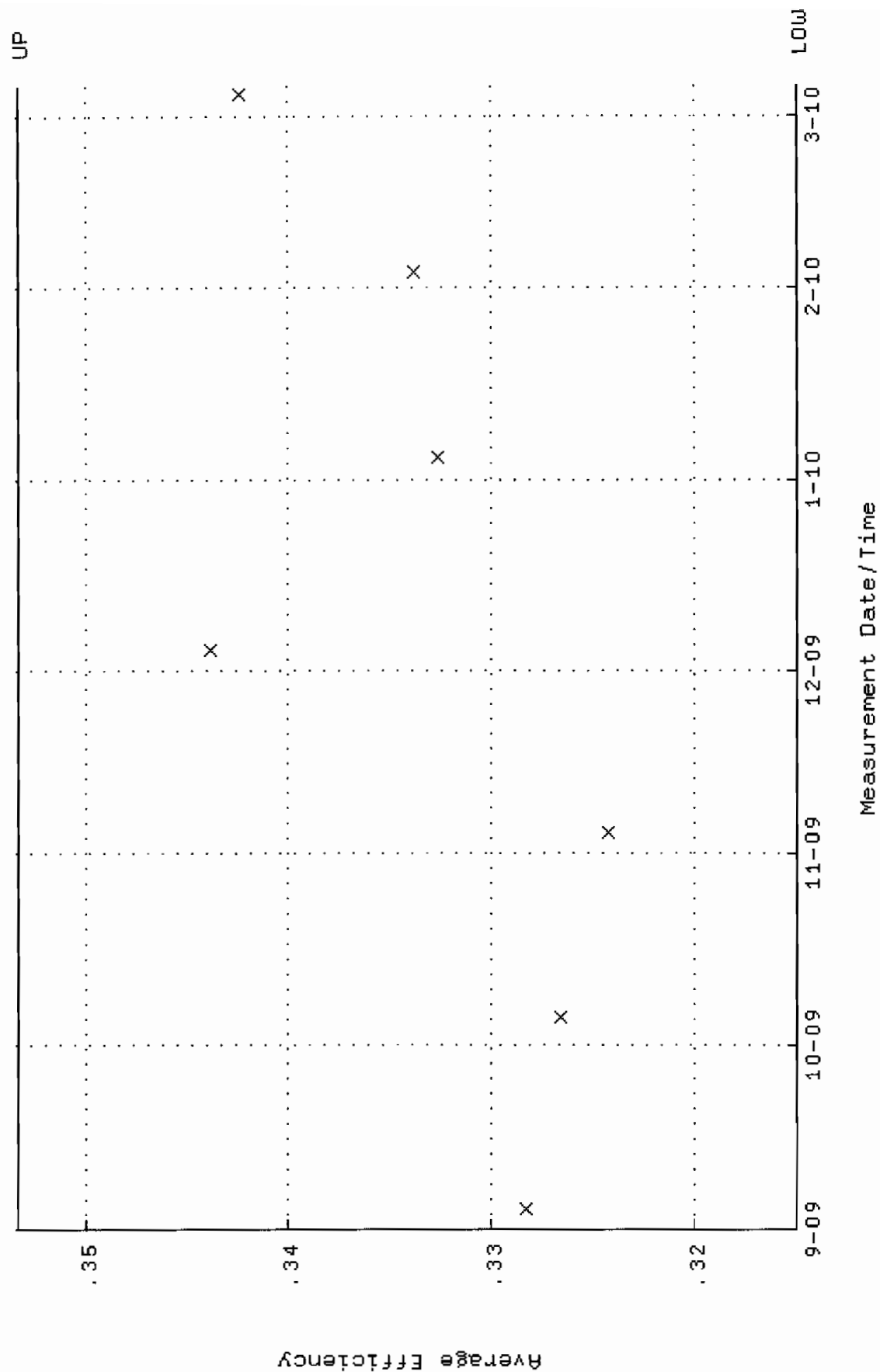


QA filename : DKA100:[ENV\_ALPHA.QA.B]B022.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:03 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02

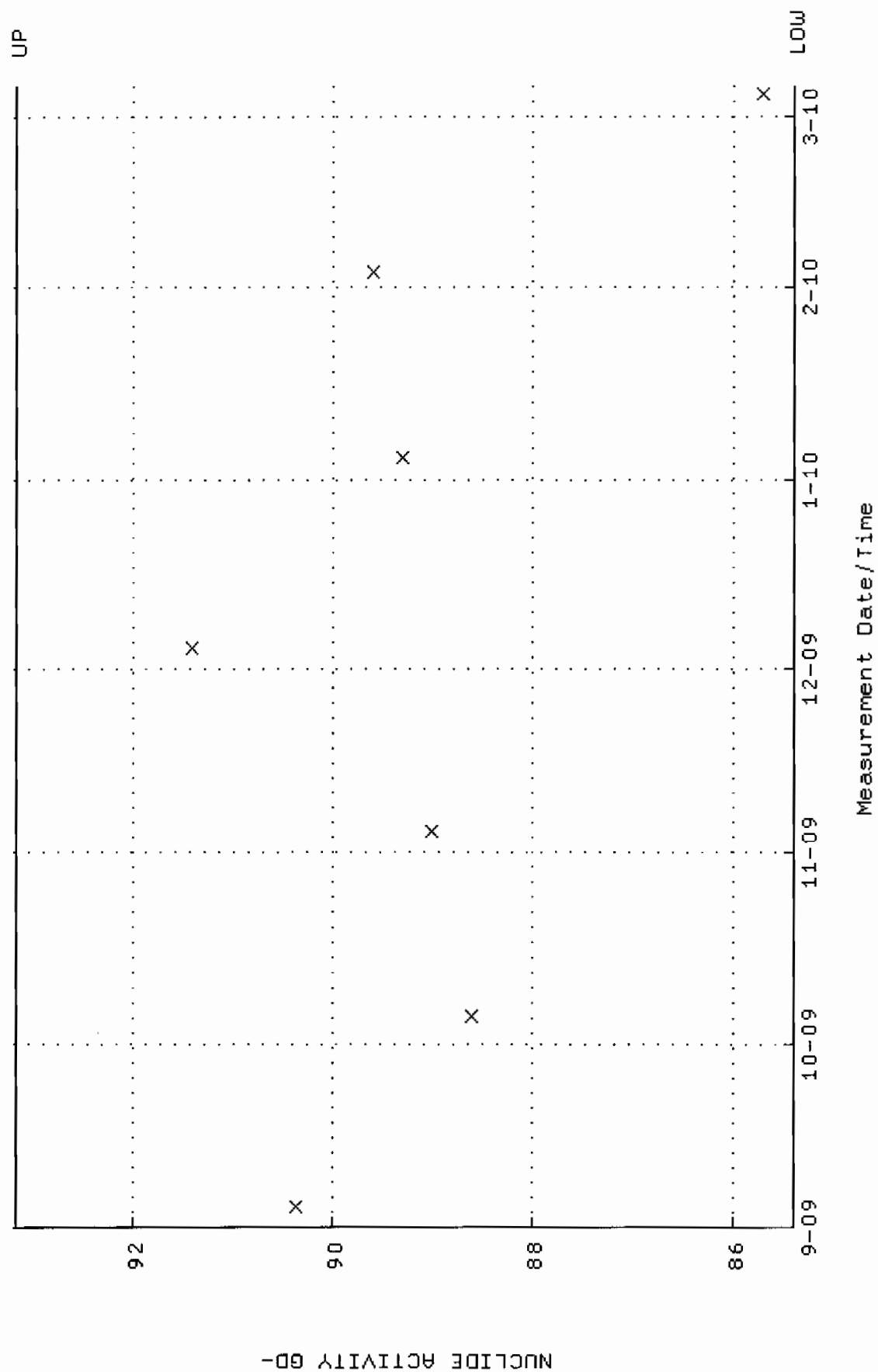




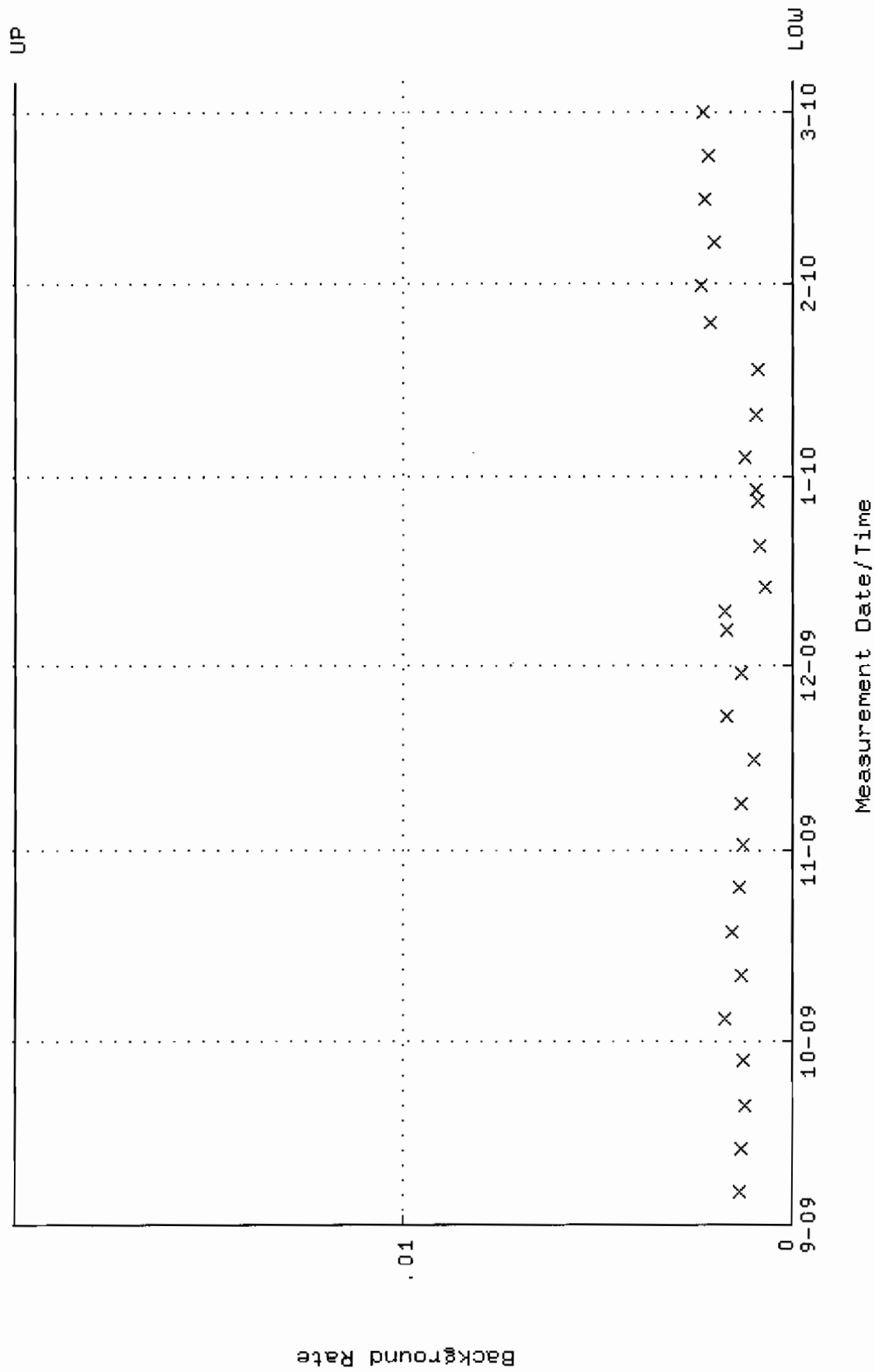
QA filename : DKA100:[ENV\_ALPHA.QA.W]W024.QAF;2  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 4-SEP-2009 07:36:42 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.314917 through 0.353325



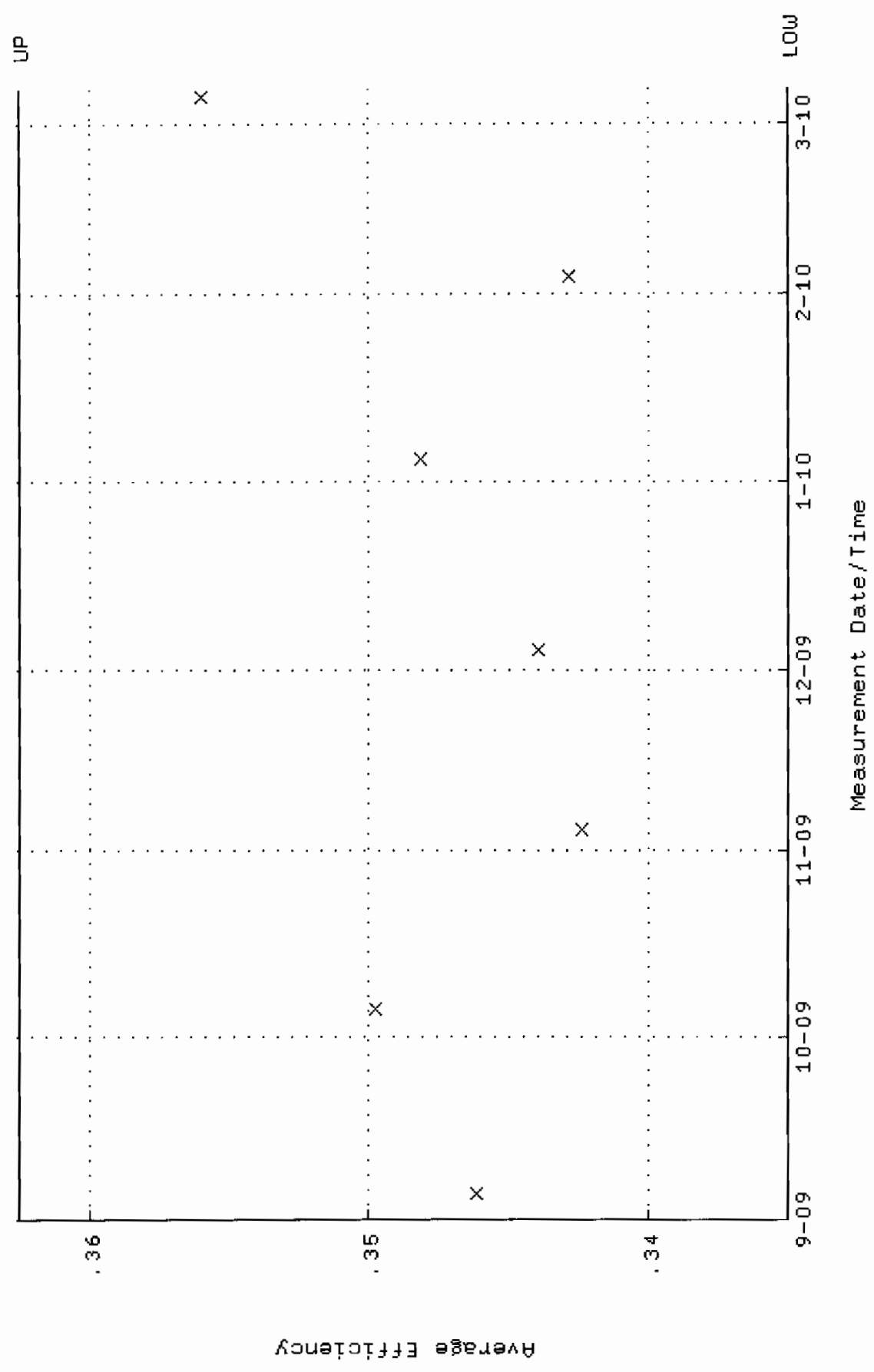
QA filename : DKA100:[ENV\_ALPHA.QA.W]W024.QAF;2  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 4-SEP-2009 07:36:42 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 85.3858 through 93.1784



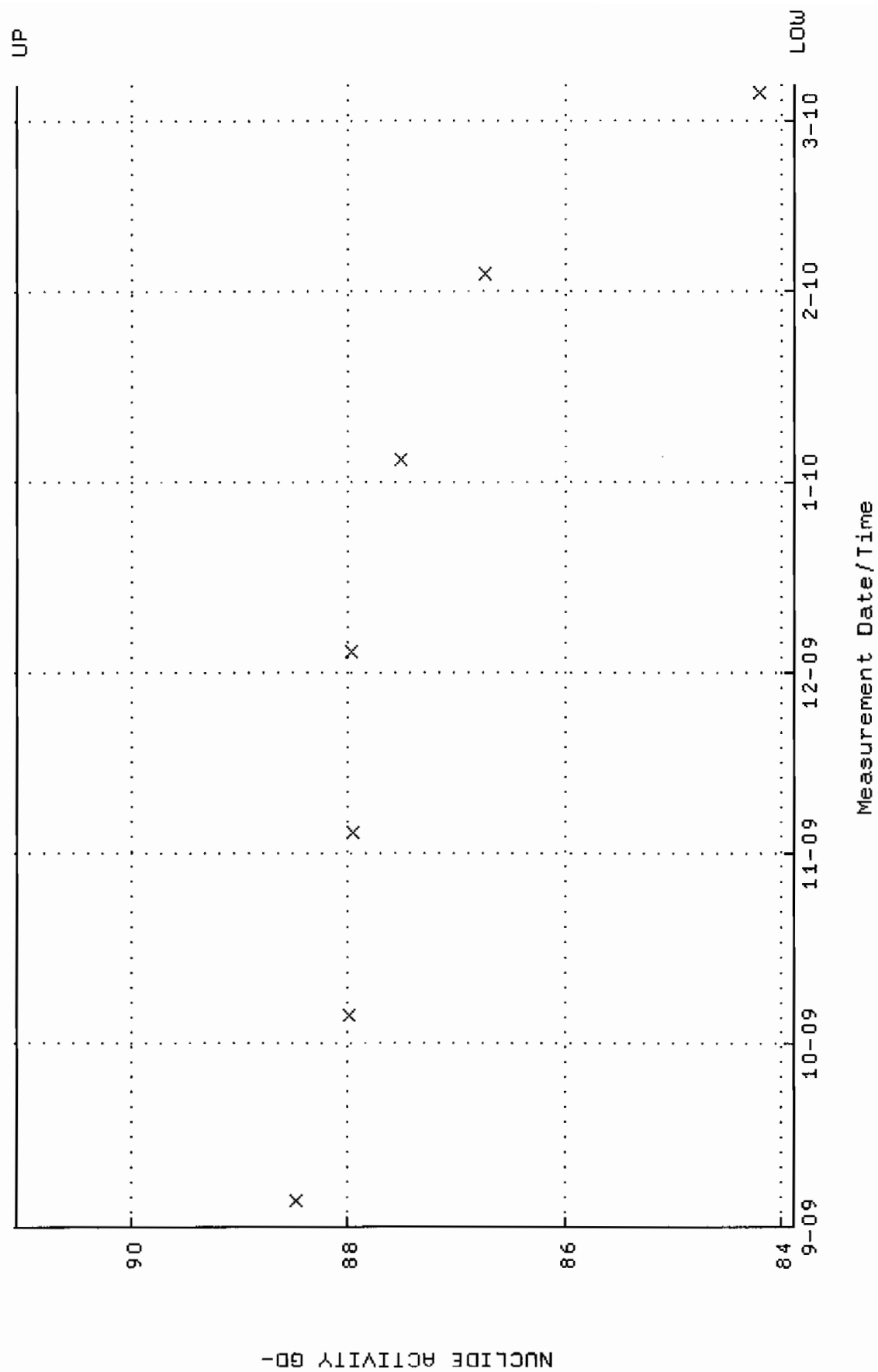
QA filename : DKA100:[ENV\_ALPHA.QA.B]B024.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:03 through 5-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



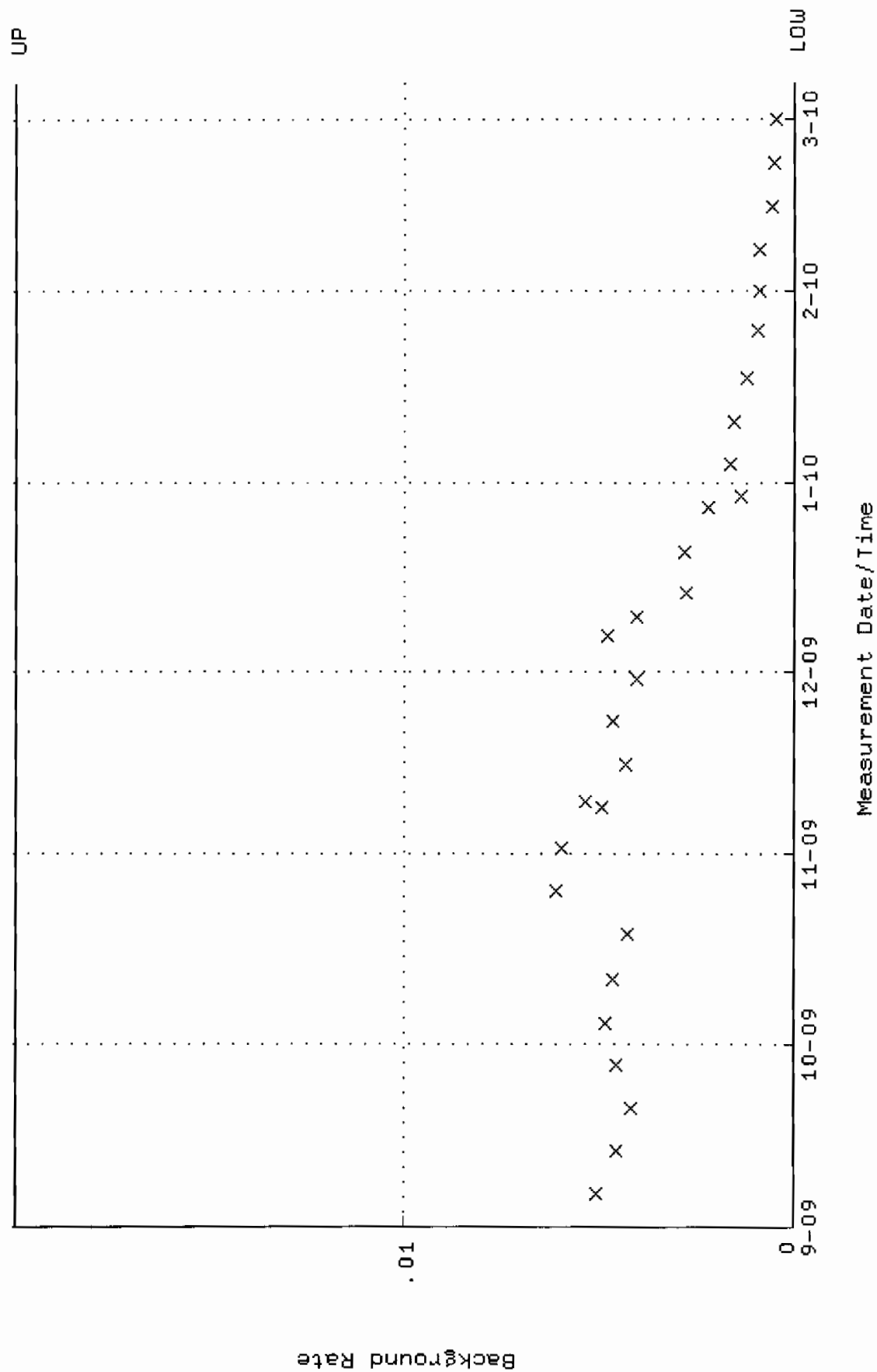
QA filename : DKA100:[ENV\_ALPHA.QA.W]W044.QAF;5  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 5-SEP-2009 09:03:12 through 6-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.335013 through 0.362525



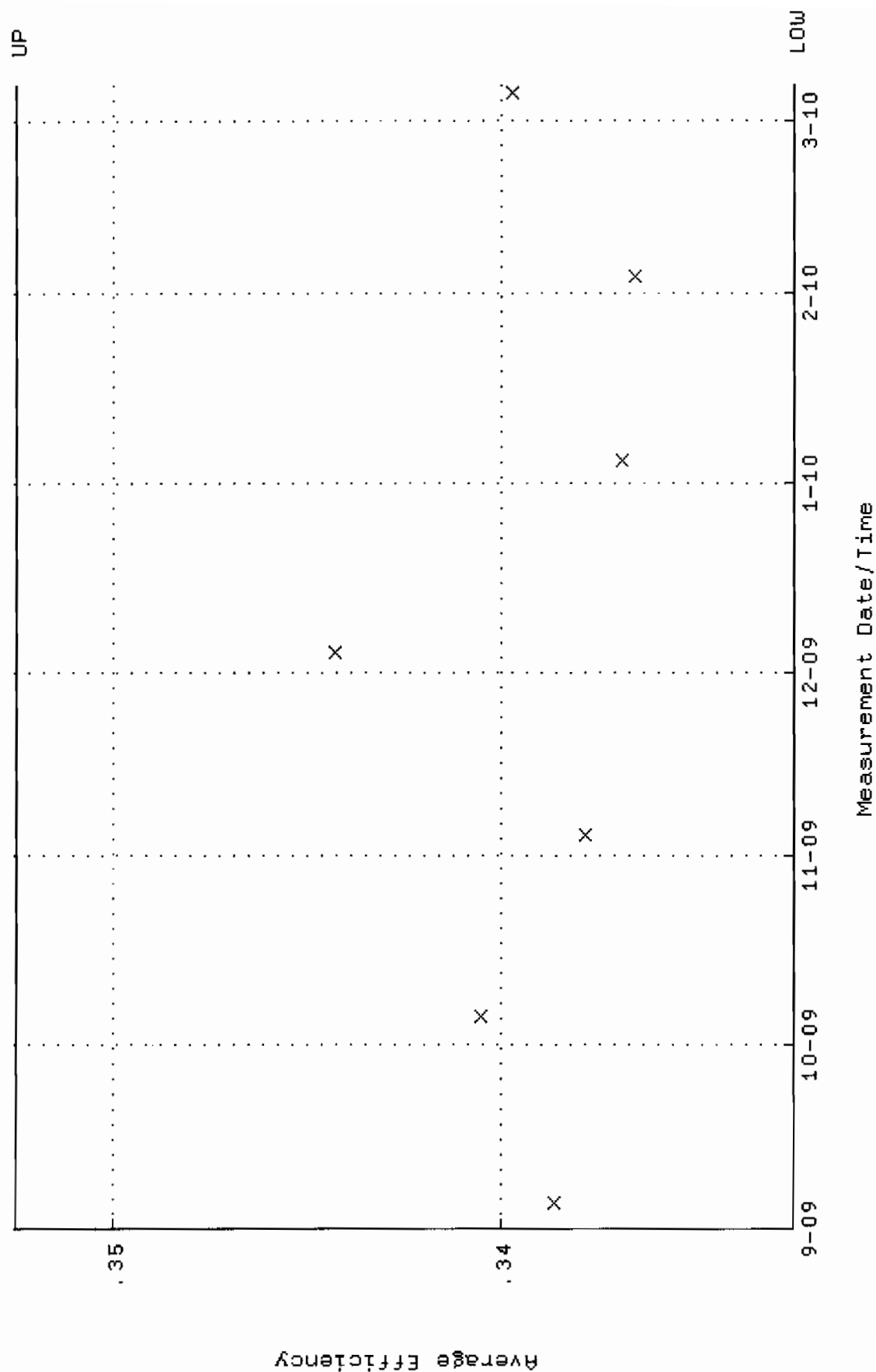
QA filename : DKA100:[ENV\_ALPHA.QA.W]W044.QAF;5  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 5-SEP-2009 09:03:12 through 6-MAR-2010 12:00:00  
 Lower/Upper Lmts: 83.8858 through 91.0588



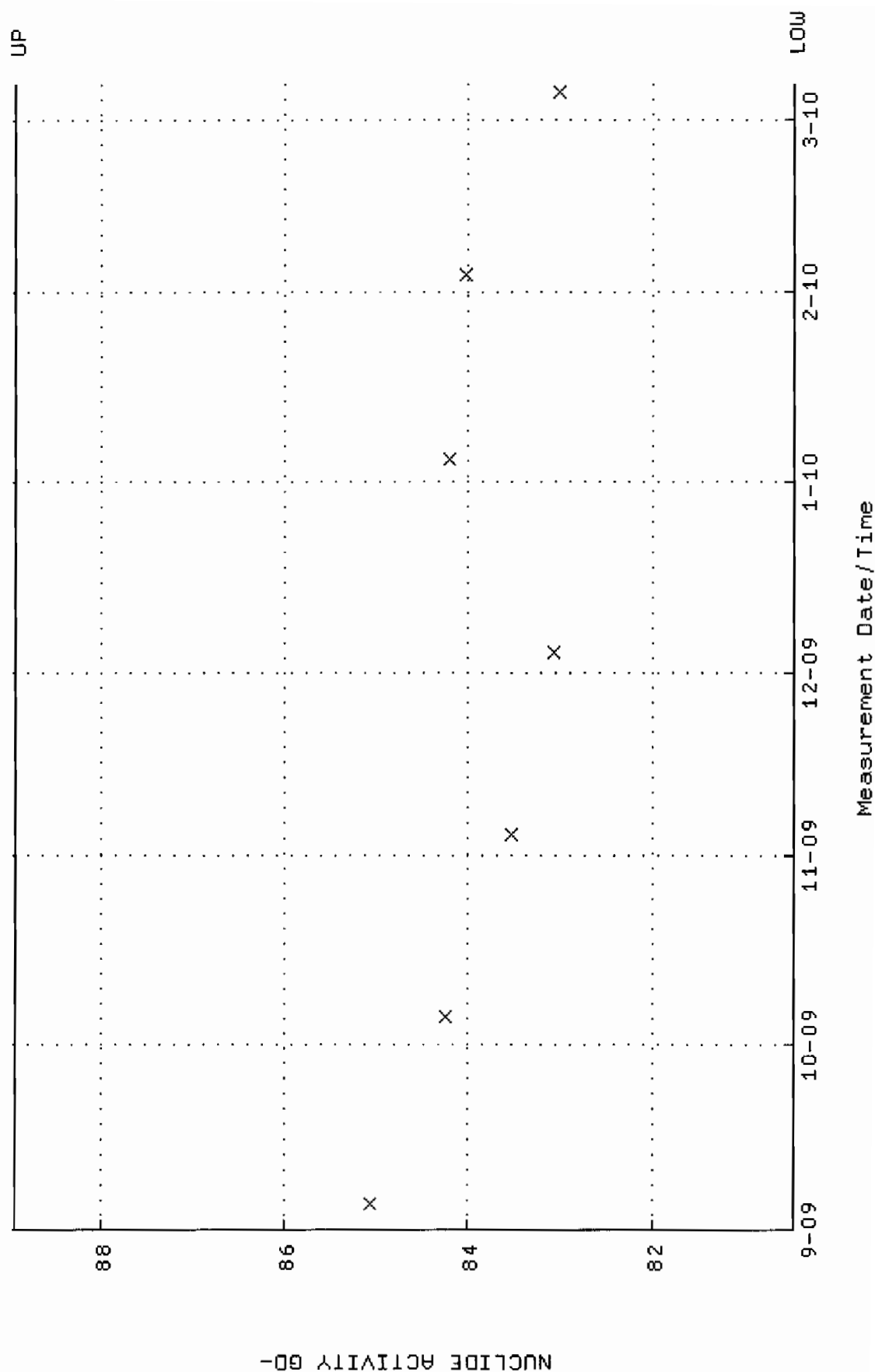
QA filename : DKA100:[ENV\_ALPHA.QA.B]B044.QAF;2  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:06 through 6-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



QA filename : DKA100:[ENV\_ALPHA.QA.W]W045.QAF;5  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 5-SEP-2009 09:03:12 through 6-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.332472 through 0.352472



QA filename : DKA100:[ENV\_ALPHA.QA.W]W045.QAF;5  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 5-SEP-2009 09:03:12 through 6-MAR-2010 12:00:00  
 Lower/Upper Lmts: 80.4622 through 88.9320



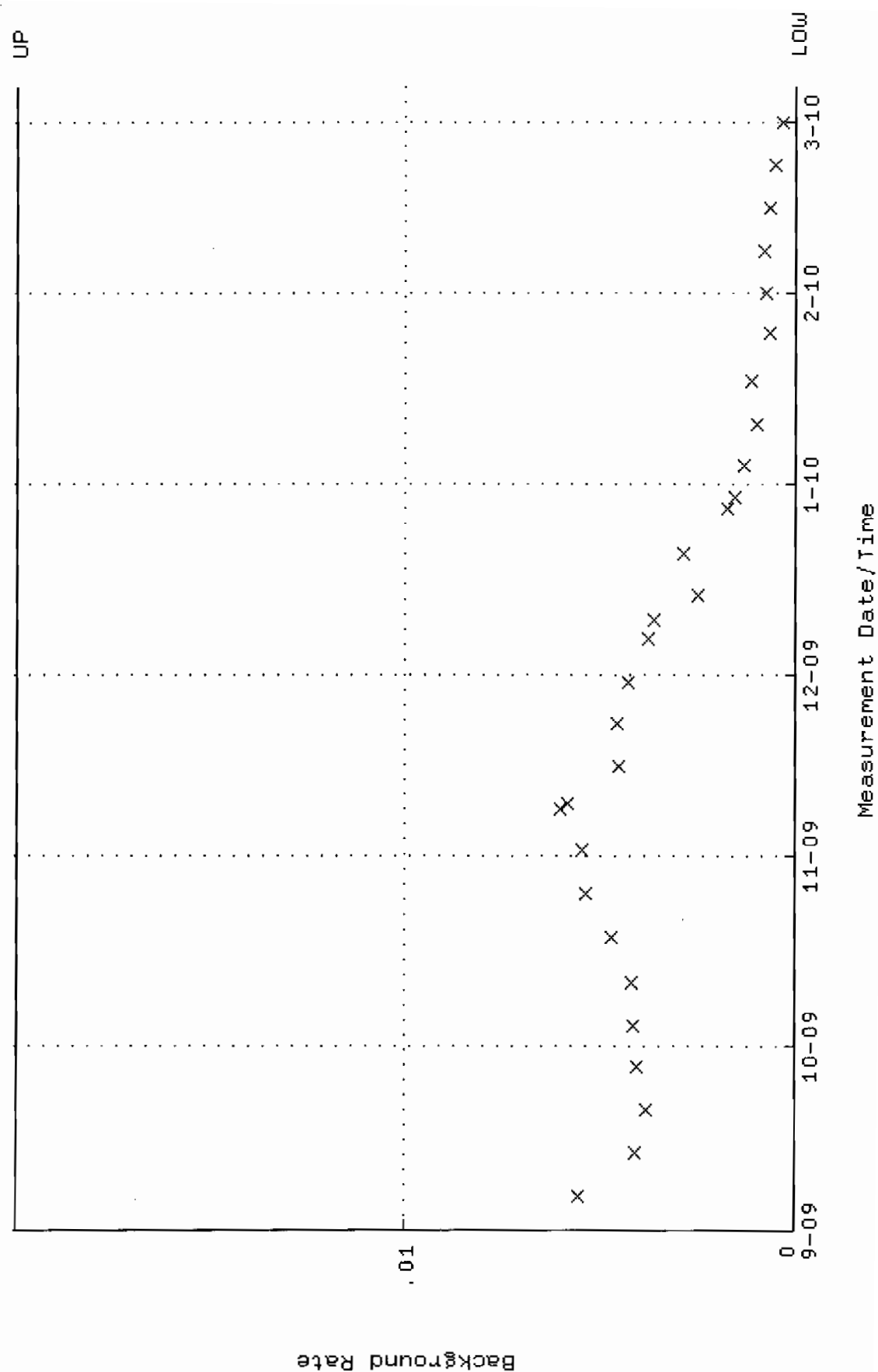


QA filename : DKA100:[ENV\_ALPHA.QA.B]B045.QAF;1

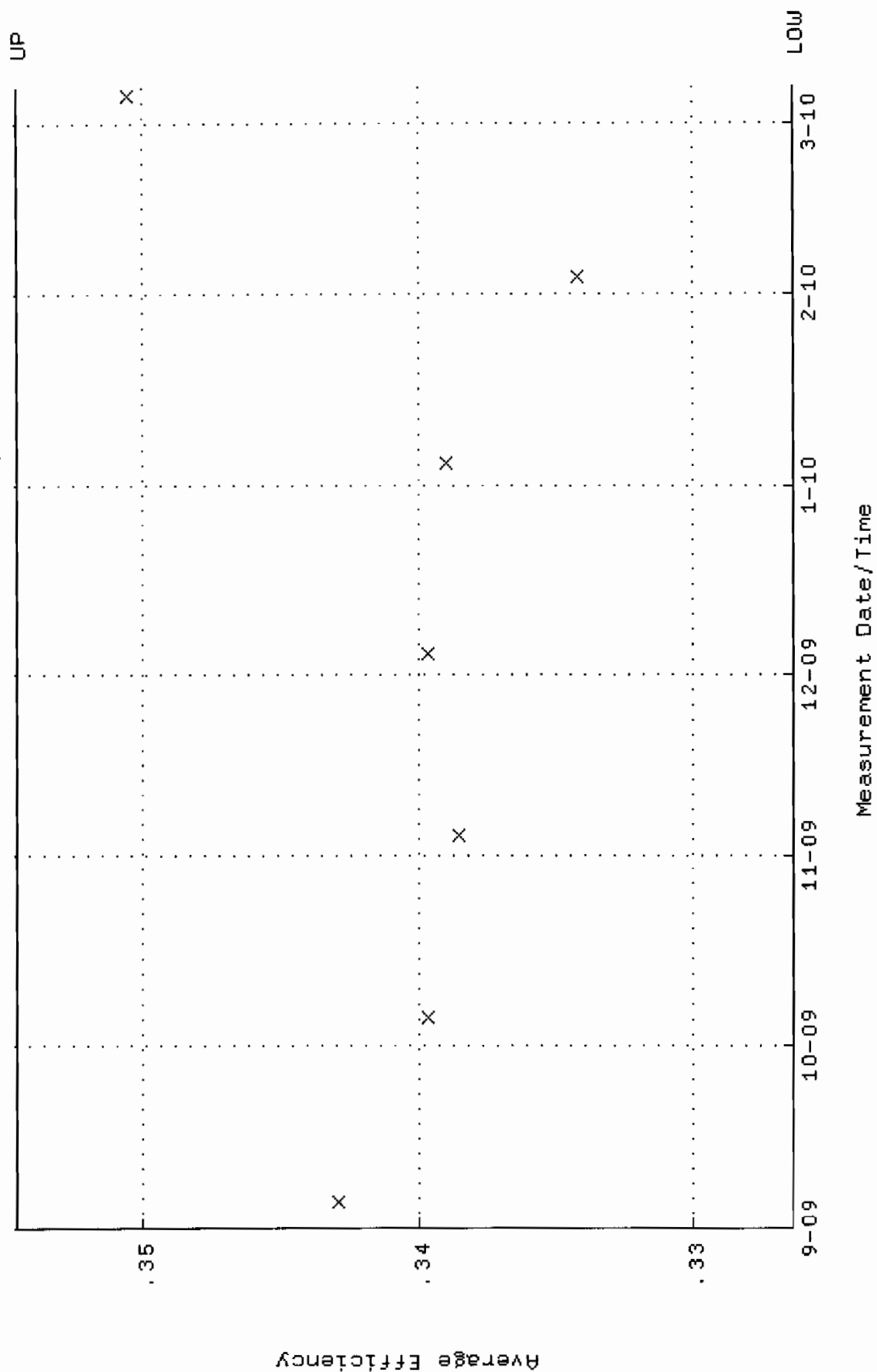
Parameter Name : BACKRATE (Background Rate)

Start/End Dates : 6-SEP-2009 14:27:06 through 6-MAR-2010 12:00:00

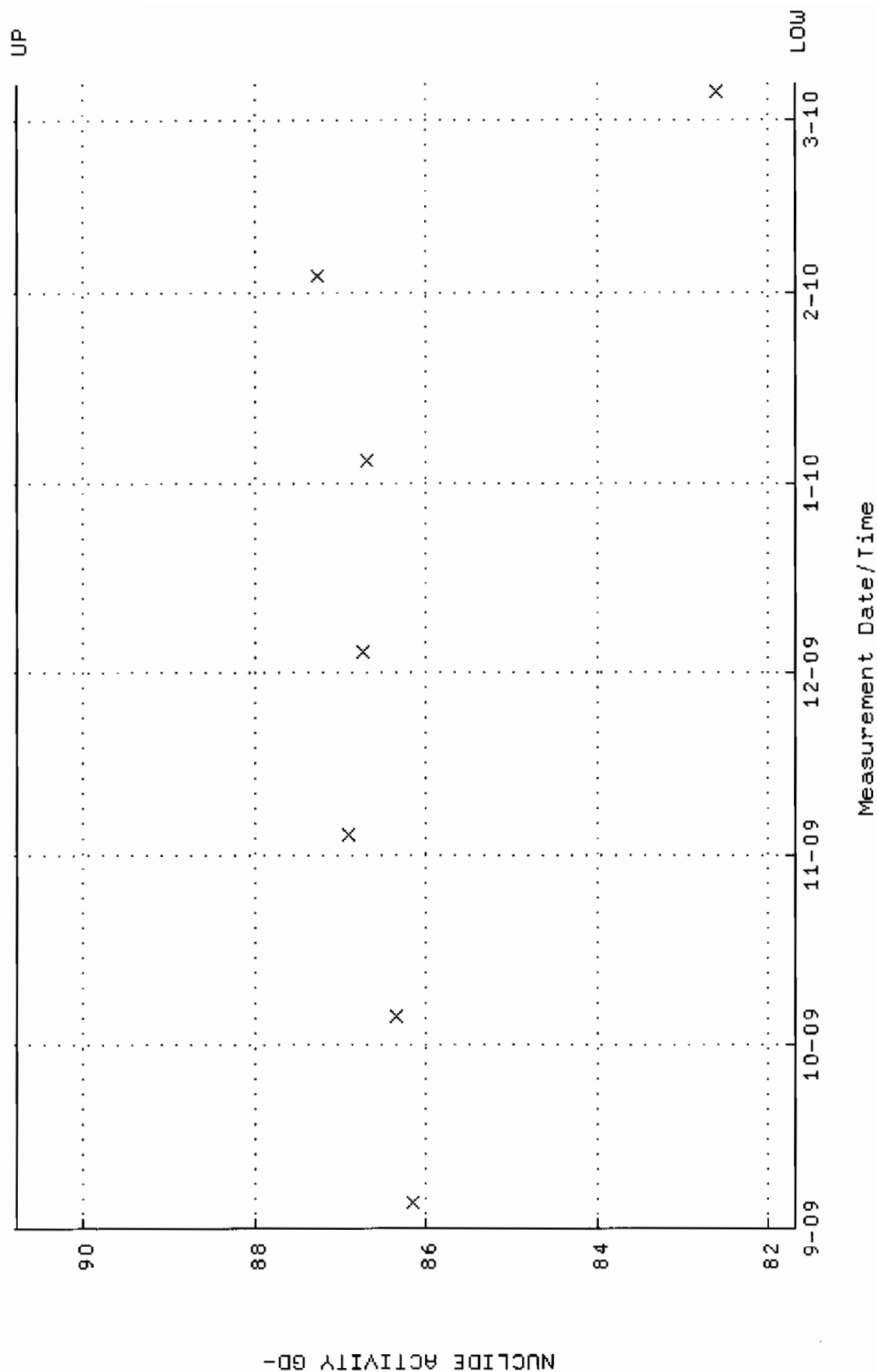
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



QA filename : DKA100:[ENV\_ALPHA.QA.W]W046.QAF;4  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 5-SEP-2009 09:03:12 through 6-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.326384 through 0.354578



QA filename : DKA100:[ENV\_ALPHA.QA.W]W046.QAF;4  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 5-SEP-2009 09:03:12 through 6-MAR-2010 12:00:00  
 Lower/Upper Lmts: 81.6839 through 90.7805

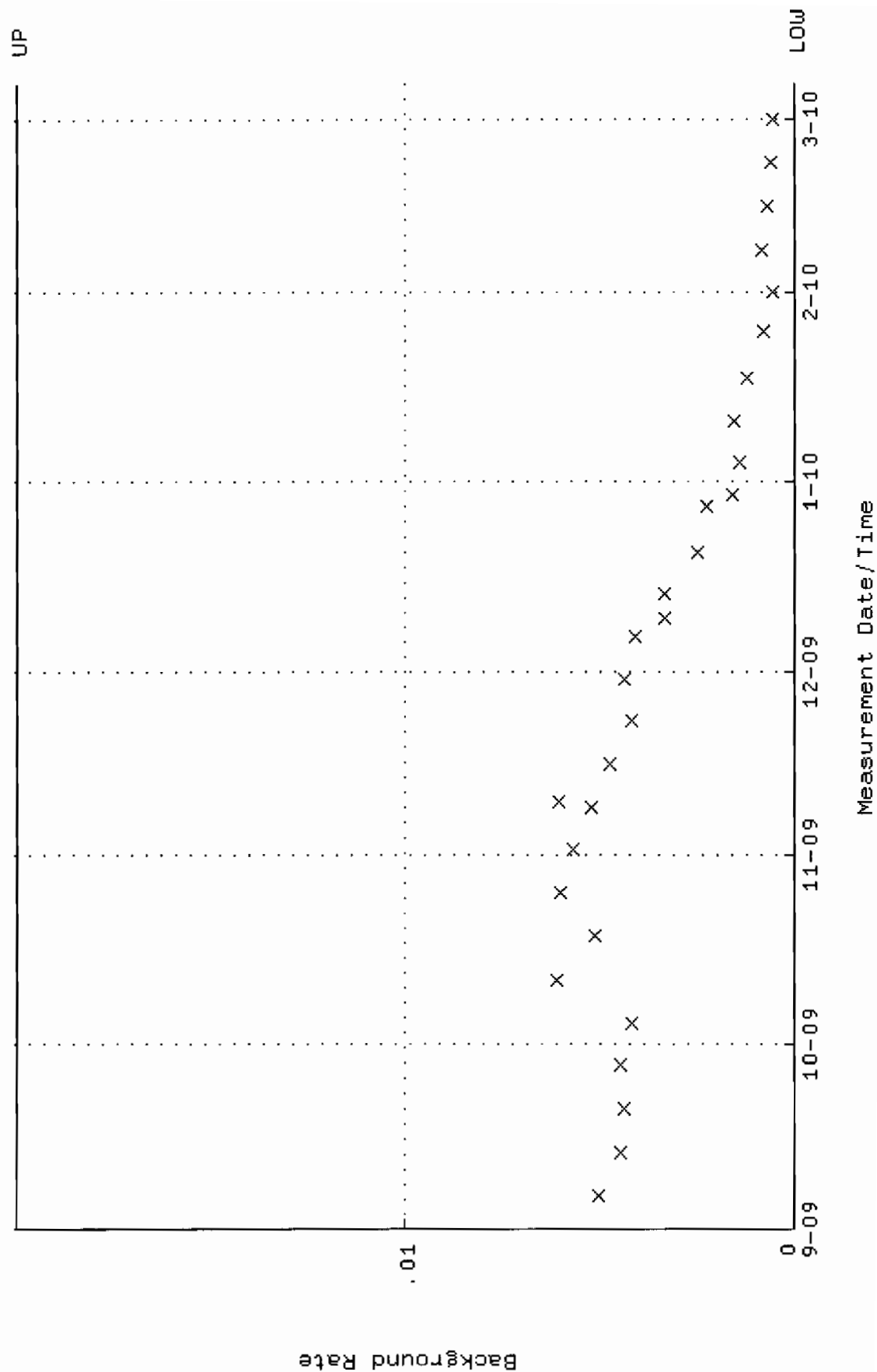


QA filename : DKA100:[ENV\_ALPHA.QA.B]B046.QAF;1

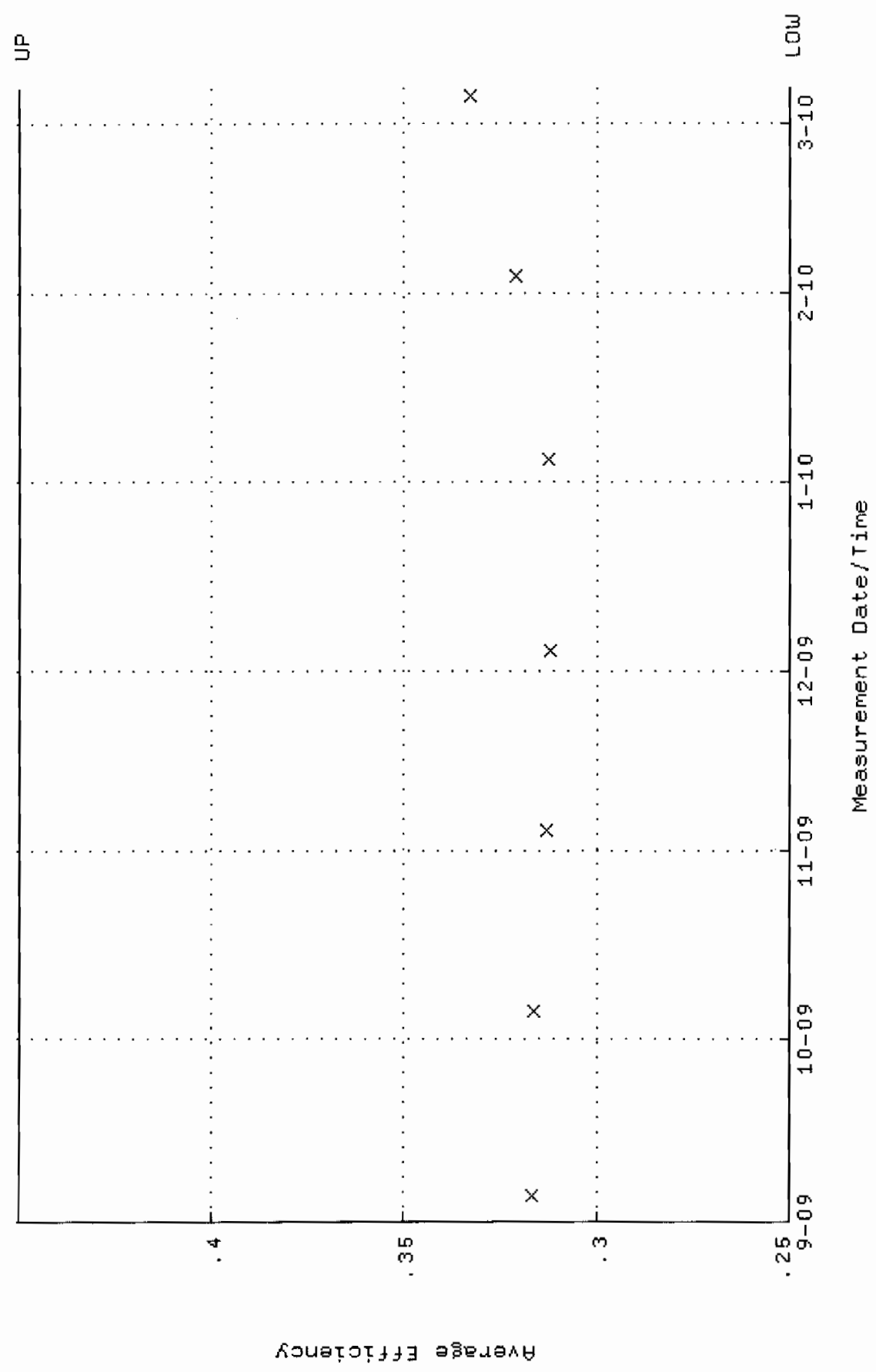
Parameter Name : BACKRATE (Background Rate)

Start/End Dates : 6-SEP-2009 14:27:06 through 6-MAR-2010 12:00:00

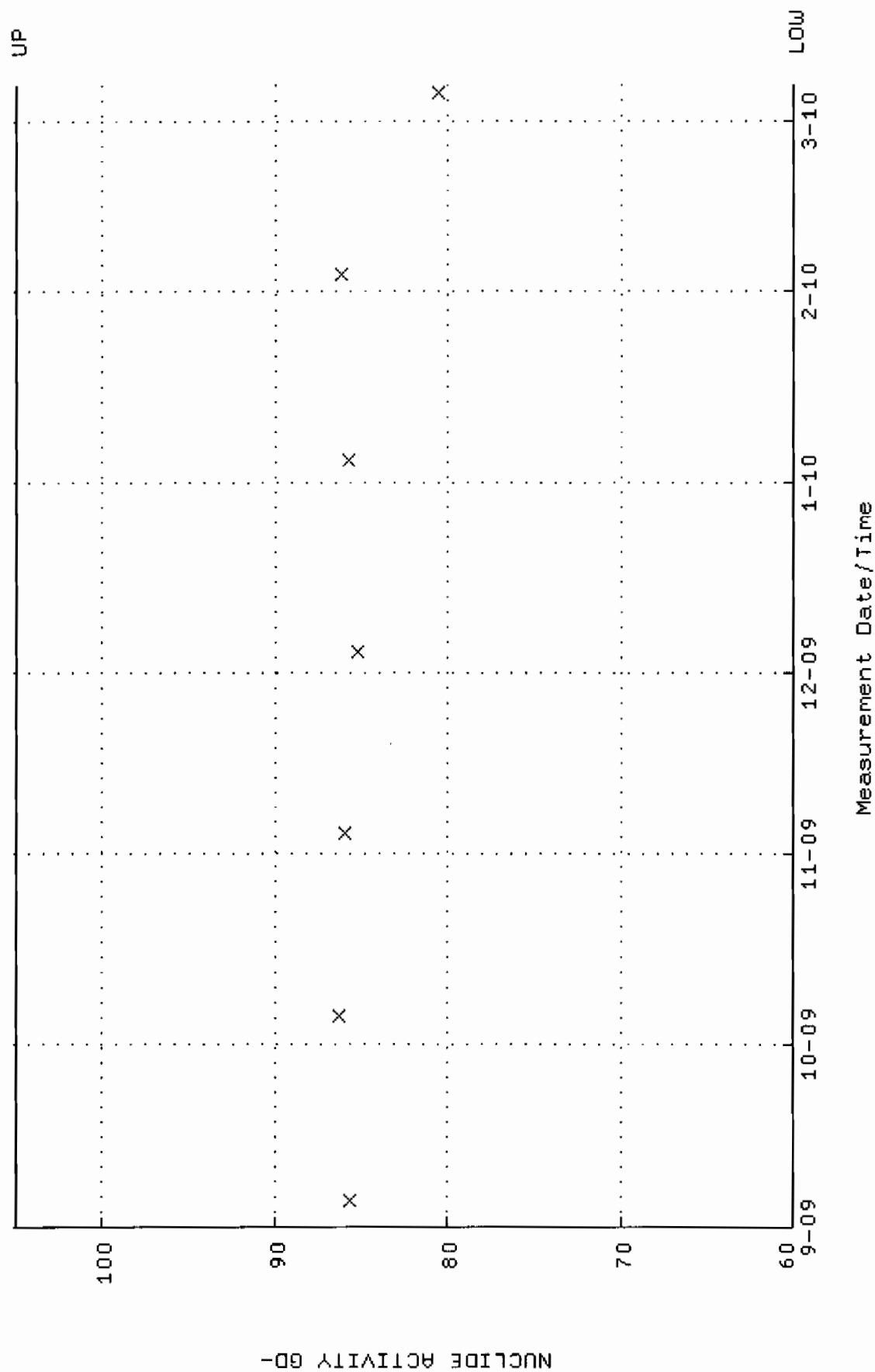
Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



QA filename : DKA100:[ENV\_ALPHA.QA.W]W048.QAF; 6  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 5-SEP-2009 09:03:12 through 6-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.250000 through 0.450000



QA filename : DKA100:[ENV\_ALPHA.QA.W]W048.QAF;6  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 5-SEP-2009 09:03:12 through 6-MAR-2010 12:00:00  
 Lower/Upper Lmts: 60.0000 through 105.000

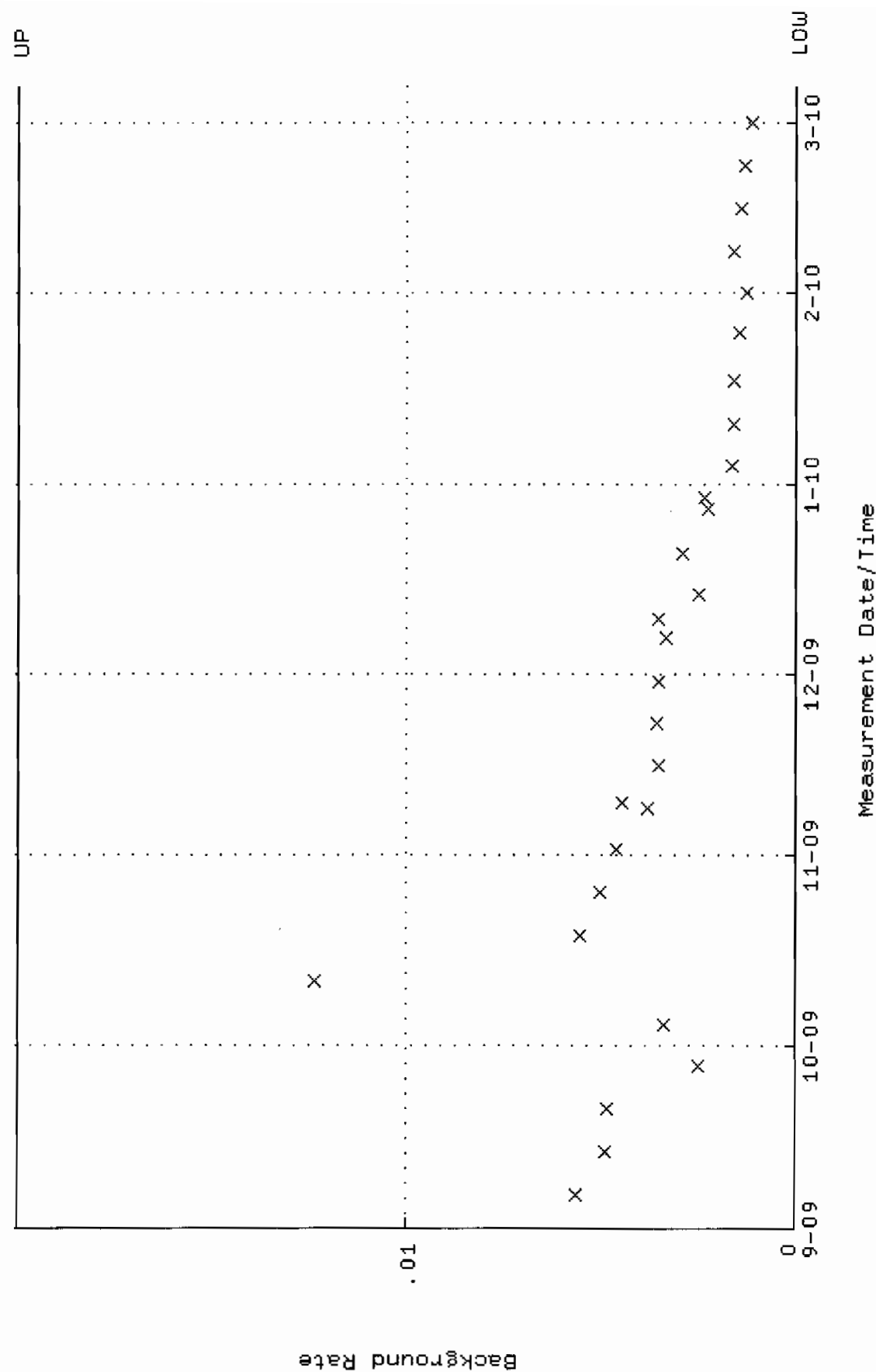


QA filename : DKA100:[ENV\_ALPHA.QA.B]B048.QAF;2

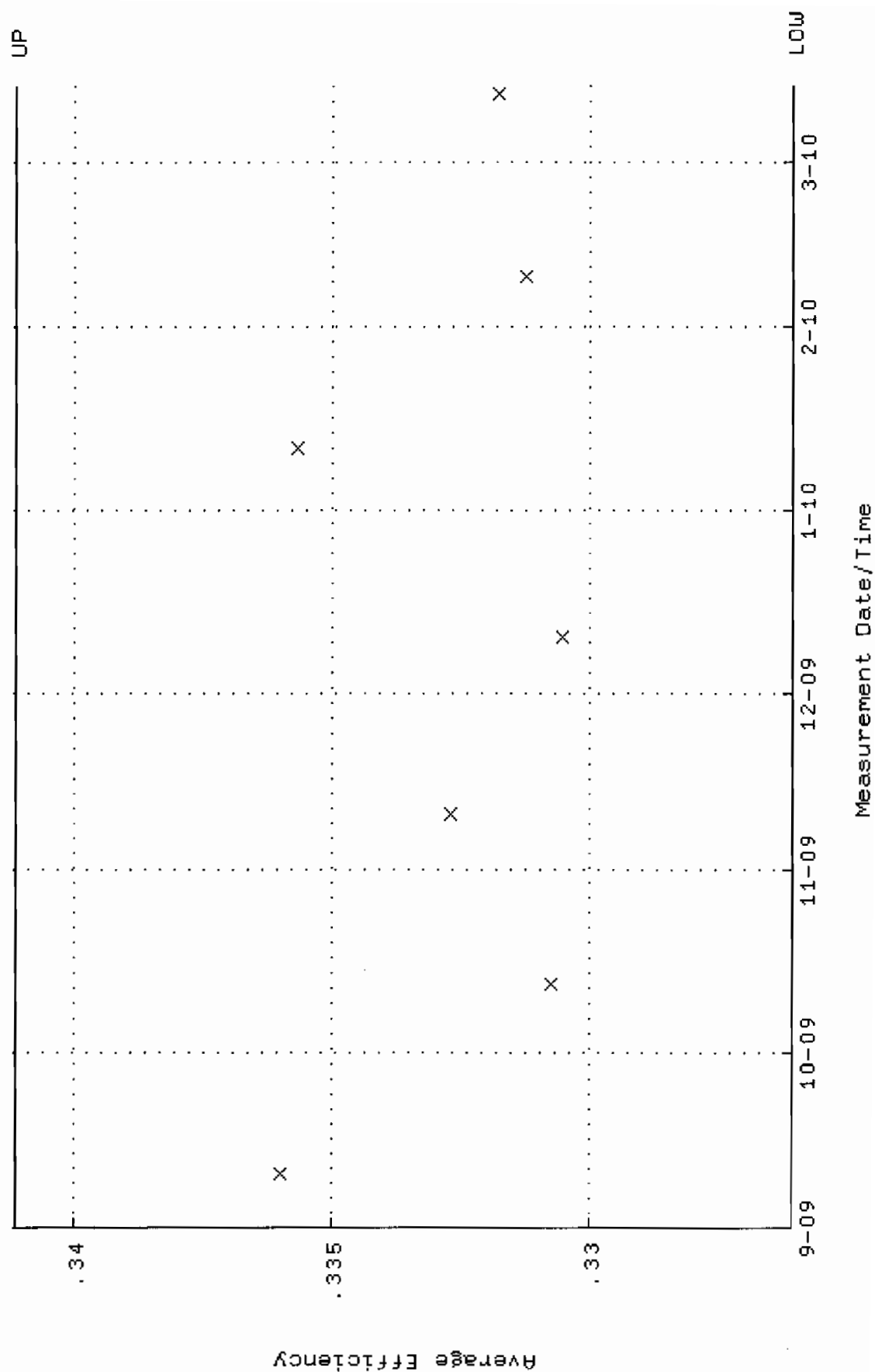
Parameter Name : BACKRATE (Background Rate)

Start/End Dates : 6-SEP-2009 14:27:06 through 6-MAR-2010 12:00:00

Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02

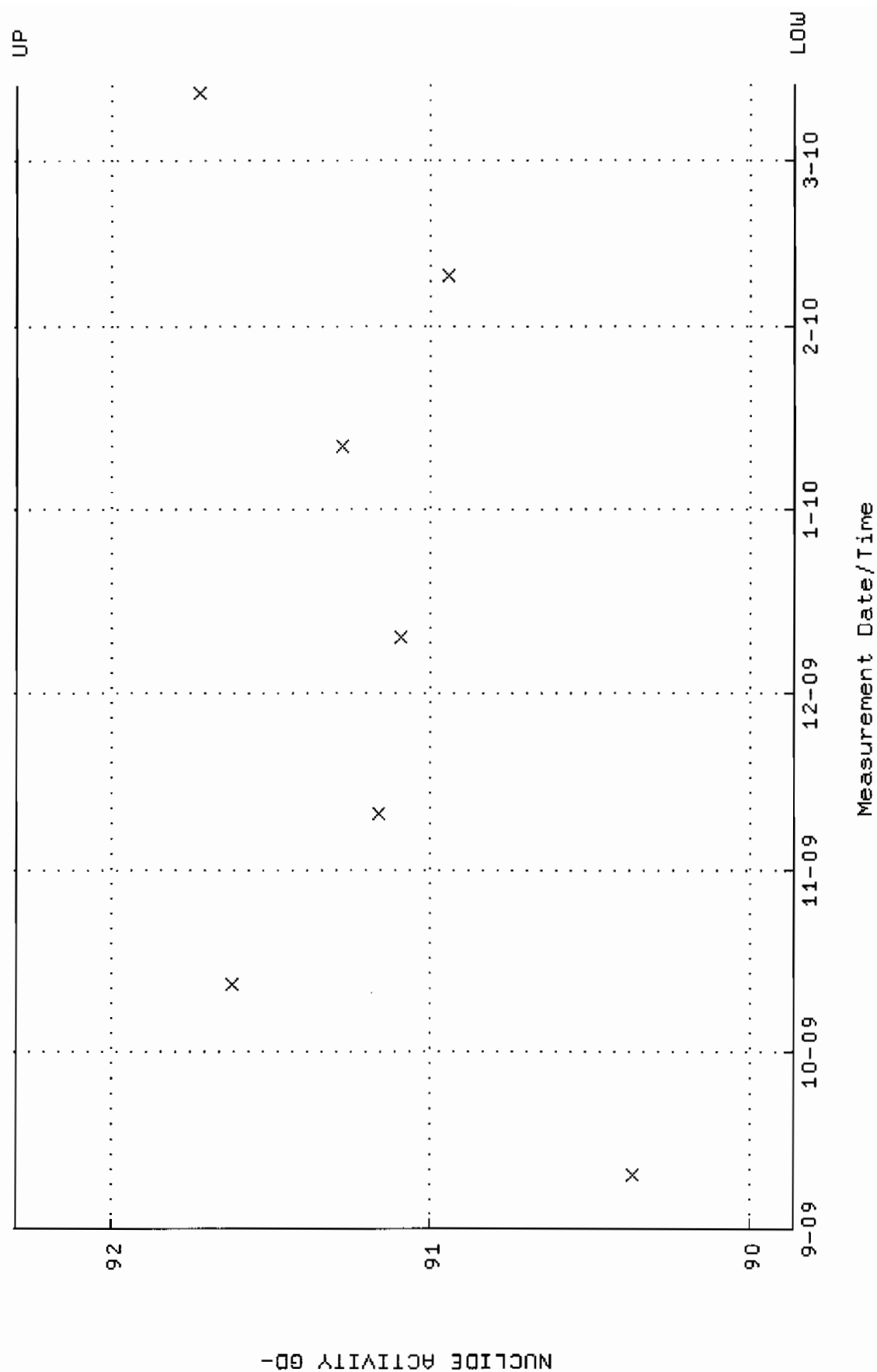


QA filename : DKA100:[ENV\_ALPHA.QA.W]W073.QAF;3  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 10-SEP-2009 07:45:11 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.326078 through 0.341146

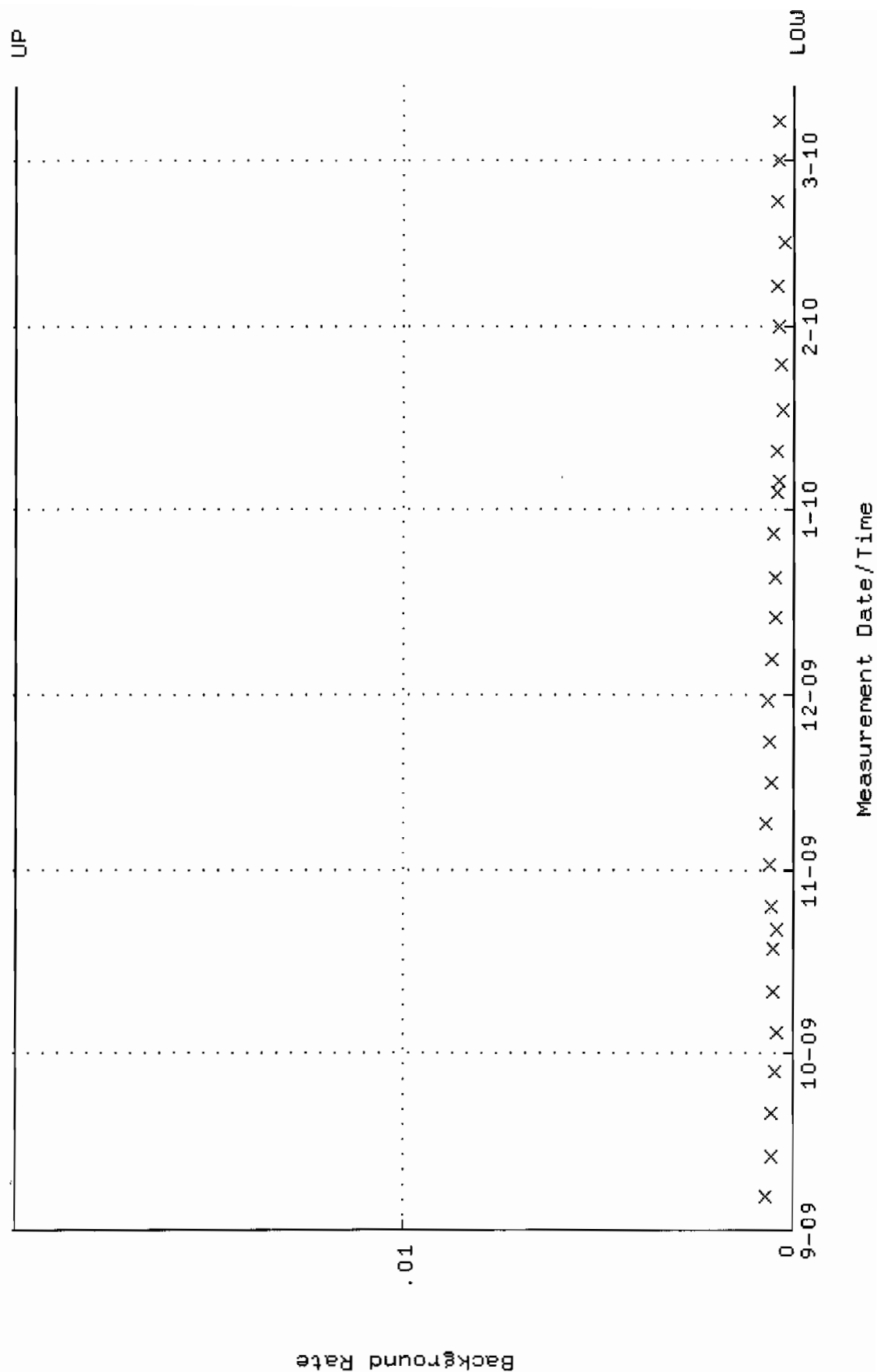




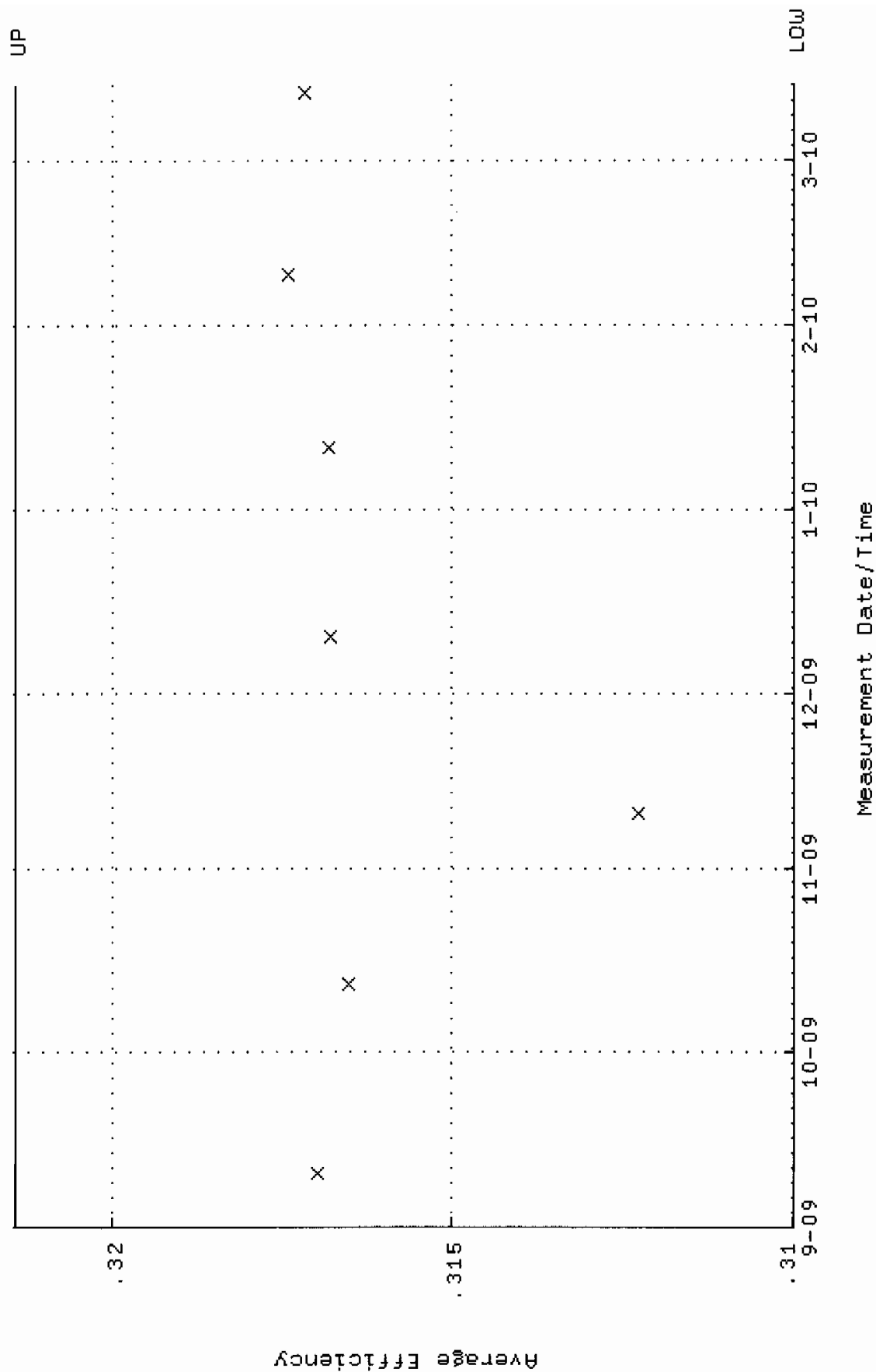
QA filename : DKA100:[ENV\_ALPHA.QA.W]W073.QAF;3  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 10-SEP-2009 07:45:11 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 89.8600 through 92.3006



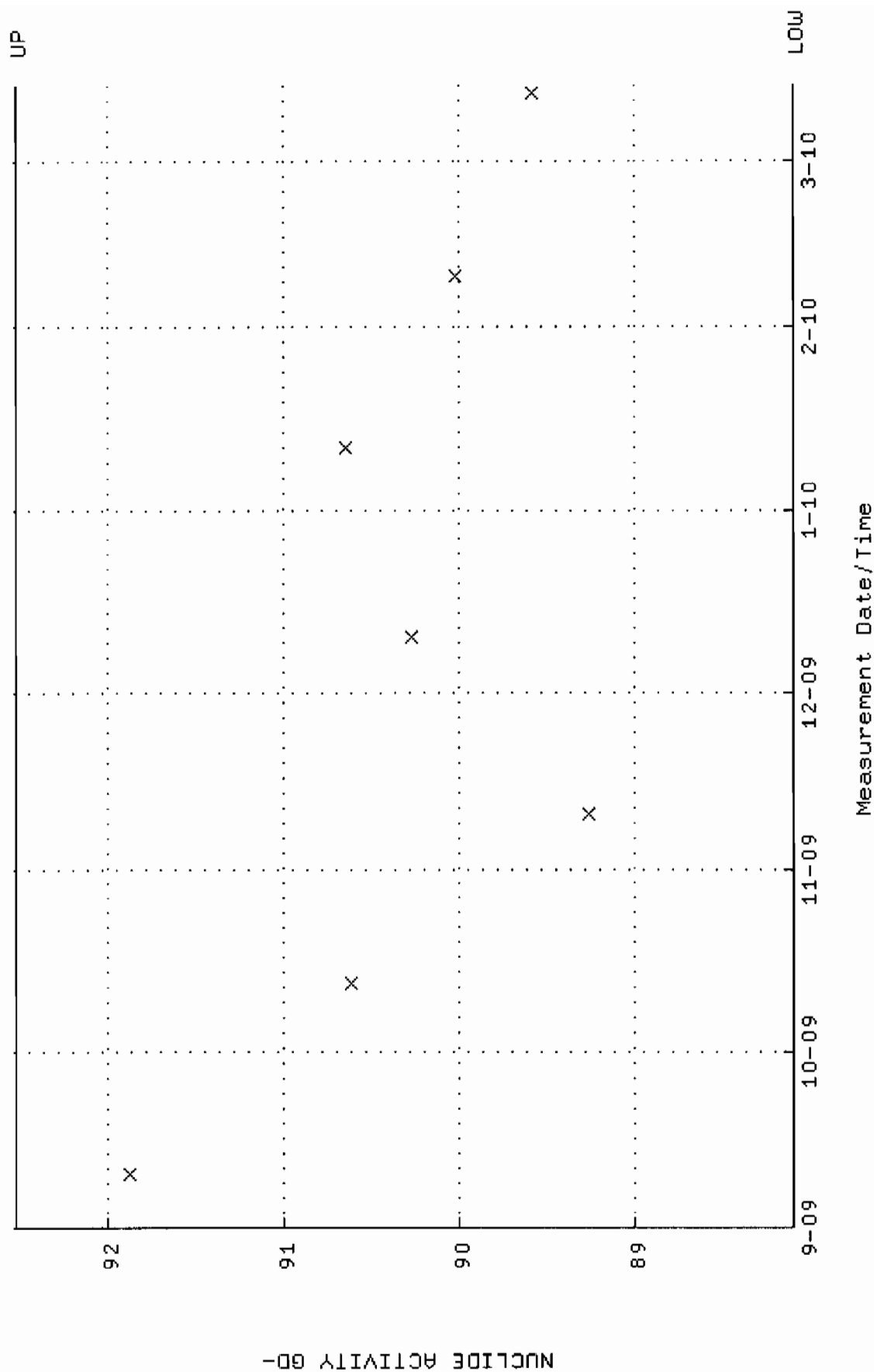
QA filename : DKA100:[ENV\_ALPHA.QA.B]B073.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 14:27:07 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 2.000000E-02



QA filename : DKA100:[ENV\_ALPHA.QA.W]W074.QAF;4  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 10-SEP-2009 07:45:11 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.309960 through 0.321424

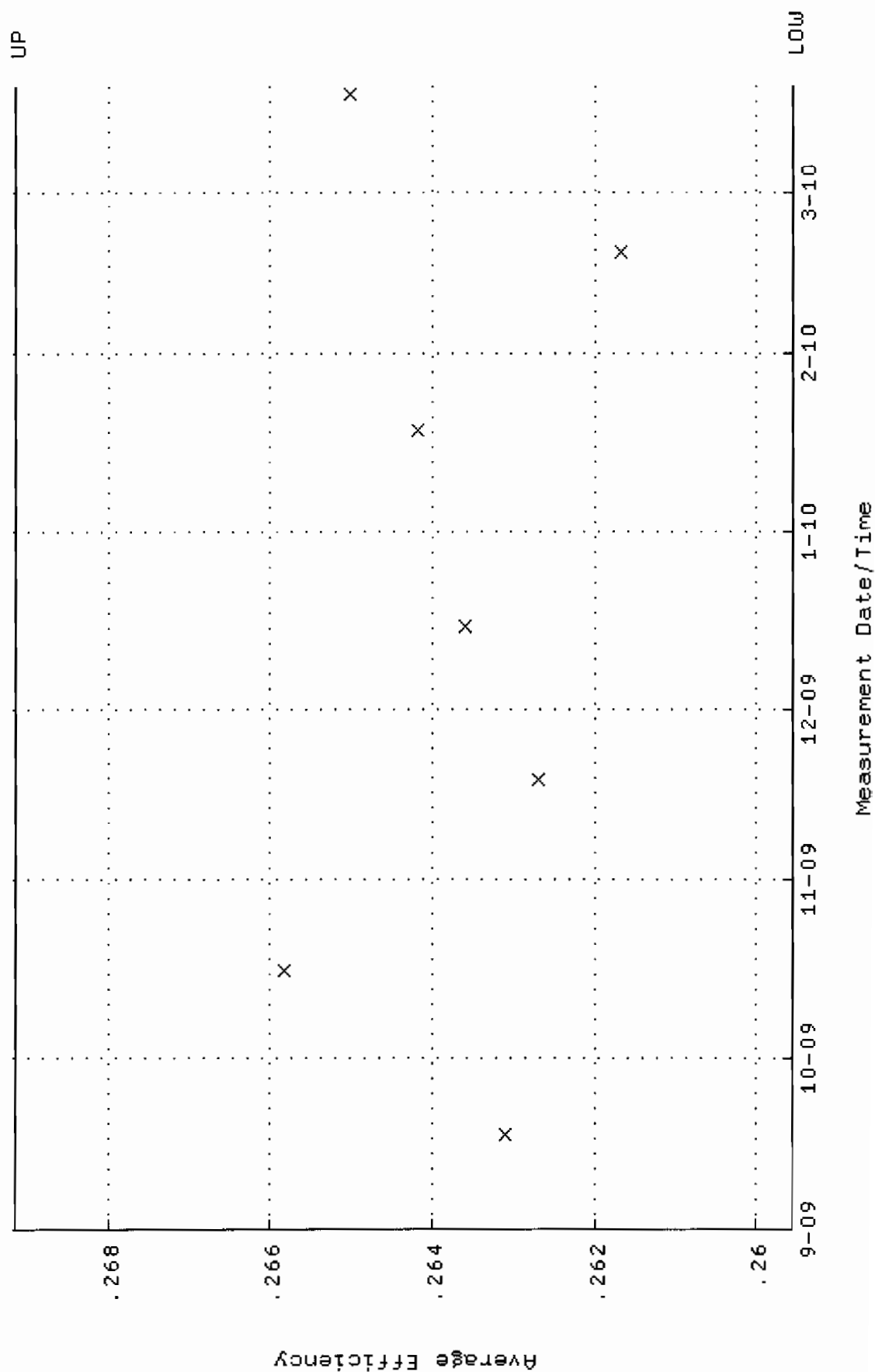


QA filename : DKA100:[ENV\_ALPHA.QA.W]W074.QAF;4  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 10-SEP-2009 07:45:11 through 13-MAR-2010 12:00:00  
 Lower/Upper Lmts: 88.0938 through 92.5190

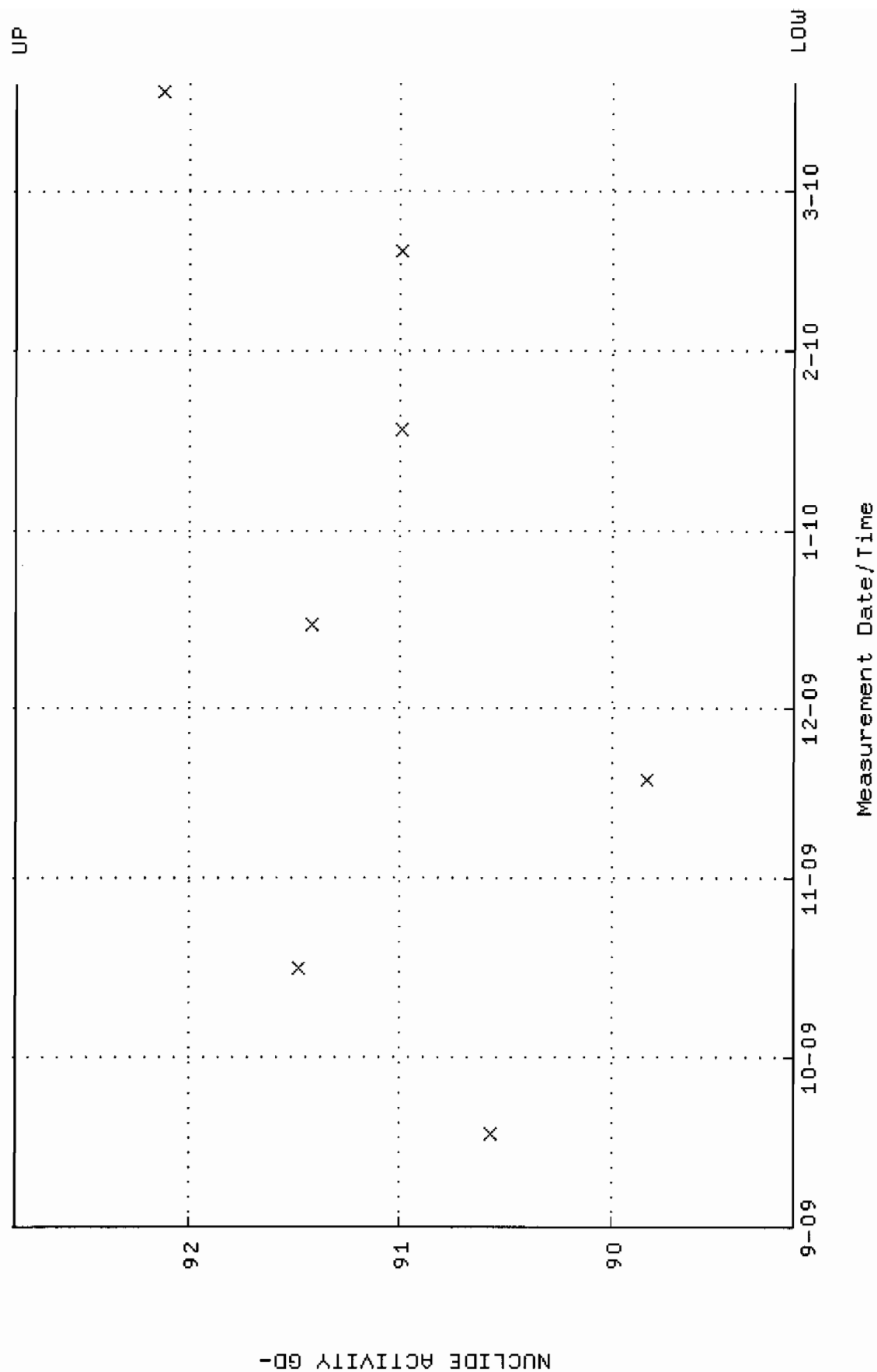




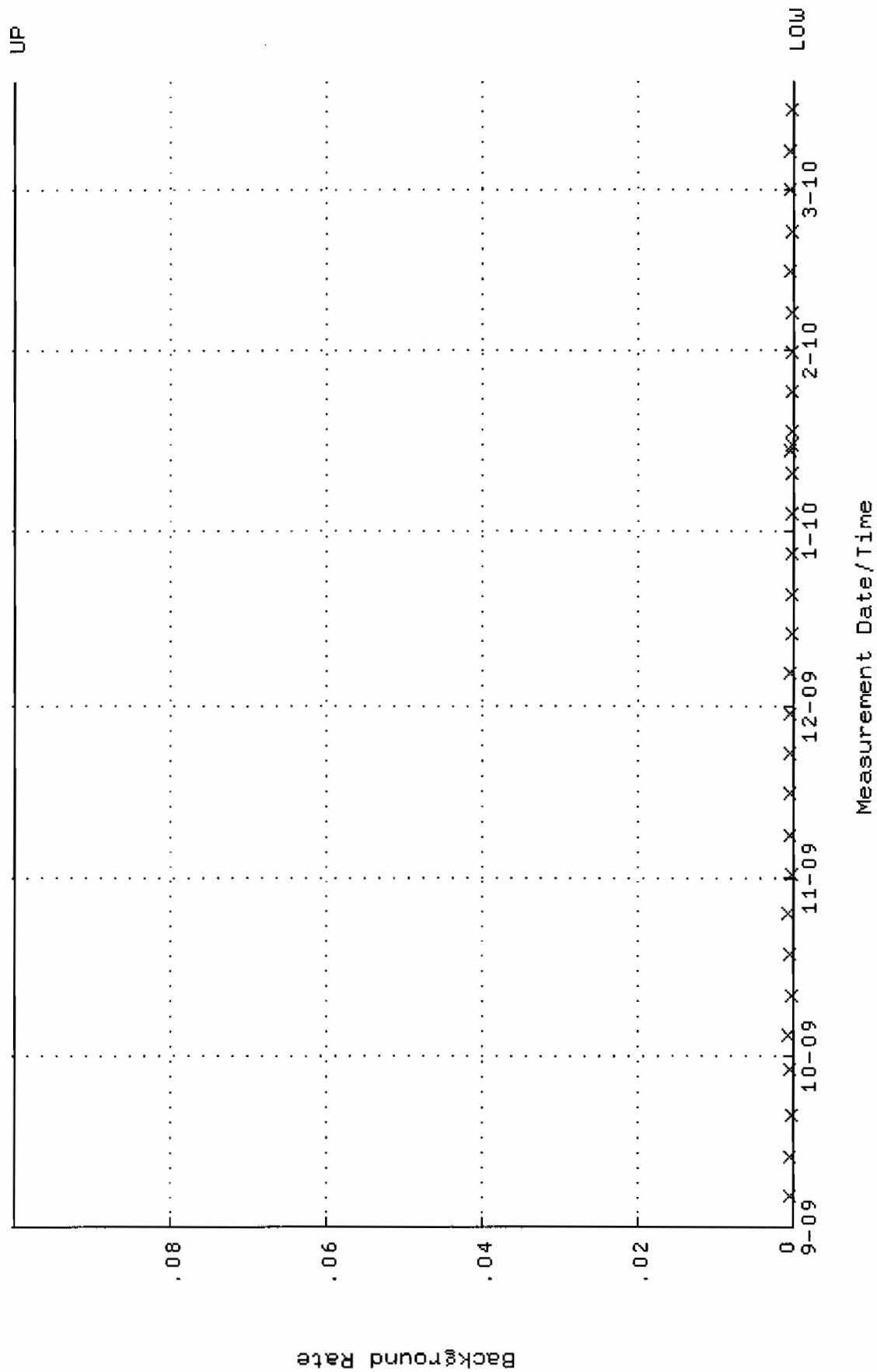
QA filename : DKA100:[ENV\_ALPHA.QA.W]W129.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 17-SEP-2009 07:24:21 through 19-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.259560 through 0.269146



QA filename : DKA100:[ENV\_ALPHA.QA.W]W129.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 17-SEP-2009 07:24:21 through 19-MAR-2010 12:00:00  
 Lower/Upper Lmts: 89.1401 through 92.8201

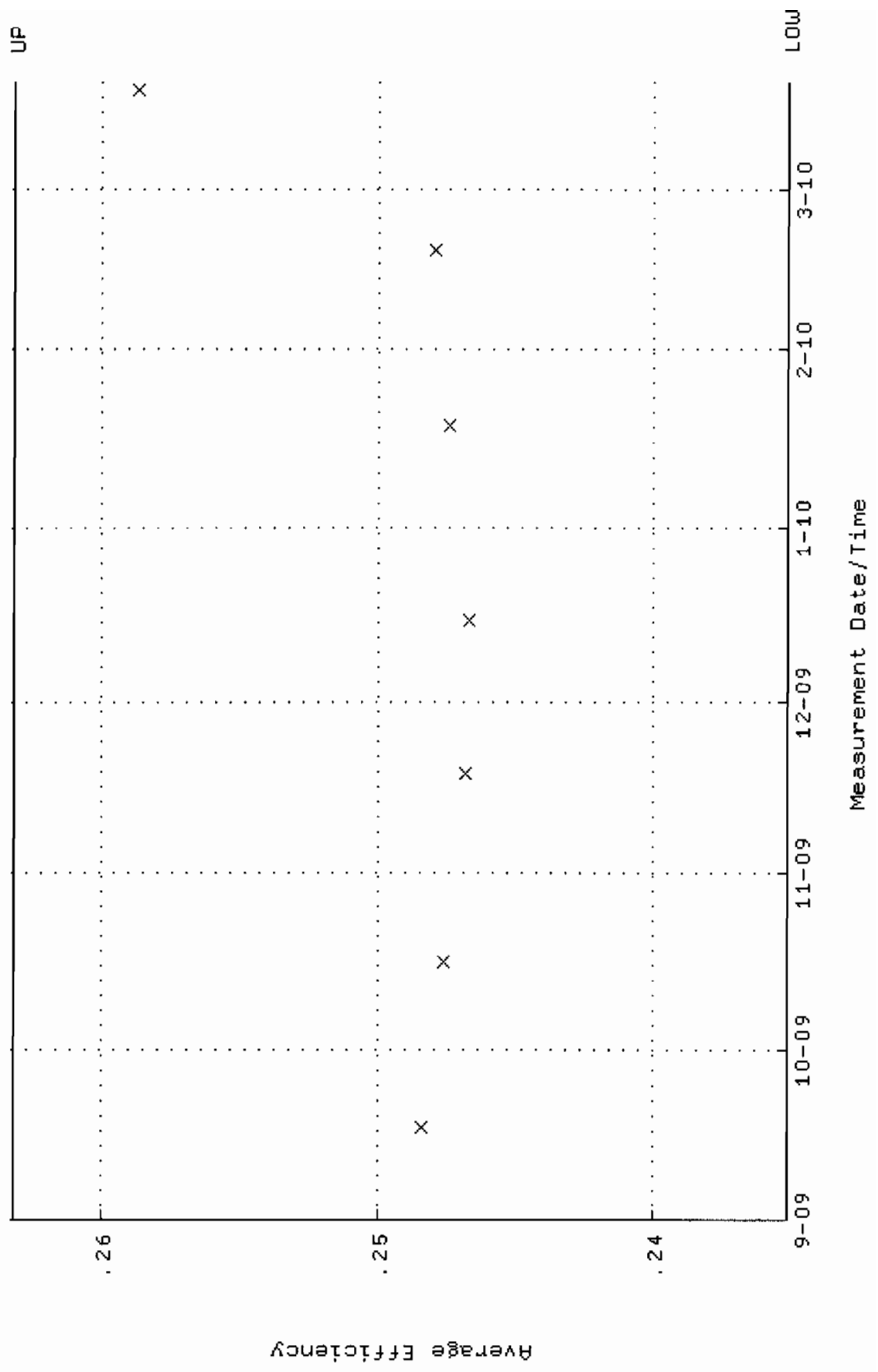


QA filename : DKA100:[ENV\_ALPHA.QA.B]B129.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 15:41:19 through 19-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000

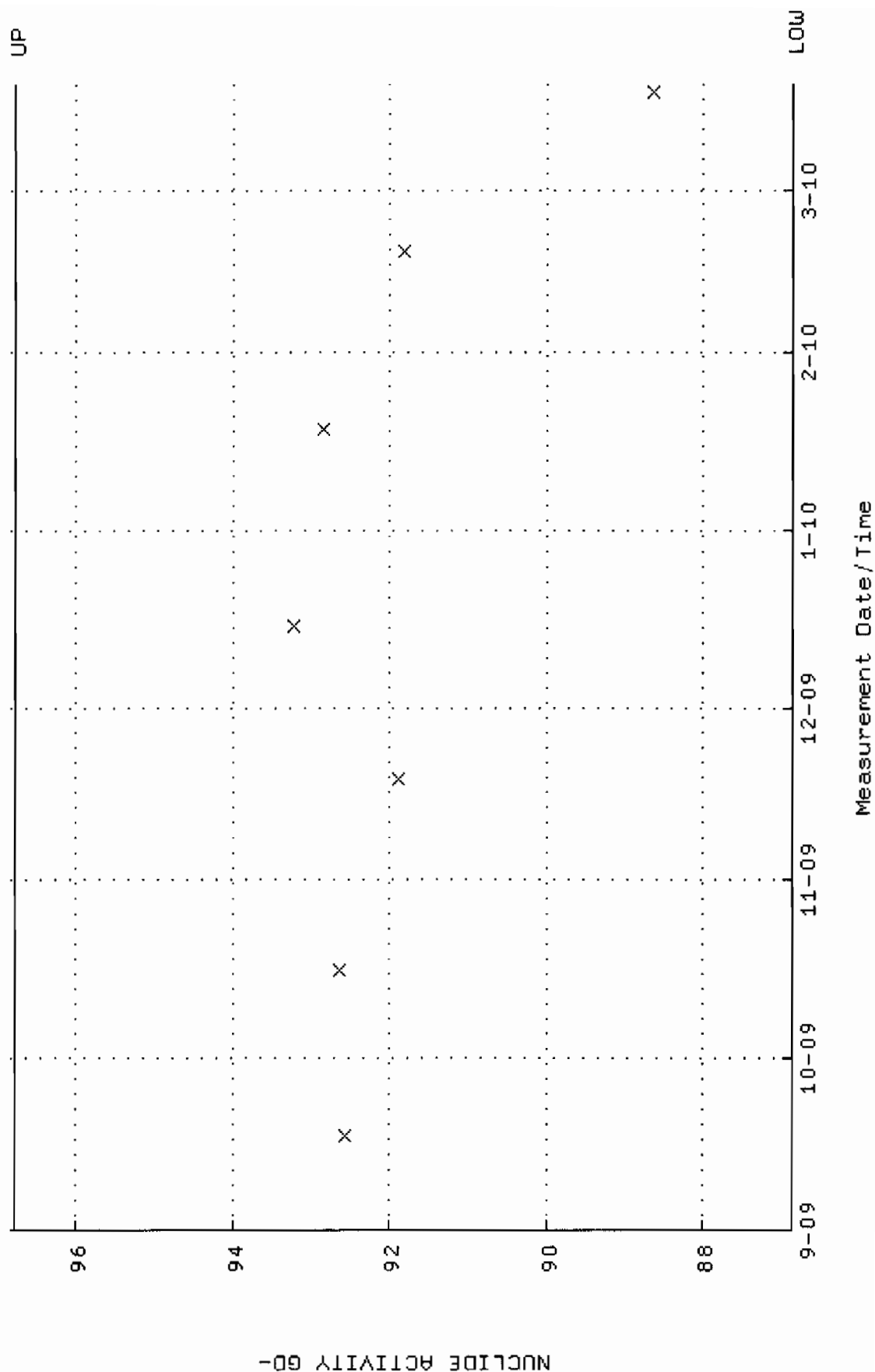




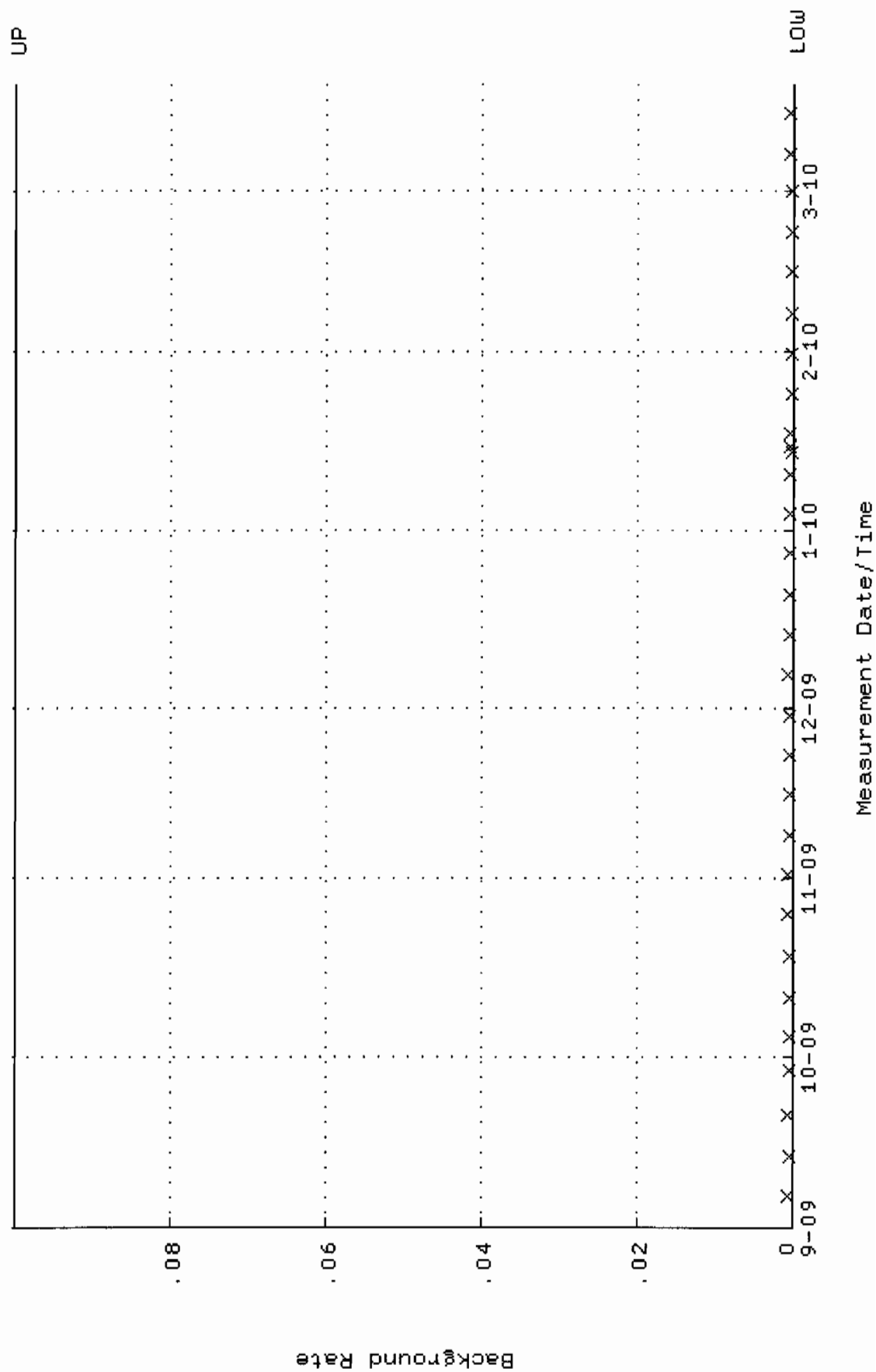
QA filename : DKA100:[ENV\_ALPHA.QA.W]W130.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 17-SEP-2009 07:24:25 through 19-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.235120 through 0.263192



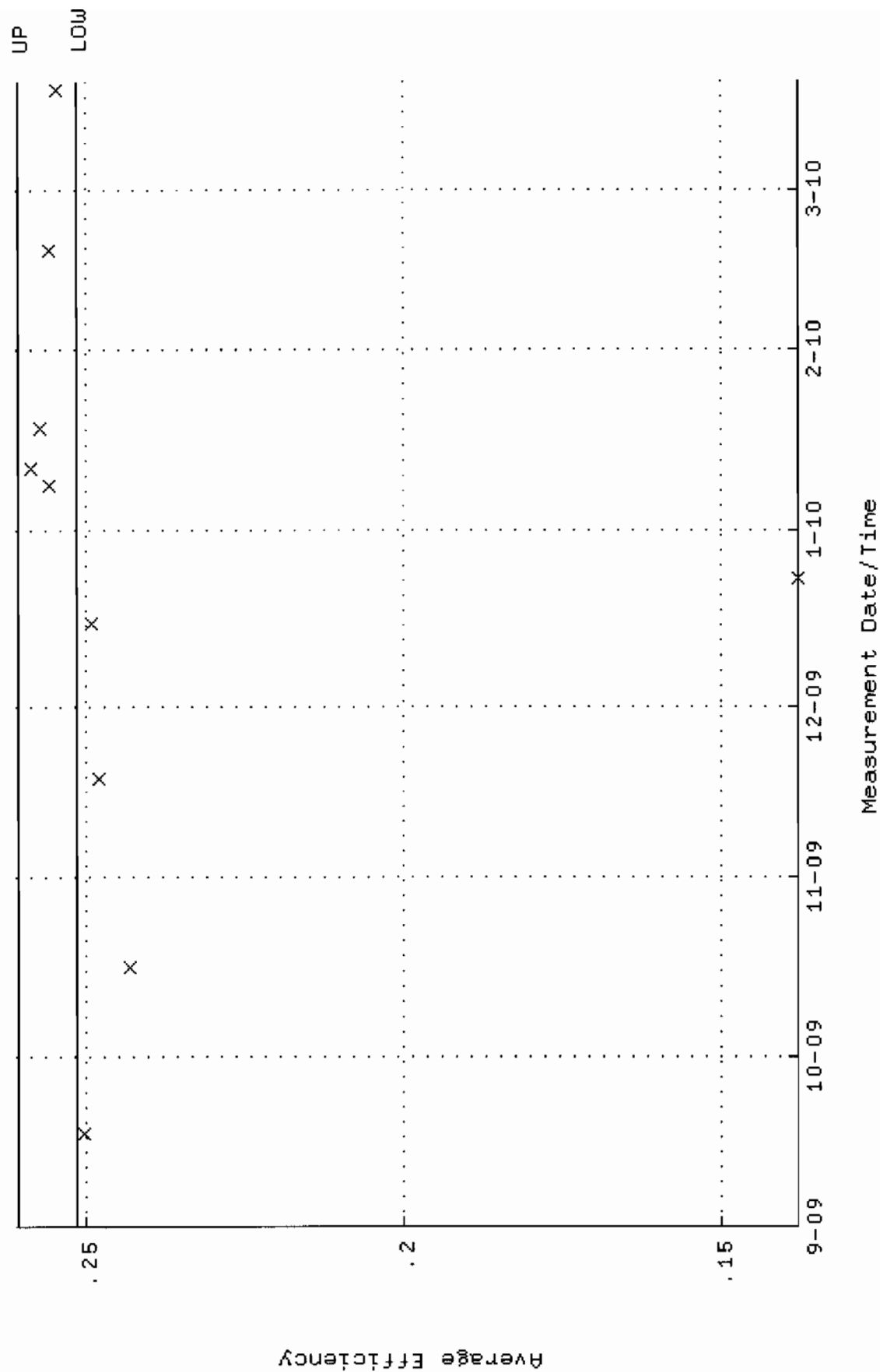
QA filename : DKA100:[ENV\_ALPHA.QA.W]w130.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 17-SEP-2009 07:24:25 through 19-MAR-2010 12:00:00  
 Lower/Upper Lmts: 86.8592 through 96.7952



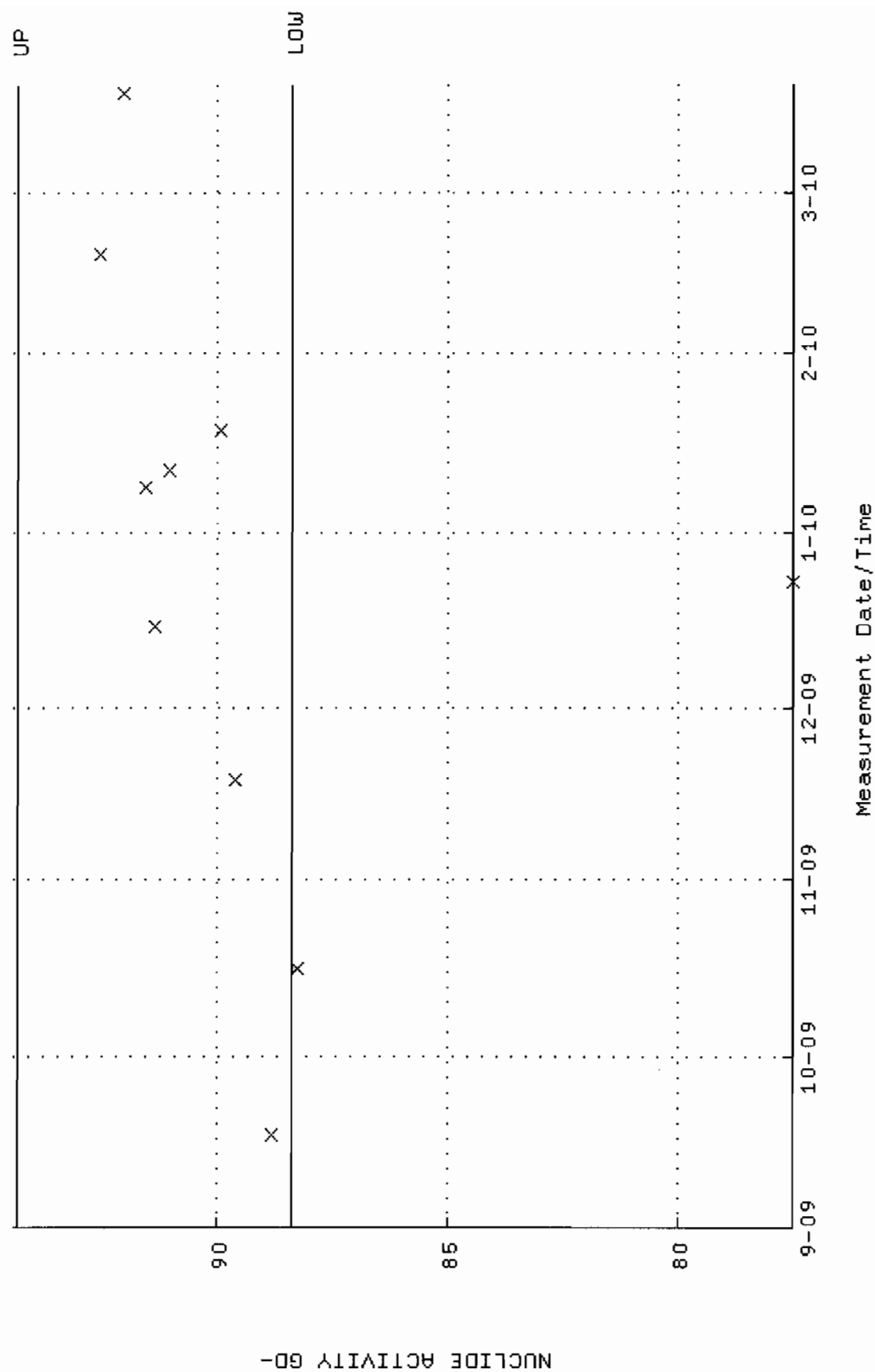
QA filename : DKA100:[ENV\_ALPHA.QA.B]B130.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 15:41:24 through 19-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



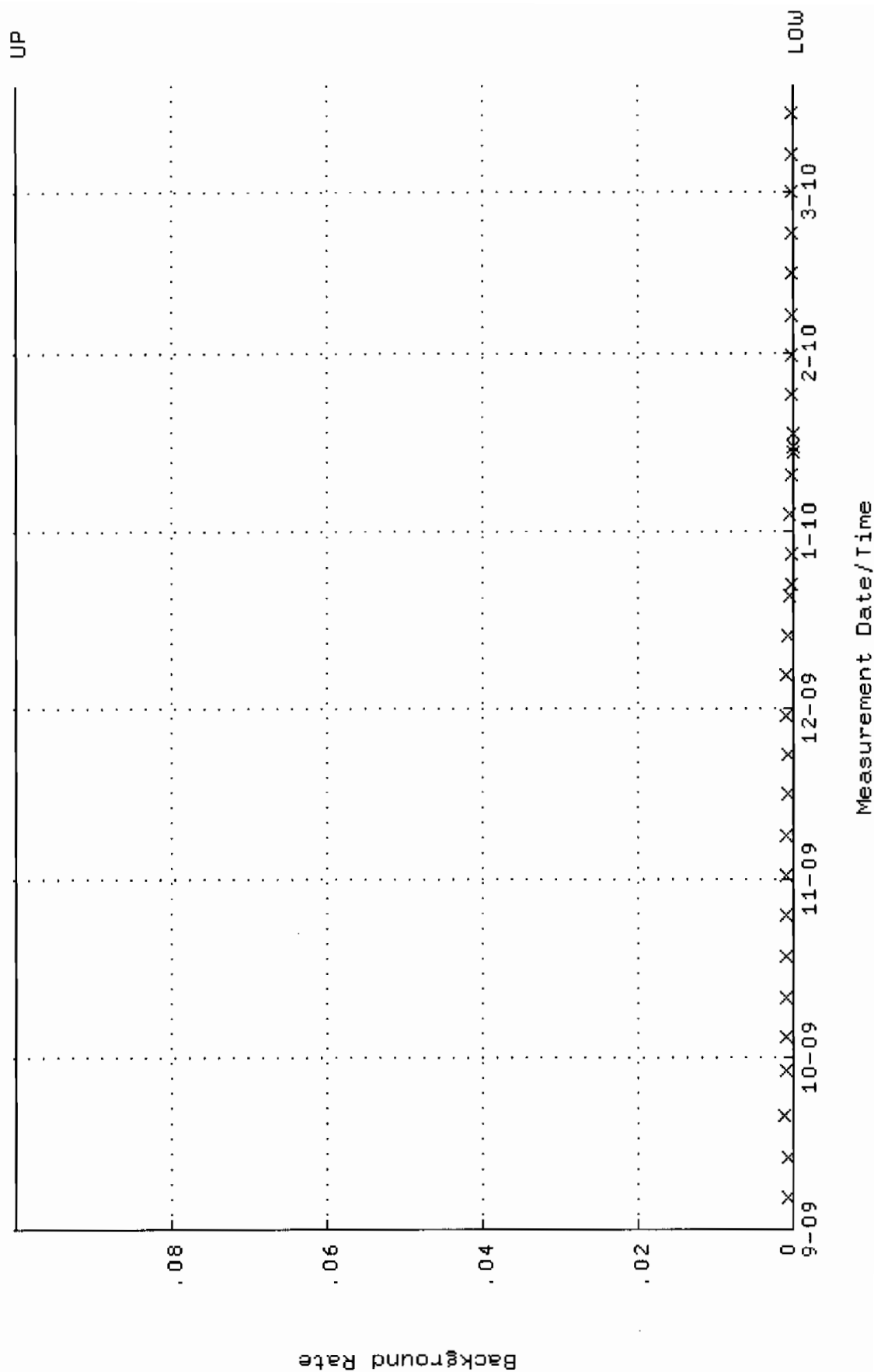
QA filename : DKA100:[ENV\_ALPHA.QA.W]W131.QAF;1  
 Parameter Name : AVREFF (Average Efficiency)  
 Start/End Dates : 17-SEP-2009 07:24:30 through 19-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.251694 through 0.260714



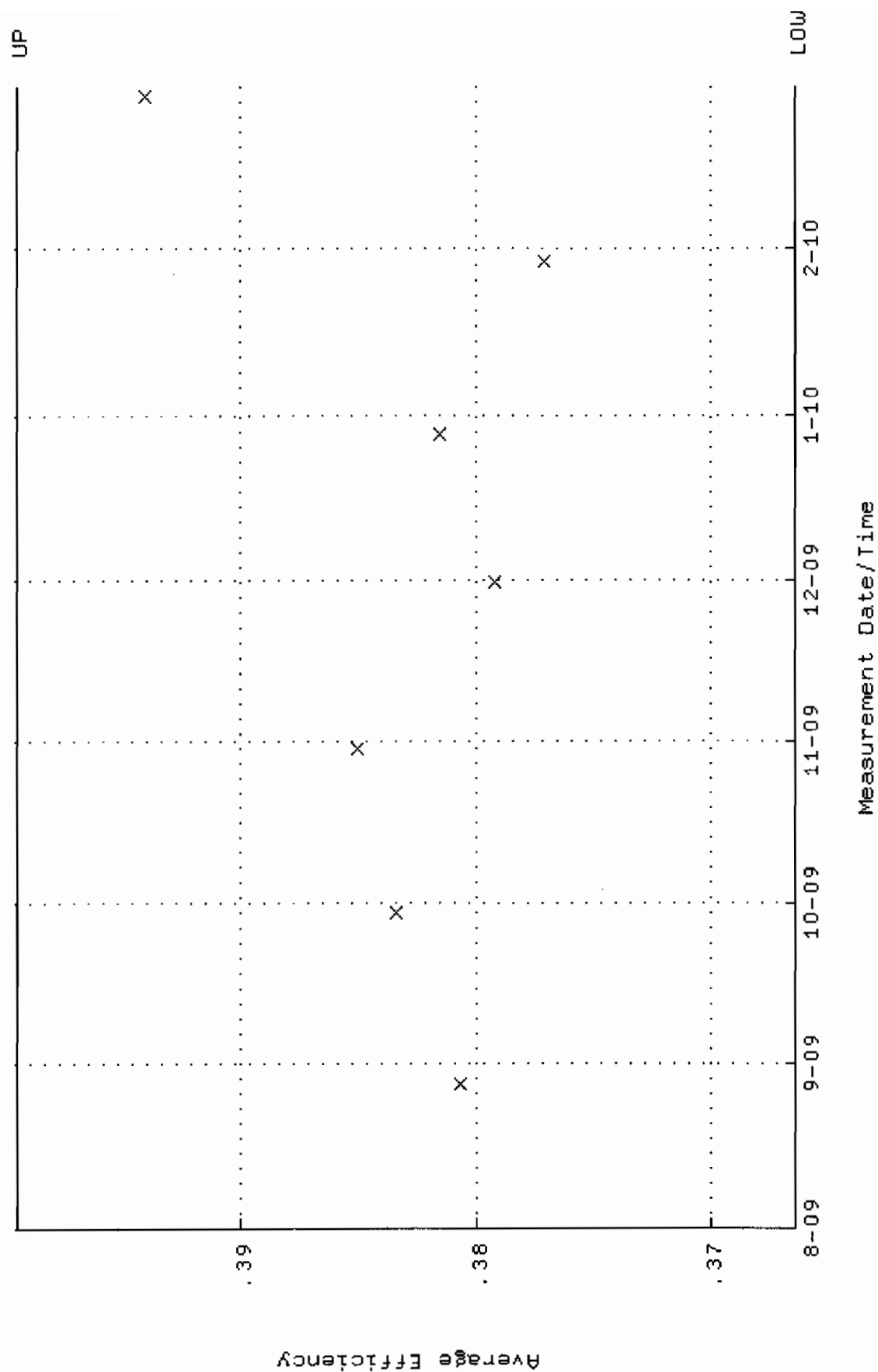
QA filename : DKA100:[ENV\_ALPHA.QA.W]W131.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 17-SEP-2009 07:24:30 through 19-MAR-2010 12:00:00  
 Lower/Upper Lmts: 88.4061 through 94.3891



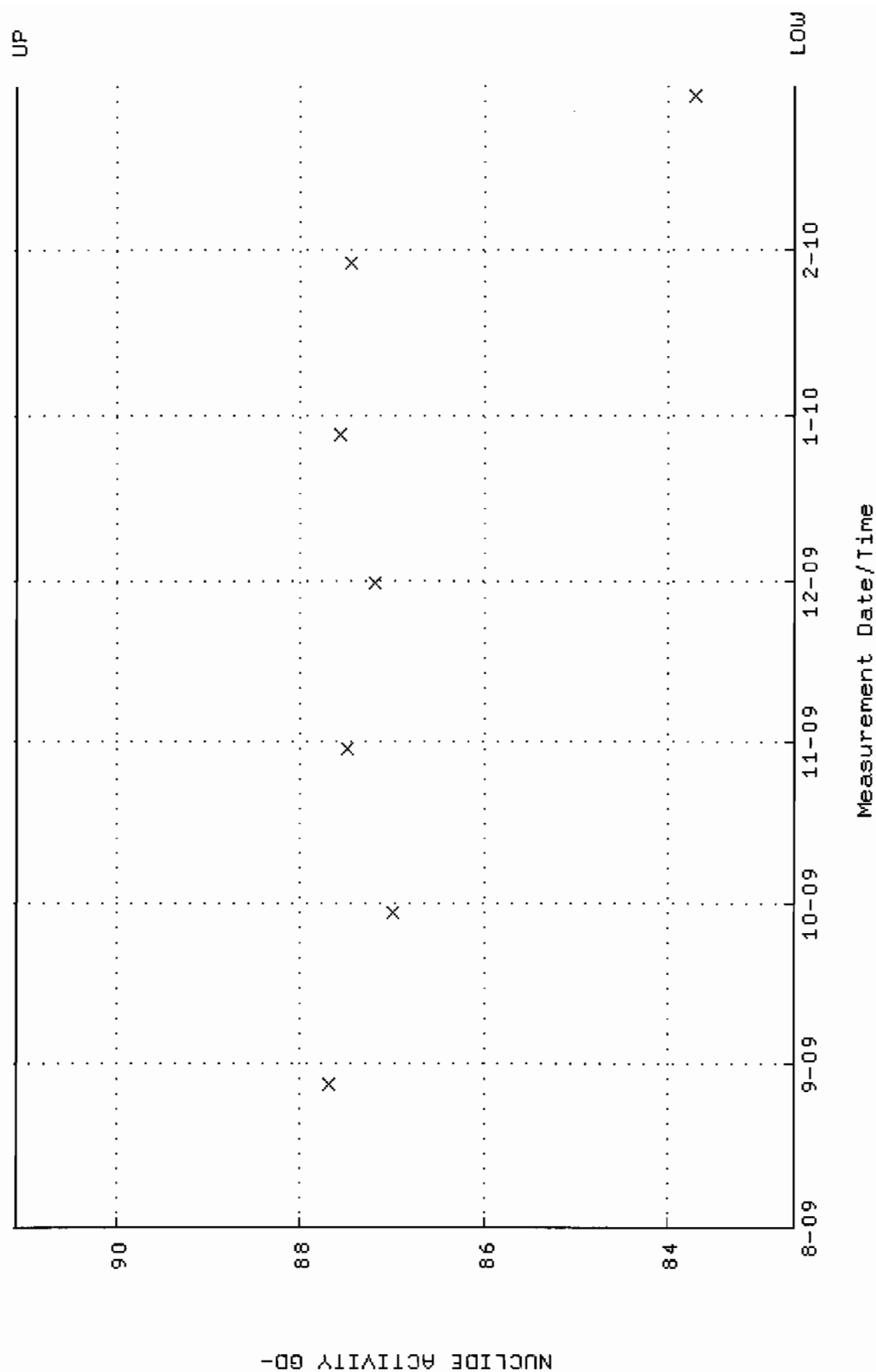
QA filename : DKA100:[ENV\_ALPHA.QA.B]B131.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 6-SEP-2009 15:41:28 through 19-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



QA filename : DKA100:[ENV\_ALPHA.QA.W]W233.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:08:35 through 3-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.366381 through 0.399563

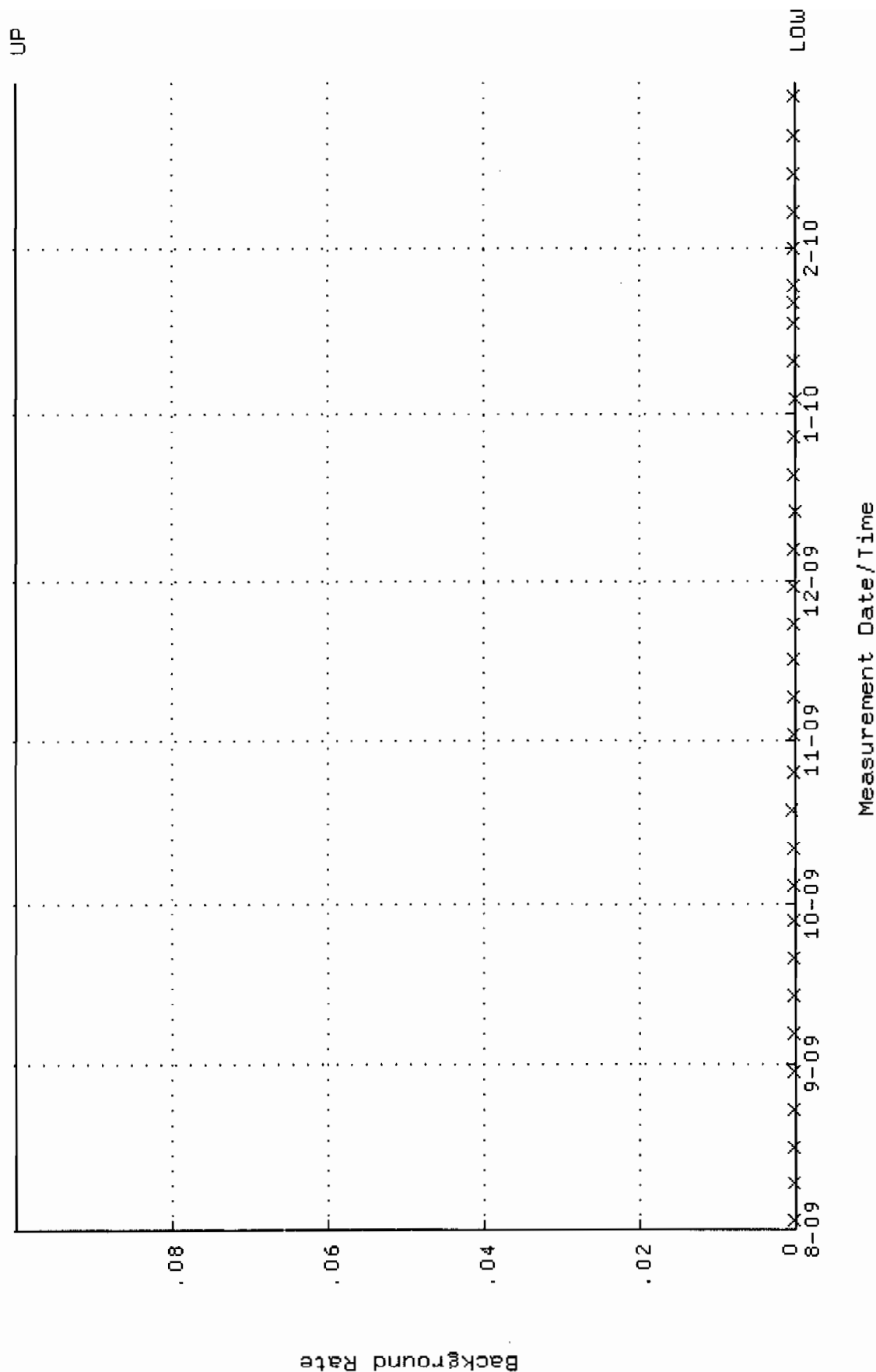


QA filename : DKA100:[ENV\_ALPHA.QA.W]W233.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:08:35 through 3-MAR-2010 12:00:00  
 Lower/Upper Lmts: 82.6177 through 91.1049

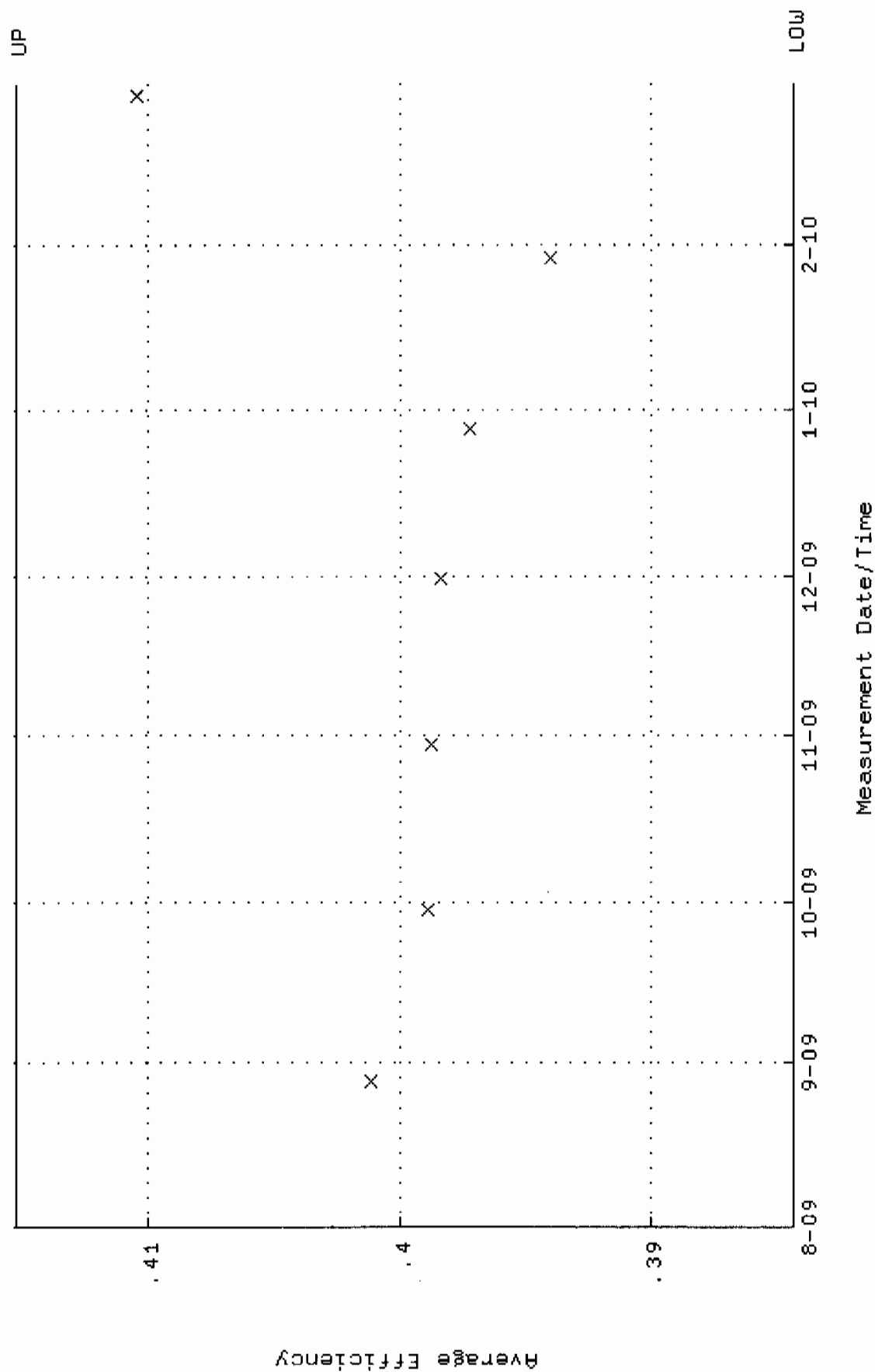




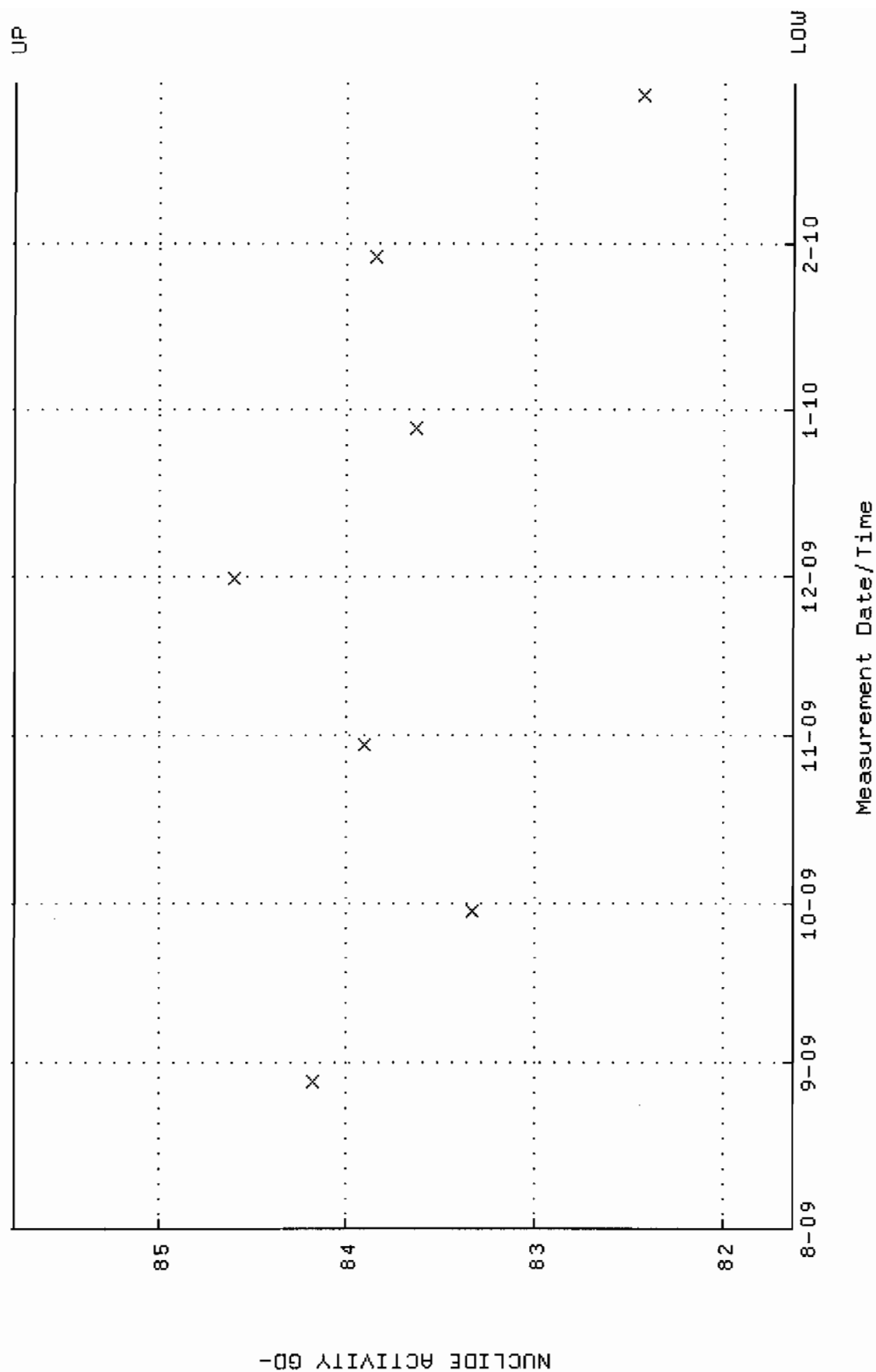
QA filename : DKA100:[ENV\_ALPHA.QA.B]B233.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:26:52 through 3-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



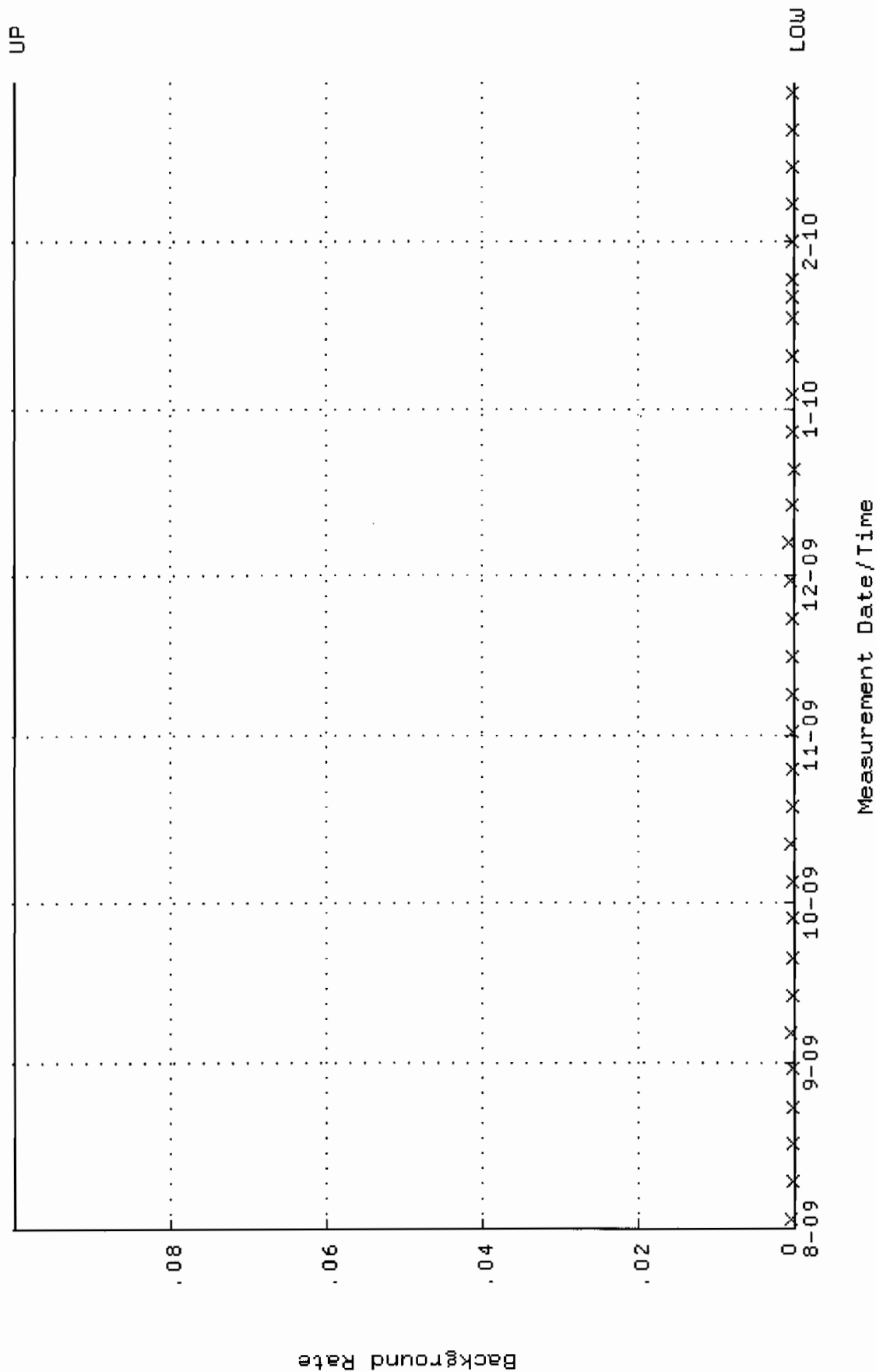
QA filename : DKA100:[ENV\_ALPHA.QA.W]W237.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:08:55 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.384343 through 0.415273



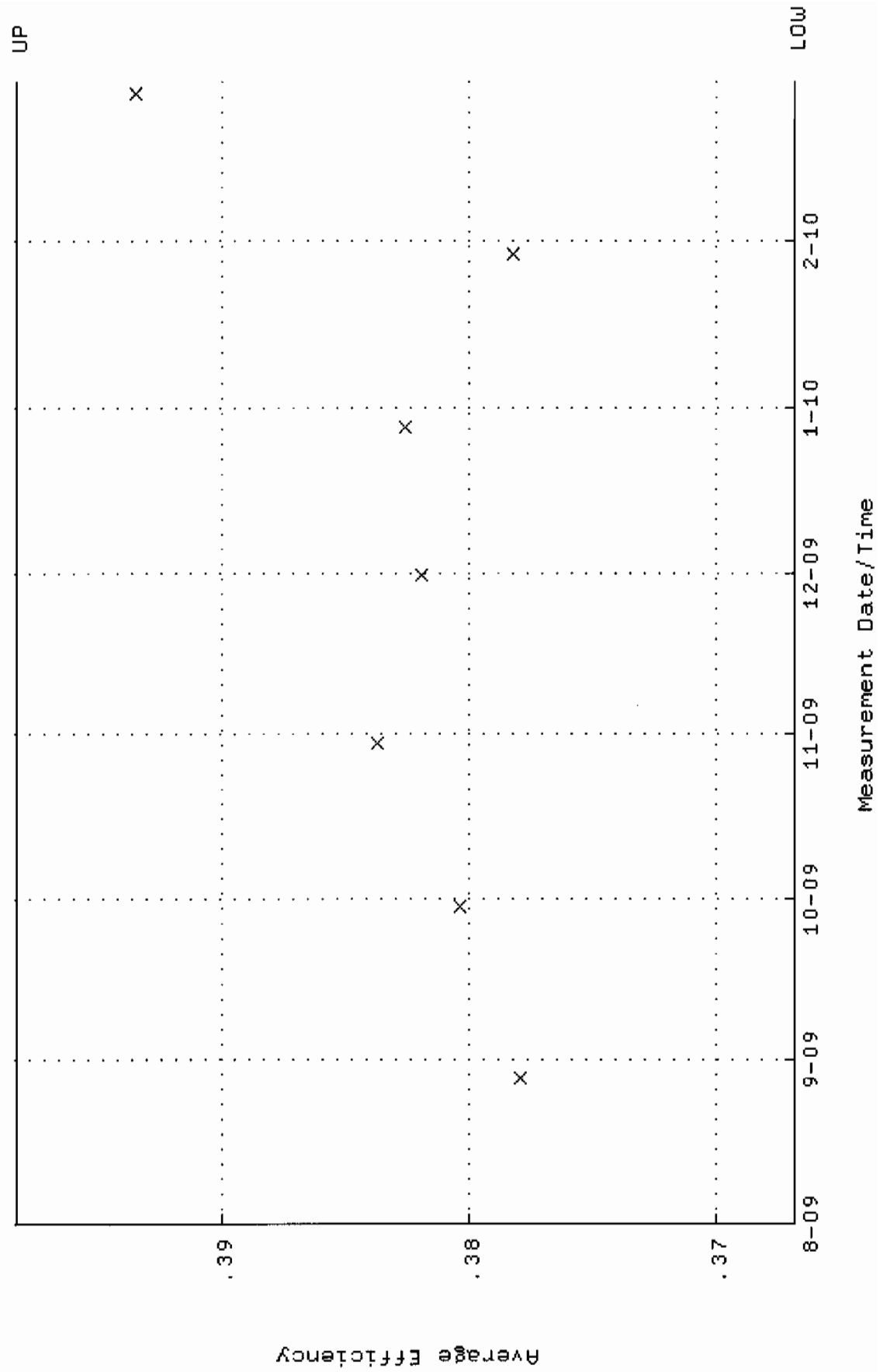
QA filename : DKA100:[ENV\_ALPHA.QA.W]W237.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:08:55 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 81.6308 through 85.7646



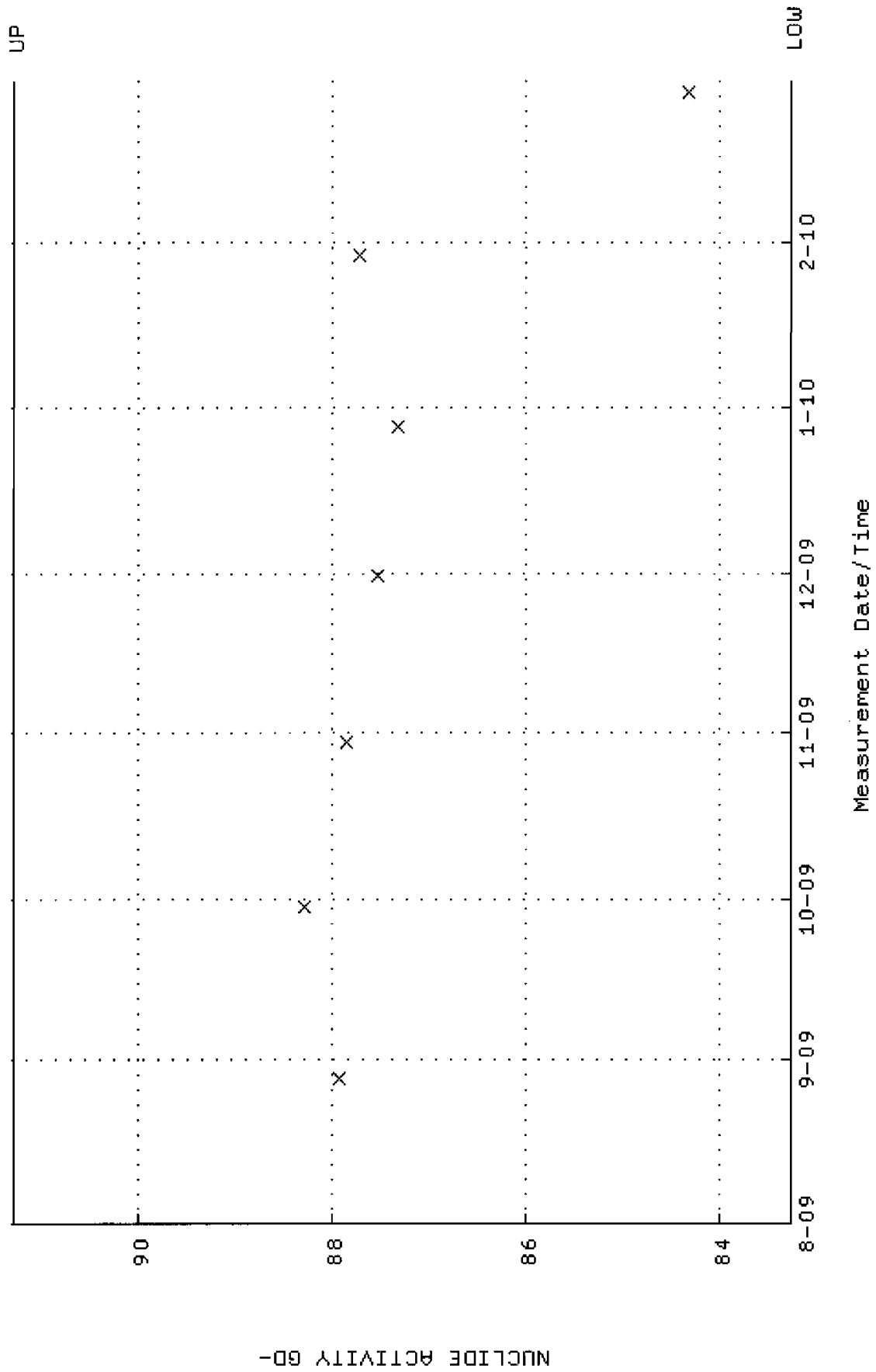
QA filename : DKA100:[ENV\_ALPHA.QA.B]B237.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:27:08 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



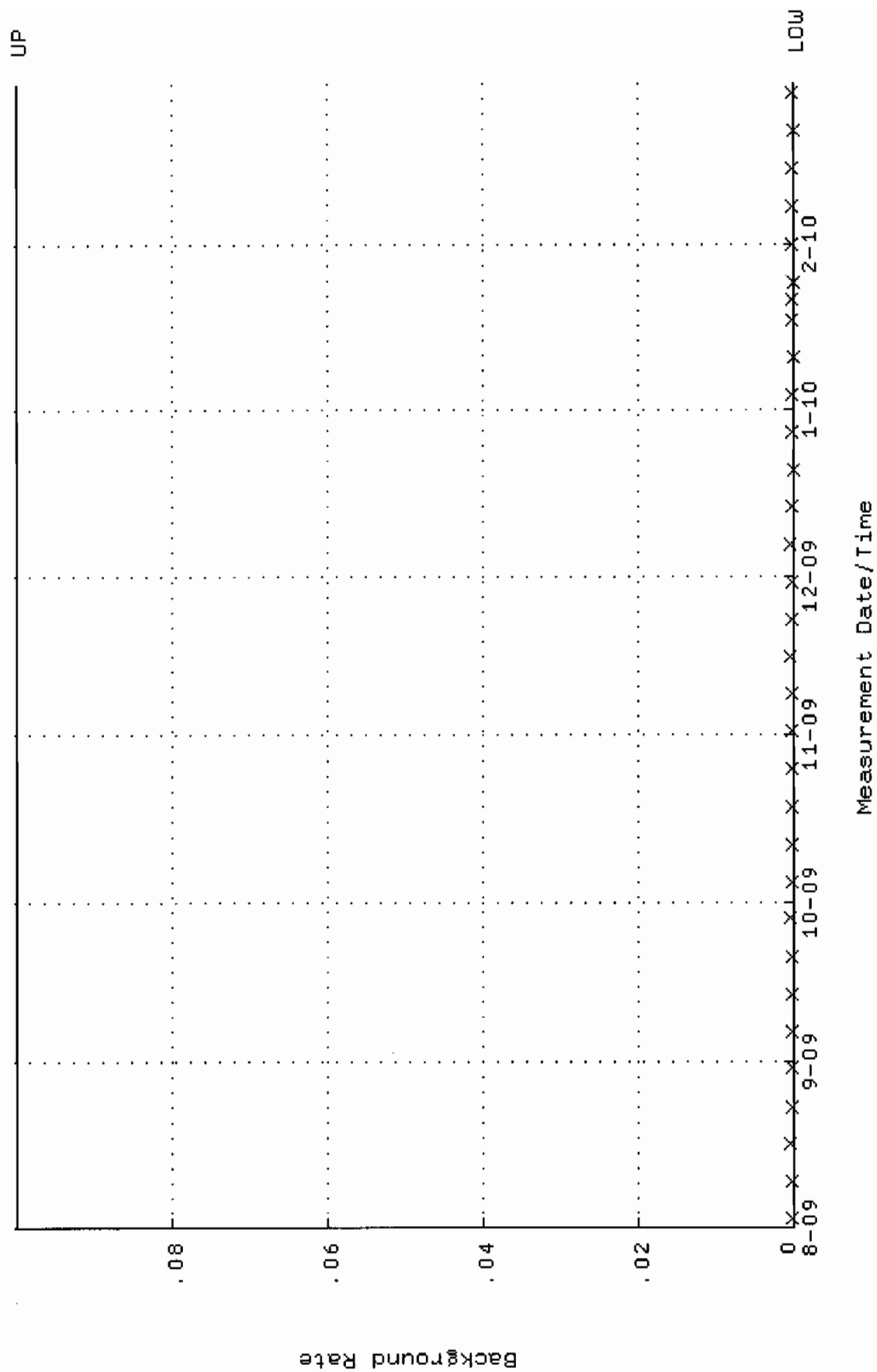
QA filename : DKA100:[ENV\_ALPHA.QA.W]w239.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:09:05 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.366836 through 0.398318



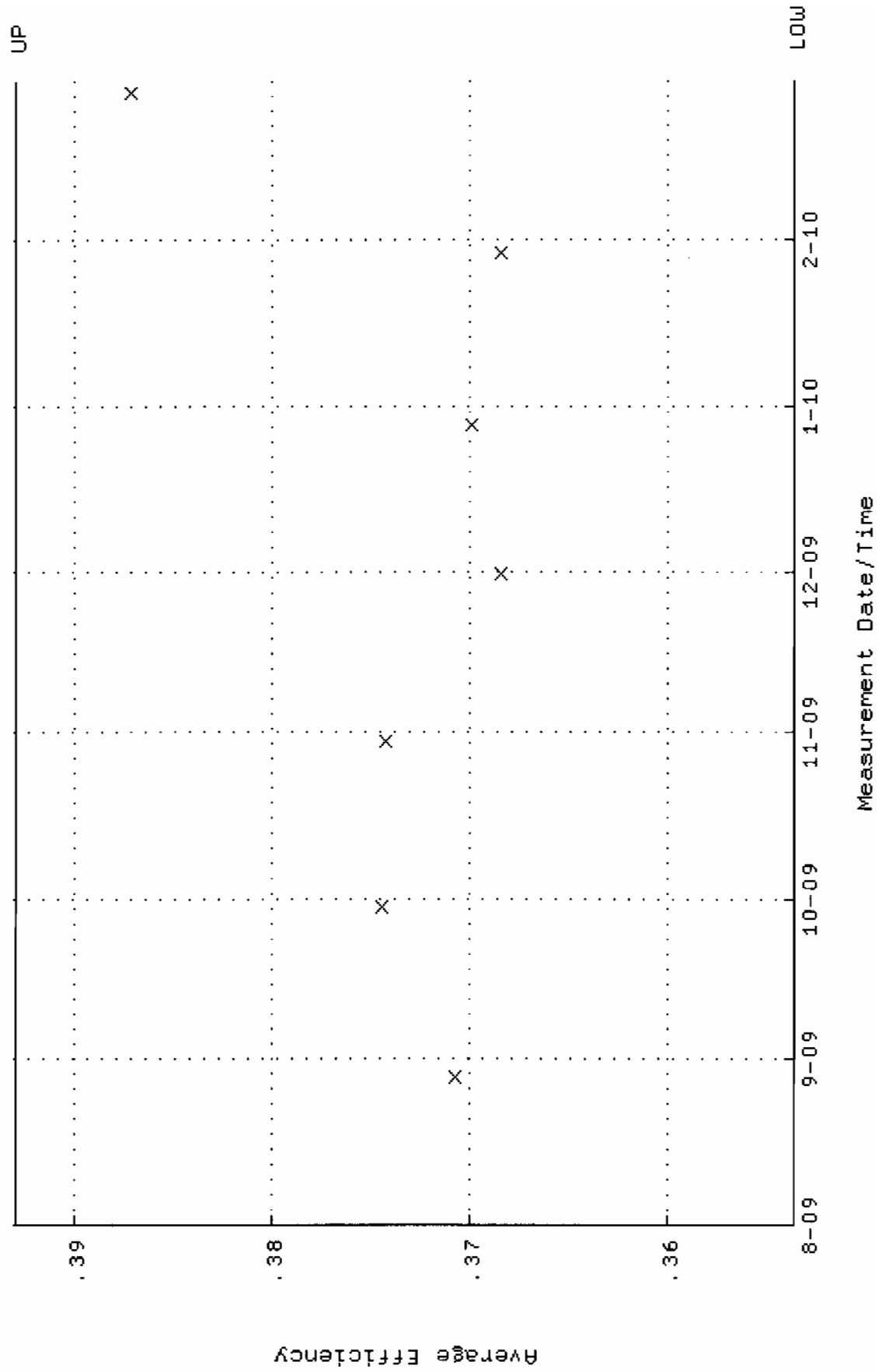
QA filename : DKA100:[ENV\_ALPHA.QA.W]W239.QAF;1  
 Parameter Name : NLACTIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:09:05 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 83.2587 through 91.2737



QA filename : DKA100:[ENV\_ALPHA.QA.B]B239.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:27:16 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000

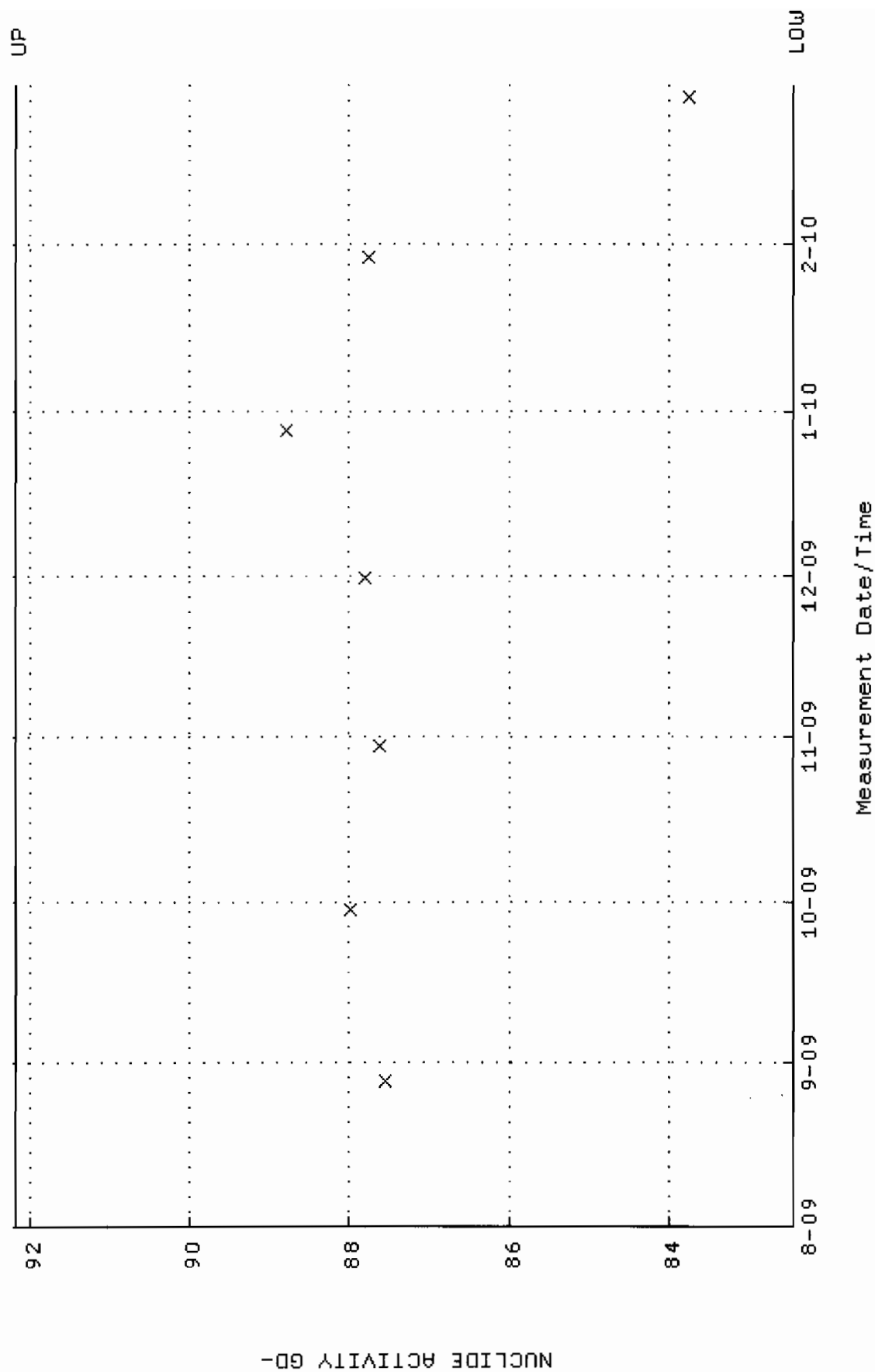


QA filename : DKA100:[ENV\_ALPHA.QA.W]W240.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:09:09 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.353617 through 0.392947

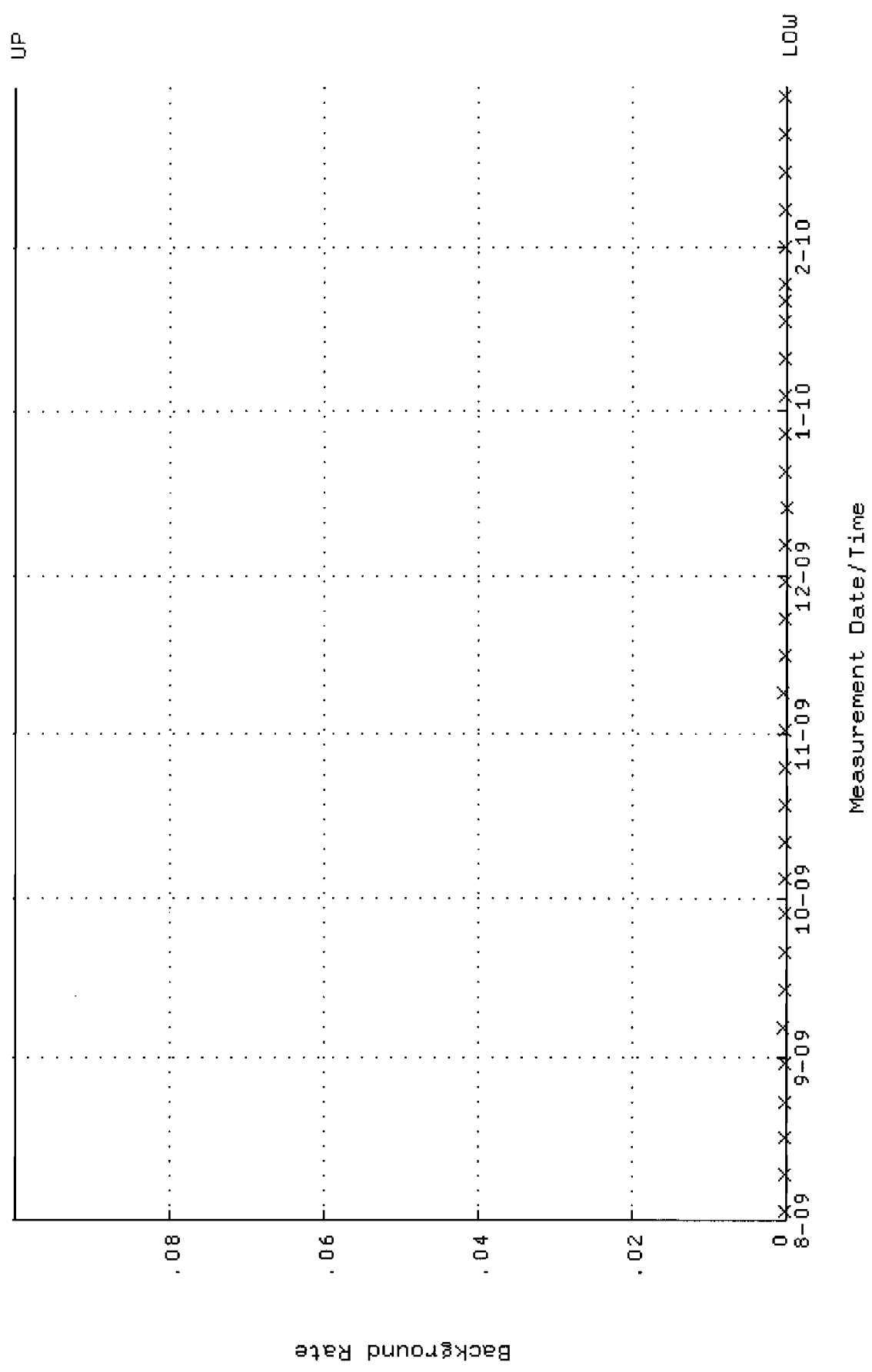




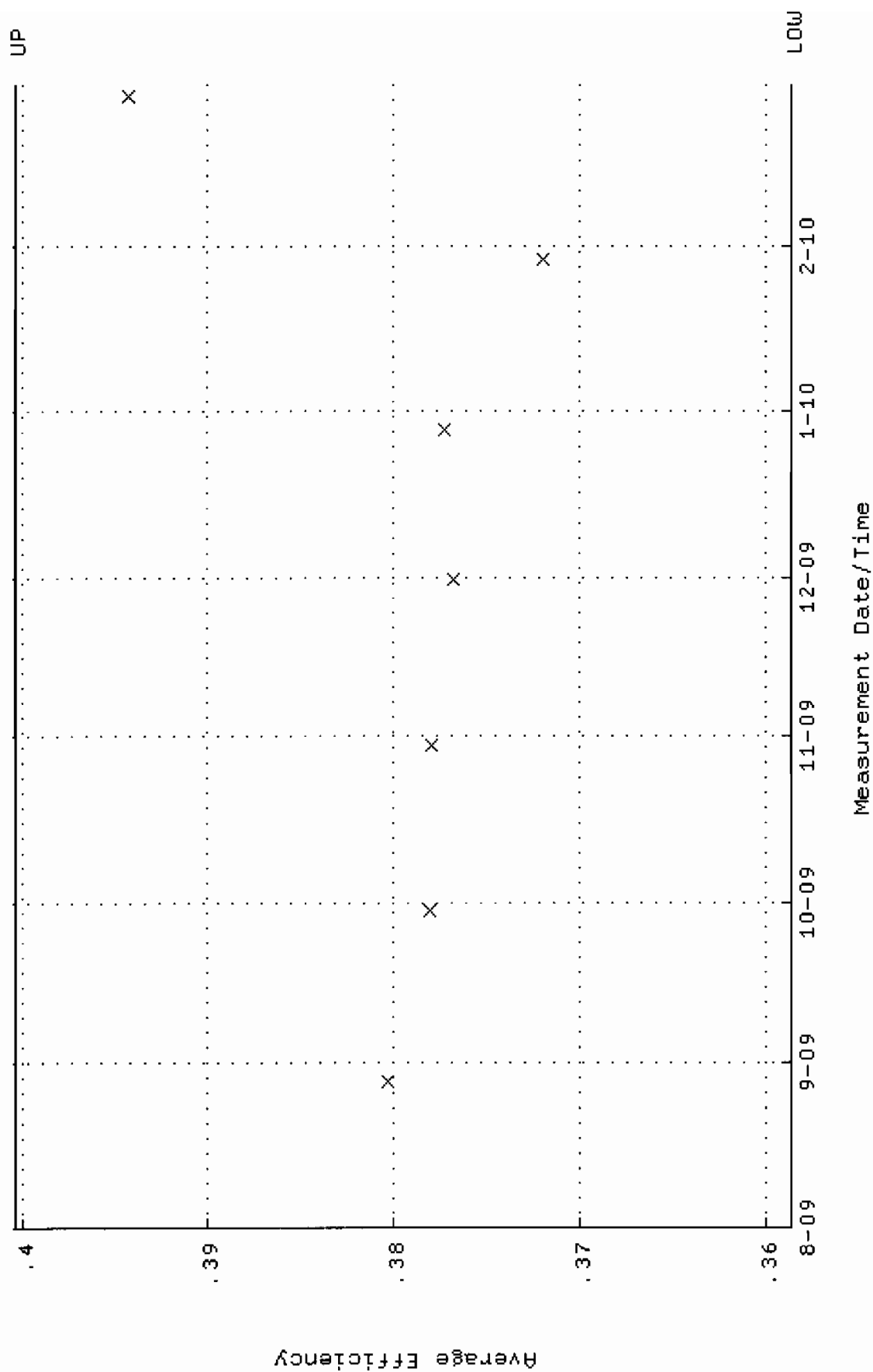
QA filename : DKA100:[ENV\_ALPHA.QA.W]W240.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:09:09 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 82.4439 through 92.1786



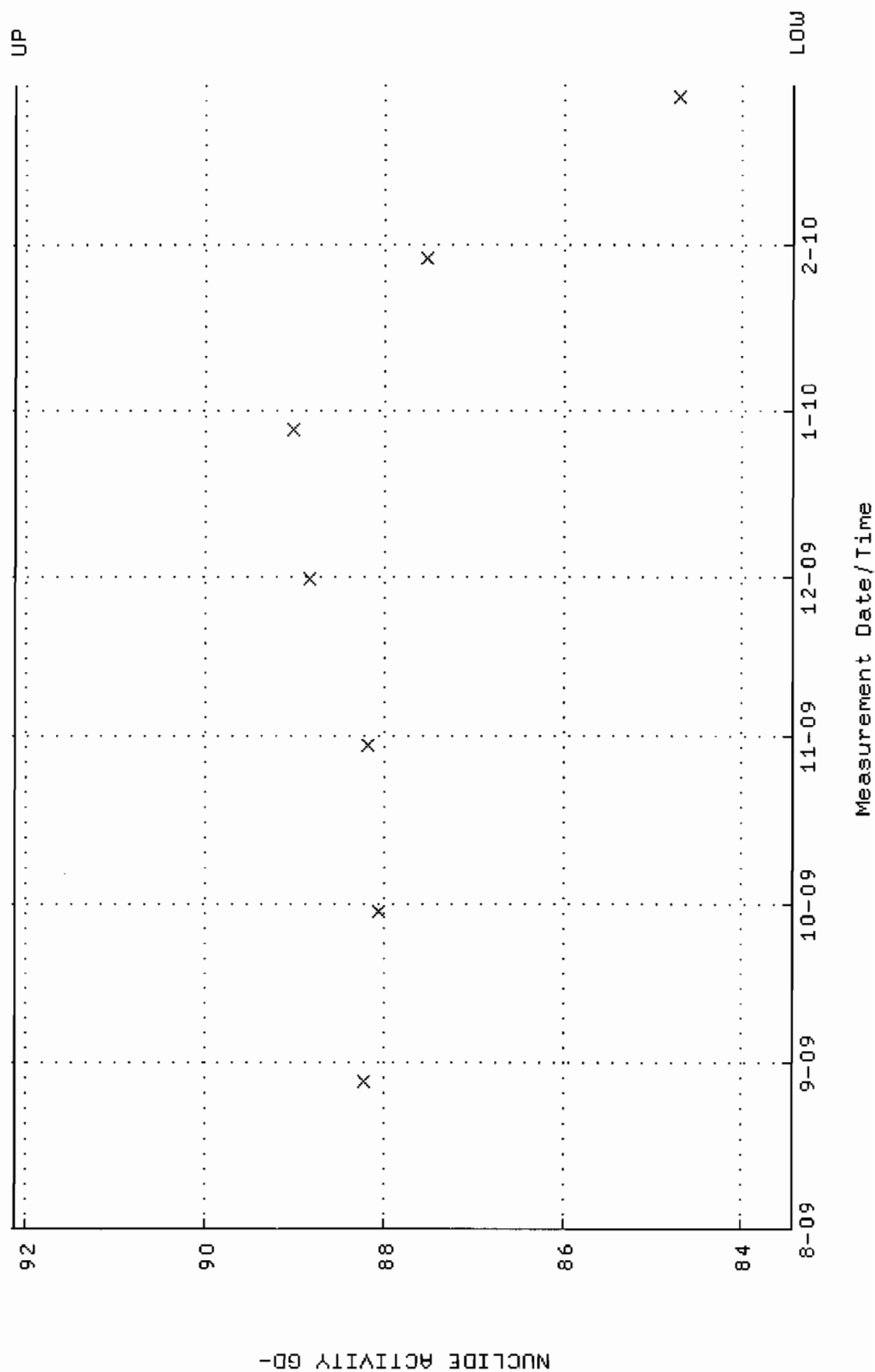
QA filename : DKA100:[ENV\_ALPHA.QA.B]B240.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:27:21 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



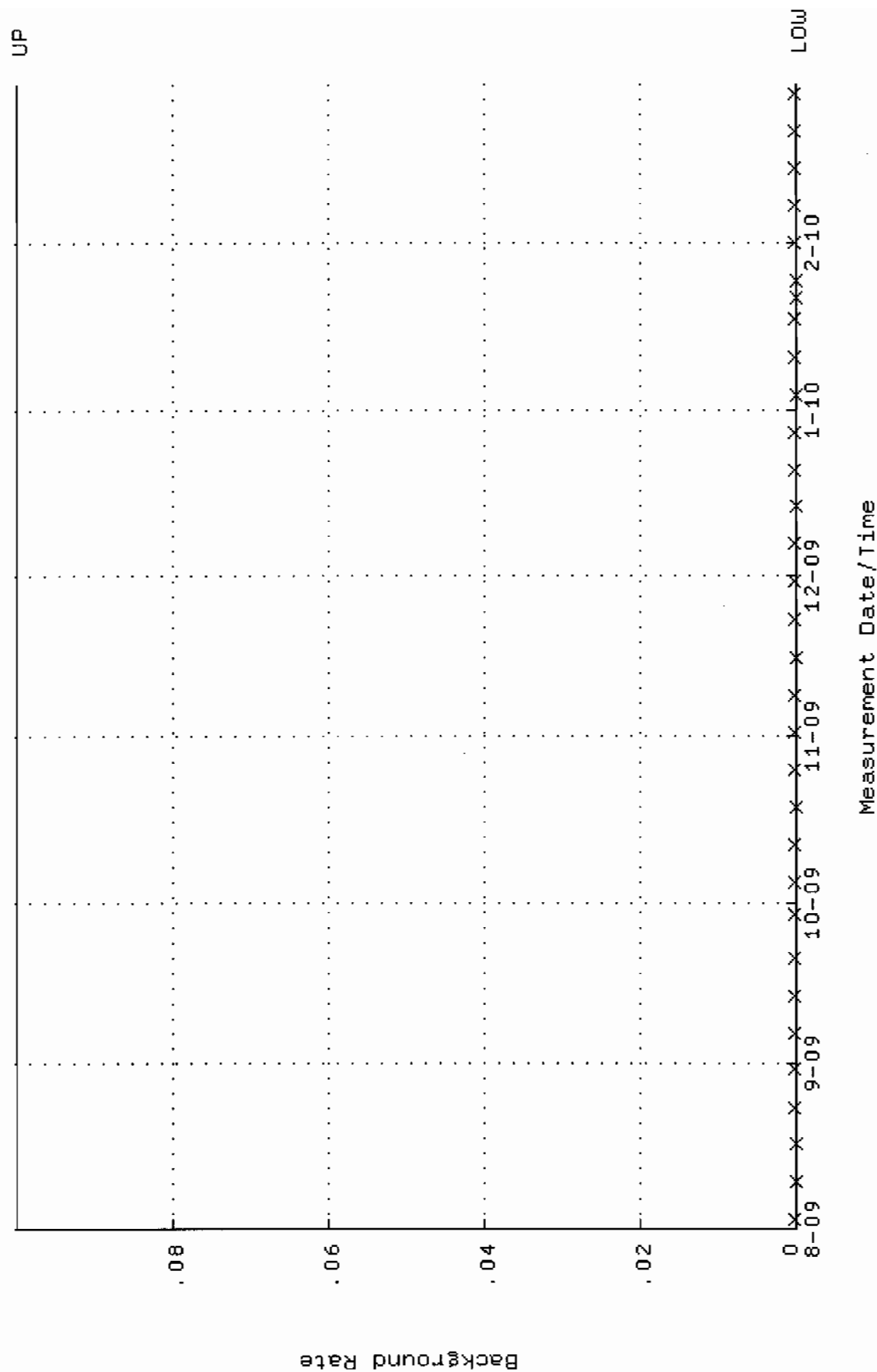
QA filename : DKA100:[ENV\_ALPHA.QA.W]W241.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:09:15 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.358643 through 0.400349



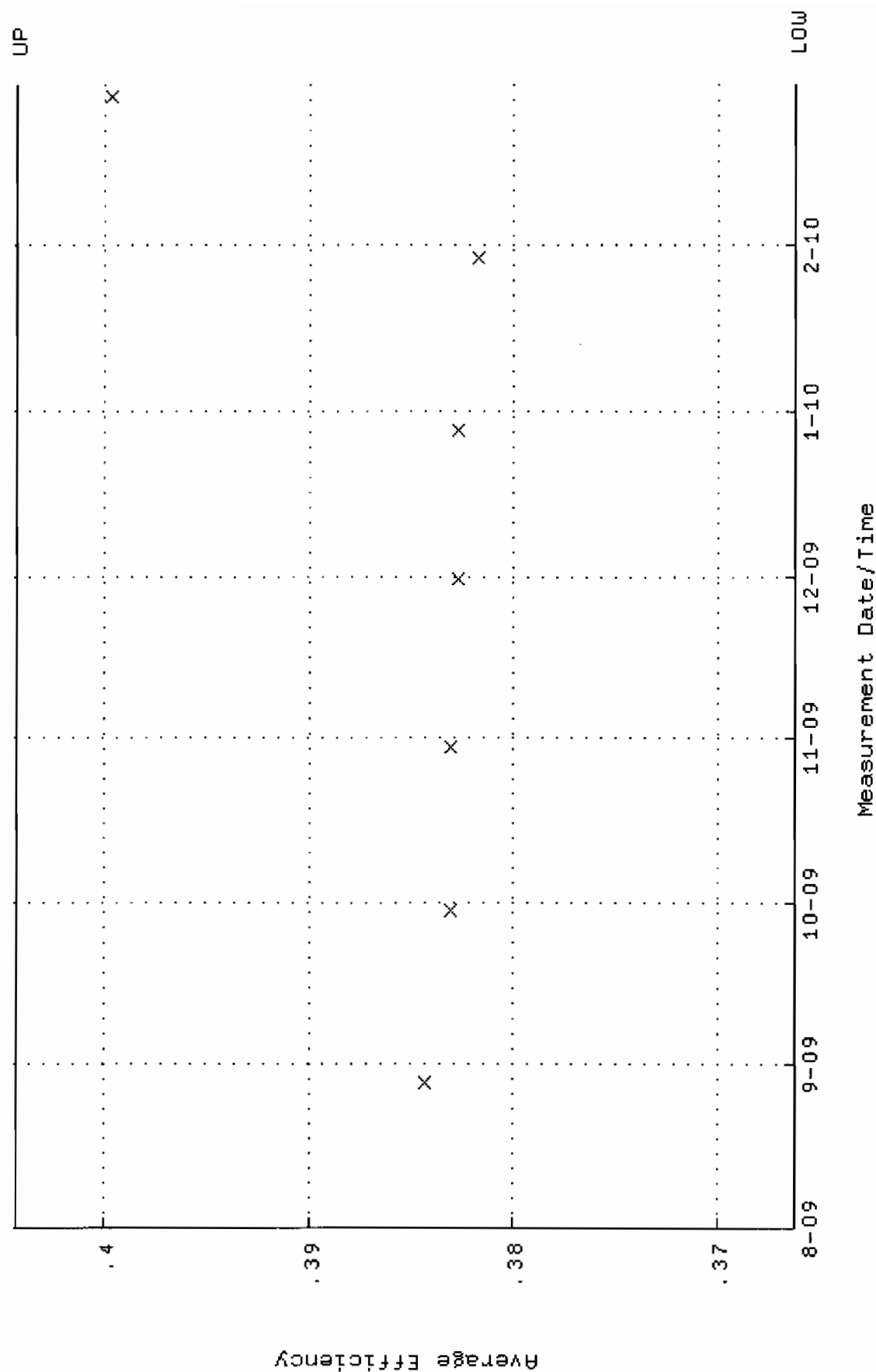
QA filename : DKA100:[ENV\_ALPHA.QA.W]W241.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:09:15 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 83.4341 through 92.1277



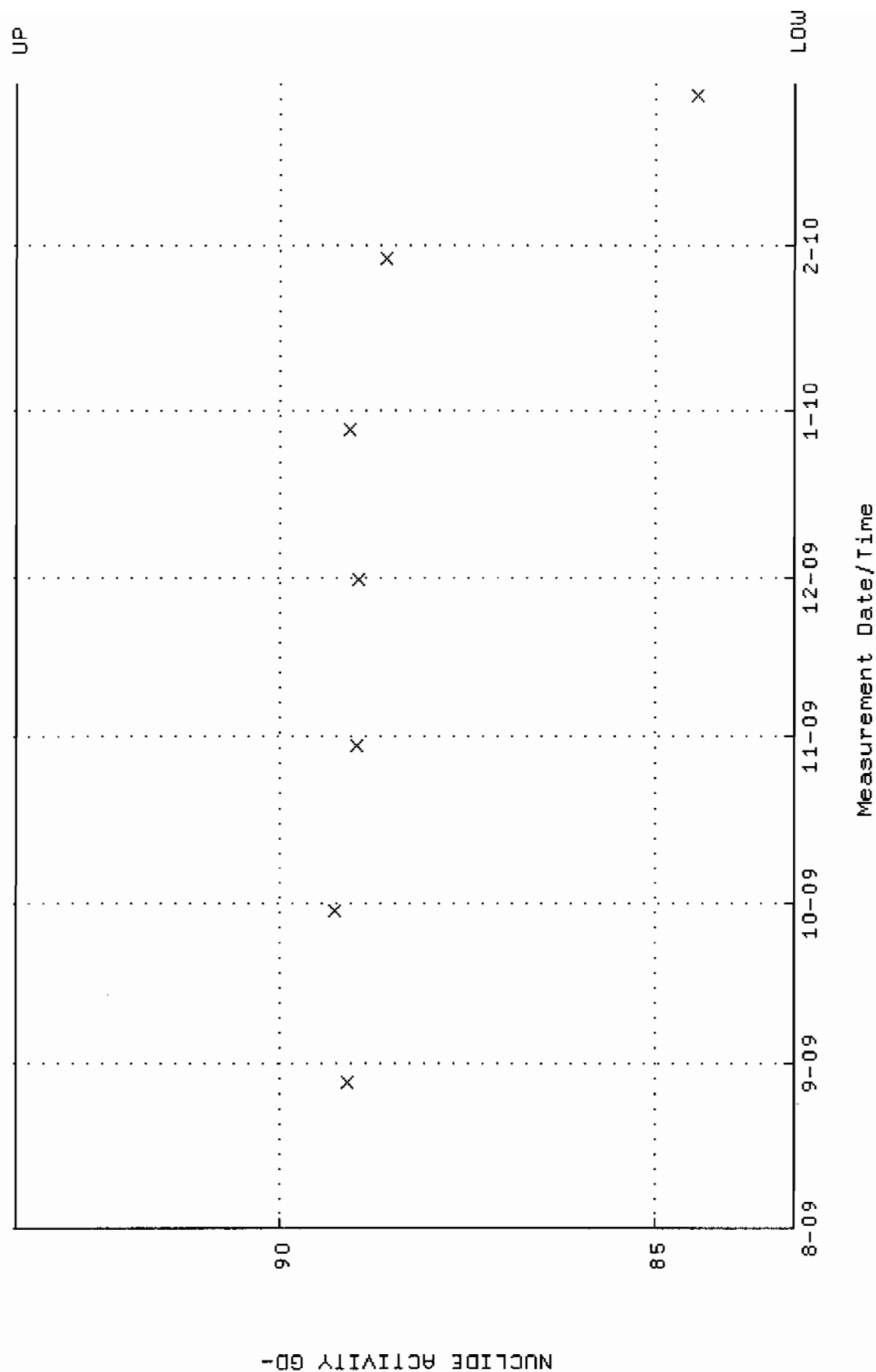
QA filename : DKA100:[ENV\_ALPHA.QA.B]B241.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:27:26 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



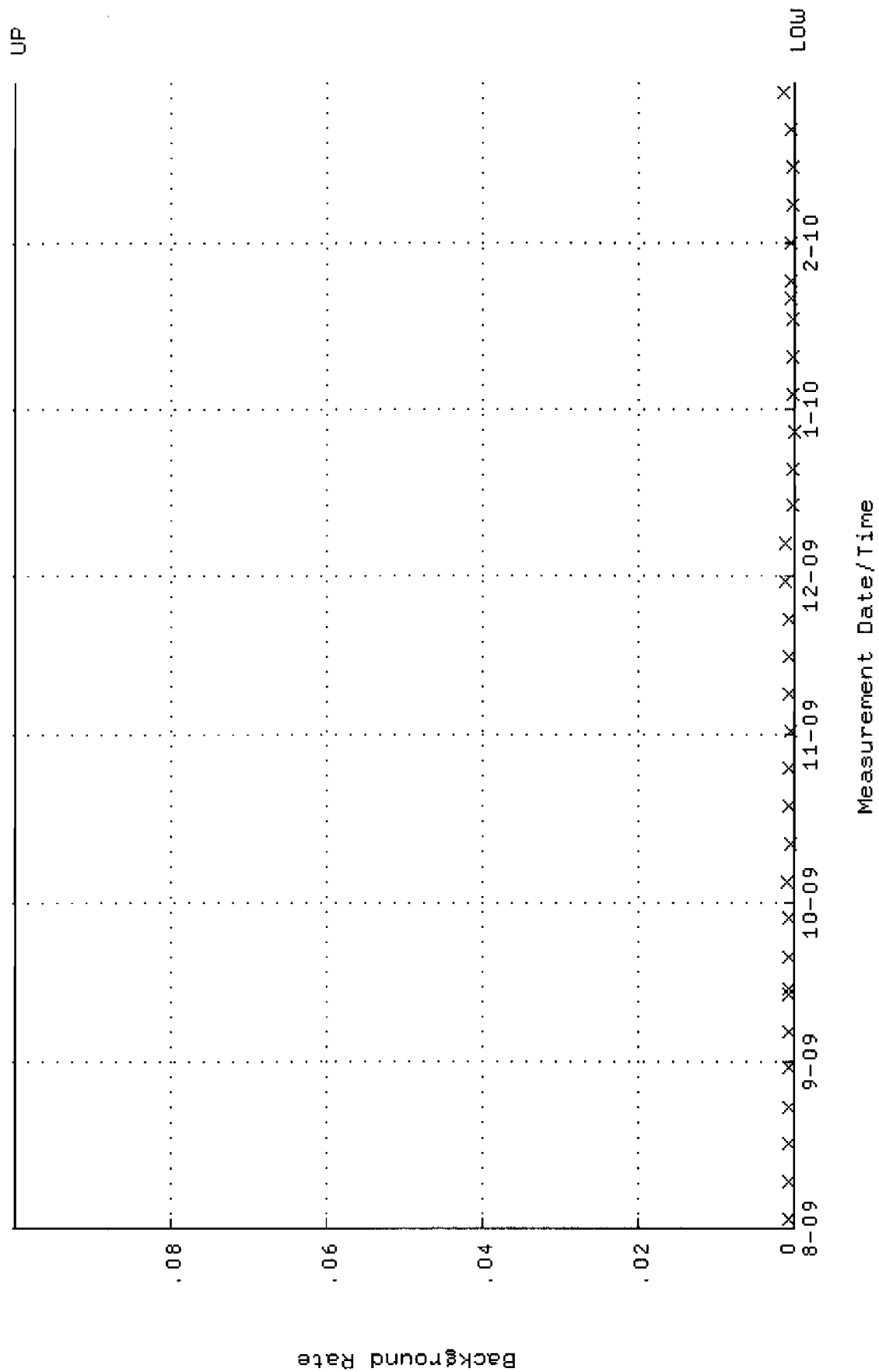
QA filename : DKA100: [ENV\_ALPHA.QA.W]W253.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:10:22 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.366220 through 0.404308



QA filename : DKA100:[ENV\_ALPHA.QA.W]w253.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:10:22 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 83.1439 through 93.5297

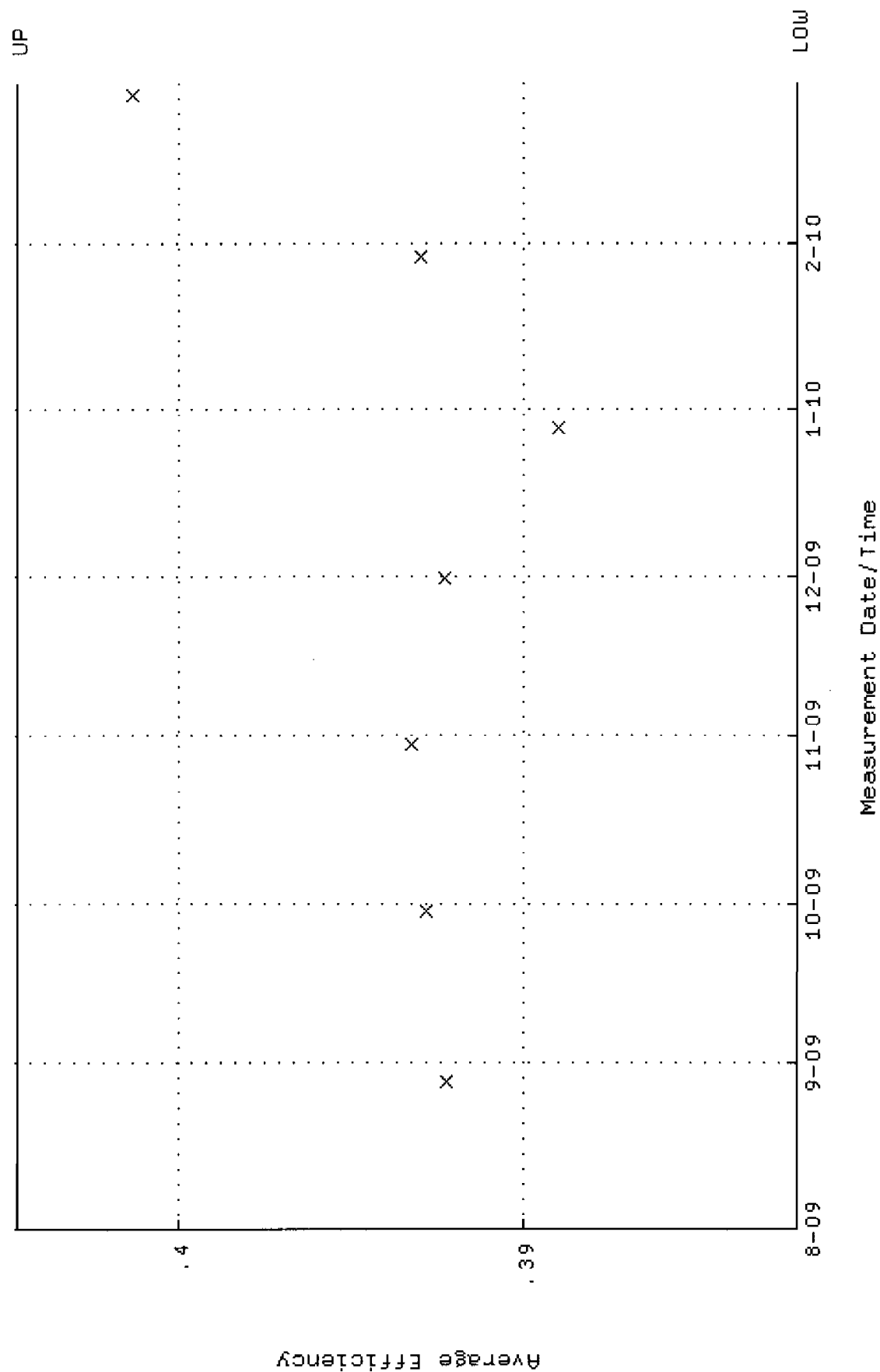


QA filename : DKA100:[ENV\_ALPHA.QA.B]B253.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:28:23 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000

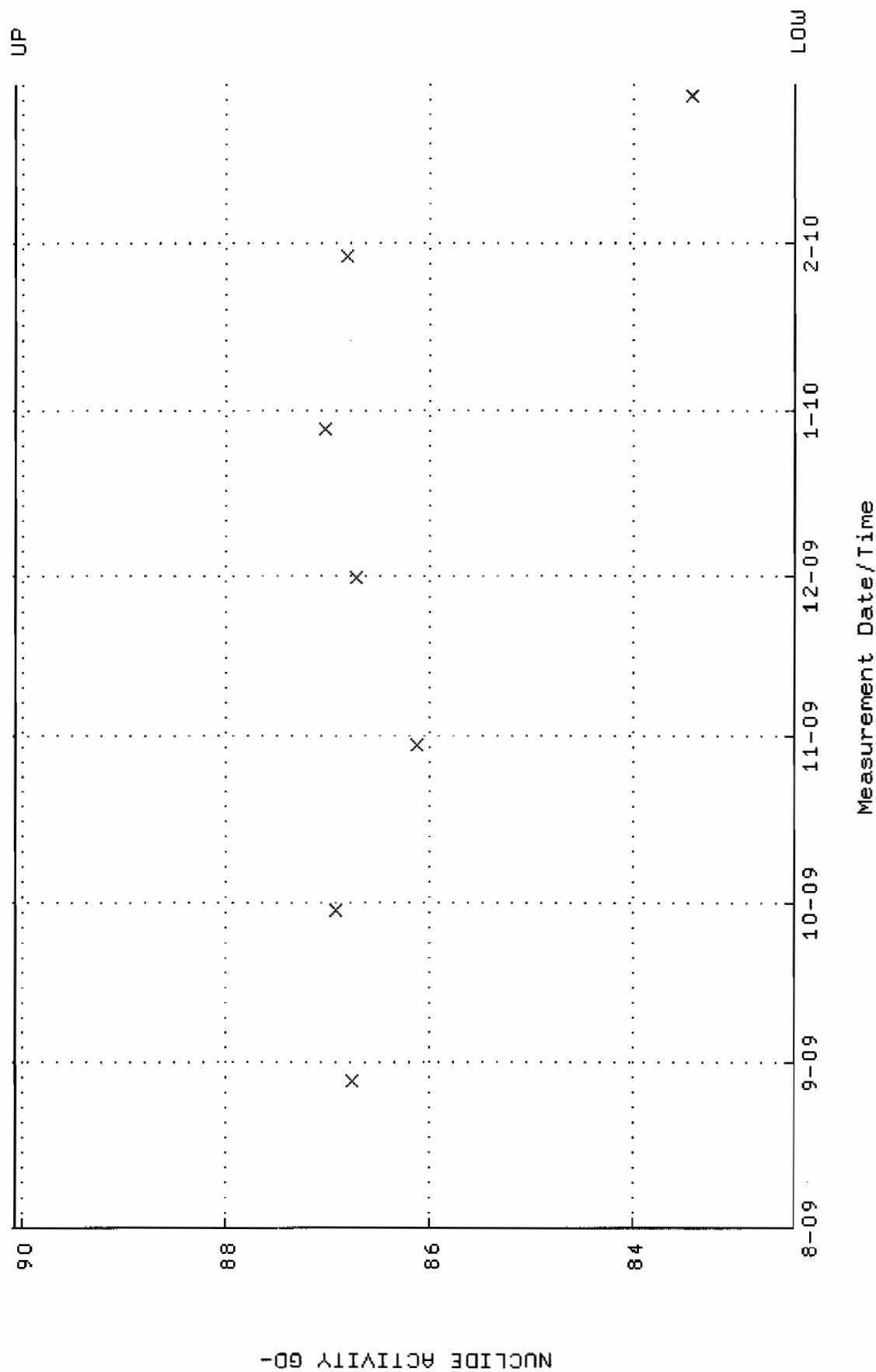




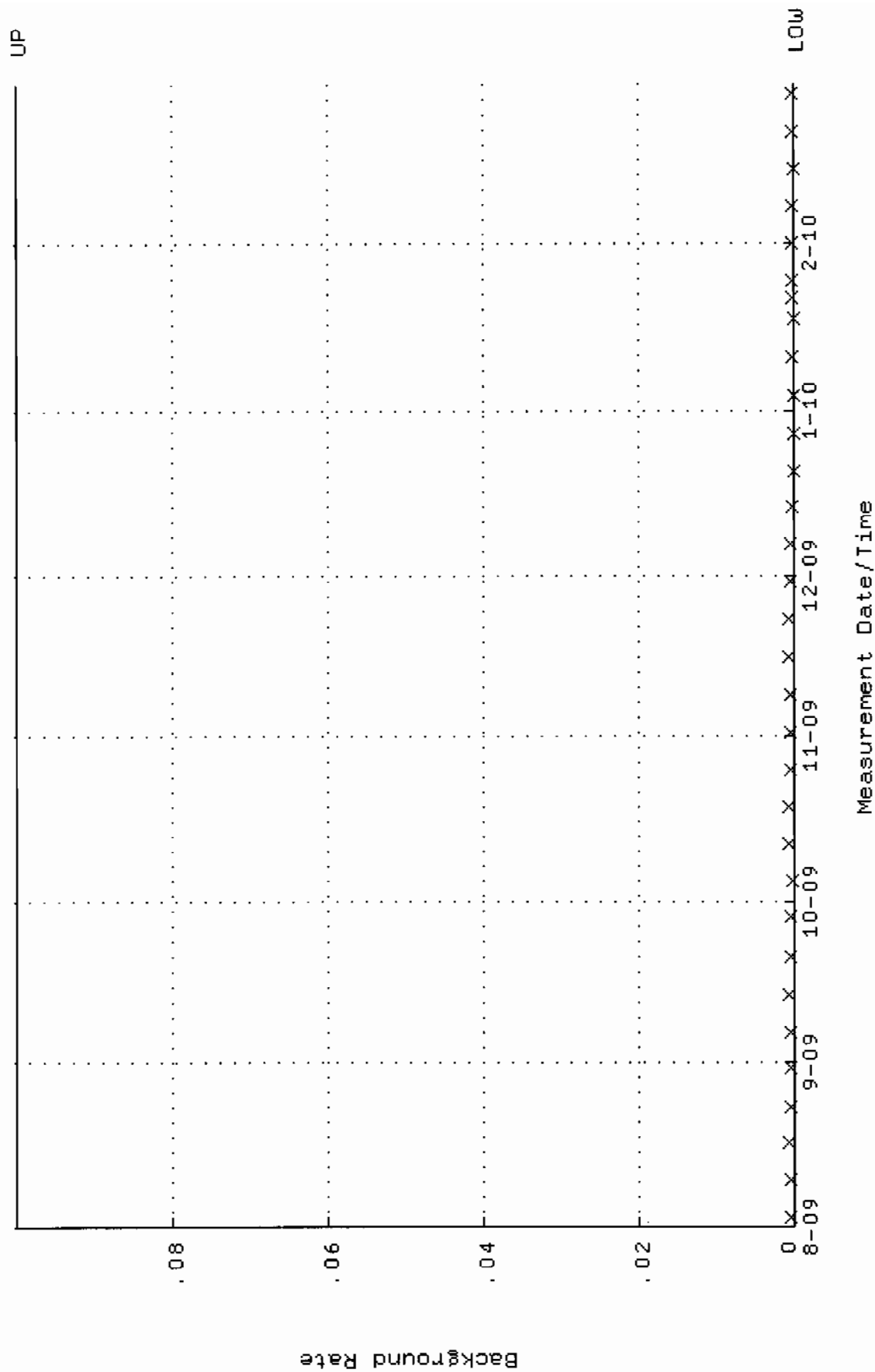
QA filename : DKA100:[ENV\_ALPHA.QA.W]W254.QAF;1  
 Parameter Name : AVRGEFF (Average Efficiency)  
 Start/End Dates : 28-AUG-2009 07:10:27 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.382064 through 0.404708



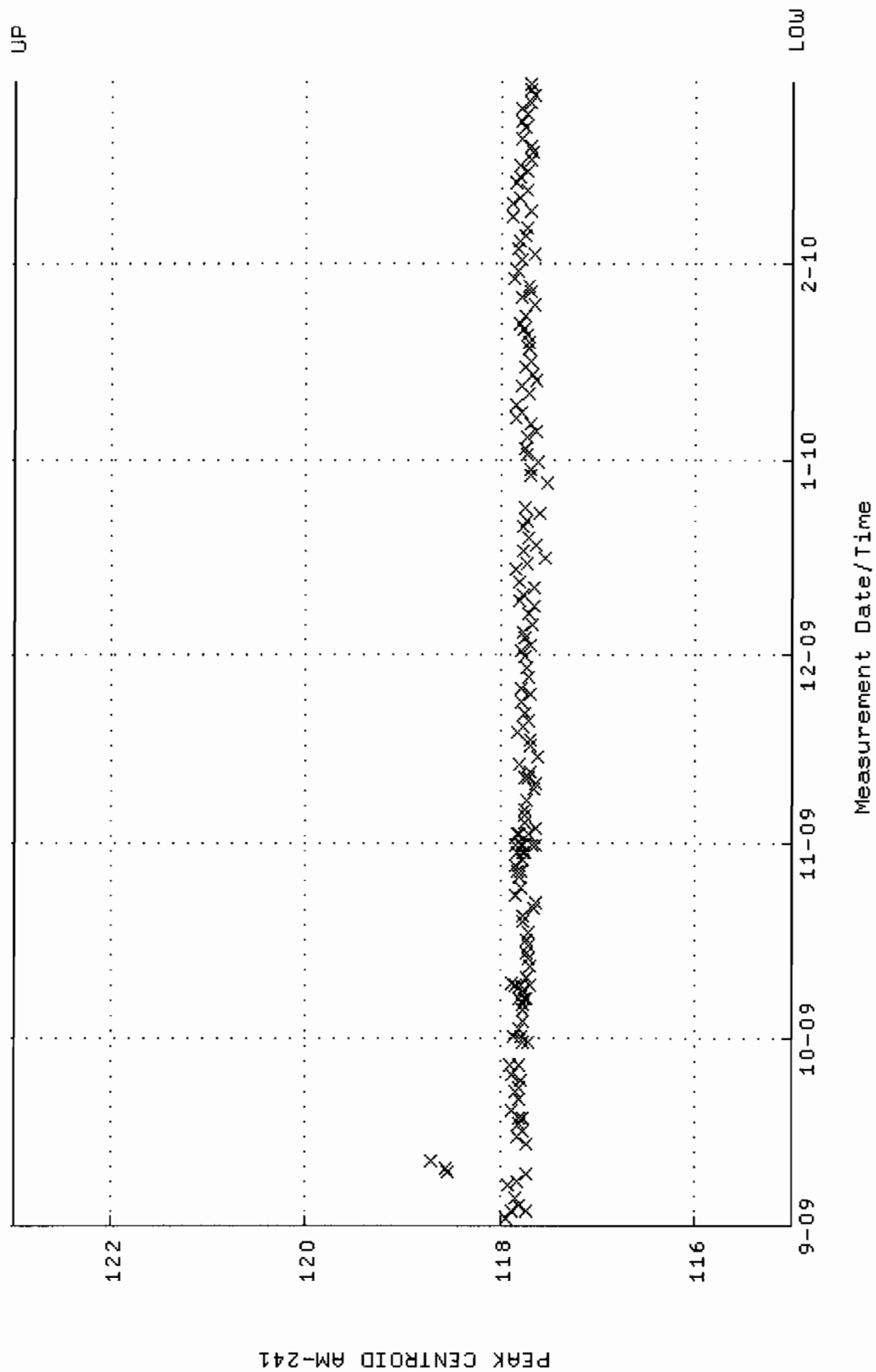
QA filename : DKA100:[ENV\_ALPHA.QA.W]w254.QAF;1  
 Parameter Name : NLAIVITY-GD148 (NUCLIDE ACTIVITY GD-148)  
 Start/End Dates : 28-AUG-2009 07:10:27 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 82.4132 through 90.0734



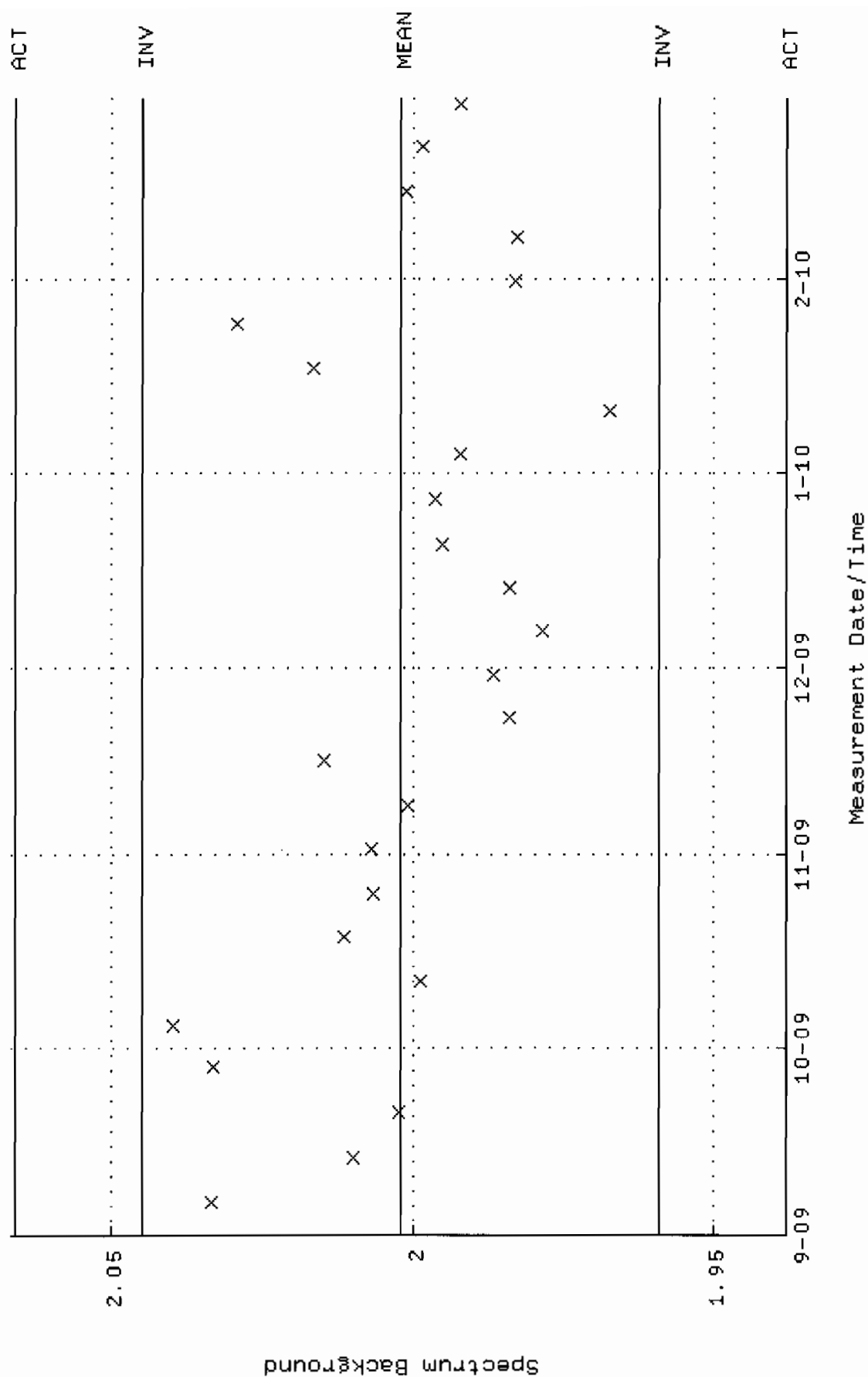
QA filename : DKA100:[ENV\_ALPHA.QA.B]B254.QAF;1  
 Parameter Name : BACKRATE (Background Rate)  
 Start/End Dates : 2-AUG-2009 17:28:28 through 2-MAR-2010 12:00:00  
 Lower/Upper Lmts: 0.000000E+00 through 0.100000



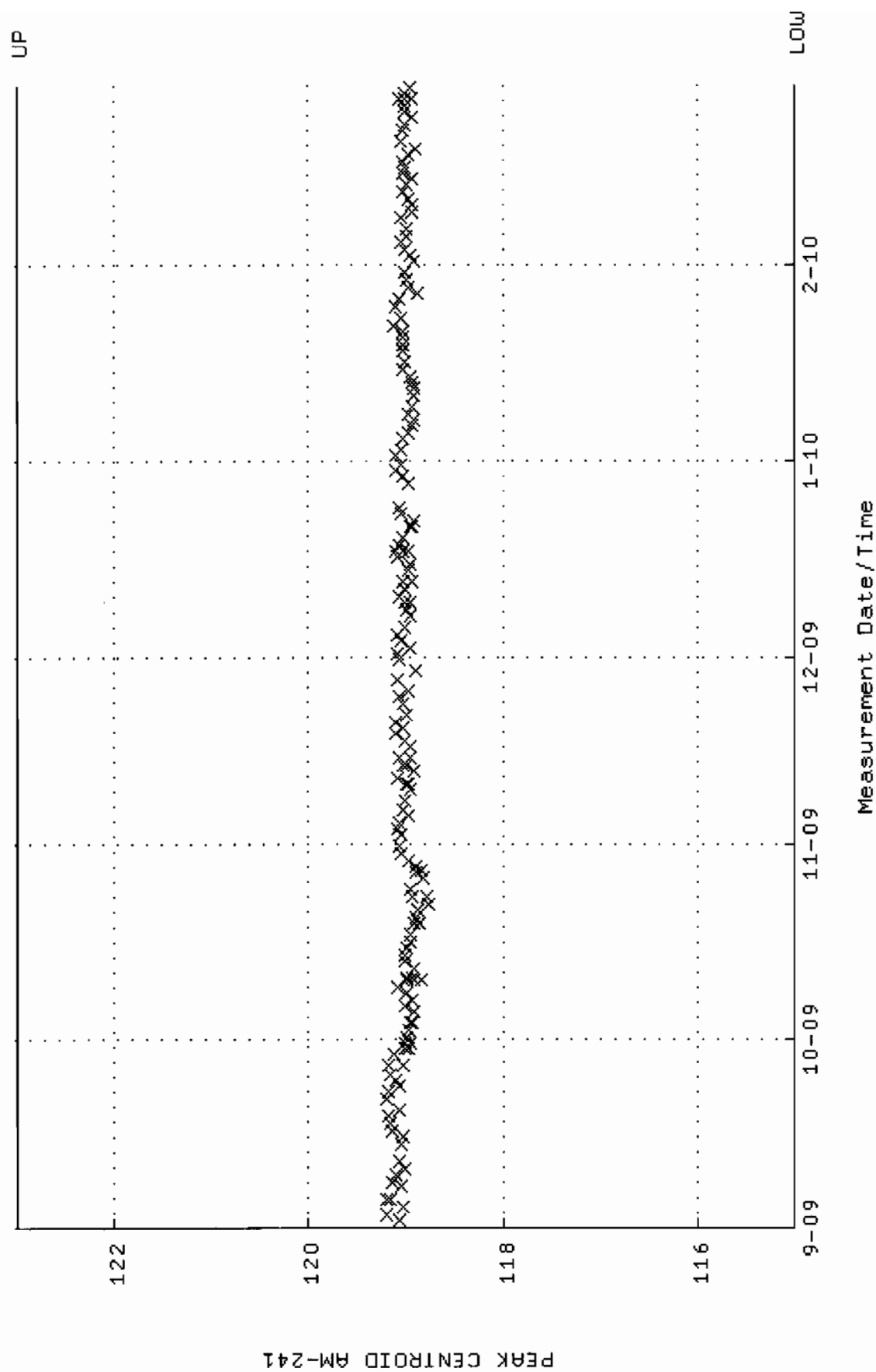
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM02\_CAN.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 2-SEP-2009 04:40:02 through 1-MAR-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



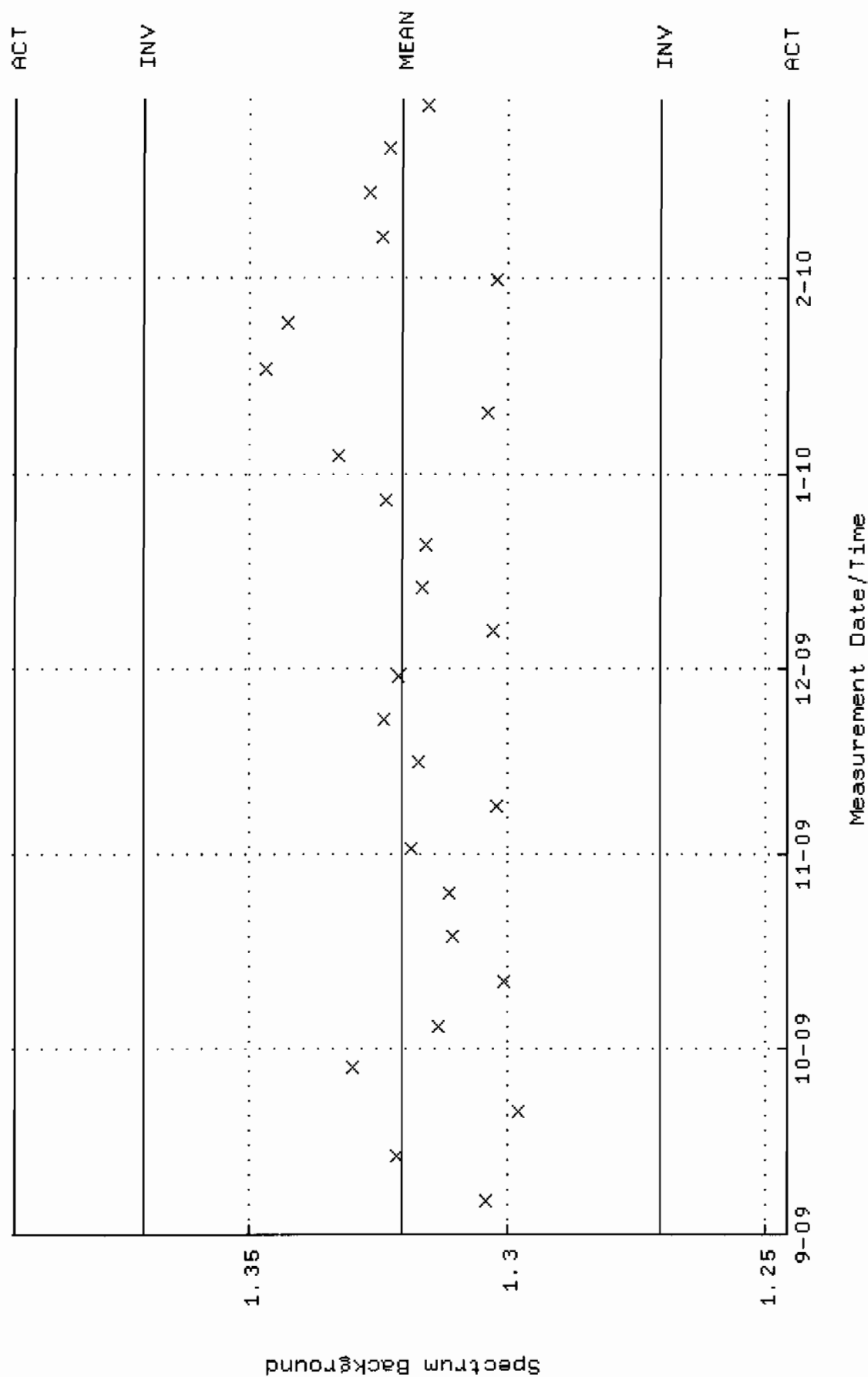
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC-GAM02.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 6-SEP-2009 11:37:17 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 2.00226 +- 2.139827E-02 (1.07 %)



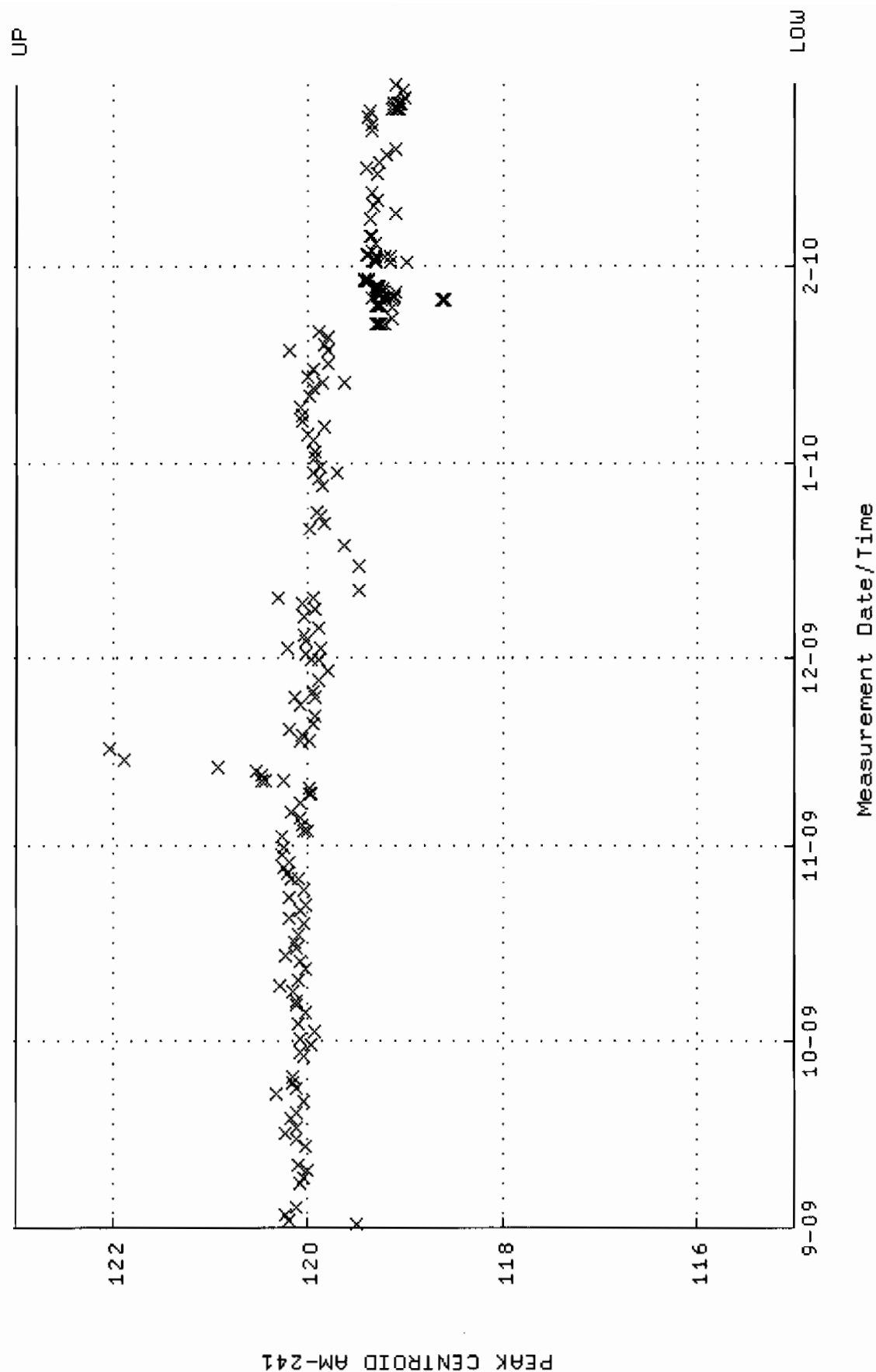
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC-GAM04-CAN.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 2-SEP-2009 05:22:58 through 1-MAR-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM04.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 6-SEP-2009 11:38:33 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 1.32050 +- 2.495234E-02 (1.89 %)

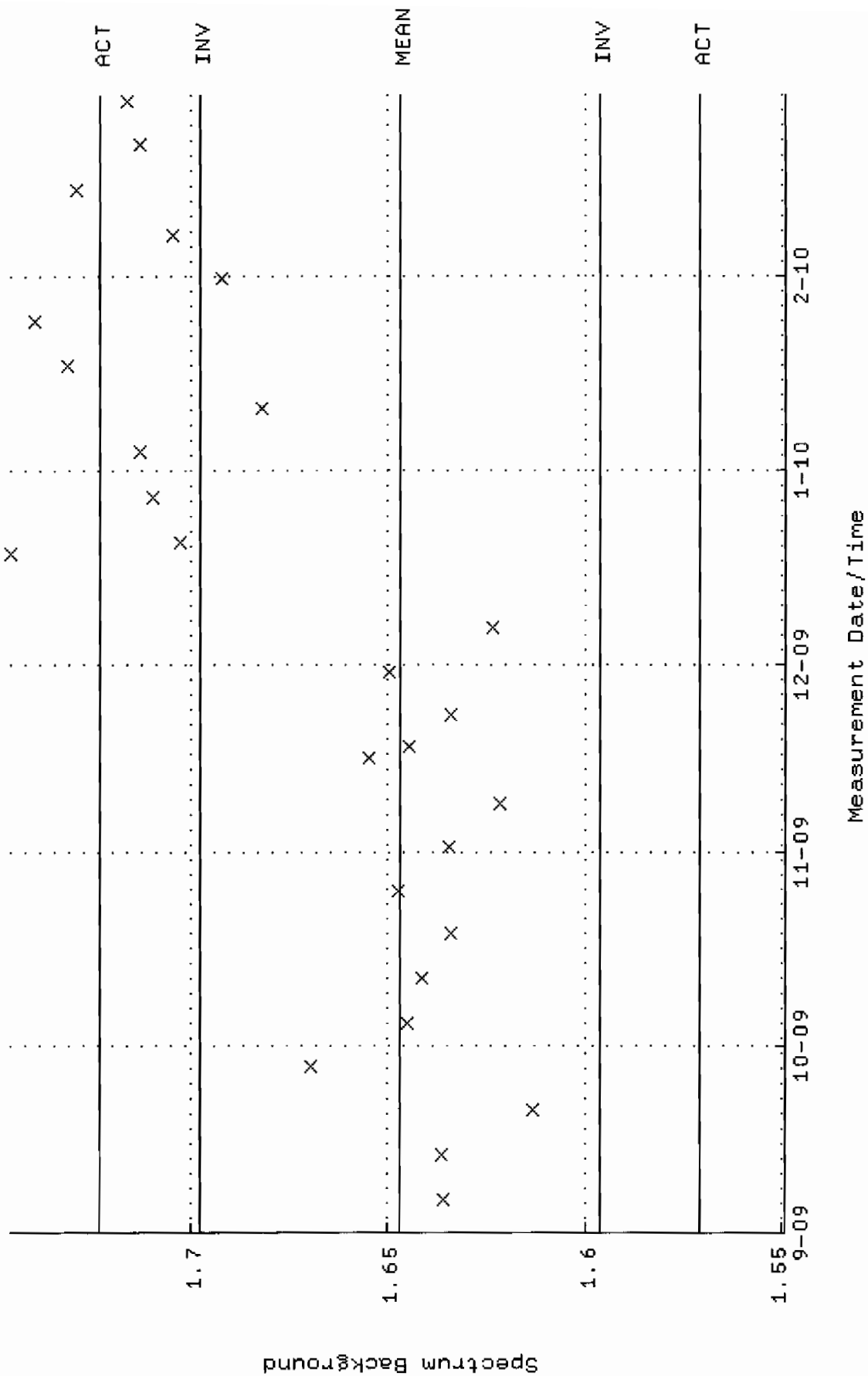


QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM05\_CAN.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 1-SEP-2009 14:54:46 through 1-MAR-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000

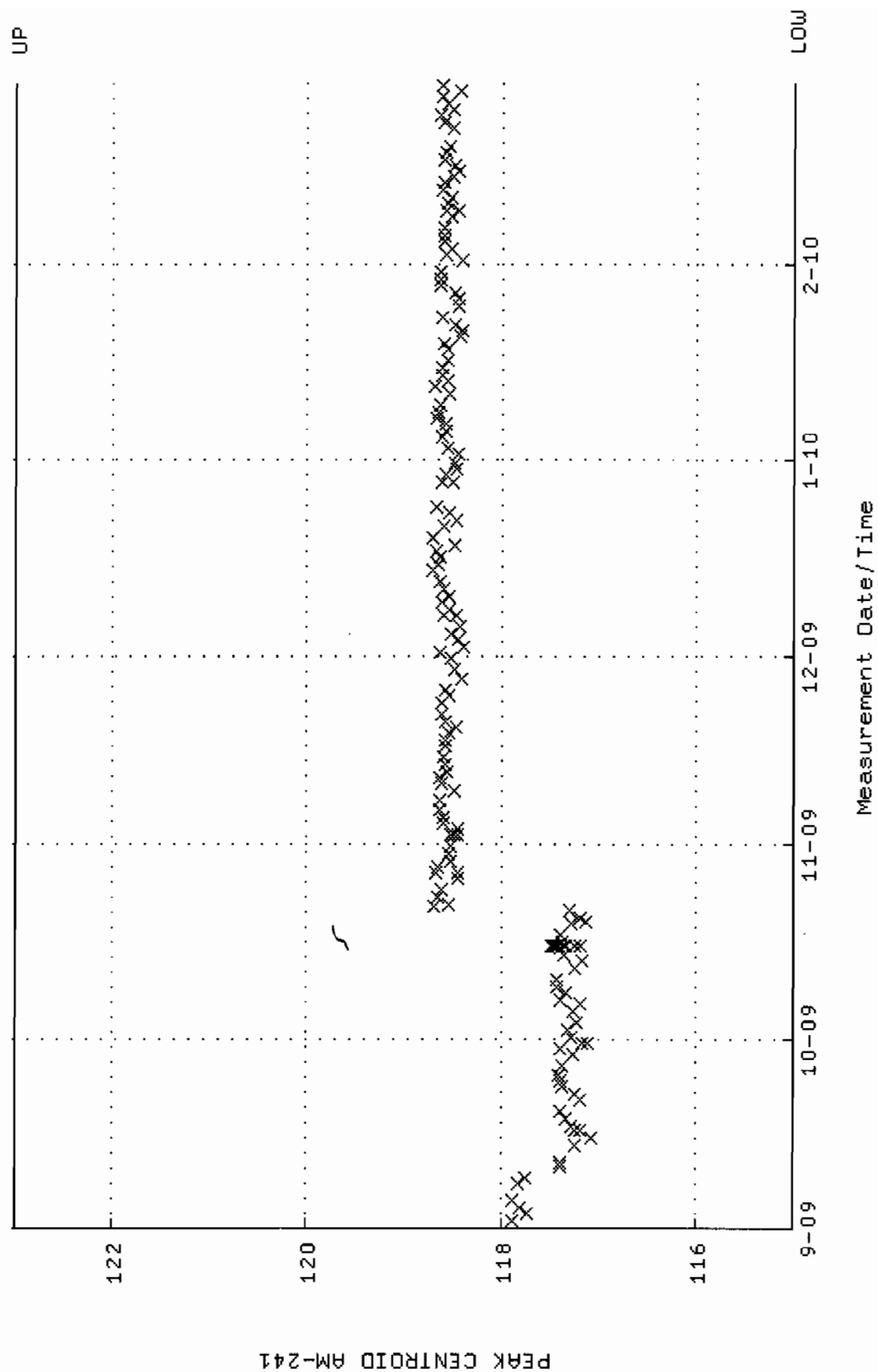




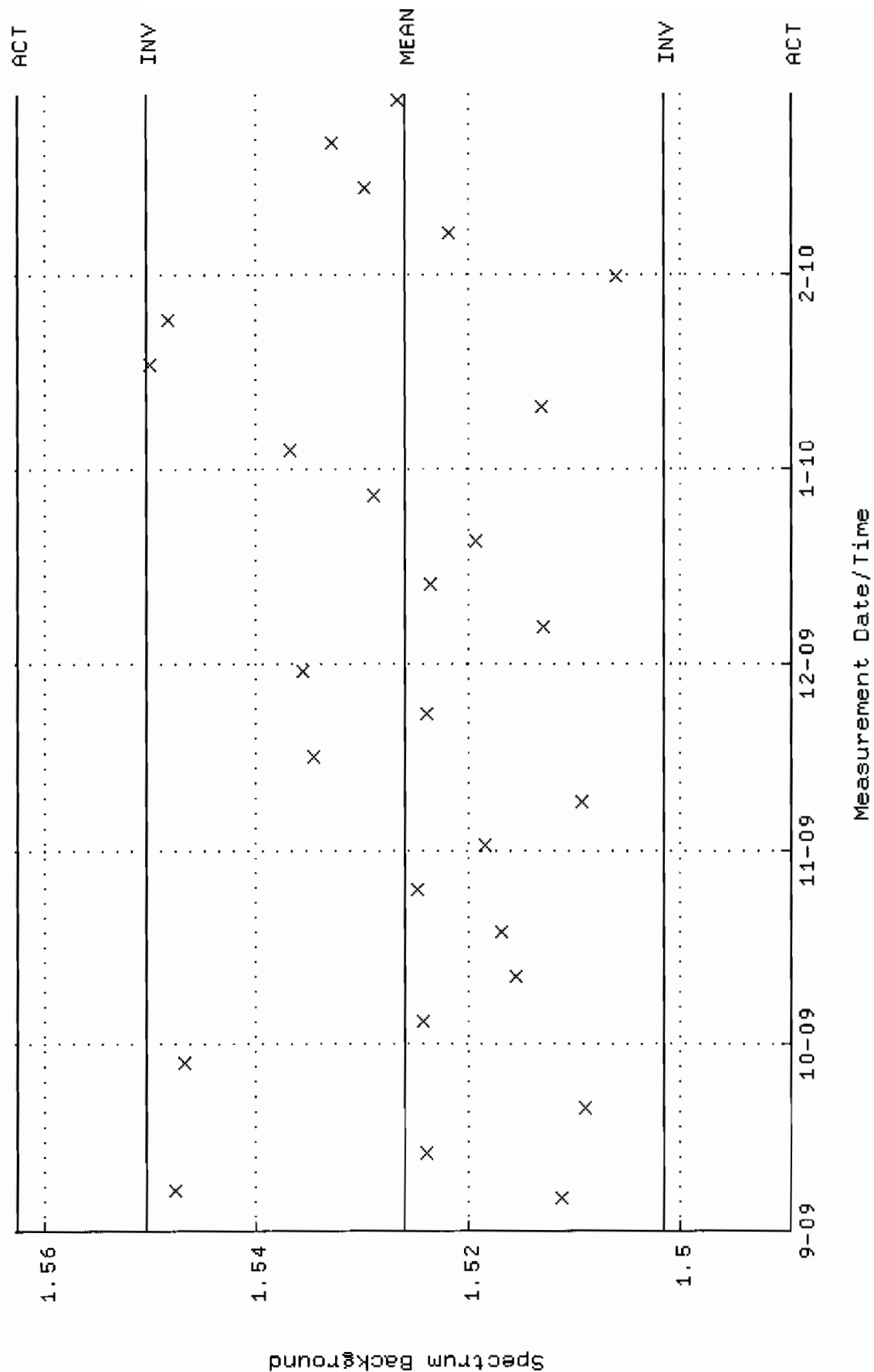
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM05.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 6-SEP-2009 11:39:04 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 1.64719 +- 2.547087E-02 (1.55 %)



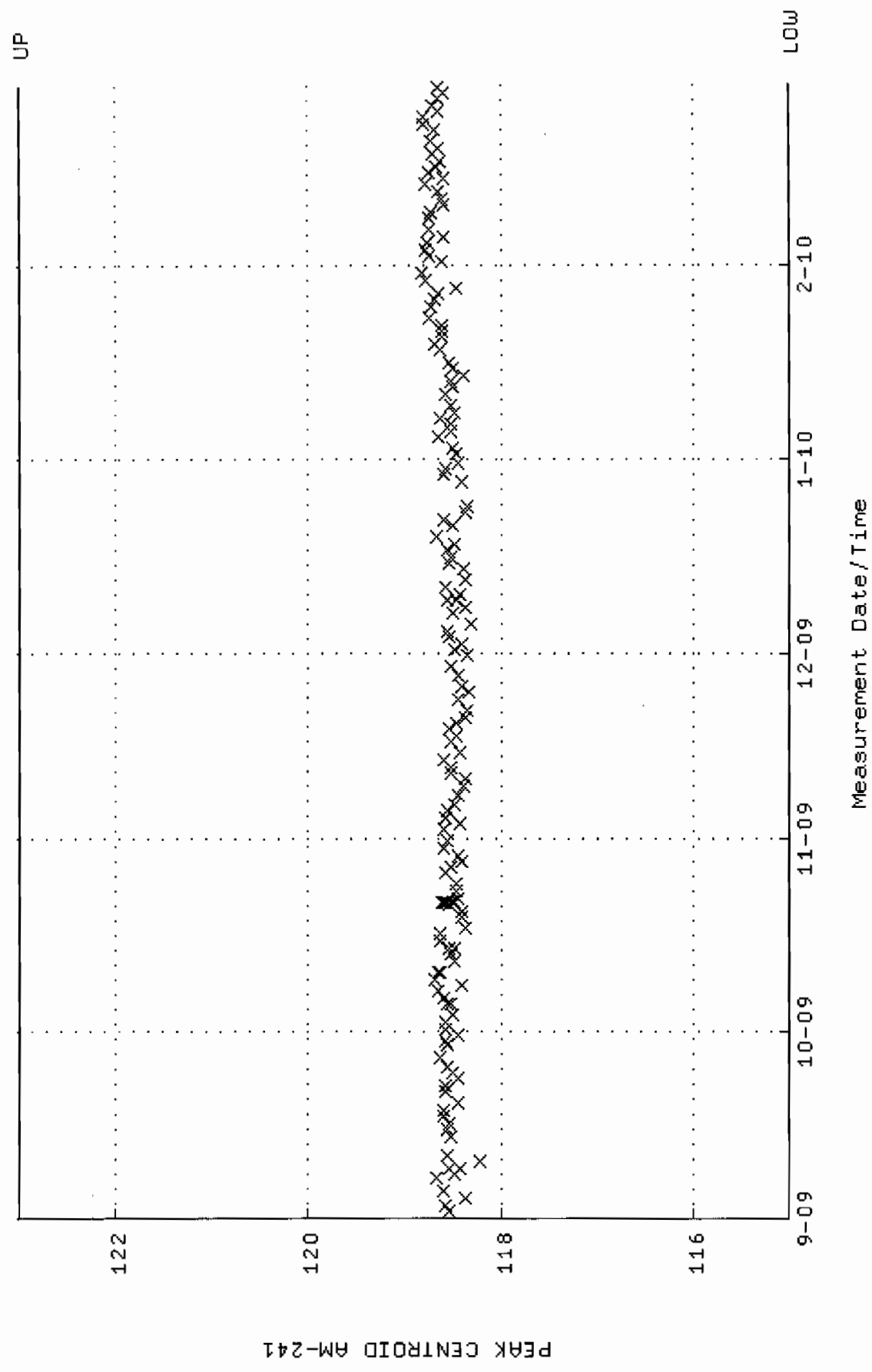
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM06\_500MLMB.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 2-SEP-2009 04:40:19 through 1-MAR-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000



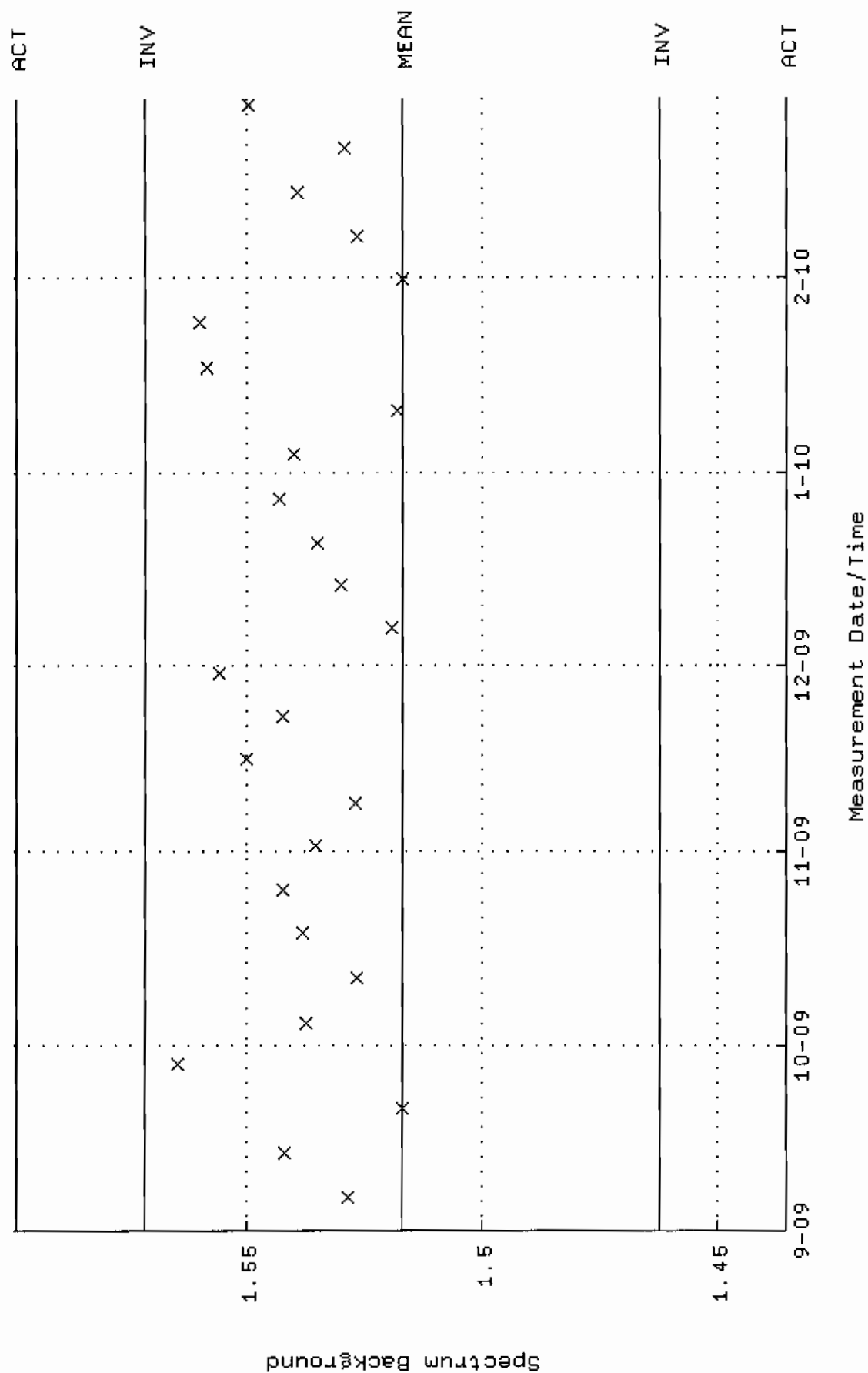
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM06.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 6-SEP-2009 11:39:28 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 1.52603 +- 1.215987E-02 (0.80 %)



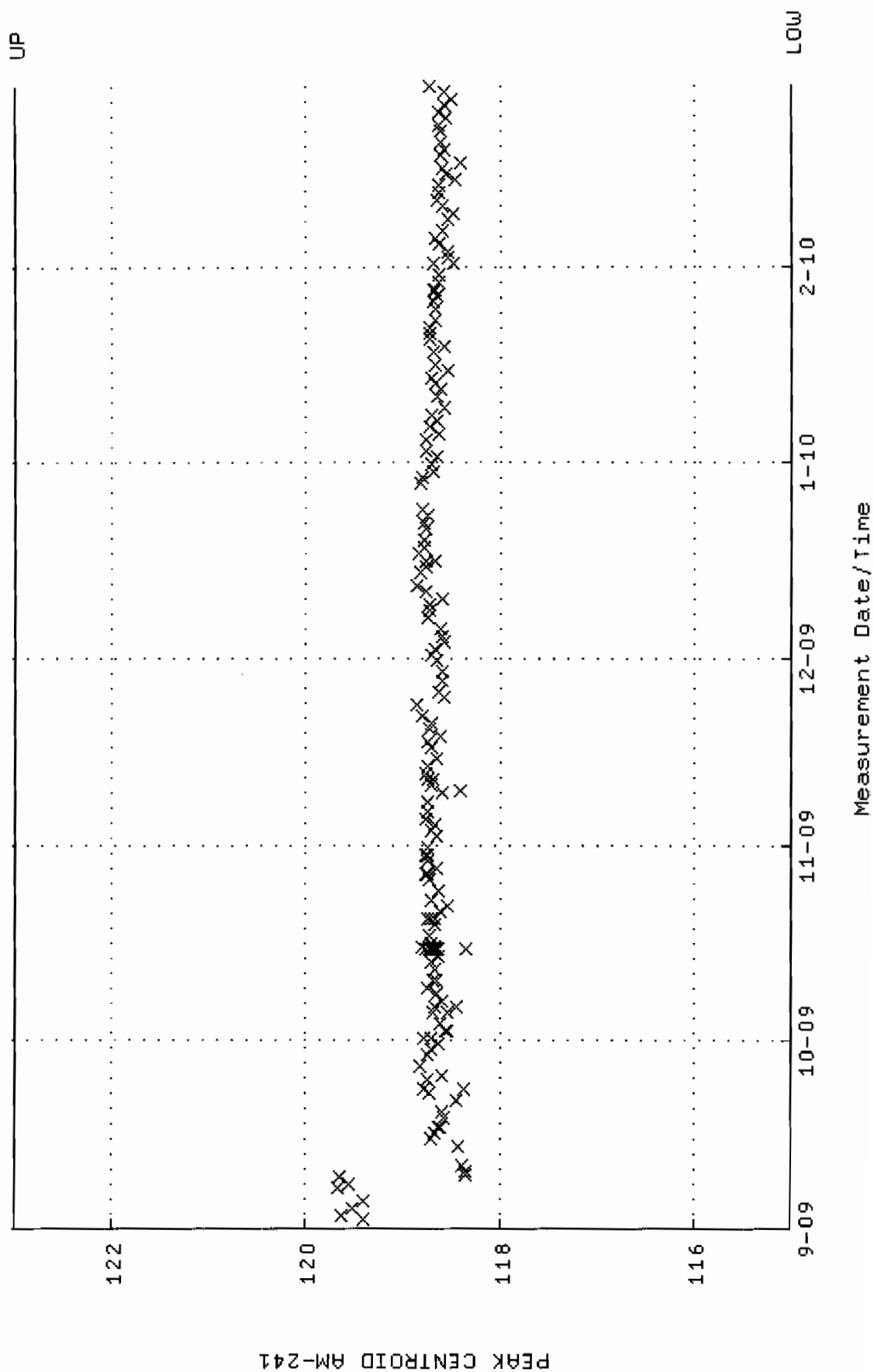
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM07\_JAR.QAF;1  
Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
Start/End Dates : 2-SEP-2009 06:09:02 through 1-MAR-2010 12:00:00  
Lower/Upper Lmts: 115.000 through 123.000



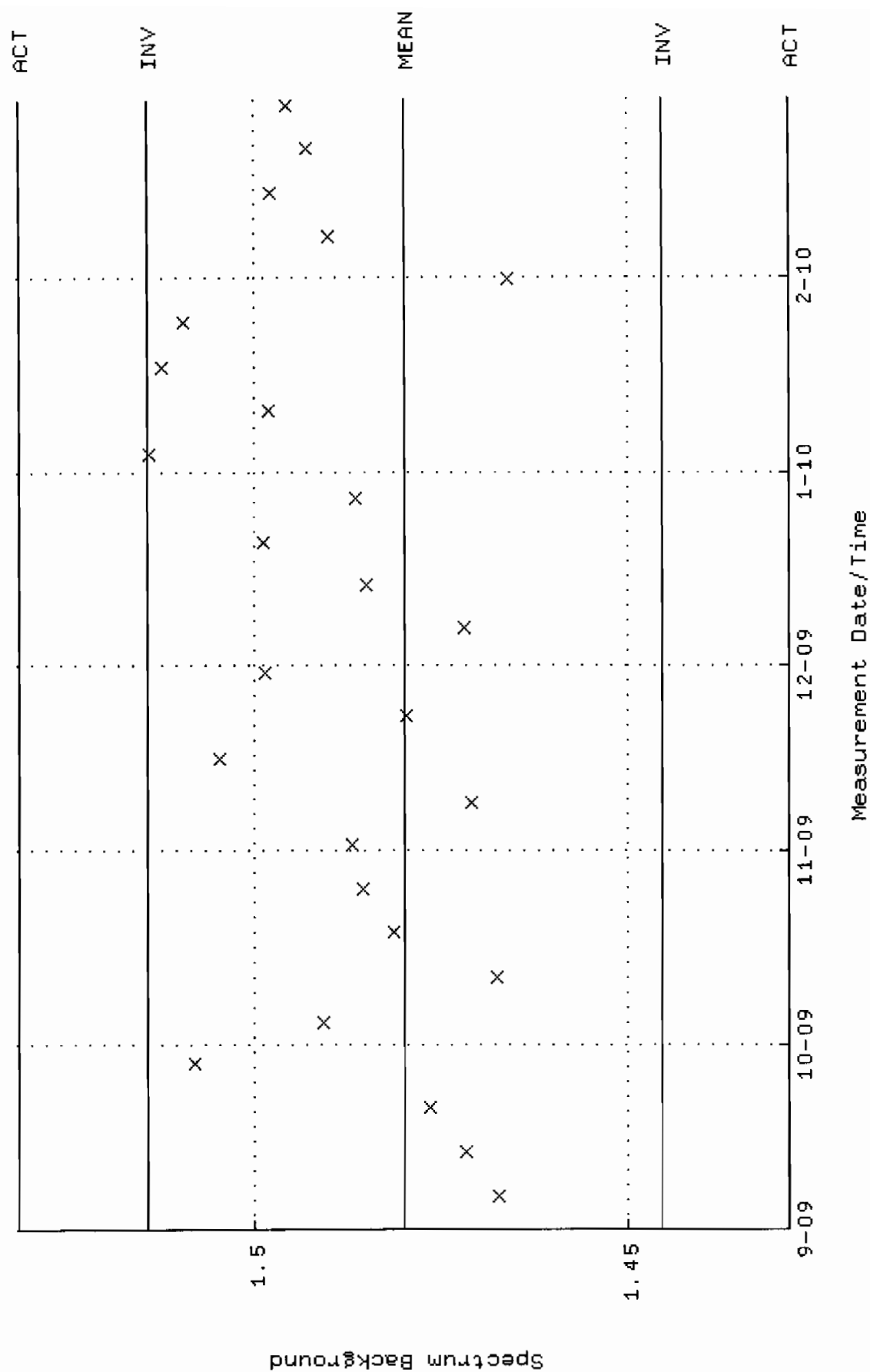
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC-GAM07.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 6-SEP-2009 11:39:54 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 1.51715 +- 2.726376E-02 (1.80 %)



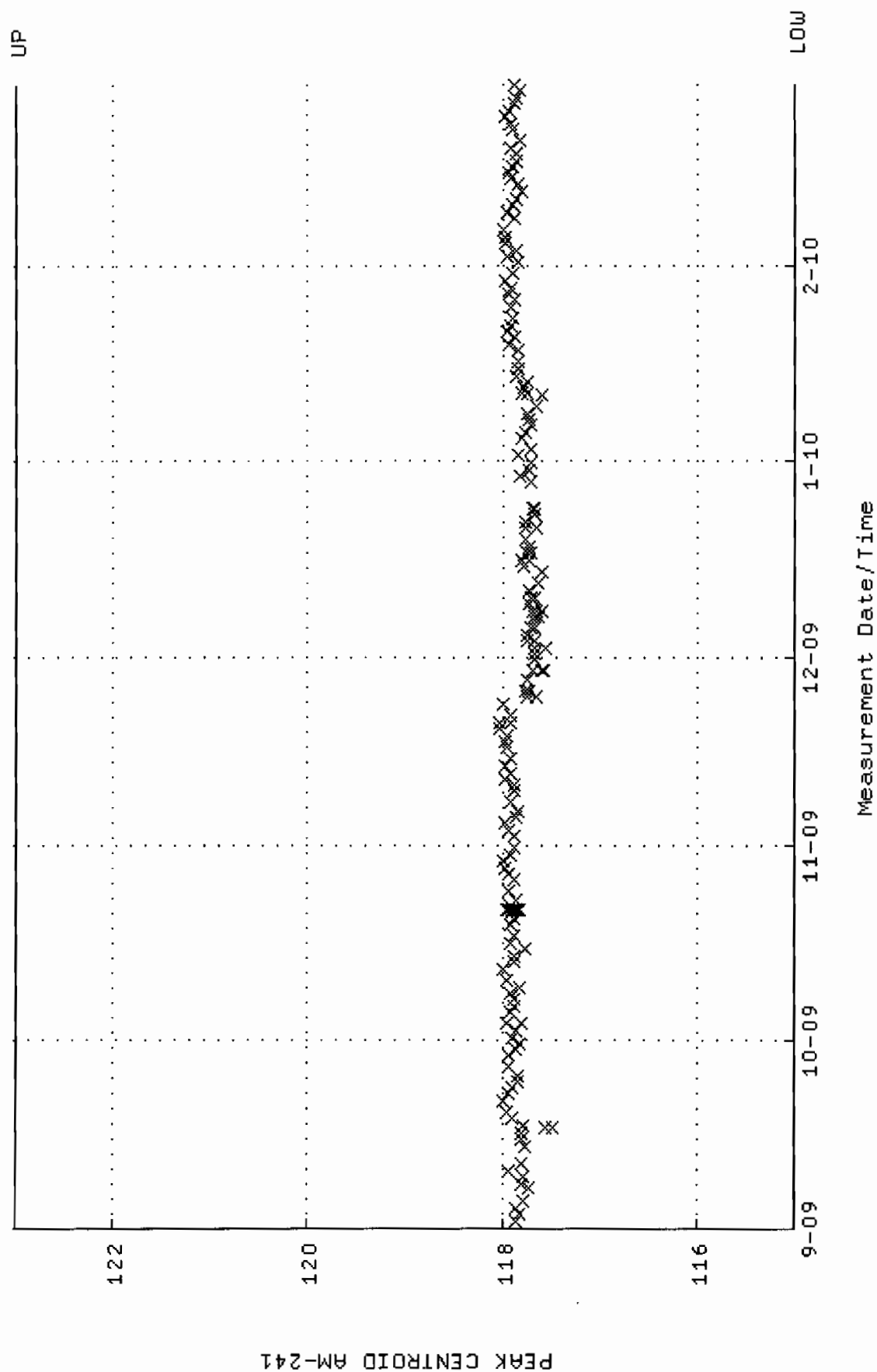
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM10\_500MLMB.QAF;1  
Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
Start/End Dates : 2-SEP-2009 10:11:44 through 1-MAR-2010 12:00:00  
Lower/Upper Lmts: 115.000 through 123.000



QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM10.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 6-SEP-2009 11:41:20 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 1.48000 +- 1.723892E-02 (1.16 %)

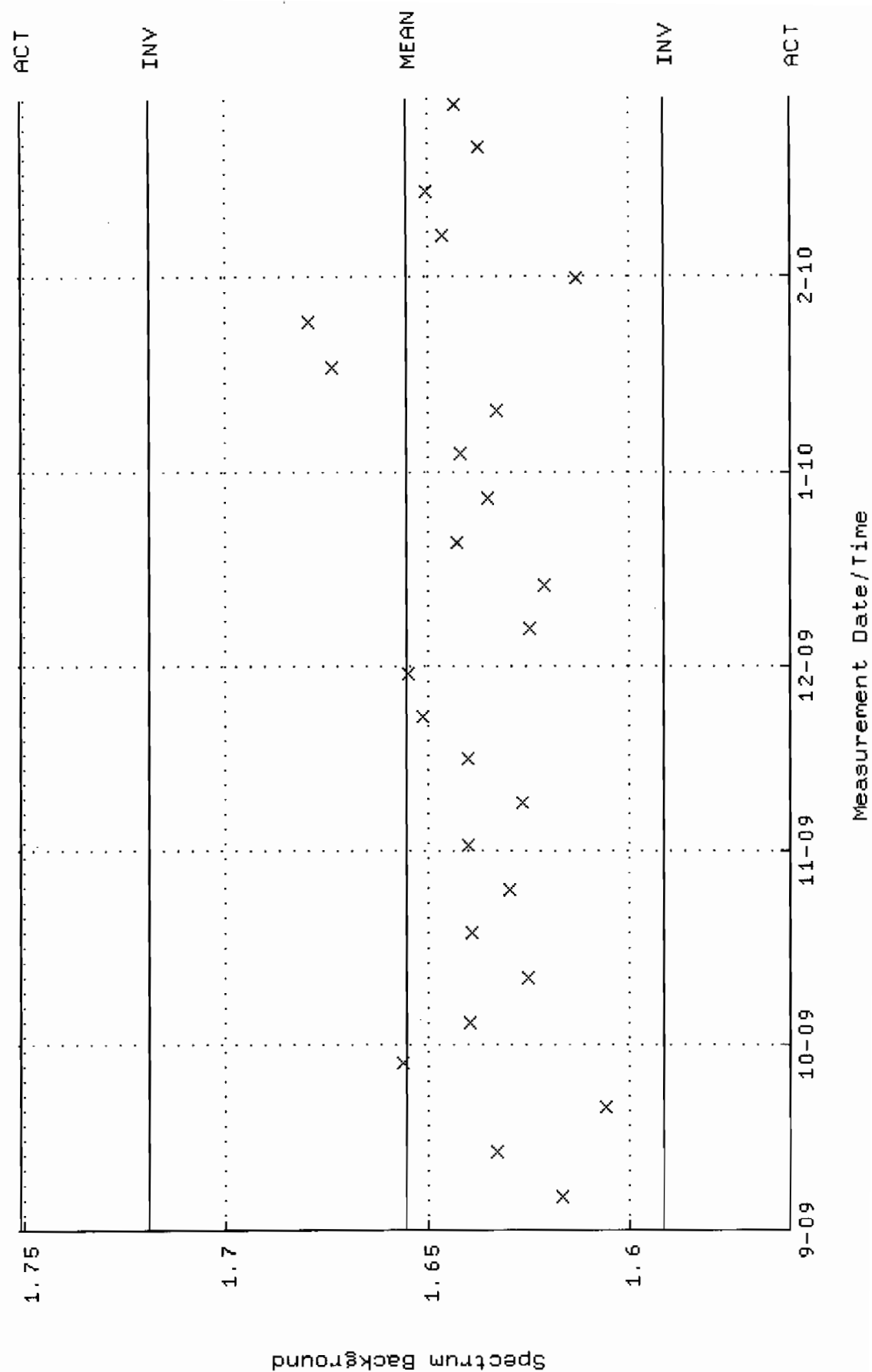


QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM11\_JAR.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 2-SEP-2009 06:47:51 through 1-MAR-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000

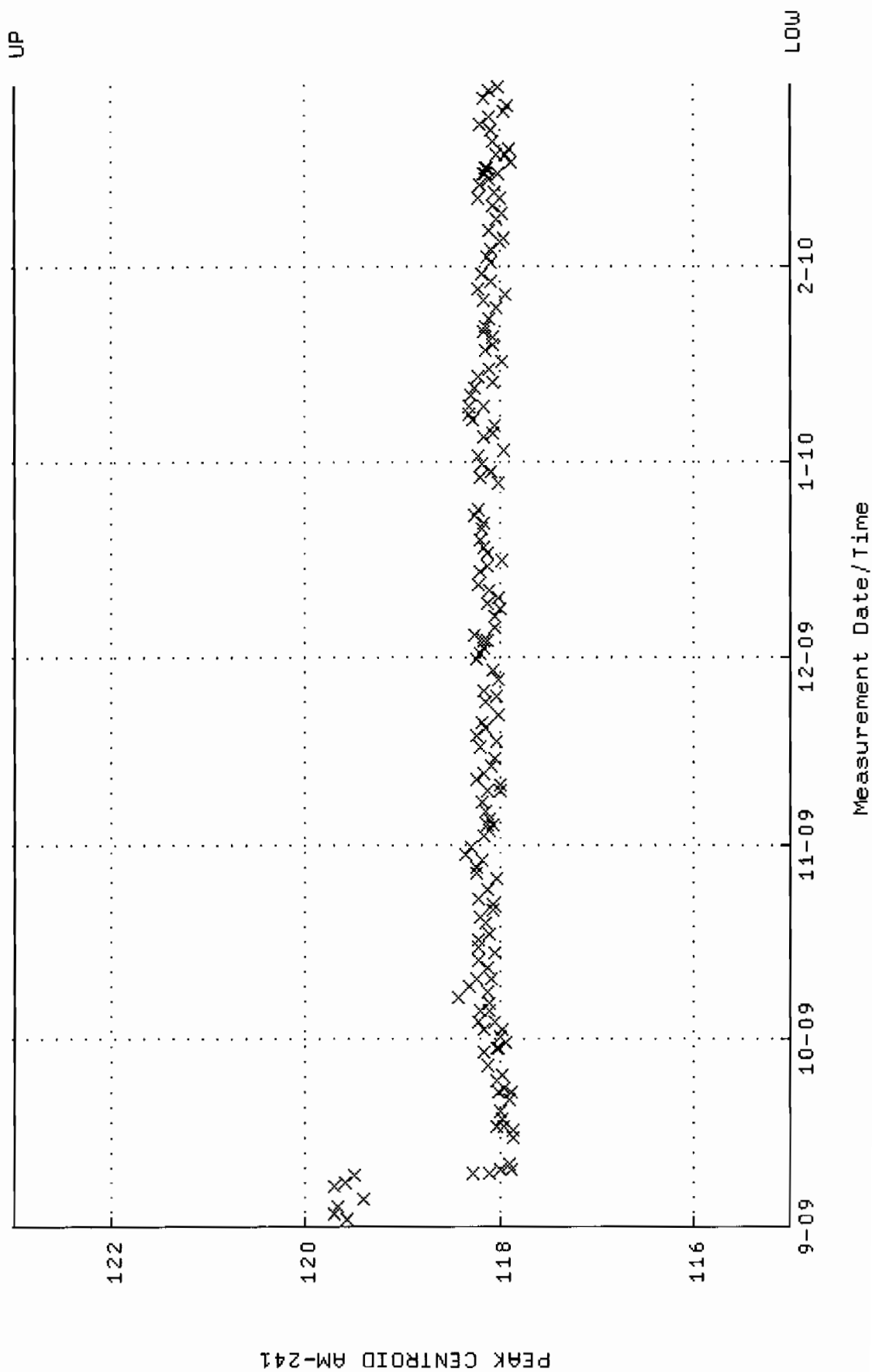




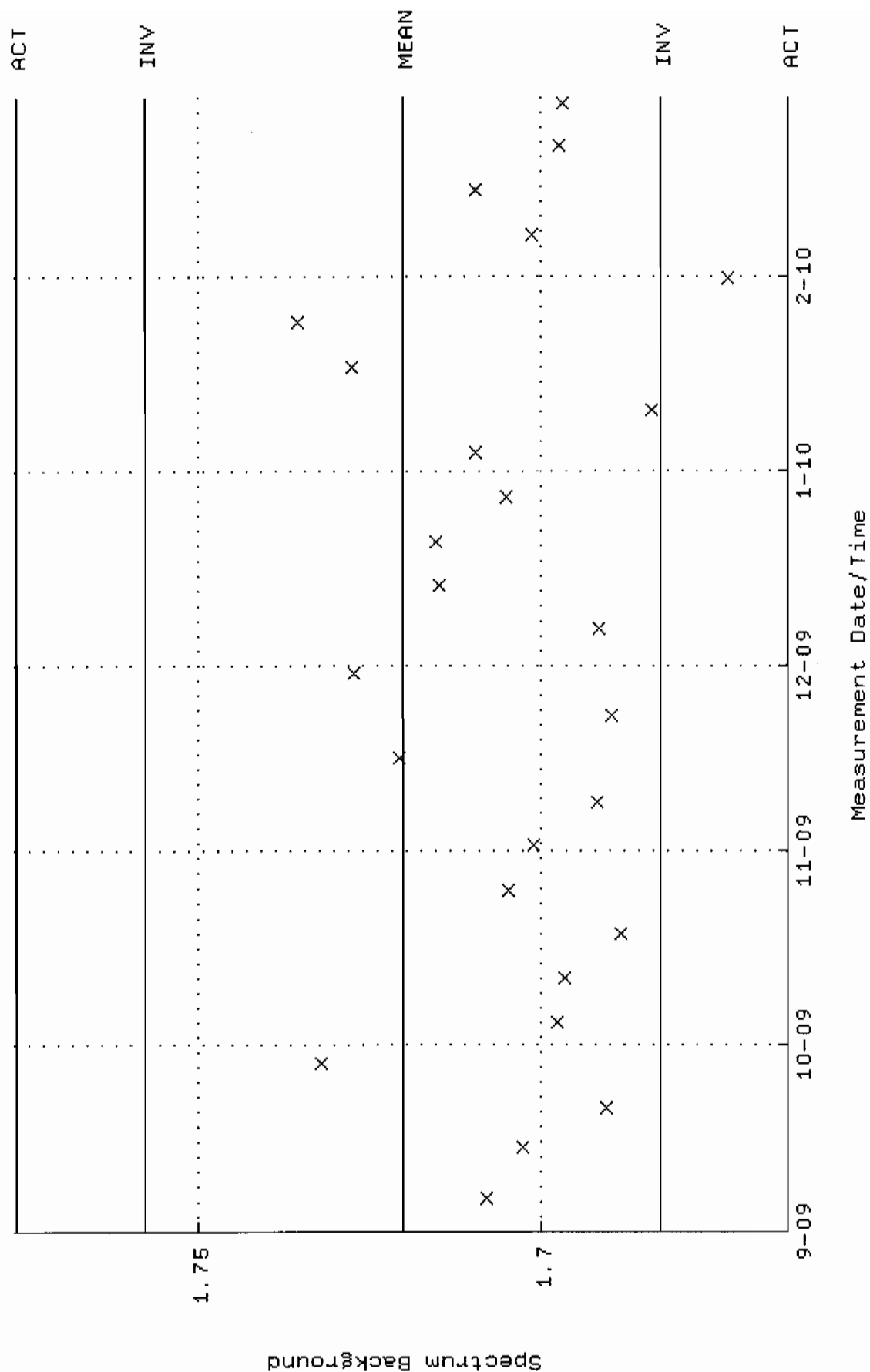
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM11.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 6-SEP-2009 11:41:47 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 1.65552 +- 3.175806E-02 (1.92 %)



QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]QCC\_GAM15\_CAN.QAF;1  
 Parameter Name : PSCENTRD-241 (PEAK CENTROID AM-241)  
 Start/End Dates : 2-SEP-2009 06:32:23 through 1-MAR-2010 12:00:00  
 Lower/Upper Lmts: 115.000 through 123.000

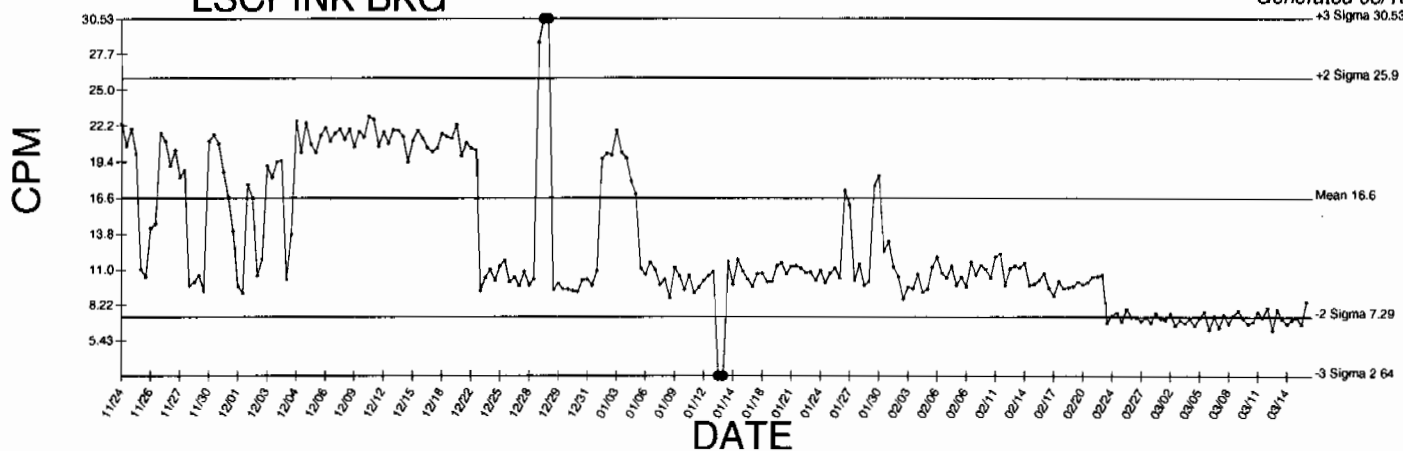


QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC\_GAM15.QAF;1  
 Parameter Name : BACKRATE (Spectrum Background Rate)  
 Start/End Dates : 6-SEP-2009 11:43:44 through 1-MAR-2010 12:00:00  
 Mean +- Std Dev : 1.72024 +- 1.875820E-02 (1.09 %)

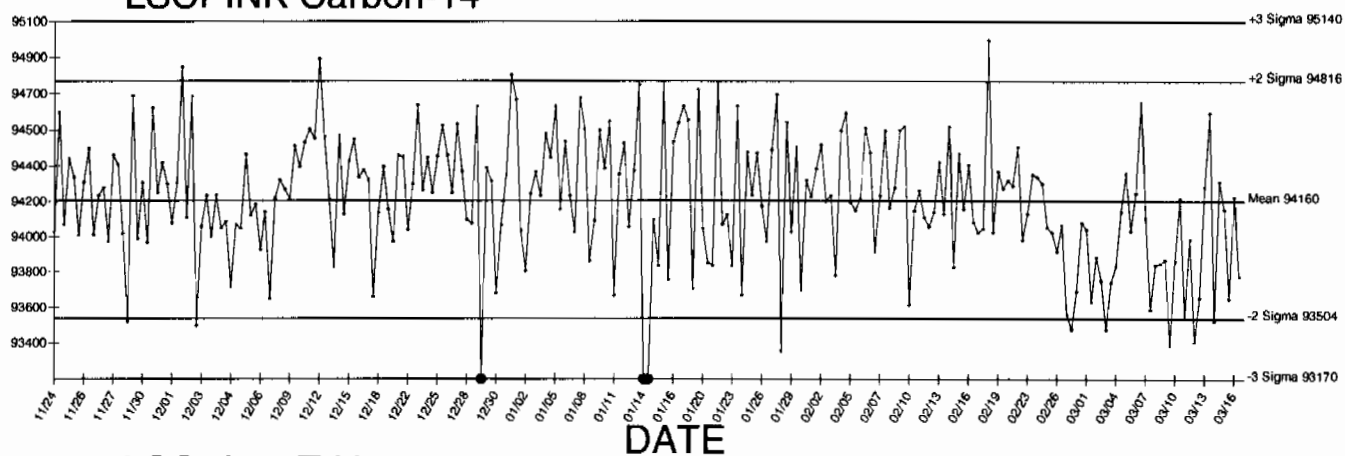


# LSCPINK BKG

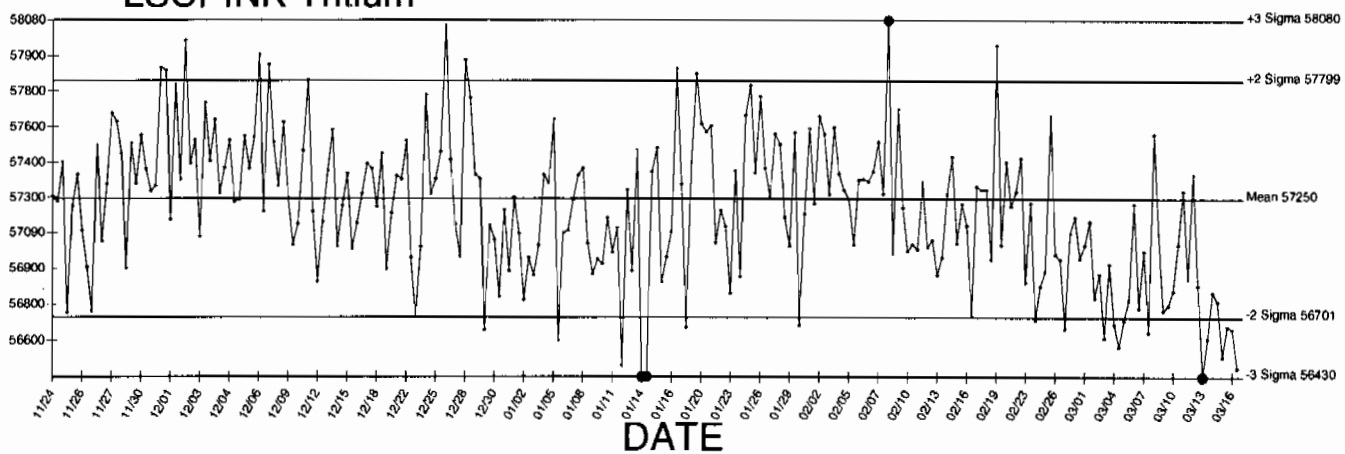
Generated 03/16/2010



# LSCPINK Carbon-14



# LSCPINK Tritium



● Denotes Outlier

# STANDARDS DATA

0134



CALIBRATION  
No. 0146

**Description** Radionuclide: TRITIUM (HYDROGEN-3) Product code: TRY-64  
Chemical form: water Batch: 111

**Measurement** Reference time: 1200 GMT on 1 March 1996  
Radioactive concentration of tritium: 488.0 kilobecquerels per gram of water  
which is equivalent to: 13.19 microcuries per gram of water  
or:  $2.93 \times 10^7$  disintegrations per minute per gram of water

**Method of Measurement**

This reference material was calibrated by direct comparison with a standard of tritium-labelled water obtained from the National Institute of Standards and Technology, USA.

**Accuracy** The OVERALL UNCERTAINTY of the result quoted above is estimated to be less than  $\pm 2.5\%$

This estimate of uncertainty was calculated in accordance with the recommendations of the International Commission on Radiation Units and Measurements (ICRU Report 12). The limits of uncertainty were taken as the arithmetic sum of the uncertainty due to random variations, calculated at the 99.7% confidence level, and the estimated systematic uncertainties.

**Purity** No radioactive impurities were detected. (Impurities with total activity greater than 0.001% of the activity of the tritium would have been detected).

**Physical Data** Half-life of tritium:  $12.43 \pm 0.11$  years  
Maximum beta energy of tritium: 18.6 keV

**Remarks:** The S.I. unit of radioactivity is the becquerel.

1 becquerel (Bq) = 1 nuclear transformation per second, therefore  
1 curie (Ci) =  $3.7 \times 10^{10}$  becquerels exactly.

Useful conversion factors are:

1 microcurie ( $\mu\text{Ci}$ ) =  $3.7 \times 10^4$  Bq = 37 kilobecquerels (kBq)  
1 kilobecquerel (kBq) = 27.027 nanocuries (nCi)

This product meets the quality assurance requirements of NRC Regulatory Guide 4.15 for achieving implicit NIST (NBS) traceability as defined in NCRP58 (1985).

**Approved  
signatory**

*W. F. Case*

QC-5-023-061a

# Standard Traceability Log Rad

Source Material Info		A Solution Material Info	
Parent Code:	0134	Isotope:	Tritium
Prepared By:	Angela Johnson	Prepared By:	Angela Johnson
Carrier Conc:	DI WATER	Prep Date:	02/21/2001
Reference Date:	03/01/1996	Verification Date:	09/10/2008
Ampoule Mass (g):	5 g	Expiration Date:	03/27/2010
Uncertainty:	+/- 2.5 %	Primary Code:	0134-A
LogBook No:	RC S 023 061	Dilution(mL):	100 mL
		Mass of Parent(g):	3.3659 g
		Density(g/mL):	1.0004
		Balance ID:	38080204

## Calculations Converting parent activity to dpm/mL|dpm/g

$(\text{Mass of parent(g)}) * (\text{Parm Activity (kBq/g)}) * (\text{conversion dpm to kBq}) / (\text{Dilution Vol}) = \text{Parent Activity (dpm/mL)}$
$(\text{Mass of parent(g)}) * (\text{Parm Activity (kBq/g)}) * (\text{conversion dpm to kBq}) / \text{Density (g/mL)} / (\text{Dilution Vol}) = \text{Parent Activity (dpm/g)}$
$(3.3659 \text{ g}) * (488 \text{ kBq/g}) * (60000 \text{ dpm/kBq}) / (100 \text{ mL}) = 985535.5200 \text{ dpm/mL}$
$(3.3659 \text{ g}) * (488 \text{ kBq/g}) * (60000 \text{ dpm/kBq}) / (1.0004 \text{ g/mL}) / (100 \text{ mL}) = 985180.3116 \text{ dpm/g}$

## Secondary Standards

Prep Date	Preparer	Mass Primary	Dilution (mL)	Code	Conc dpm/mL	Verification Date	Expiration Date
07/20/2004	Amanda Fehr	5.86	1000	0134-H	5773.1566 dpm/mL	07/25/2006	07/25/2007
12/20/2005	Amanda Fehr	5.5451	1000	0134-I	5462.92 dpm/mL	12/20/2006	12/20/2007
07/11/2007	Daniel Roy	5.5863	1000	0134-J	5503.5128 dpm/ml	07/29/2008	07/29/2009
03/25/2009	Mary Aders	5.4917	1000	0134-K	5410.3147 dpm/ml	03/27/2009	03/27/2010

GEL Laboratories LLC  
Version 1.0 9/18/2000

# Verification for H-3 Standard 0134-K

M. Aders	Isotope	Detector CPM	BKG CPM	NET CPM	Detector Eff Mass. Used (mL)	Source DPM/mL
4/9/2009	0134-K N1	1097.2000	54.0000	1043.2000	1.0000	2741.3099
	0134-K N2	1073.2000	54.0000	1019.2000	0.380548	2678.242955
	0134-K N3	1085.2000	54.0000	1031.2000	0.380548	2709.776428
Mean Value (Counting) =	2709.776428		104.954429	Pass		2709.776428
Stdev =	31.53347278		0.01163693	Rule 3 (Pass/Fail)		

Certificate Value = 2581.86 dpm/mL  
 Lower Limit = 2646.709482 dpm/mL  
 Upper Limit = 2772.843373 dpm/mL  
 Rule 1 Pass/Fail Fail  
 Two sigma = 63.06694556 dpm/mL  
 10 % of Mean = 270.9776428 dpm/mL  
 Rule 2 (Pass/Fail) Pass

\*exception taken due to full recovery of standard

## 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 10% of the certificate value.

The analyst prepared three standard verification sources for H-3 source 0134-K by transferring 0.1 mL portions of the standard into glass liquid scintillation vials. Ten mL of Ecosint Ultra liquid scintillation cocktail was added to each vial and the vials were shaken to mix. A Blank vial was prepared in a similar fashion using 1 mL of DI water and 10 mL of Ecosint Ultra liquid scintillation cocktail. The standard verification vials and Background source were dark adapted for two hours and counted on Silver for H-3 source standard verification. The H-3 efficiency calibration which was used for verification calculations was performed on 4/9/09 using 0020-A (H-3). Calibration data is recorded in this logbook under H-3 0020. Each verification source calculation was performed as follows:

$$\text{Source dpm/g} = (A - B)/(C)(D)$$

where:

- A = Ver. source cpm,
- B = BKG cpm,
- C = System efficiency, (cpm/dpm), and
- D = mass used for standard verification.

Reference RAD SOP M-001

Handwritten signatures and dates:  
 Amanda J. Dehn 4/9/09  
 4/9/09



1032

1380 Seaboard Industrial Blvd.  
Atlanta, Georgia 30318  
Tel 404-352-8677  
Fax 404-352-2837  
www.analytiscinc.com

## 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. Analytisc 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 ENERGY	HALF-LIFE	GAMMA-RAYS PER SECOND	TOTAL UNCERTAINTY %
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:

Wm. M. J. 11-28-06

This standard will expire one year after the calibration date.

rec'd 11/30/06  
RC-S-045-073-c

1380 Seaboard Industrial Blvd.  
 Atlanta, Georgia 30318

Tel 404-352-8677

Fax 404-352-2837

www.analytisc.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		A Solution Material Info	
Parent Code:	1032	Isotope:	Mixed Gamma
Prepared By:	Daniel Roy	Prepared By:	Daniel Roy
Carrier Conc:	4 M HCL	Prep Date:	11/30/2006
Reference Date:	10/01/2006	Verification Date:	12/02/2009
Ampoule Mass (g):	5.31725 g	Expiration Date:	12/02/2010
Uncertainty:	+/- 2.81 %	Primary Code:	1032-A
LogBook No:	RC-S-045-073	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
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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. 1A2-1
	Mixed Gamma N1	2534	pCi/L - Ver. 1A2-3
	Mixed Gamma N2	2510	pCi/L - Ver. 1A2-5
	Mixed Gamma N3	2413	

Mean Value (Counting) = 2485.67  
 Stdev = 64.065  
 Rule 3 (Pass/Fail) 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

M. Stamps  
12/2/09  
 in hand  
 12/2/09

## 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

Cs-137	Isotope	Result	pCi/L - Ver. IAR.1
	Mixed Gamma N1	854.2	pCi/L - Ver. IAR.3
	Mixed Gamma N2	907.6	pCi/L - Ver. IAR.2
	Mixed Gamma N3	898.9	

Mean Value (Counting) = 856.90  
Stdev = 28.651  
Rule 3 (Pass/Fail) Pass

Certificate Value = 933.44144  
Lower Limit = 829.597644  
Upper Limit = 944.202356  
Rule 1 (Pass/Fail) Pass  
Two sigma = 57.30235597  
10 % of Mean = 88.69000000  
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.

*12/2/09*  
*12/2/09*  
*12/2/09*

# Verification for Mixed Gamma Standard 1032-A

M. Stamps  
12/2/2009

Co-60 (1332.5)

Isotope	Result	pCi/L - VER-1A2-5
Mixed Gamma N1	1572	pCi/L - VER-1A2-2
Mixed Gamma N2	1495	pCi/L - VER-1A2-3
Mixed Gamma N3	1501	

Mean Value (Counting) = 1522.67 Pass  
Stdev = 42.829 Rule 3 (Pass/Fail)

Certificate Value = 1545.8378 pCi/L  
Lower Limit = 1437.008431 pCi/L  
Upper Limit = 1608.324902 pCi/L  
Rule 1 (Pass/Fail) Pass  
Two sigma = 85.65823564  
10 % of Mean = 152.26666667  
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 Result (pCi/g)	Uranium-238 Result (pCi/g)	Thorium-230 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 4/11/2000 *lett c held 12/1/04*

*angela d. johnson 12/13/04*

TRM

Invoice:

5 bottles 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
Tn-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	529 ± 24	22.1 ± 1.2	56.0 ± 2.1	38.9 ± 2.0



9911627-01-00

**Internal Lab**

Batch No.

SARAWR No. N/A

**Press F1 for instructions for each field.**

## ANALYSIS REQUEST AND CHAIN OF CUSTODY

Page 1 of 1

AR/COC-	602945
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Dept. No./Mail Stop: <b>7132 / 1042</b> Project/Task Manager: <b>PAM PUISSANT</b> Project Name: Record Center Code: <b>N/A</b> Logbook Ref. No.: <b>N/A</b> Service Order No.:		Date Samples Shipped: <b>11-16-98</b> SMO USE Carlot/Waybill No.: <b>5206494</b> Lab Contact: <b>EDIE KENT</b> Lab Destination: <b>G.E.L.</b> SMO Contact/Phone: <b>Doug Salmi / 844-3110</b> Send Report to SMO: <b>Suzi Jensen / 844-3184</b>		Contract No.: <b>AJ-2480A</b> Case No.: <b>10204-13</b> SMO Authorization: Bill to: <b>Sandia National Laboratories</b> Supplier Services, Dept. P.O. Box 5800 MS 0154		Lab USE Lab Sample ID Parameter & Method Requested Special Instructions/QC Requirements Abnormal Conditions on Receipt Lab Use	
<b>Location</b> Building <b>N/A</b> Room <b>N/A</b> Sample No. - Fraction ER Sample ID or Sample Location Detail		<b>Reference LOV (available at SMO)</b> Container Type Volume Sample Matrix Date/Time Collected ER Site # Depth in ft.		Sample Type Collection Method Preservative Special Instructions/QC Requirements EDD <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Raw data package <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No These samples are well characterized and materials decayed to GEL over 60 days at Hank Mission.		Please list as separate report.	
050484 - 001 PEM-1 050485 - 001 TRM-2 050486 - 001 ARM-2 <b>NBHD</b>		P 1 L 4 C G SA G 1 L 4 C G SA G 1 L 4 C G SA		SA SA SA			
<b>RMMA</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Ref. No. Sample Disposal <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by lab		<b>Sample Tracking</b> Date Entered (mm/dd/yy) Entered by:		QC Initials Company/Organization/Phone Westcoast / 7577 / 845-0887		Please list as separate report.	
Turnaround Time <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Rush Required Report Date Name Douglas E. Perry		Init Date		Date 11-16-98 Time 0900			
Sample Team Members		Date		Date			
1. Relinquished by 1. Received by		Date Date		Date Date			
2. Relinquished by 2. Received by		Date Date		Date Date			
3. Relinquished by 3. Received by		Date Date		Date Date			

Original To Accompany Samples,  
(Laboratory Copy (White))

**1<sup>st</sup> Copy To Accompany Samples,  
Return to SMO (Blue)**

**2<sup>nd</sup> Copy SMO Suspense Copy (Yellow)**

3<sup>rd</sup> Copy Field Copy (Pink)

### 0244-B Characterization

Sample #	Plutonium-239 Result (pCi/g)	Plutonium-238 Result (pCi/g)	Americium-241 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. Fehe 4/30/04  
 Lott & Staley 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.





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		A Solution Material Info	
Parent Code:	445-96-2	Isotope:	Americium-243
Prepared By:	Genie Bost	Prepared By:	Angela Johnson
Carrier Conc:	2M HNO3	Prep Date:	01/05/1994
Reference Date:	01/01/1994	Verification Date:	05/11/2009
Ampoule Mass (g):	5.3739 g	Expiration Date:	05/11/2010
Uncertainty:	+/- 3 %	Primary Code:	445-96-2-A
LogBook No:	RC S 005 032	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 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 =	0.043588989		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.

Mary G. Aders 5/15/09  
Tahara  
07509



# NATIONAL PHYSICAL LABORATORY

Teddington Middlesex UK TW11 0LW Telephone +44 20 8977 3222

## Certificate of Calibration



0478

### PLUTONIUM-236 SOLUTION R37-02

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to recognised national standards, and to units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

FOR: GEL Laboratories LLC  
2040 Savage Road  
Charleston, SC 29407  
USA

FOR THE ATTENTION OF: Mr Tim Winters

NPL PRODUCT CODE: R37-02

IDENTIFICATION: A09881

DESCRIPTION: An aqueous solution of  $^{236}\text{Pu}$  also containing 2 mol dm<sup>-3</sup> of nitric acid. The solution is contained in a flame sealed ampoule of type Q and nominal volume 5 ml (squat) as defined in BS 795:1983.

DATE(S) OF CALIBRATION: 26 June 2009 to 1 July 2009

INTENDED USE: Calibration of instruments for response to  $^{236}\text{Pu}$

STORAGE: The material may be stored at room temperature in a suitably sealed container. Flame-sealed glass ampoules are recommended for long-term storage. Regulatory conditions may apply to the manner in which this material is stored.

### MEASUREMENTS

The samples were prepared by gravimetric dilution of a  $^{236}\text{Pu}$  solution, which had been previously standardised using liquid scintillation counting. The accuracy of the dilution factor was checked using liquid scintillation counting.

Reference: 2009100356

Page 1 of 3

Date of Issue: 4 November 2009

Signed:

(Authorised Signatory)

Checked by:

Name: Dr Arvic Harms

for Managing Director

Page 51 of 529

## RESULTS

Principal radionuclide:	$^{236}\text{Pu}$
Reference time:	2009-07-01 12:00 UTC
Activity concentration of principal radionuclide:	$170.8 \text{ Bq g}^{-1}$
Expanded uncertainty:	$\pm 0.6 \text{ Bq g}^{-1} (\pm 0.36 \%)$
Contaminants present:	$^{226}\text{Ra}$ , $^{232}\text{U}$ , $^{228}\text{Th}$ , $^{237}\text{Np}$
Activity concentration of $^{226}\text{Ra}$ :	$11.0 \text{ mBq g}^{-1}$
Expanded uncertainty:	$\pm 4.0 \text{ mBq g}^{-1} (\pm 36 \%)$
Activity concentration of $^{232}\text{U}$ :	$0.67 \text{ Bq g}^{-1}$
Expanded uncertainty:	$\pm 0.12 \text{ Bq g}^{-1} (\pm 18 \%)$
Activity concentration of $^{228}\text{Th}$ :	$11.38 \text{ mBq g}^{-1}$
Expanded uncertainty:	$\pm 0.46 \text{ mBq g}^{-1} (\pm 4 \%)$
Activity concentration of $^{237}\text{Np}$ :	$5.00 \text{ mBq g}^{-1}$
Expanded uncertainty:	$\pm 0.34 \text{ mBq g}^{-1} (\pm 8 \%)$
Sample Mass:	$4.97 \text{ g} \pm 0.02 \text{ g}$

## UNCERTAINTIES

The reported uncertainties are based on standard uncertainties multiplied by a coverage factor  $k=2$ , providing a level of confidence of approximately 95 %. The uncertainty evaluations have been carried out in accordance with UKAS requirements.

## NOTES

- [1]. The reported reference time is stated consistent with the format given in ISO 8601:2004. UTC is the abbreviation for Universal Time, Coordinated. The date is stated in the format YYYY-MM-DD such that 2008-09-01 represents 1 September 2008.
- [2]. The recommended half life of  $^{236}\text{Pu}$  is 1044 (6) days and is taken from the evaluations published in *Nuclear Data Sheets*.
- [3]. The recommended half life of  $^{226}\text{Ra}$  is  $5.844 (50) \times 10^5$  days and is taken from the evaluations of the *Decay Data Evaluation Project*, see for example [www.nucleide.org/DDEP.htm](http://www.nucleide.org/DDEP.htm).
- [4]. The recommended half life of  $^{232}\text{U}$  is 25800 (800) days and is taken from the evaluations of the *Decay Data Evaluation Project*, see for example [www.nucleide.org/DDEP.htm](http://www.nucleide.org/DDEP.htm).
- [5]. The recommended half life of  $^{237}\text{Np}$  is  $7.83 (6) \times 10^8$  days and is taken from the evaluations of the *Decay Data Evaluation Project*, see for example [www.nucleide.org/DDEP.htm](http://www.nucleide.org/DDEP.htm).
- [6]. The recommended half life of  $^{228}\text{Th}$  is 698.60 (46) days and is taken from the evaluations of the *Decay Data Evaluation Project*, see for example [www.nucleide.org/DDEP.htm](http://www.nucleide.org/DDEP.htm).

## UNCERTAINTIES

The reported uncertainties are based on standard uncertainties multiplied by a coverage factor  $k=2$ , providing a level of confidence of approximately 95 %. The uncertainty evaluations have been carried out in accordance with UKAS requirements.

# Standard Traceability Log Rad

Source Material Info	
Parent Code:	1430
Prepared By:	Ashley Drochter
Carrier Conc:	2 M HNO3
Reference Date:	07/01/2009
Ampoule Mass (g):	4.97 g
Uncertainty:	+/- .36 %
LogBook No:	RC-S-051-149

A Solution Material Info	
Isotope:	Plutonium-236
Prepared By:	Ashley Drochter
Prep Date:	01/27/2010
Verification Date:	01/27/2010
Expiration Date:	01/27/2011
Primary Code:	1430-A
Dilution(mL):	100 mL
Mass of Parent(g):	4.8051 g
Density(g/mL):	1.0610
Balance ID:	38080204

## Calculations Converting parent activity to dpm/mL/dpm/g

$(\text{Mass of parent(g)}) * (\text{Parm Activity (Bq/g)}) * (\text{conversion dpm to Bq}) / (\text{Dilution Vol}) = \text{Parent Activity (dpm/mL)}$
$(\text{Mass of parent(g)}) * (\text{Parm Activity (Bq/g)}) * (\text{conversion dpm to Bq}) / \text{Density (g/mL)} / (\text{Dilution Vol}) = \text{Parent Activity (dpm/g)}$
$(4.8051 \text{ g}) * (170.8 \text{ Bq/g}) * (60 \text{ dpm/Bq}) / (100 \text{ mL}) = 492.4266 \text{ dpm/mL}$
$(4.8051 \text{ g}) * (170.8 \text{ Bq/g}) * (60 \text{ dpm/Bq}) / (1.0610 \text{ g/mL}) / (100 \text{ mL}) = 464.1156 \text{ dpm/g}$

## Secondary Standards

Prep Date	Preparer	Mass Primary	Dilution (mL)	Code	Conc dpm/mL	Verification Date	Expiration Date
01/27/2010	Bethany Fiem	33.0429	200	1430-B	76.6786262 dpm/mL	01/27/2010	01/27/2011
03/01/2010	Ashley Drochter	15.2331	200	1430-C	35.3496 dpm/mL	03/01/2010	03/01/2011

GEL Laboratories LLC  
Version 1.0 9/18/2000

## Verification for Plutonium-236 Standard 1430-C

	Isotope	Value	Uncertainty
A. Drochter	1430-C	2.760	0.4480
3/4/2010	1430-C	2.770	0.4520
	1430-C	2.950	0.4850
Mean Value (Counting) =	2.827	104.54659 % of Known Value	
Stdev =	0.106926766		
Target =	2.70		
Lower Limit =	2.612813134		
Upper Limit =	3.040520199		
Rule 1 Pass/Fail	Pass	Pass	Pass
Two sigma =	0.213853532		
10 % of Mean =	0.282666667		
Rule 2 (Pass/Fail)	Pass		

The analyst prepared three standard verification sources for standard 1430-B using 0.1 mL for each source. Each standard was combined with 0.1 mL of Pu 239 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. After approximately ten minutes, 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-236 were calculated by comparison to Pu-239 certified values.

*file* 3/5/10  
*L* 3/5/10





Eckert & Ziegler

Analytics

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Atlanta, Georgia 30318  
Tel 404-352-8677  
Fax 404-352-2837  
www.analyticinc.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 4.15, 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 Uncertainty (k=2):	5.0%

Comments:

Impurities: U-233 <0.3%, Am-241 <0.15%  
5.20483 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		A Solution Material Info	
Parent Code:	1283	Isotope:	Uranium-232
Prepared By:	Daniel Roy	Prepared By:	Daniel Roy
Carrier Conc:	1M HNO3	Prep Date:	12/16/2008
Reference Date:	12/09/2008	Verification Date:	12/30/2008
Ampoule Mass (g):	5.20453 g	Expiration Date:	12/30/2009
Uncertainty:	+/- 5 %	Primary Code:	1283-A
LogBook No:	RC-S-051-002	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	12/02/2009	12/02/2010
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	01/08/2010	12/02/2010
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	pCi/L
	1283-H N2	2.000	pCi/L	0.234	pCi/L
	1283-H N3	2.060	pCi/L	0.242	pCi/L
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 =	1.965565657	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 1ml 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: 957136**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
247784002	SAMPLE	MXR1	GAM02	05-MAR-10 10:25	DONE	CAN	29-OCT-09 00:00
247790002	SAMPLE	MXR1	GAM16	05-MAR-10 10:26	DONE	CAN	16-NOV-09 00:00
247790003	SAMPLE	MXR1	GAM23	05-MAR-10 10:26	DONE	CAN	02-JUN-09 00:00
247797001	SAMPLE	MXR1	GAM05	05-MAR-10 10:27	DONE	CAN	11-JUN-09 00:00
247797002	SAMPLE	MXR1	GAM07	05-MAR-10 10:28	DONE	CAN	20-JUL-09 00:00
247797003	SAMPLE	MXR1	GAM11	05-MAR-10 10:29	DONE	CAN	18-NOV-09 00:00
247797004	SAMPLE	MXR1	GAM04	05-MAR-10 10:29	DONE	CAN	05-MAY-09 00:00
247797005	SAMPLE	MXR1	GAM06	05-MAR-10 10:30	DONE	CAN	16-FEB-10 00:00
247809001	SAMPLE	MXR1	GAM15	05-MAR-10 10:31	DONE	CAN	03-FEB-10 00:00
247809002	SAMPLE	MXR1	GAM22	05-MAR-10 10:32	DONE	CAN	02-DEC-09 00:00
247809003	SAMPLE	MXR1	GAM01	05-MAR-10 10:33	DONE	CAN	12-JAN-10 00:00
247809004	SAMPLE	MXR1	GAM19	05-MAR-10 10:34	DONE	CAN	12-MAR-09 00:00
247809005	SAMPLE	MXR1	GAM14	05-MAR-10 10:35	DONE	CAN	06-MAR-09 00:00
247809006	SAMPLE	MXR1	GAM17	05-MAR-10 10:35	DONE	CAN	06-JAN-10 00:00
247809008	SAMPLE	MXR1	GAM18	05-MAR-10 10:36	DONE	CAN	23-APR-09 00:00
247809009	SAMPLE	MXR1	GAM21	05-MAR-10 10:37	DONE	CAN	28-JUL-09 00:00
247809012	SAMPLE	MXR1	GAM20	05-MAR-10 10:38	DONE	CAN	26-AUG-09 00:00
1202052272	MB	MXR1	GAM10	05-MAR-10 10:54	DONE	CAN	16-MAR-09 00:00
1202052273	DUP	MXR1	GAM02	05-MAR-10 13:05	DONE	CAN	29-OCT-09 00:00
1202052274	LCS	MXR1	GAM02	08-MAR-10 09:46	DONE	CAN	29-OCT-09 00:00

# Instrument Run Log

**Instrument Type: ALPHA SPECTROMETER**

**Batch ID: 961200**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
247549001	SAMPLE	AYB1	1227	16-MAR-10 07:35	DONE		
247549002	SAMPLE	AYB1	1228	16-MAR-10 07:35	DONE		
247549003	SAMPLE	AYB1	1229	16-MAR-10 07:35	DONE		
247549004	SAMPLE	AYB1	1230	16-MAR-10 07:35	DONE		
1202061746	LCS	AYB1	1233	16-MAR-10 07:38	DONE		
247797001	SAMPLE	AYB1	1237	16-MAR-10 07:38	DONE		
247797003	SAMPLE	AYB1	1239	16-MAR-10 07:38	DONE		
247797004	SAMPLE	AYB1	1240	16-MAR-10 07:38	DONE		
247797005	SAMPLE	AYB1	1241	16-MAR-10 07:39	DONE		
248239001	SAMPLE	AYB1	1242	16-MAR-10 07:39	DONE		
248239002	SAMPLE	AYB1	1243	16-MAR-10 07:39	DONE		
248239003	SAMPLE	AYB1	1244	16-MAR-10 07:39	DONE		
248239004	SAMPLE	AYB1	1247	16-MAR-10 07:39	DONE		
248239005	SAMPLE	AYB1	1248	16-MAR-10 07:39	DONE		
248239006	SAMPLE	AYB1	1249	16-MAR-10 07:39	DONE		
248239007	SAMPLE	AYB1	1250	16-MAR-10 07:39	DONE		
1202061744	MB	AYB1	1253	16-MAR-10 07:39	DONE		
1202061745	DUP	AYB1	1254	16-MAR-10 07:39	DONE		
247551001	SAMPLE	AYB1	1043	17-MAR-10 07:28	DONE		
247797002	SAMPLE	AYB1	1044	17-MAR-10 07:28	DONE		
247551002	SAMPLE	AYB1	1248	18-MAR-10 14:39	DONE		

# Instrument Run Log

**Instrument Type: ALPHA SPECTROMETER**

**Batch ID:961201**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
1202061752	LCS	AYB1	1045	17-MAR-10 07:28	DONE		
1202061750	MB	AYB1	1046	17-MAR-10 07:28	DONE		
1202061751	DUP	AYB1	1048	17-MAR-10 07:28	DONE		
247797001	SAMPLE	AYB1	1019	17-MAR-10 08:50	DUSE		
247797002	SAMPLE	AYB1	1020	17-MAR-10 08:50	DONE		
247797003	SAMPLE	AYB1	1022	17-MAR-10 08:50	DONE		
247797004	SAMPLE	AYB1	1023	17-MAR-10 08:50	DUSE		
247797005	SAMPLE	AYB1	1024	17-MAR-10 08:50	DONE		
248239007	SAMPLE	AYB1	1077	17-MAR-10 08:56	DUSE		
247549001	SAMPLE	AYB1	1083	17-MAR-10 08:56	DUSE		
247549002	SAMPLE	AYB1	1084	17-MAR-10 08:56	DONE		
247549003	SAMPLE	AYB1	1085	17-MAR-10 08:56	DONE		
247549004	SAMPLE	AYB1	1086	17-MAR-10 08:56	DONE		
247551001	SAMPLE	AYB1	1087	17-MAR-10 08:56	DONE		
247551002	SAMPLE	AYB1	1088	17-MAR-10 08:56	DUSE		
248239001	SAMPLE	AYB1	1095	17-MAR-10 08:56	DUSE		
248239002	SAMPLE	AYB1	1096	17-MAR-10 08:56	DONE		
248239003	SAMPLE	AYB1	1097	17-MAR-10 08:56	DONE		
248239004	SAMPLE	AYB1	1098	17-MAR-10 08:56	DONE		
248239005	SAMPLE	AYB1	1099	17-MAR-10 08:56	DUSE		
248239006	SAMPLE	AYB1	1100	17-MAR-10 08:56	DONE		
247549001	SAMPLE	AYB1	1071	18-MAR-10 20:59	DONE		
247551002	SAMPLE	AYB1	1072	18-MAR-10 20:59	DONE		
247797001	SAMPLE	AYB1	1073	18-MAR-10 20:59	DONE		
247797004	SAMPLE	AYB1	1074	18-MAR-10 20:59	DONE		
248239001	SAMPLE	AYB1	1107	18-MAR-10 20:59	DONE		
248239005	SAMPLE	AYB1	1108	18-MAR-10 20:59	DONE		
248239007	SAMPLE	AYB1	1109	18-MAR-10 20:59	DONE		

## Instrument Run Log

**Instrument Type: ALPHA SPECTROMETER**

**Batch ID:961204**

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
1202061756	MB	AYB1	1129	17-MAR-10 13:28	DONE		
1202061757	DUP	AYB1	1130	17-MAR-10 13:28	DONE		
1202061758	LCS	AYB1	1131	17-MAR-10 13:28	DONE		
247549001	SAMPLE	AYB1	1001	17-MAR-10 18:34	DONE		
247549002	SAMPLE	AYB1	1002	17-MAR-10 18:34	DONE		
247549003	SAMPLE	AYB1	1003	17-MAR-10 18:34	DONE		
247549004	SAMPLE	AYB1	1004	17-MAR-10 18:34	DONE		
247551001	SAMPLE	AYB1	1006	17-MAR-10 18:34	DONE		
247551002	SAMPLE	AYB1	1007	17-MAR-10 18:34	DONE		
247797001	SAMPLE	AYB1	1008	17-MAR-10 18:34	DONE		
247797002	SAMPLE	AYB1	1009	17-MAR-10 18:34	DONE		
247797003	SAMPLE	AYB1	1010	17-MAR-10 18:34	DONE		
247797004	SAMPLE	AYB1	1011	17-MAR-10 18:34	DONE		
247797005	SAMPLE	AYB1	1001	18-MAR-10 11:45	DONE		
248239001	SAMPLE	AYB1	1002	18-MAR-10 11:45	DONE		
248239002	SAMPLE	AYB1	1003	18-MAR-10 11:45	DONE		
248239003	SAMPLE	AYB1	1004	18-MAR-10 11:45	DONE		
248239004	SAMPLE	AYB1	1006	18-MAR-10 11:45	DONE		
248239005	SAMPLE	AYB1	1007	18-MAR-10 11:45	DONE		
248239006	SAMPLE	AYB1	1008	18-MAR-10 11:45	DONE		
248239007	SAMPLE	AYB1	1009	18-MAR-10 11:45	DONE		



# Instrument Run Log

Instrument Type: LSC

Batch ID: 961540

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
247797001	SAMPLE	KXK2	LSCPINK	11-MAR-10 03:45	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247797002	SAMPLE	KXK2	LSCPINK	11-MAR-10 05:48	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247797003	SAMPLE	KXK2	LSCPINK	11-MAR-10 07:50	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247797004	SAMPLE	KXK2	LSCPINK	11-MAR-10 09:53	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247797005	SAMPLE	KXK2	LSCPINK	11-MAR-10 11:56	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247900004	SAMPLE	KXK2	LSCPINK	11-MAR-10 13:59	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247900006	SAMPLE	KXK2	LSCPINK	11-MAR-10 15:56	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247900008	SAMPLE	KXK2	LSCPINK	11-MAR-10 17:59	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247900011	SAMPLE	KXK2	LSCPINK	11-MAR-10 20:02	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247920002	SAMPLE	KXK2	LSCPINK	11-MAR-10 20:40	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
248385001	SAMPLE	KXK2	LSCPINK	11-MAR-10 22:43	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
248385002	SAMPLE	KXK2	LSCPINK	12-MAR-10 02:01	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
248385003	SAMPLE	KXK2	LSCPINK	12-MAR-10 04:03	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
248385004	SAMPLE	KXK2	LSCPINK	12-MAR-10 06:06	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
248385005	SAMPLE	KXK2	LSCPINK	12-MAR-10 08:08	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
248385006	SAMPLE	KXK2	LSCPINK	12-MAR-10 10:11	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
248386003	SAMPLE	KXK2	LSCPINK	12-MAR-10 12:13	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
248386004	SAMPLE	KXK2	LSCPINK	12-MAR-10 14:16	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
1202062409 MB		KXK2	LSCPINK	12-MAR-10 16:18	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
1202062410 DUP		KXK2	LSCPINK	12-MAR-10 18:22	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
1202062411 LCS		KXK2	LSCPINK	12-MAR-10 20:24	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00